



**LABOR MARKET ABSORTION RATE OF GRADUATE OF HEALTH
SCIENCE STUDY PROGRAM FROM UNTL, ISC, UNPAZ, ICS, UNDIL
WITHIN THE LAST 5 YEARS
(2019 - 2023)**

**NAAAA RESEARCH
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LABOR MARKET ABSORPTION RATE OF GRADUATE OF HEALTH SCIENCE STUDY PROGRAM FROM UNTL WITHIN THE LAST FIVE YEARS (2019-2023)

By

**Dr. Domingos CBB Gomes
Carlos da Conceicao de Deus, Ph.D.**

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REPÚBLICA DEMOCRÁTICA DE TIMOR-LESTE
MINISTÉRIO DO ENSINO SUPERIOR CIÊNCIA E CULTURA
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REPÚBLICA DEMOCRÁTICA DE TIMOR-LESTE
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Instituto Nacional
de Ciências e Tecnologia
Timor-Leste

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ACKNOWLEDGEMENTS BY AUTHOR

The picturesque campus of the UNTL, UNPAZ, UNDIL, ICS, and ISC as a group of eager Health Science graduates gathered to reflect on their future prospects. The past five years (2019-2023) had been a whirlwind of lectures, labs, and clinical placements, and now they stood on the threshold of their careers. As the golden hour illuminated the university's iconic clock tower, the friends shared their hopes and dreams for the future. Each one of them had their own unique story and aspirations, but they all shared a common goal: to make a positive impact in the healthcare sector of their beloved country. They reminisced about their challenging yet rewarding journey at UNTL, UNPAZ, UNDIL, ICS, and ISC.

The rigorous curriculum had equipped them with a strong foundation in health science, and their clinical rotations had provided invaluable real-world experience. Now, as they prepared to enter the job market, they were eager to put their skills to use and make a difference in their communities. However, they were also aware of the potential challenges ahead.

The job market in Timor-Leste, especially in the healthcare sector, could be competitive, and they knew that securing their dream careers might not be easy. Despite the potential obstacles, the graduates remained optimistic. They had faith in the quality of their education and the support of their alumni network. As they bid farewell to their university life and embarked on their professional journeys, they knew that their hard work and dedication would pay off. Each step they took towards their future was a step towards improving the health and well-being of the people of Timor-Leste.

Therefore we would like to express our deepest gratitude to all those who have contributed to the completion of this study on graduate employment in the field of Health Science. This research has been a collaborative endeavor, and it is essential to recognize the efforts and support of various individuals and institutions that have made this work possible.

First and foremost, we extend our heartfelt thanks to the Ministry for Higher Education, Science and Culture, the National Agency for Academic Accreditation and Assessment (ANAAA), and the National Institute of Science and Technology (INCT) for their unwavering support and cooperation throughout the research process. Their commitment to enhancing the quality of higher education in Timor-Leste has provided a significant backdrop for this study, emphasizing the importance of graduate employability in the health sciences sector.

We are particularly grateful to the universities included in this study such as the Universidade Nacional Timor Lorosa'e (UNTL), Universidade da Paz (UNPAZ), Universidade de Dili (UNDIL), Instituto Ciencias da Saúde (ICS), and Instituto Superior Cristal (ISC). The collaboration and provision of data and information from these institutions have been invaluable to the success of this research. Their willingness to share insights and resources has greatly enriched our analysis and understanding of the graduate employment landscape.

We would also like to express our sincere appreciation to the participants of this study, including graduates from the aforementioned universities, employers, and key stakeholders in the field of higher education and employment in Timor-Leste. Their insights and perspectives have greatly enhanced our understanding of the challenges and opportunities facing graduates in the health sciences. The diverse experiences and viewpoints shared by these individuals have contributed significantly to the depth and quality of this study.

Furthermore, we extend our heartfelt thanks to the research team involved in data collection, analysis, and report writing. Their dedication, expertise, and commitment to excellence have been instrumental in producing this comprehensive study on the graduate employment situation in Timor-Leste. Each member of the team has played a crucial role in ensuring that our findings are accurate, relevant, and impactful.

Lastly, we acknowledge the support of our families and friends, whose encouragement and understanding have sustained us throughout this research journey. Their belief in the importance of this work has motivated us to persevere and strive for excellence in our efforts to contribute to the understanding of graduate employment in the health science sector.

Lastly but not end, this study is a collective effort, and we are deeply appreciative of all those who have contributed in various ways. We hope that the findings presented in this research will serve as a valuable resource for policymakers, educators, and stakeholders in enhancing the employability of graduates in Timor-Leste, particularly in the critical field of health sciences.

Dili, November 6th 2024

Dr. Domingos CBB Gomes
Dr. Carlos da Conceicao de Deus

AGRADECIMENTOS PELO AUTOR

O campus da UNTL, UNPAZ, UNDIL, ICS e ISC como um grupo de ansiosos graduados em Ciências da Saúde reuniram-se para refletir sobre suas perspectivas futuras. Os últimos cinco anos (2019-2023) foram um turbilhão de palestras, laboratórios e colocações clínicas, e agora eles estavam no limiar de suas carreiras. Enquanto a hora dourada iluminava a icônica torre do relógio da universidade, os amigos compartilharam suas esperanças e sonhos para o futuro. Cada um deles tinha sua própria história e aspirações, mas todos compartilhavam um objetivo comum: causar um impacto positivo no setor de saúde de seu amado país. Eles relembrou sua jornada desafiadora, mas gratificante, na UNTL, UNPAZ, UNDIL, ICS e ISC.

O currículo rigoroso os equipou com uma base sólida em ciências da saúde, e suas rotações clínicas proporcionaram uma experiência inestimável no mundo real. Agora, enquanto se preparavam para entrar no mercado de trabalho, eles estavam ansiosos para colocar suas habilidades em uso e fazer a diferença em suas comunidades. No entanto, estavam também conscientes dos potenciais desafios que se avizinham. O mercado de trabalho em Timor-Leste, especialmente no setor da saúde, podia ser competitivo e eles sabiam que garantir as suas carreiras de sonho poderia não ser fácil. Apesar dos potenciais obstáculos, os formandos mantiveram-se otimistas. Eles tinham fé na qualidade de sua educação e no apoio de sua rede de ex-alunos. Ao despedirem-se da vida universitária e embarcarem nas suas jornadas profissionais, sabiam que o seu trabalho árduo e dedicação compensariam. Cada passo que deram em direção ao seu futuro foi um passo para melhorar a saúde e o bem-estar do povo de Timor-Leste.

Por isso, gostaríamos de expressar a nossa mais profunda gratidão a todos aqueles que contribuíram para a conclusão deste estudo sobre o emprego dos licenciados na área das Ciências da Saúde. Esta pesquisa tem sido um esforço colaborativo, e é essencial reconhecer os esforços e o apoio de vários indivíduos e instituições que tornaram este trabalho possível.

Em primeiro lugar, estendemos os nossos sinceros agradecimentos ao Ministério do Ensino Superior, Ciência e Cultura, à Agência Nacional de Acreditação e Avaliação Acadêmica (ANAAA) e ao Instituto Nacional de Ciência e Tecnologia (INCT) pelo seu apoio e cooperação inabaláveis ao longo de todo o processo de investigação. O seu compromisso com a melhoria da qualidade do ensino superior em Timor-Leste forneceu um pano de fundo significativo para este estudo, enfatizando a importância da empregabilidade dos licenciados no setor das ciências da saúde.

Estamos particularmente gratos às universidades incluídas neste estudo: a Universidade Nacional Timor Lorosa'e (UNTL), Universidade da Paz (UNPAZ), Universidade de Dili (UNDIL), Instituto Ciências da Saúde (ICS) e Instituto Superior Cristal (ISC). A colaboração e o fornecimento de dados e informações dessas instituições têm sido inestimáveis para o sucesso desta pesquisa. A sua vontade de partilhar ideias e recursos enriqueceu grandemente a nossa análise e compreensão do panorama do emprego dos licenciados.

Gostaríamos também de expressar o nosso sincero apreço aos participantes deste estudo, incluindo licenciados das universidades acima mencionadas, empregadores e principais partes interessadas no campo do ensino superior e do emprego em Timor-Leste. As suas perspectivas e perspectivas melhoraram grandemente a nossa compreensão dos desafios e oportunidades que os licenciados em ciências da saúde enfrentam. As diversas experiências e pontos de vista partilhados por estes indivíduos contribuíram significativamente para a profundidade e qualidade deste estudo.

Além disso, estendemos nossos sinceros agradecimentos à equipe de pesquisa envolvida na coleta de dados, análise e redação de relatórios. A sua dedicação, experiência e compromisso com a excelência têm sido fundamentais para produzir este estudo abrangente sobre a situação do emprego dos licenciados em Timor-Leste. Cada membro da equipe desempenhou um papel crucial para garantir que nossas descobertas sejam precisas, relevantes e impactantes.

Por fim, reconhecemos o apoio de nossos familiares e amigos, cujo incentivo e compreensão nos sustentaram ao longo desta jornada de pesquisa. A sua crença na importância deste trabalho motivou-nos a perseverar e a lutar pela excelência nos nossos esforços para contribuir para a compreensão do emprego dos licenciados no setor das ciências da saúde.

Por último, mas não fim, este estudo é um esforço coletivo e estamos profundamente agradecidos a todos aqueles que contribuíram de várias formas. Esperamos que os resultados apresentados nesta investigação sirvam como um recurso valioso para decisores políticos, educadores e partes interessadas no aumento da empregabilidade dos licenciados em Timor-Leste, particularmente no campo crítico das ciências da saúde.

Díli, 6 de Novembro de 2024

Dr. Domingos CBB Gomes
Dr. Carlos da Conceicao de Deus



MENSAGEM DO MINISTRO DO ENSINO SUPERIOR, CIÊNCIA E CULTURA DO IX GOVERNO CONSTITUCIONAL DA REPÚBLICA DEMOCRÁTICA DE TIMOR-LESTE

É com grande satisfação que tive conhecimento deste estudo sobre a “*Taxa de Absorção no Mercado de Trabalho dos Graduados em Ciências da Saúde da UNTL, ISC, UNPAZ, ICS e UNDIL nos últimos 5 anos (2019-2023)*”, promovido pela Agência Nacional de Avaliação e Acreditação Académica (ANAAA) em colaboração com o Instituto Nacional de Ciência e Tecnologia (INCT).

Nos últimos anos, o nosso país assistiu a transformações significativas no setor da saúde que influenciaram não apenas os resultados de saúde dos nossos cidadãos, como também moldaram as oportunidades e desafios enfrentados pelos graduados ao ingressarem no mercado de trabalho.

Este setor tem enfrentado inúmeros desafios, incluindo elevadas taxas de mortalidade materna e a crescente prevalência de doenças não transmissíveis. Em resposta, as nossas Instituições de Ensino Superior têm trabalhado diligentemente para melhorar os seus currículos, assegurando que estes se alinham com as necessidades em evolução do nosso sistema de saúde. Ao fomentar o pensamento crítico, as competências práticas e um sólido enquadramento ético, procurámos equipar os nossos licenciados com as ferramentas necessárias para abordar estas questões prioritárias.

Ao refletirmos sobre os últimos cinco anos, é evidente que a empregabilidade dos nossos licenciados em ciências da saúde está numa trajetória ascendente. No entanto, temos de nos manter vigilantes. O sucesso futuro dependerá da avaliação contínua dos currículos, da colaboração com líderes do setor da saúde e de um compromisso permanente com a inovação. É fundamental que continuemos a trabalhar juntos para enfrentar os desafios e maximizar as oportunidades no setor da saúde.

Enquanto Ministro do Ensino Superior, Ciência e Cultura, reafirmo o compromisso do Governo de Timor-Leste em continuar a investir no fortalecimento das instituições de ensino superior, na melhoria da qualidade do ensino, e na promoção de pesquisas que ajudem a moldar políticas públicas informadas e sustentáveis. Exorto todos os envolvidos – educadores, decisores políticos, instituições de saúde e profissionais – a manterem a colaboração para garantir a empregabilidade dos nossos graduados. É através deste esforço conjunto que poderemos formar não apenas profissionais competentes, mas também agentes de mudança que inspirarão as futuras gerações a seguir carreiras com impacto significativo na nossa sociedade.

Para finalizar, deixo um enorme agradecimento à ANAAA, ao INCT e aos parceiros institucionais que participaram neste estudo, que espero que seja uma ferramenta valiosa para orientar decisões estratégicas e promover debates construtivos que reforcem o papel do ensino superior no desenvolvimento humano de Timor-Leste.

José Honório da Costa Pereira Jerónimo, M.Si.
Ministro de Ensino Superior, Ciência e Cultura



MENSAGEM DO MINISTRO DO ENSINO SUPERIOR, CIÊNCIA E CULTURA DO IX GOVERNO CONSTITUCIONAL DA REPÚBLICA DEMOCRÁTICA DE TIMOR-LESTE

It is with great satisfaction of this study on the "*Absorption Rate in the Labor Market of Graduates in Health Sciences from UNTL, ISC, UNPAZ, ICS and UNDIL in the last 5 years (2019-2023)*", promoted by the National Agency for Academic Assessment and Accreditation (ANAAA) in collaboration with the National Institute of Science and Technology (INCT).

In recent years, our country has seen significant transformations in the health sector that have influenced not only the health outcomes of our citizens, but have also shaped the opportunities and challenges faced by graduates when entering the workforce.

This sector has faced numerous challenges, including high maternal mortality rates and the increasing prevalence of non-communicable diseases. In response, our Higher Education Institutions have worked diligently to improve their curricula, ensuring that they align with the evolving needs of our health system. By fostering critical thinking, practical skills and a strong ethical framework, we sought to equip our graduates with the tools they needed to address these priority issues.

As we reflect on the last five years, it is clear that the employability of our health sciences graduates is on an upward trajectory. However, we must remain vigilant. Future success will depend on continuous evaluation of curricula, collaboration with leaders in the healthcare industry, and an ongoing commitment to innovation. It is critical that we continue to work together to address challenges and maximize opportunities in the health sector.

As Minister of Higher Education, Science and Culture, I reaffirm the commitment of the Government of Timor-Leste to continue to invest in strengthening higher education institutions, improving the quality of education, and promoting research that helps shape informed and sustainable public policies. I urge all involved – educators, policy makers, health institutions and professionals – to maintain collaboration to ensure the employability of our graduates. It is through this joint effort that we will be able to train not only competent professionals, but also agents of change who will inspire future generations to pursue careers with a significant impact on our society.

To conclude, I would like to express my thanks to ANAAA, the INCT and the institutional partners who participated in this study, which I hope will be a valuable tool to guide strategic decisions and promote constructive debates that strengthen the role of higher education in Timor-Leste's human development.

José Honório da Costa Pereira Jerónimo, M.Si.
Ministro de Ensino Superior, Ciência e Cultura

MESSAGE FROM THE EXECUTIVE DIRECTOR OF THE ANAAA

On behalf of the National Agency for Academic Accreditation and Assessment (ANAAA), I would like to extend my deepest appreciation to the dedicated team behind the recent study on graduate employment within the realm of higher education in Timor-Leste. This critical research provides a comprehensive analysis of the labor market absorption rate for graduates in health science from various universities across our nation, illuminating both the challenges and opportunities present in this vital sector.

At ANAAA, we are unwavering in our commitment to ensuring the quality and relevance of higher education in Timor-Leste. This undertaking is not only pivotal for the academic institutions but also essential for the broader socio-economic development of our country. The findings from this study align seamlessly with our mission to promote excellence, accountability, and continuous improvement within the higher education sector.

By delving into the employability of graduates, the study enables us to identify specific areas that require enhancement. It further allows us to strengthen curricula and improve the critical linkages between academia and industry. It is imperative that our educational programs are attuned to the evolving needs of the labor market, and this research serves as a vital tool in that endeavor.

The insights and recommendations gleaned from this study will be invaluable to ANAAA as we continue to refine our accreditation and assessment processes for higher education institutions. By integrating these findings into our operational framework, we can better align educational offerings with market demands, thereby increasing the employability prospects of our graduates.

I would also like to take this opportunity to express my heartfelt gratitude to the universities, employers, and graduates who participated in this study. Your contributions have been instrumental in providing a holistic view of the current landscape and future possibilities. Additionally, I commend the research team for their meticulous and dedicated work on this project. This collaborative effort manifests the commitment of all stakeholders to elevate the quality and relevance of higher education in Timor-Leste.

Together, we can forge a path toward a more prosperous future, ensuring that our graduates are not only well-educated but also well-prepared to meet the challenges of the labor market.

Thank you for your ongoing support and engagement in this crucial initiative.

Dili, 6 December 2024

Nilton Diamantino Paiva Mau, Ph.D.
Director Executivo ANAAA

MENSAGEM DO DIRETOR EXECUTIVO DA ANAAA

Em nome da Agência Nacional de Acreditação e Avaliação Acadêmica (ANAAA), gostaria de estender o meu mais profundo apreço à equipa dedicada por detrás do recente estudo sobre o emprego dos licenciados no âmbito do ensino superior em Timor-Leste. Esta pesquisa crítica fornece uma análise abrangente da taxa de absorção do mercado de trabalho para graduados em ciências da saúde de várias universidades em nosso país, iluminando os desafios e oportunidades presentes neste setor vital.

Na ANAAA, somos inabaláveis no nosso compromisso de garantir a qualidade e relevância do ensino superior em Timor-Leste. Este empreendimento não é apenas fundamental para as instituições académicas, mas também essencial para o desenvolvimento socioeconómico mais amplo do nosso país. Os resultados deste estudo alinham-se perfeitamente com a nossa missão de promover a excelência, a responsabilização e a melhoria contínua no setor do ensino superior.

Ao aprofundar a empregabilidade dos diplomados, o estudo permite-nos identificar áreas específicas que necessitam de aperfeiçoamento. Permite-nos ainda reforçar os currículos e melhorar as ligações críticas entre o meio académico e a indústria. É imperativo que nossos programas educacionais estejam sintonizados com as necessidades em evolução do mercado de trabalho, e esta pesquisa serve como uma ferramenta vital nessa empreitada.

Os insights e recomendações colhidos deste estudo serão inestimáveis para a ANAAA à medida que continuamos a refinar nossos processos de acreditação e avaliação para instituições de ensino superior. Ao integrar estes resultados no nosso quadro operacional, podemos alinhar melhor as ofertas educativas com as exigências do mercado, aumentando assim as perspectivas de empregabilidade dos nossos diplomados.

Gostaria também de aproveitar esta oportunidade para expressar a minha sincera gratidão às universidades, empregadores e licenciados que participaram neste estudo. Suas contribuições foram fundamentais para fornecer uma visão holística do cenário atual e das possibilidades futuras. Além disso, felicito a equipa de investigação pelo seu trabalho meticuloso e dedicado neste projeto. Este esforço colaborativo manifesta o compromisso de todas as partes interessadas em elevar a qualidade e relevância do ensino superior em Timor-Leste.

Juntos, podemos forjar um caminho para um futuro mais próspero, garantindo que nossos graduados não sejam apenas bem formados, mas também bem preparados para enfrentar os desafios do mercado de trabalho.

Obrigado pelo vosso apoio e empenho contínuos nesta iniciativa crucial.

Díli, 6 de dezembro de 2024

Dr. Nilton Diamantino TrueIva
Diretor Executivo ANAAA

MESSAGE FROM THE EXECUTIVE PRESIDENT OF THE INCT

Esteemed colleagues, distinguished guests, and all stakeholders in the realm of higher education in Timor-Leste were overing the Study Program of Health Science.

It is with great pleasure and immense pride that, on behalf of the National Institute of Science and Technology (INCT), present to you the findings of our comprehensive study entitled “The Employment of Higher Education Graduates in Timor-Leste (2018-2022)”. This vital research initiative, executed in collaboration with the National Agency for Academic Assessment and Accreditation (ANAAA), reflects our unwavering commitment to enhancing graduate employability within the health science sector and beyond.

We acknowledge the significant request from the Technical Secretariat of the Human Capital Development Fund (FDCH), which catalyzed this important project under the auspices of the INCT Strategic Plan. As part of our ongoing INCT Training and Research Program, this study exemplifies our dedication to advancing the fields of science and health science while simultaneously fostering the development of human resources and institutional capacities across Timor-Leste.

At this juncture, I wish to extend my heartfelt gratitude to Dr. Nilton Paiva, the Executive Director of ANAAA, and his dedicated team. Their trust in the INCT to carry out this pivotal project is deeply appreciated. The insights garnered from this research hold profound significance for Higher Education Institutions (HEIs) throughout our nation. By analyzing how the labor market integrates and absorbs graduates, we are better equipped to identify both the challenges and opportunities that lie ahead. This study not only assesses the effectiveness of the professional pathways afforded by various academic programs but also highlights the critical need for alignment between educational outcomes and labor market demands.

The findings of this research endeavor are paramount for HEIs, governmental bodies, and organizations such as ANAAA. They serve as a foundational basis for formulating policies aimed at enhancing educational quality and relevance in our rapidly evolving societal context. Understanding the dynamics of graduate employability will enable us to respond proactively to the needs of our economy and workforce, ensuring that our higher education landscape remains robust and future-focused.

The INCT, established by Decree-Law No. 23/2014, is mandated to promote science, technology, and innovation (STI) in Timor-Leste. Our mission encompasses the development of both applied and theoretical research, the dissemination of research findings, and the accreditation of scientific publications within our national context. We are proud to collaborate with 18 HEIs, striving collectively for the enhancement of scientific inquiry and the formulation of effective public policies.

In our quest for excellence, we have also cultivated partnerships with esteemed institutions globally. Collaborations with universities such as the Singapore University of Social Sciences, Kanazawa University in Japan, and BRIN in Indonesia have enriched our research capabilities and broadened our horizons.

This five-year study commenced its journey with the involvement of five distinguished HEIs: the Universidade Nacional Timor Lorosa’e (UNTL), Universidade da Paz (UNPAZ), Universidade de Dili (UNDIL), Instituto Científico de Saúde (ICS), and the Instituto Superior Cristal (ISC). I would like to express my profound gratitude to the rectors, vice-rectors, deans, and department heads of these institutions. Their unwavering cooperation and provision of critical data have been instrumental in bringing this study to fruition.

I would also like to extend my sincere thanks to the dedicated researchers who undertook this monumental task. A special acknowledgment goes to Dr. Domingos Cairesi Beremau Gomes, our

research team leader, whose exemplary leadership was pivotal in steering this project towards success. Additionally, I wish to recognize Dr. Carlos de Conceição de Deus and all researchers who contributed their expertise and diligence to this endeavor.

Last but certainly not least, I would like to express my deepest appreciation to the organizational structures of the INCT and the ANAAA. Your support and coordination have been invaluable, culminating in the successful execution of this research project.

Finally, let us embrace the insights derived from this study as a catalyst for transformative change in our higher education system. By addressing the challenges identified and leveraging the opportunities presented, we can enhance the employability of our graduates and ultimately contribute to the prosperity of Timor-Leste. Together, we have the power to shape a brighter future for our nation.

José Cornelio Guterres, Ph.D

Executive President of the INCT

MENSAGEM DO PRESIDENTE EXECUTIVO DO INCT

Estimados colegas, ilustres convidados e todos os intervenientes no domínio do ensino superior em Timor-Leste estavam a sobrepor-se ao Programa de Estudos de Ciências da Saúde.

É com grande prazer e imenso orgulho que, em nome do Instituto Nacional de Ciência e Tecnologia (INCT), vos apresentamos as conclusões do nosso abrangente estudo intitulado "O Emprego dos Diplomados do Ensino Superior em Timor-Leste (2018-2022)". Esta iniciativa de investigação vital, executada em colaboração com a Agência Nacional de Avaliação e Acreditação Académica (ANAAA), reflete o nosso compromisso inabalável em melhorar a empregabilidade dos licenciados no setor das ciências da saúde e não só.

Reconhecemos a significativa solicitação da Secretaria Técnica do Fundo de Desenvolvimento do Capital Humano (FDCH), que catalisou este importante projeto sob os auspícios do Plano Estratégico do INCT. Como parte do nosso Programa de Formação e Investigação INCT em curso, este estudo exemplifica a nossa dedicação ao avanço dos campos da ciência e da ciência da saúde, ao mesmo tempo que promove o desenvolvimento de recursos humanos e capacidades institucionais em Timor-Leste.

Neste momento, quero estender minha sincera gratidão ao Dr. Nilton Paiva, Diretor Executivo da ANAAA, e sua dedicada equipe. A sua confiança no INCT para levar a cabo este projeto fundamental é profundamente apreciada. Os insights obtidos a partir desta pesquisa têm um profundo significado para as Instituições de Ensino Superior (IES) em todo o nosso país. Ao analisar como o mercado de trabalho integra e absorve os graduados, estamos mais bem equipados para identificar os desafios e as oportunidades que temos pela frente. Este estudo não só avalia a eficácia dos percursos profissionais proporcionados por vários programas académicos, mas também destaca a necessidade crítica de alinhamento entre os resultados educativos e as exigências do mercado de trabalho.

Os resultados deste esforço de pesquisa são primordiais para IES, órgãos governamentais e organizações como a ANAAA. Servem de base fundamental para a formulação de políticas destinadas a melhorar a qualidade e a relevância educativas no nosso contexto societal em rápida evolução. Compreender a dinâmica da empregabilidade dos diplomados permitir-nos-á responder proativamente às necessidades da nossa economia e da nossa força de trabalho, assegurando que o nosso panorama do ensino superior permanece robusto e orientado para o futuro.

O INCT, instituído pelo Decreto-Lei n.º 23/2014, está mandatado para promover a ciência, tecnologia e inovação (CTI) em Timor-Leste. A nossa missão engloba o desenvolvimento da investigação aplicada e teórica, a divulgação dos resultados da investigação e a acreditação de publicações científicas no nosso contexto nacional. Orgulhamo-nos de colaborar com 18 IES, lutando coletivamente pela valorização da investigação científica e pela formulação de políticas públicas eficazes.

Na nossa busca pela excelência, também cultivamos parcerias com instituições conceituadas em todo o mundo. Colaborações com universidades como a Universidade de Ciências Sociais de Singapura, a Universidade de Kanazawa, no Japão, e a BRIN, na Indonésia, enriqueceram as nossas capacidades de investigação e alargaram os nossos horizontes.

Este estudo de cinco anos iniciou o seu percurso com o envolvimento de cinco IES distintas: a Universidade Nacional Timor Lorosa'e (UNTL), a Universidade da Paz (UNPAZ), a Universidade de Dili (UNDIL), o Instituto Científico de Saúde (ICS) e o Instituto Superior Cristal (ISC). Gostaria de expressar a minha profunda gratidão aos reitores, vice-reitores, decanos e chefes de departamento destas instituições. A sua cooperação inabalável e o fornecimento de dados críticos foram fundamentais para levar este estudo a bom porto.

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Finalmente, vamos abraçar os insights derivados deste estudo como um catalisador para mudanças transformadoras em nosso sistema de ensino superior. Ao abordar os desafios identificados e alavancar as oportunidades apresentadas, podemos aumentar a empregabilidade dos nossos graduados e, em última análise, contribuir para a prosperidade de Timor-Leste. Juntos, temos o poder de moldar um futuro mais brilhante para a nossa nação.

Dr. José Cornélio Guterres

Presidente Executivo do INCT

EXECUTIVE SUMARIZE

In examining the graduate absorption rates based on sector for various higher education institutions in Timor-Leste, we uncover significant insights into the employability of graduates from these institutions. The findings reveal a noteworthy disparity in employment rates among graduates from different universities, underscoring the varying degrees of alignment between educational outcomes and labor market needs.

High Employment Rates: The Universidade Nacional Timor Lorosa'e (UNTL) and Universidade da Paz (UNPAZ) exhibit impressive employment rates of 81.99% and 82.21%, respectively. This suggests that these institutions are effectively preparing their graduates to meet the demands of the labor market.

Moderate Employment Rates: On the other hand, the Universidade de Dili (UNDIL) shows a lower absorption rate at 65.19%. This indicates potential gaps in either the curriculum offered or the practical skills provided to students, which may hinder their employability in a competitive job market.

Lower Employment Rates in Specialized Institutions: Instituto Superior Cristal (ISC) 71,78% no Instituto de Ciencias da Saude (ICS) 68,47% respectively. These figures raise concerns about the relevance and applicability of the training provided in these institutions, which may not be adequately aligned with market demands.

The employability rates and unemployment figures across various academic disciplines within the healthcare sector reveal a complex landscape characterized by both opportunities and challenges. The data emphasizes that while certain fields, such as Biomedical Science and Medicine, showcase exceptional employability rates 100% for Medicine and 82% for Biomedical Science other areas like Nursing, Dental Nursing, and Midwifery face significant hurdles due to high unemployment figures, highlighting a competitive job market influenced by multiple factors.

The stunning employability statistics in Biomedical Science and Medicine reflect a robust demand for skilled professionals in these areas, driven by the ongoing expansion of the healthcare industry. This trend is supported by a growing body of research that underscores the pressing need for medical scientists and healthcare practitioners as innovation and patient care needs evolve. For prospective students and educational institutions, this presents a clear signal to prioritize these disciplines that align with market demands, ensuring graduates are equipped with the necessary skills and qualifications to thrive in this dynamic environment.

Conversely, the employment landscape for Nursing and Public Health, despite solid employment rates of 79% and 81% respectively, reveals underlying challenges. The relatively high unemployment rate in nursing 20% points to a saturated job market where graduates must navigate a competitive arena influenced by factors such as educational qualifications and geographic location. This calls for a deeper exploration into the systemic issues affecting nursing employment, including the effectiveness of residency programs and the alignment of nursing curricula with evolving healthcare needs. By addressing these challenges through targeted research and collaboration among educational institutions and healthcare providers, we can better prepare nursing graduates for successful careers.

In contrast, fields such as Dental Nursing and Midwifery exhibit alarming employment statistics, with employability rates of only 54% and unemployment rates as high as 41% and 32% respectively. This suggests potential oversupply in these sectors and underscores the necessity for immediate investigation into the factors contributing to these trends. Stakeholders must consider actionable strategies, such as enhancing partnerships between educational programs and healthcare employers, to ensure that newly trained professionals are well-prepared to meet market demands.

The pharmacy sector's moderate employment rate of 69% and substantial unemployment at 28% further emphasizes the shifting dynamics within healthcare. The contrasting performance of Nutrition and Dietetics, which boasts an 82% employment rate, illustrates the increasing recognition of preventive health and wellness within the healthcare landscape. This shift suggests that future healthcare professionals, particularly in Pharmacy, should seek additional training and specialization to align their skills with the evolving needs of the industry.

Overall, the average employment rate of 78% across all healthcare disciplines, coupled with a concerning 22% unemployment rate, suggests that while the healthcare sector is expanding, significant gaps remain in the alignment between educational outcomes and job market demands. This presents an imperative for stakeholders from educational institutions to policymakers to engage in collaborative efforts to enhance graduates' employability. Future research should focus on identifying the specific barriers that contribute to the unemployment of healthcare graduates and developing strategies to bridge the gap between education and employment.

SUMARIZE EXECUTIVO

Ao examinar as taxas de absorção de graduados com base no setor para várias instituições de ensino superior em Timor-Leste, descobrimos percepções significativas sobre a empregabilidade dos graduados dessas instituições. Os resultados revelam uma disparidade notável nas taxas de emprego entre graduados de diferentes universidades, sublinhando os diferentes graus de alinhamento entre os resultados educacionais e as necessidades do mercado de trabalho.

Altas Taxas de Emprego: A Universidade Nacional Timor Lorosa'e (UNTL) e a Universidade da Paz (UNPAZ) apresentam taxas de emprego impressionantes de 81,99% e 82,21%, respectivamente. Isso sugere que essas instituições estão efetivamente preparando seus egressos para atender às demandas do mercado de trabalho.

Taxas de Emprego Moderadas: Por outro lado, a Universidade de Díli (UNDIL) apresenta uma taxa de absorção mais baixa, de 76,67%. Isto indica potenciais lacunas quer no currículo oferecido, quer nas competências práticas fornecidas aos alunos, o que pode dificultar a sua empregabilidade num mercado de trabalho competitivo.

Menores Taxas de Emprego em Instituições Especializadas: Instituto Superior Cristal (ISC) 71,78% no Instituto de Ciências da Saúde (ICS) 68,47% respectivamente. Estes números suscitam preocupações quanto à relevância e aplicabilidade da formação ministrada nestas instituições, que pode não estar devidamente alinhada com as exigências do setor.

As taxas de empregabilidade e os números do desemprego em várias disciplinas académicas no setor da saúde revelam um cenário complexo caracterizado por oportunidades e desafios. Os dados enfatizam que, enquanto certas áreas, como a Ciência Biomédica e a Medicina, apresentam taxas de empregabilidade excecionais de 100% para a Medicina e 82% para a Ciência Biomédica, outras áreas como Nursing, Nursing Odontológica e Obstetrícia enfrentam obstáculos significativos devido aos altos números de desemprego, destacando um mercado de trabalho competitivo influenciado por múltiplos fatores.

As impressionantes estatísticas de empregabilidade em Ciências Biomédicas e Medicina refletem uma demanda robusta por profissionais qualificados nessas áreas, impulsionada pela expansão contínua do setor de saúde. Esta tendência é apoiada por um corpo crescente de investigação que sublinha a necessidade premente de cientistas médicos e profissionais de saúde à medida que a inovação e as necessidades de cuidados ao paciente evoluem. Para os futuros alunos e instituições de ensino, isso representa um sinal claro para priorizar essas disciplinas que se alinham com as demandas do mercado, garantindo que os graduados estejam equipados com as habilidades e qualificações necessárias para prosperar neste ambiente dinâmico.

Inversamente, o panorama do emprego na Nursing e na Saúde Pública, apesar das sólidas taxas de emprego de 79% e 81%, respectivamente, revela desafios subjacentes. A taxa de desemprego relativamente elevada na Nursing de 20% aponta para um mercado de trabalho saturado, onde os licenciados têm de navegar numa arena competitiva influenciada por fatores como as qualificações académicas e a localização geográfica. Isso exige uma exploração mais profunda das questões sistêmicas que afetam o emprego de Nursing, incluindo a eficácia dos programas de residência e o alinhamento dos currículos de Nursing com as necessidades de cuidados de saúde em evolução. Ao abordar estes desafios através de investigação orientada e colaboração entre instituições de ensino e prestadores de cuidados de saúde, podemos preparar melhor os licenciados em Nursing para carreiras de sucesso.

Em contrapartida, áreas como a Nursing Dentária e a Obstetrícia apresentam estatísticas de emprego alarmantes, com taxas de empregabilidade de apenas 54% e taxas de desemprego de 41% e 32%, respectivamente. Este facto sugere um potencial excesso de oferta nestes sectores e sublinha a

necessidade de uma investigação imediata dos fatores que contribuem para estas tendências. As partes interessadas devem considerar estratégias acionáveis, como o reforço das parcerias entre programas educacionais e empregadores de saúde, para garantir que os profissionais recém-formados estejam bem preparados para atender às demandas do mercado.

A taxa de emprego moderada do sector farmacêutico de 69% e o desemprego substancial de 28% acentuam ainda mais a dinâmica de mudança nos cuidados de saúde. O desempenho contrastante da Nutrition and Dietetics, que apresenta uma taxa de emprego de 82%, ilustra o crescente reconhecimento da saúde preventiva e bem-estar no panorama dos cuidados de saúde. Esta mudança sugere que os futuros profissionais de saúde, particularmente na Pharmacy, devem procurar formação e especialização adicionais para alinhar as suas competências com as necessidades em evolução da indústria.

De um modo geral, a taxa média de emprego de 78% em todas as disciplinas de cuidados de saúde, associada a uma preocupante taxa de desemprego de 22%, sugere que, embora o setor dos cuidados de saúde esteja a expandir-se, subsistem lacunas significativas no alinhamento entre os resultados educativos e as exigências do mercado de trabalho. Isto representa um imperativo para as partes interessadas, desde as instituições de ensino aos decisores políticos, se envolverem em esforços de colaboração para melhorar a empregabilidade dos diplomados. A investigação futura deve centrar-se na identificação dos obstáculos específicos que contribuem para o desemprego dos diplomados em cuidados de saúde e no desenvolvimento de estratégias para colmatar o fosso entre a educação e o emprego.

Palavra de chave: Saude, Campo de trabalho, graduado, taxa, absorpcao

SUMARIU EZEKUTIVU

Taxa absorpsaun graduadu sira ho baze iha setór ida-idak iha universidade sira iha Timór-Leste, deskobre perçepsaun signifikante kona-ba empregu graduadu sira nian hosi instituisaun UNTL, UNPAZ, UNDIL, ICS, ISC. Rezultadu sira hatudu disparidade barak iha taxa servisu entregadu sira hosi universidade sira ne'e, hanesan sublinha ba alinhamentu oin-oin ka diferença iha rezultadu edukasionál ho nesesidade hosi merkadu servisu nian mak hanesan:

Alta Taxa Servisu: Universidade Nacional Timor-Lorosa'e (UNTL) no Universidade da Paz (UNPAZ) apresenta taxa servisu ne'ebé impresionante, 81.99% no 82.21% respetivamente. Ne'e significa katak instituisaun sira ne'e prepara sira-nian graduadu sira ho qualidade hodi bele kompete iha campo servisu nian.

Empregu Moderadu: Tuir dalan seluk, Universidade Dili (UNDIL) absorve ho 76,67%. Ida ne'e hatudu potencia lacuna iha kurríkuulu ne'ebé fó, ka iha habilidade prátika estudante sira, ne'ebé bele difikulta sira nia kapasidade no qualidade servisu ne'ebé kompetitivu.

Empregu ki'ik iha Instituto Superior Cristal (ISC) 71,78% no Instituto de Ciencias da Saude (ICS) 68,47% respetivamente.

Numeru siran e'e hamosu preokupasaun kona-ba relevansia no aplika abilidade formasaun ne'ebé fó iha instituisaun sirane'e, ne'ebé bele la iha alinhamentu di'ak ho eskolaunsetór ne'ebé iha ona. Numeru empregabilidade no numeru dados iha variasi disiplina akademika iha setór saúde hatudu kena'o ida ne'ebé kompleksu no beibeik ho oportunidade no desafios. Dados sira ne'ebé enfatiza, enkuantu área balu, hanesan Siensia Biomédiku Medicina apresenta empregabilidade eksepsional liu tan 100% ba Medicina no 82% ba Siensia Biomédika, área seluk hanesan Nursing, Dental no enfrenta obstakulu ida ne'ebé signifikante tebes tanba numeru dados dadu la'os tanba merkadu kompetitivu ne'ebé influencia husi faktór sira ne'ebé mutiple.

Dados analisa Estatística impresionante tebes ba empregu iha area disiplina Ciencias Biomedika no Medicina Geral refleta ba demanda forti ba profesional kualifikadu sira iha area ne'e. Tendénsia ne'e apoiadu husi investigasaun ne'ebé difikulta bo'ot ba ita nia nesesidade ba sidadaun médiku no profesional saúde sira hafoin inovasaun no nesesidade kuidadu pasiente sira halo mudansa di'ak liu tan. Ba estudante no instituisaun sira ne'e, significa sinal klaru katak prioriza disiplina sira ne'ebé alinhadu ho merkadu nia demanda, garantidu ba graduadu sira nian katak sira hetan habilidade no kualifikasaun ne'ebé importante tebes atu hadi'a iha ambiente ne'ebé mais dinamik. Maski taxa empregu iha Enfermagem no Saúde Pública solidu liuhosi 79% no 81% respetivamente. Taxa desempregu relativa boot ba Enfermagem 20%. Ne'e kria krizis ne'ebé presiza iha dalan atu explora liutan kona-ba asuntu sistémiku sira ne'ebé afeta ba empregu Nursing nian, inklui efikásia ba programa residénsia no alinhamentu ba kurikulum Nursing ne'ebé konaba itania nesesidade kuidadu saúde ne'ebé iha evolusaun. Liuhusi investigasaun orientadu no kolaborasaun entre instituisaun ensinu no prestador saúde nian, ita bele prepara lisensiadu sira iha atu hetan karreira ne'ebé di'ak liu.

Iha parte seluk, área sira hanesan Nursing Dentária no Parteira hatudu estatística kazu desempregu ne'ebé alarmante, ho taxa empregabilidade deit 54% no taxa kazu desempregu ba oin 41% no 32%, reseitaivamente. Faktu ida ne'e sujere potenciál excesso oferta iha setórsira ne'e no subliña nesesidade atu dezanvolve investigasaun imediata ba faktór sira ne'ebé kontribui ba tendénsia sira ne'e. Parte interesadu sira tenki konsideraestratégia balun atu ativa, hanesan hametin kolaborasaun entre programa edukasaun no empregadór sira saúde nian, atu garante katak profesional ne'ebé foin forma preparadu di'ak ba husu merkadu nian. Taxa empregu modera sector farmacia nian hamutuk 69% nodesempregu lubun hamutuk 28%, iha enfazu klaru tanbamudansa ne'ebé akontese iha kuidadu saúde nian. Desempenhu kontraste Nutrisaun no Dietética nian, ho taxa empregu 82%, ilustra kresimentu atensaun ho panorama nebe diak. Mudansa ida ne'e sugere katak, futuro profesional saúde nian, liuliu iha setór farmacia, tenki buka formasaun no espesializasaun adisionál atu simu nia kompeténsia ho nesesidade evolusaun demanda servisu.

Lifuan sabi: Graduado, Saude, Campo servisu, Taxa

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LIST OF ACRONYMS

ALMPs	Active Labor Market Programs
ANAAA	Agência Nacional para a Avaliação e Acreditação Acadêmica (National Agency for Academic Assessment and Accreditation)
AAPs	Annual Action Plans
AIR	Apparent Intake Rate (see annex for definitions)
AJR	Annual Joint Review
ANAAA	National Commission for Academic Accreditation and Evaluation
AusAID	Australian Agency for International Development
BAS	Business Activity Survey
BE	Basic Education
BEST	Best Strengthening Education School Transformation
BNTL	National Library Timor Lorosa'e
BS	Basic School
CAPI	Computer Aided Personal Interface
CBS	Central Basic School
CCI	Chamber of Commerce and Industry
CEOPs	Centro de Emprego e Orientação Profissional (Center for Employment and Professional Guidance)
CNEFP	Centro Nacional de Emprego e Formação Profissional (National Center for Employment and Vocational Training)
CNFP	Centro Nacional de Formação Profissional (National Center for Vocational Training)
CoM	Council of Ministers
CS	Census School
CS-Pro	Census School Professional Application
CSV	Comma Separated Values
DD	Deputy Director
DDs	District Directorates
DED	Detail Engineering Design
DFAT	Department of Foreign Affairs and Trade
DGAIDC	Director General for School Management, Innovation and Curricular
DGC	Director General for Culture
DGEB	Director General Ensino Básico
DGES	Director General for Higher Education
DGSC	Director General for Corporate Services
DIT	Dili Institute of Technology
DLI	Directly Linked Indicator
DME	Director of Municipalities Education
DNACICC	National Directorate for Arts, Culture and Creative Cultural Industries
DNAEP	National Directorate for Pre-school Education
DNAFOP	Direcção Nacional para Formação Profissional (National Directorate for Vocational Training Policy)
DNANDP	National Directorate for Procurement
DNAPÉ	National Directorate of Employment Policy
DNASE	National Directorate for School Social Action
DNCAE	National Directorate for Curriculum and School Evaluation
DNCDCT	National Directorate for Science and Technology Development
DNEB	National Directorate for Basic Education
DNER	Direcção Nacional de Ensino Recorrente (National Directorate for Recurrent Education)

DNRE	National Directorate for Recurrent Education
DNESC	National Directorate for Secondary General Education
DNEST	Direcção Nacional do Ensino Superior Técnico (National Directorate For Higher Technical Education)
DNEST	National Directorate for Higher Technical Education
DNESTV	Direção Nacional do Ensino Secundário Técnico-Vocacional (National Directorate for Secondary Technical-Vocational Education)
DNESTV	National Directorate for Secondary Technical-Vocational Education
DNESU	National Directorate for Higher University Education
DNFL	National Directorate for Finance and Logistics
DNFP	Direcção Nacional de Formação Profissional (National Directorate for Vocational Training)
DNIMT	Direcção Nacional de Informação do Mercado de Trabalho (National Directorate of Labour Market Information)
DNMB	National Directorate for Museums and Libraries
DNPC	National Directorate for Cultural Heritage
DNPETI	National Directorate for Planning, Statistics and Information Technologies
DNPMA	National Directorate for Planning Monitoring and Evaluation
DNRH	National Directorate for Human Resources
DNs	National Directorates
DPs	Development Partners
DRs	Regional Directorates
DSME	Decentralised Services of the Ministry of Education
DSTI	Directorate of Science Technology and Innovation
EFA	Education for All
EMIS	Education Management Information System
ESP	Education Sector Plan
ESS	Enterprise and Skills Survey
FDCH	Fundo de Desenvolvimento do Capital Humano (Human Capital Development Fund)
FEFOP	Fundo de Emprego e Formação Profissional (Employment and Vocational Training Fund)
FQSE	Free Quality School Education
FTI	Fast Track Initiative
FY	Fiscal Year
GAP	Gender Action Plan
GB	Giga Byte
GDP	Gross Domestic Product
GER	Gross Enrolment Ratio
GIS	Geographic Information System
GoTL	Government of Timor-Leste
Govt	Government
GPS	Geographi Positioning System
ICT	Information and Communication Technology
ILO	International Labor Organization
INDMO	Instituto Nacional de Desenvolvimento de Mão de Obra (National Institute for Labor Force Development)
INFORDEPE	Instituto Nacional de Formação de Docentes e Profissionais da Educação (National Institute for Training of Teachers and Education Professionals)
ISCs	Industry Sub-Commissions
IT	Information Technology
LFS	Labor Force Survey

LISREL	Linear Square Correlation
LMI	Labor Market Information
LMIS	Labor Market Information System
M&E	Monitoring and Evaluation
MBSSE	Ministry of Basic and General Secondary School Education
MDG	Millennium Development Goal
MLSTP	Mid-Level Skills Training Project
MNTL	National Museum Timor Lorosa'e
MOF	Ministry of Finance
MSATM	Ministry of State Administration and Territorial Management
MSS	Ministry of Social Solidarity
MTCI	Ministry of Tourism
NCAAA	National Commission for Academic Assessment and Accreditation
NDME	Directorates of the Ministry of Education
NDP	National Development Plan
NER	Net Enrolment Ratio (see annex for definitions)
NES	National Employment Strategy
NESP	National Education Strategic Plan
NGO	Non-Government Organization
NHDR	National Human Development Report
NIR	Net Intake Rate (see annex for definitions)
NQF	National Qualifications Framework
OS	Operating System
PBF	Performance Based Financing
PN	Parliament Nacional
PP	Priority Programs
RDTL	Republica Democratica de Timor-Leste
RPL	Recognized Prior Learning
SDG	Sustainable Development Goal
SDP	Strategic Development Plan
SE	School Enrolment
SEFOPE	Secretária de Estado da Formação Profissional e Emprego (Secretariat of State for Employment and Training)
SEPFOPE	Secretária de Estado para a Política de Formação Profissional e Emprego (Secretariat of State for Vocational Training Policy and Employment)
SIP	Sector Investment Program
SPPS	Statistical Package Social Science
SSRD	Secretary of State for Rural Development and Co-operatives
Stat TL	Statistics Timor-Leste
STATA	A general-purpose statistical software package
STR	Student Teacher Ratio
SWAP	Sector-Wide Approach
WDPTL	Workforce Development Program Timor-Leste
WFP	World Food Program

INTRODUCTION

“The labor market absorption rate is a crucial metric that helps to evaluate how effectively graduates transition from higher education into the workforce. In Timor-Leste, the analysis of this absorption rate, particularly for graduates from the Health Science Study Program at the UNTL, UNPAZ, UNDIL, ICS, ISC, and provides valuable insights into the challenges and opportunities facing new graduates in a developing economy. This research aims to explore the various aspects of the labor market for health science graduates over the past five years, focusing on trends, factors influencing employment, and recommendations for improving graduate employability. This chapter also provides an overview of the educational landscape in Timor-Leste, especially concerning health sciences. The UNTL, UNPAZ, UNDIL, ICS, ISC has been a significant provider of health education since its establishment. The curriculum, influenced by both local and international educational standards, aims to equip students with the necessary skills and knowledge to meet the healthcare needs of the population. This chapter also discusses the evolution of health science programs and the demographic characteristics of the student population”

1.1 Background

Health Science, a brilliant and ambitious young graduate herself, stood out among them. With a degree from the prestigious University as such UNTL, UNPAZ, UNDIL, ICS, ISC, she embodied the promise and potential of her field. As we followed Health Science's journey, we learned that she wasn't alone in her pursuit of excellence. Graduates from institutions, including these HEI's (UNDIL), joined forces to navigate the challenging yet rewarding labor market. Together, they embarked on a quest to secure their place in the healthcare industry, determined to make a positive impact on their nation's well-being. The last five years (2019-2023) have been a testament to the resilience and talent of these young professionals. Despite the competitive nature of the job market, the absorption rate of graduates from these health science study programs has been impressive. Employers across Timor-Leste have recognized the value that these individuals bring to the table, embracing their skills and knowledge with open arms. Recent statistics reveal a dynamic environment influenced by numerous factors such as technological progress, demographic transitions, and shifts in policy. Grasping these trends is crucial for stakeholders like educational institutions, policymakers, and future students.

Technological advancements have had a substantial impact on employment patterns within health science. The incorporation of artificial intelligence, telemedicine, and electronic health records has not only generated new job opportunities but also transformed the skill sets required for existing positions. The growing demand for graduates proficient in health informatics and data analytics, indicating a trend towards a workforce that is more technologically skilled. This shift highlights the necessity for educational programs to integrate these emerging technologies, thereby equipping graduates for a competitive employment landscape.

Demographic changes, particularly the increasing elderly population, have significantly influenced employment trends as well. A rising number of older adults necessitate healthcare services, resulting in heightened demand for professionals specializing in geriatric care, chronic disease management, and rehabilitation. This demographic evolution has led to a proliferation of job opportunities in areas such as home healthcare and assisted living, underscoring the need for graduates educated in these specialized fields.

Policy alterations, including healthcare reforms and funding decisions, also affect employment rates. Programs designed to broaden access to healthcare often lead to increased funding for public health initiatives and community health centers, thereby generating job openings for graduates. On the flip

side, budget reductions or policy changes that curtail healthcare expenditures can adversely affect job prospects, illustrating the unpredictable nature of employment in this field.

It is also important to consider regional differences in employment rates. Urban centers typically provide a wider range of opportunities due to the presence of major healthcare institutions and research facilities, while rural regions may experience a lack of qualified professionals. This disparity calls for focused strategies to promote fair distribution of healthcare resources and job opportunities across various areas.

Given these trends, educational institutions have a critical role in aligning their curricula with the needs of the industry. Partnerships with healthcare providers and ongoing updates to educational programs are essential to prepare graduates with the necessary skills and knowledge for today's job market. Additionally, career counseling and placement services are crucial in directing graduates towards appropriate employment opportunities, which can enhance the overall employment rate in health science.

The term "graduate absorption rate" refers to the proportion of graduates from higher education institutions who successfully obtain employment in their respective fields shortly after completing their studies (Gomes & de Deus, 2023). Recent research on graduate absorption rates conducted by reveals varied outcomes across different contexts. In Timor-Leste, graduates from prestigious university groups were less likely to be underemployed, although field of study had a significant impact on employment outcomes and earnings. A national study found that Timor-Leste graduates in management generally experienced positive employment trajectories, with participation in paid work increasing from 75% to 98% within five years past-graduation, and median salaries rising by 58% (Gomes & de Deus, 2023). In Romania, a case study at West University of Timisoara showed high graduate satisfaction despite over 40% incongruence between degree field and job. The study reported successful labor market integration, with 58.5% of graduates employed within 6 months and 83.9% within 12 months of graduation (Păcurariu, 2019). These findings highlight the complex factors influencing graduate absorption rates, including university prestige, field of study, and regional labor market conditions.

This metric is crucial for evaluating the effectiveness of educational programs and the preparedness of graduates to fulfill labor market requirements. A high absorption rate signifies a strong job market and efficient transitions from education to employment, while a low rate raises concerns about the alignment between educational outcomes and market demands. In the last five years, the health science education sector has undergone changes, characterized by variations in enrollment, shifts in program offerings, and differing employment outcomes for graduates. This period has been notably influenced by the COVID-19 pandemic, which disrupted conventional educational routes and job markets. Recently, there has been a significant increase in the number of graduate students enrolling in health sciences.

Data from universities involved in health science programs reveals a total of 5,994 graduates, reflecting a considerable output of individuals qualified to enter the healthcare workforce. There is a concentration of graduates in specific programs, particularly nursing and public health. For example, UNTL's nursing program produced the highest number of graduates, totaling 214, while UNDIL's public health program accounted for 627 graduates. This underscores a significant focus on nursing and public health education within the country. The institutions offer educational programs at both the undergraduate (S1) and diploma (D3) levels, addressing various educational needs and workforce demands. UNTL has produced 179 graduates from D3 programs, primarily in nursing and midwifery. Additionally, UNPAZ has significantly contributed to the healthcare workforce, with 1,305 graduates in public health alone. Moreover, ICS and ISC also show substantial numbers in nursing and midwifery disciplines. The trend of graduates in health sciences from 2019 to 2023 across these institutions shows fluctuation rates: 2019 (23%), 2020 (12%), 2021 (20%), 2022 (21%), and 2023 (25%). For instance, applications for graduate programs in health sciences saw an increase of 15.6%

at the doctoral level and 12.3% at the master's level in a particular year. This rise indicates a growing interest in health-related careers and the perceived stability associated with the healthcare sector.

Over the past five years, enrollment in health science programs at the aforementioned universities has significantly increased. This growth can be attributed to increased awareness of career opportunities in healthcare, government initiatives aimed at promoting health education, and a rise in private institutions offering health-related courses. Consequently, the influx of graduates entering the job market has surged, prompting inquiries about their integration into relevant employment.

The range of health science programs has expanded, catering to various interests and career trajectories. This includes specialized master's programs in fields such as health informatics, public health, and clinical research, alongside doctoral programs focused on research and advanced clinical practice.

The diversification of programs within health sciences reflects the changing needs of the healthcare sector. Institutions have started to offer a broader array of disciplines, including nursing, public health, pharmacy, and health administration. This variety enables students to receive specialized training that aligns with specific roles in the health sector, which is vital for enhancing employability.

The distribution of graduates across different health programs provides insight into potential future workforce capabilities. The substantial number of nursing graduates is particularly significant given the global shortage of nurses, suggesting that Timor-Leste could benefit from strengthening its nursing workforce. Variability in educational quality across institutions may lead to disparities in graduate competencies. It is crucial to ensure a standardized curriculum and high training quality to produce competent healthcare professionals.

Many institutions encounter challenges such as insufficient infrastructure, inadequate training facilities, and limited educational resources. These limitations can hinder students' practical training, which is essential in health sciences education. There is a potential risk of graduates seeking employment opportunities abroad due to more favorable prospects, leading to a brain drain. Addressing this issue necessitates the creation of competitive job opportunities within Timor-Leste. The healthcare sector is dynamic and continually evolving, highlighting the necessity for ongoing professional development programs to keep healthcare workers updated with the latest practices and technologies. Recent studies highlight challenges in the labor market and health sector of Timor-Leste with 18% unemployment reported in 2023 (Gomes & de Deus, 2023). Graduate employment opportunities are limited, partly due to low relevance of higher education to job market needs. In the health sector, Timor-Leste is categorized as a high-endemicity area for Hepatitis B virus (HBV), with prevalence rates of 8.5-12.4% (Dolly, 2022). This poses significant health risks, particularly for young adults aged 20-35 years. To address these issues, the government has initiated bilateral and multilateral cooperation agreements to create job opportunities both domestically and abroad (Sunandar, 2024). Additionally, there's a growing emphasis on early HBV detection and vaccination among university students to prevent horizontal transmission in the healthcare sector. Another recent studies on labor market absorption of graduates highlight varying outcomes across different fields. For management graduates in Timor-Leste, unemployment rates remain high, with male graduates experiencing nearly double the unemployment of females (Gomes & de Deus, 2023). These findings suggest varying labor market absorption rates across different academic disciplines and institutions.

1.2 Rationale of Research

Health science programs play a crucial role in shaping the future of healthcare systems worldwide. These programs are designed to educate and train professionals who will contribute to various aspects of health services, from clinical practice to public health initiatives. With a focus on integrating theoretical knowledge and practical skills, health science programs aim to produce competent professionals capable of addressing the complex health challenges of modern society. Institutions like

the National University of Timor-Leste (UNTL), the University of Peace (UNPAZ), the University of Dili (UNDIL), Instituto Superior Cristal (ISC), and Instituto Ciençiais de Saúde (ICS) are at the forefront of this educational mission, offering diverse programs that cater to the evolving needs of the healthcare sector.

Health education is fundamental to improving public health outcomes and ensuring that healthcare systems are staffed by knowledgeable and skilled professionals. It empowers individuals with the information and tools necessary to make informed decisions about their health and well-being. Furthermore, health education fosters a culture of prevention, encouraging communities to engage in healthy practices that can reduce the incidence of diseases and improve quality of life. Institutions dedicated to health science education play a pivotal role in disseminating this knowledge, preparing students to become leaders and innovators in the field.

This study investigates the employment rate of graduates in Timor-Leste, with a particular focus on the labor market integration of health science alumni from institutions such as UNTL, UNPAZ, UNDIL, ISC, and ICS over the last five years (2019-2023). These institutions provide a platform for academic excellence and research, nurturing the next generation of health professionals who are equipped to meet the public health needs of their communities. Through a combination of rigorous academic curricula, hands-on training, and community engagement, these institutions are committed to producing graduates who are not only skilled in their respective fields but also possess a deep understanding of the cultural and social contexts in which they will operate. Their efforts contribute significantly to the development of a robust healthcare workforce, capable of addressing both current and emerging health issues.

The expected result of this study is to investigate the outcomes of higher education in relation to the demands of the labor market, particularly focusing on the health sector. Through an analysis of employment trends, this research intends to uncover gaps between educational programs and job market needs. Gaining this insight could facilitate improvements in educational curricula, thereby better preparing graduates with relevant skills that match existing job opportunities. Furthermore, understanding employment trends can inform policy decisions, enhance training initiatives, and improve workforce planning. To assessing current conditions and emerging trends alongside desired skills and qualifications, this study aims to contribute to the enhancement of educational strategies, improve career counseling services for students, and ensure alignment with market requirements. Ultimately, these endeavors are designed to increase graduate employability and success rates within Timor-Leste.

1.3 Contextualization

The health sciences sector is crucial for society, comprising various disciplines including nursing, public health, pharmacy, and other allied health professions. As the population ages and healthcare demands rise, the need for skilled health professionals has reached unprecedented levels.

In Timor-Leste, similar to many nations, the necessity for qualified healthcare workers is becoming increasingly urgent due to factors like population growth, urbanization, and a persistent demand for medical services especially in rural regions. Therefore, it is important to analyze the rate at which graduates are absorbed into this field to ensure that the healthcare requirements of the community are adequately addressed.

1.4 Research Framework

This report employs a multi-faceted approach to assess the labor market absorption rate, taking into account different theoretical models and empirical evidence. The examination will explore the relationship between educational institutions and the labor market, focusing on how graduates move from academic settings into employment within the health sector.

This frame thinking as foundation and guideline for succeeded of this case study. The aims of this case study to comprehensively analyze the landscape of graduate employability among higher education institutions (HEIs) in Timor-Leste, specifically focusing on Universidade Nacional Timor Lorosa'e (UNTL), Universidade da Paz (UNPAZ), Universidade de Dili (UNDIL), Institute Ciencais Saude (ICS), and Institute Superior Cristal (ISC) over the last five years (2019-2023). The Grand Theory of Human Capital, Theory of From School to Field Job, and Theory Market Segmentation, this research seeks to provide a holistic understanding of the challenges, opportunities, and strategies to enhance graduate employability in the Timorese context.

The graphic bellow remind overall researcher to understanding detail of the what the research will be achieved:

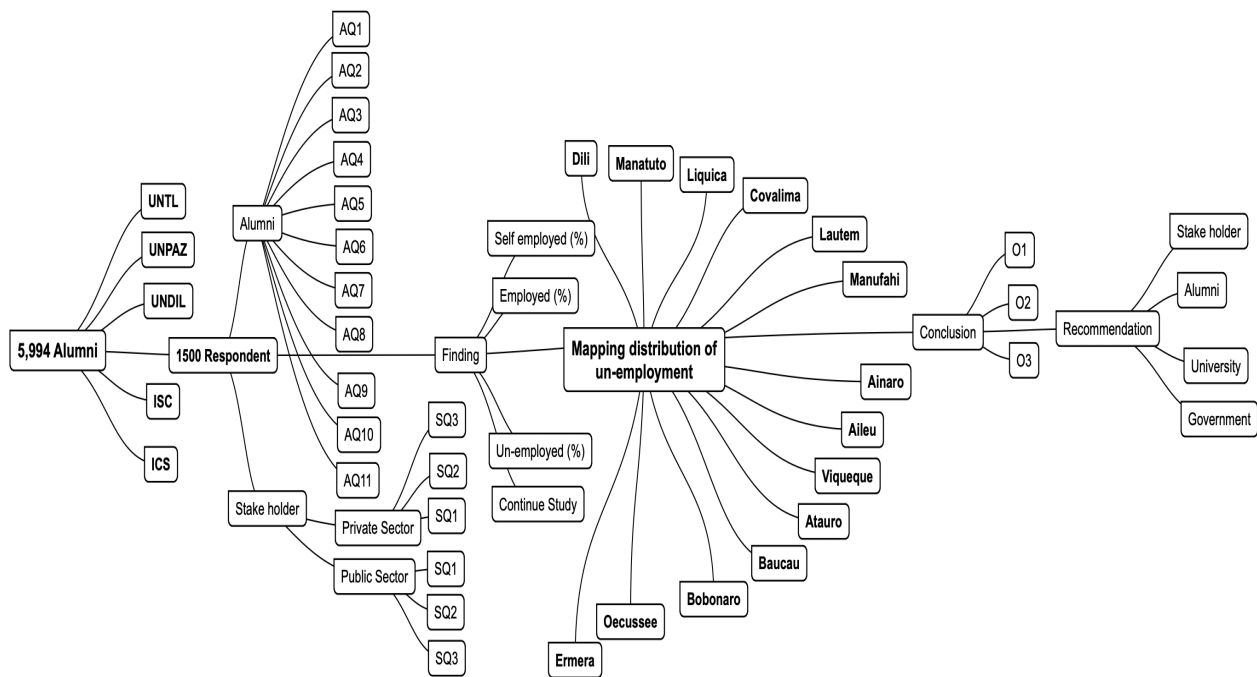


Figure 1. Research framework for graduate absorption rate in the health science sector among universities in Timor-Leste by the year 2019 to 2023 (Gomes, 2024)

The graduate absorption rate in the health science sector among universities in Timor-Leste from 2019 to 2023 presents a mixed picture. While there have been improvements in enrollment and program diversity, the declining absorption rates pose significant challenges for both graduates and the healthcare sector. Addressing the factors contributing to low absorption rates is crucial for developing effective strategies that enhance graduate employability and ensure that the health workforce meets the demands of the population. Collaborative efforts among educational institutions, government agencies, and stakeholders are essential for creating pathways that lead to successful graduate employment in the health science sector.

The Grand Theory of Human Capital serves as a foundational framework for understanding the relationship between education, skills development, and labor market outcomes. Developed by renowned economist Gary Becker, this theory posits that individuals' investment in education and training leads to the acquisition of human capital, which in turn enhances their productivity and earning potential in the labor market. In the context of Timor-Leste's HEIs, the application of the Grand Theory of Human Capital provides valuable insights into the factors that contribute to graduate employability, including the quality of education, skills development, and the relevance of curricula to market needs. By analyzing the HEIs' efforts in fostering human capital development among their graduates, this theory can offer a comprehensive perspective on the effectiveness of educational investments in shaping the employability of graduates in the local and regional job markets.

The Theory of From School to Field Job focuses on the transition from education to employment, emphasizing the role of HEIs in preparing students for the challenges and requirements of the job market. In the Timorese context, this theory sheds light on the extent to which HEIs have effectively facilitated the transition of their graduates from academic settings to real-world employment environments. Key aspects of this theory include the practical relevance of academic programs, the integration of work-integrated learning opportunities, and the provision of career development support to students. In this regards to examining the alignment between academic preparation and stakeholder expectations, this theory can elucidate the strengths and weaknesses of HEIs in Timor-Leste in bridging the gap between school-based learning and the demands of the professional workforce.

The Theory of Market Segmentation addresses the diverse nature of the labor market, recognizing that different segments of the workforce may have distinct employment patterns, skill requirements, and career trajectories. In the context of Timor-Leste, this theory highlights the significance of understanding the specific dynamics of the local and regional labor markets, including sectoral employment trends, skill gaps, and the evolving needs of employers. By engaging with the Theory of Market Segmentation, this reserach aims to explore how HEIs can tailor their educational offerings to cater to the distinct segments of the labor market, thereby enhancing the employability of graduates across various industries and professions. Additionally, this theory can provide insights into the role of HEIs in addressing the unique employment challenges faced by different segments of the Timorese workforce, including youth, women, and marginalized communities.

Furthermore, the Theory of From School to Field Job comes into play as Timor-Leste HEIs has endeavored to strengthen the practical orientation of its curricula, incorporating internships, practicums, and training projects to provide students with hands-on experience and exposure to real-world work environments. Through such experiential learning opportunities, HEIs has aimed to facilitate a seamless transition for its graduates from the academic realm to gainful employment. Additionally, the university's career services and counseling initiatives have played a crucial role in empowering students to navigate the job market effectively, offering guidance on resume building, interview preparation, and job search strategies.

1.5 Conceptual Framework

The primary concept framing this analysis is the labor market absorption rate, defined as the percentage of graduates who secure employment within a specified period post-graduation. This concept will be explored through various lenses, including human capital theory, theories of transition from school to work, and labor market segmentation.

This conceptual framework aims to develop a comprehensive frame concept for enhancing graduate employability among Higher Education Institutions (HEIs) in Timor-Leste, with a focus on Universidade Nacional Timor Lorosa'e (UNTL), Universidade da Paz (UNPAZ), Universidade de Dili (UNDIL), Institute Ciencais Saude (ICS), and Institute Superior Cristal (ISC) over the last five years (2019-2023). The framework is developed based on the integration of the Grand Theory of Human Capital, Theory of From School to Field Job, and Theory of Market Segmentation.

This conceptual framework allow to synthesizes research on graduate employability and higher education in Timor-Leste and beyond. Studies highlight the role of universities in developing human resources through various methods, including training, career development, and further education. Character education management is emphasized as crucial for producing quality graduates with religious, cultural, and academic attributes. Research on transnational education reveals limited studies on employability preparation and labor market outcomes, suggesting a need for more focus on career processes (Schueller, 2023). To enhance graduates' employability skills, authentic learning approaches are recommended, providing a framework for designing activities that bridge the gap between higher education curricula and real-world demands (Ornellas et al., 2019). These studies

collectively emphasize the importance of aligning higher education with labor market needs to improve graduate employability. By synthesizing these theories, this framework aims to provide a holistic approach to addressing the challenges of graduate employability and bridging the gap between education and the job market in Timor-Leste. The structure of conceptual framework bellow showed the specific concept how to achieve the target of the research:

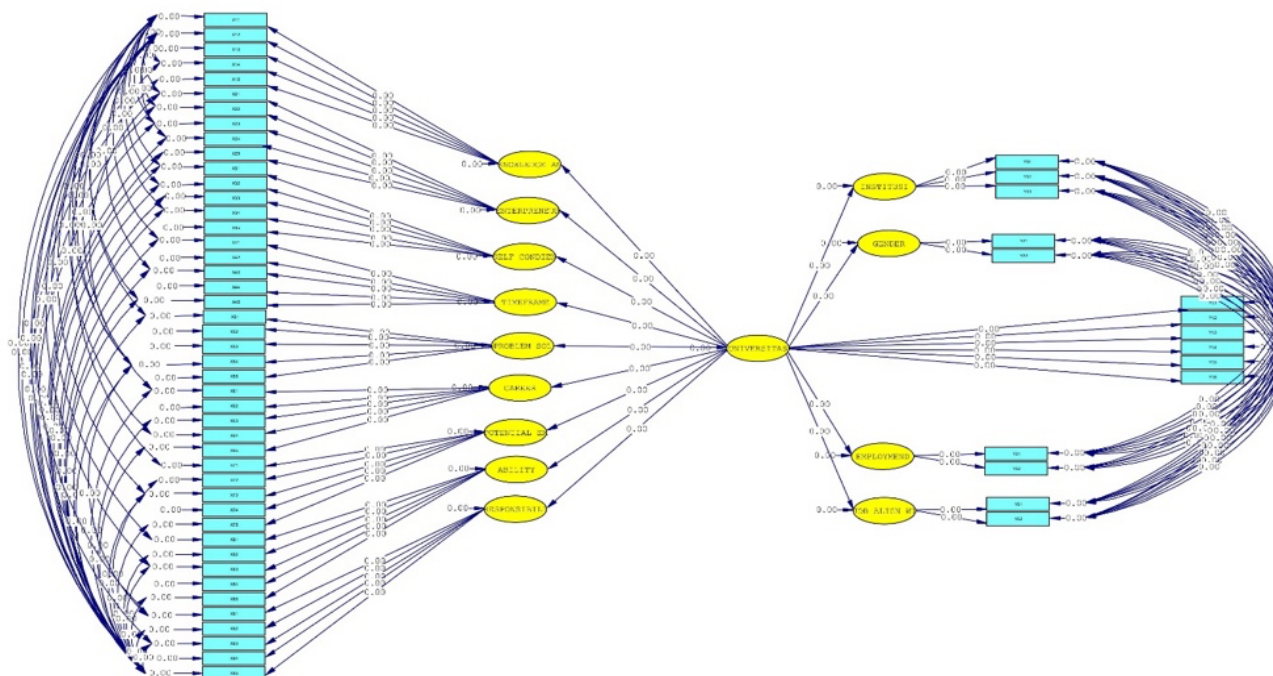


Figure 2. Conceptual Framework of Graduate Employability in Area Health among UNTL, UNPAZ, UNDIL, ICS, ISC last five years (2019-2023) (Barbara Mintho, 1987 in Gomes, 2024)

The research is framed around the availability of research on employability indicators in Timor-Leste, with a specific focus on health study programs offered by HEIs. Understanding the employability landscape, the challenges faced by graduates, and the role of HEIs in addressing these challenges are central to the research concept. The research concept is designed to identify the specific areas where improvements can be made to enhance graduate employability and align health education with the evolving needs of the job market in Timor-Leste.

The grand theory to resolve the problem statement and research objective revolves around the idea of aligning health education with the evolving needs of the job market in Timor-Leste. This theory emphasizes the importance of equipping graduates with practical skills, an entrepreneurial mindset, and adaptability to enhance their employability. By focusing on the practical and industry-relevant aspects of health education, the grand theory aims to address the current gaps in employability indicators and contribute to the development of a skilled and entrepreneurial workforce in Timor-Leste.

The research methodology adopts a mixed-method approach, combining qualitative and quantitative methods to gather comprehensive data on employability indicators and health programs in Timor-Leste's HEIs. Qualitative data will be collected through interviews and focus group discussions with graduates, employers, and HEI representatives. Quantitative data will be gathered through surveys to assess the employability indicators and perceptions of graduates and employers. This mixed-method approach allows for a holistic understanding of the employability landscape and provides valuable insights into the challenges and opportunities within health education in Timor-Leste.

The analysis of research results will involve a comprehensive examination of the qualitative and quantitative data gathered through interviews, focus group discussions, and surveys. This will include identifying common themes, trends, and correlations related to employability indicators, health education, and the role of HEIs in Timor-Leste. By conducting a thorough analysis of the research results, the study aims to uncover valuable insights that can inform actionable plans and recommendations to enhance graduate employability and improve health programs in HEIs.

The discussion of results will involve interpreting the findings in the context of the research objectives. This will include analyzing the effectiveness of health programs in preparing graduates for the job market, identifying gaps in employability indicators, and evaluating the role of HEIs in fostering entrepreneurship and career development. By engaging in a meaningful discussion of the results, the research aims to provide a nuanced understanding of the employability landscape in Timor-Leste and offer insights into the specific areas where improvements can be made to enhance graduate employability.

The research focuses on a comprehensive set of employability indicators to assess the current landscape and challenges faced by graduates of health programs in Timor-Leste's HEIs. The employability indicators include the status of currently employed graduates, knowledge and skills necessary for entrepreneurship, support for entrepreneurial endeavors, skills for the job market, confidence in finding a job, preparation for practical challenges, satisfaction with career services, facilitation of networking opportunities, adaptability and learning, and employer perspectives. Below the indicators used to provide a holistic view of the employability landscape and the specific areas where improvements can be made to enhance graduate employability in Timor-Leste:

(a) Status of Currently Employed

- Public Institution
- Private Institution
- Self-Employment

(b) Knowledge and Skills Necessary for Entrepreneurship

- Assessing the readiness of graduates to start and manage their own businesses.
- Identifying the gaps in entrepreneurial skills and knowledge within the current health programs.

(c) Support for Entrepreneurial Endeavors

- Evaluating how HEIs support and encourage entrepreneurial endeavors among their health graduates.
- Identifying best practices and areas for improvement in fostering an entrepreneurial mindset.

(d) Skills for the Job Market

- Assessing the extent to which HEIs equip graduates with the necessary skills required for the job market.
- Identifying specific skills (e.g., leadership, communication, problem-solving) that are valued by employers.

(e) Confidence in Finding a Job

- Measuring graduates' confidence in finding a job in their desired field within a reasonable timeframe.
- Identifying factors that contribute to or hinder graduates' confidence in the job market.

(f) Preparation for Practical Challenges

- Assessing how well HEIs prepare graduates for the practical challenges of the job market.
- Identifying areas where practical experience and market demands exposure can be enhanced within health programs.

- (g) Satisfaction with Career Services
 - Evaluating graduates' satisfaction with the support and guidance provided by HEIs' career services in their job search.
 - Identifying areas for improvement in career services to better meet the needs of graduates.
- (h) Facilitation of Networking Opportunities
 - Assessing the extent to which HEIs facilitate networking opportunities for potential employment and career growth.
 - Identifying effective strategies for HEIs to enhance networking and connections for their graduates.
- (i) Adaptability and Learning
 - Assessing the ability of graduates to adapt to new tasks and changing work environments.
 - Identifying the value placed by employers on adaptability and the ability to learn new skills.
- (j) Employer Perspectives
 - Understanding employers' perceptions of the skills and readiness of health graduates for the job market.
 - Identifying areas where HEIs can better align their programs with the needs of employers.

The research formulates actionable plans based on the findings to enhance graduate employability and improve health programs in Timor-Leste's HEIs. These actionable plans include survey and data collection, stakeholder engagement, curriculum review and enhancement, career services improvement, policy recommendations, and longitudinal tracking. To implementing these actionable plans, the research aims to contribute to the development of a skilled and entrepreneurial workforce in Timor-Leste and foster greater alignment between health education and industry needs:

- a) Survey and Data Collection
 - Develop survey instruments to gather quantitative data on employability indicators.
 - Identify key stakeholders for interviews and focus group discussions to gather qualitative insights.
- b) Stakeholder Engagement
 - Engage with graduates, employers, and HEI representatives to understand diverse perspectives on employability indicators.
 - Foster collaboration between HEIs and partners to align health programs with market demands needs.
- c) Curriculum Review and Enhancement
 - Collaborate with HEIs to review and enhance the health curriculum to better align with the needs of the job market.
 - Integrate practical, entrepreneurial, and industry-relevant elements into the curriculum.
- d) Career Services Improvement
 - Work with HEIs to improve career services and support for graduates in their job search and career development.
 - Establish mentorship programs, networking events, and facilitate connections for graduates.
- e) Policy Recommendations

- Formulate policy recommendations for the government to support the alignment of health education with market demands needs.
- Advocate for initiatives to promote entrepreneurship, innovation, and practical skill development within HEIs.

The exploration of employability metrics and health initiatives within the higher education institutions (HEIs) of Timor-Leste presents an incredible chance to evaluate the existing situation, pinpoint opportunities for growth, and develop practical strategies aimed at boosting graduate employability.

Drawing from these insights, the research proposes tangible recommendations directed toward both government entities and HEIs. Such proposals might encompass refining academic curricula, fostering stronger partnerships between educational institutions and market demands sectors, as well as introducing career development programs designed to assist graduates in navigating their journey into professional life.

1.6 Scope of Study

- 1) While the study may provide insights into the employment rates of health science graduates, the findings may not be generalizable to graduates from other fields or institutions. This limitation restricts the broader applicability of the research conclusions.
- 2) The study focuses on regular graduate during period 2019 to 2023. Changes in the labour market dynamics, such as economic shifts or changes in health policies, may occur after this period, making the findings less relevant for future cohorts.

1.7 Problem Statement

The current labor market absorption rates of graduates from the National University of Timor-Leste (UNTL), the National University of Agriculture Timor-Leste (UNPAZ), the University of Timor-Leste (UNDIL), the Institute of Health Sciences (ICS), and the Institute of Science (ISC) in the field of health sciences. Furthermore, the study will examine the trends in these absorption rates over the last five years (2019-2023) to provide insights into the evolving employment landscape for health science graduates.

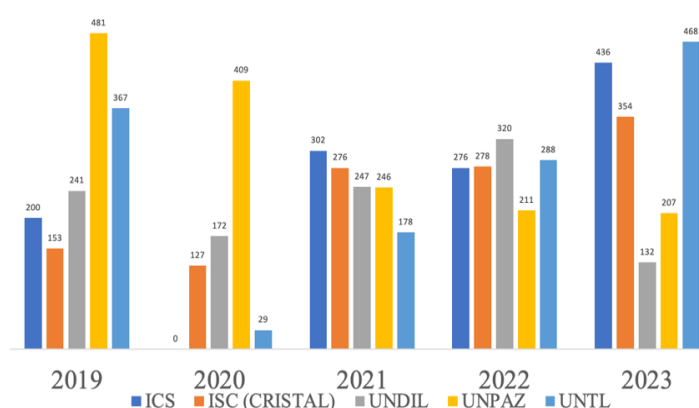


Figure 3. Graduate Rate by the Year 2019-2023

The research will identify the specific skills and qualifications that are most sought after by employers in Timor-Leste, thus contributing to a better understanding of the alignment (or misalignment) between graduate education and labor market requirements.

- Between 2019 and 2023, the graduate employment absorption rate in health science in Timor-Leste showed variability: 23% in 2019, 12% in 2020, 20% in 2021, 21% in 2022, and 25% in 2023.

- Economic conditions significantly influenced job availability, while shifts in healthcare policy created both opportunities and barriers for graduates.
- Urban areas had higher absorption rates, highlighting the need for targeted policies to boost rural employment.
- Factors affecting job opportunities included skill demand, curriculum alignment, partnerships with healthcare providers, robust internship programs, and the growing elderly population, which increases the need for health professionals.

1.8 Research Questions

- What is the current labor market absorption rate of graduates from UNTL, UNPAZ, UNDIL, ICS, and ISC in area science health in Timor-Leste?
- How has the labor market absorption rate of graduates from UNTL, UNPAZ, UNDIL, ICS, and ISC changed over the last five years (2019-2023)?
- What are the skills and qualifications that are most sought after by employers in Timor-Leste?

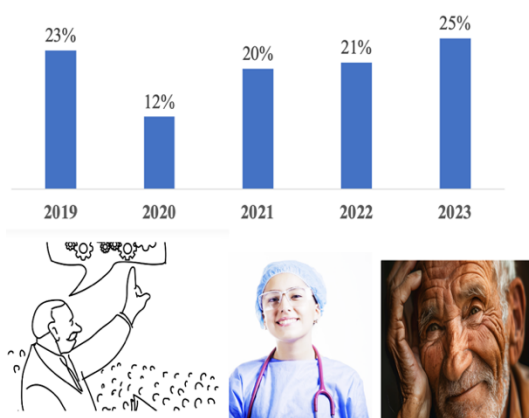


Figure 4. Number of graduate by the year, and by the

1.9 Objectives

1.9.1 General Objective

The general objective of this study is to examine the labor market absorption rate of graduates from various higher education institutions in Timor-Leste, specifically focusing on the employment of graduates from Universidade Nacional Timor Lorosa'e (UNTL), Universidade da Paz (UNPAZ), Universidade de Dili (UNDIL), Instituto Ciencais Cristal (ISC), and Instituto Superior Cristal (ISC) within the last five years, in area health and to understand the trends, factors influencing employability, and alignment with market demands.

1.9.2 Specific Objectives

Based on the statement, the specific objective for a case study on graduate employment of higher education in Timor-Leste, focusing on the labor market absorption rate of graduates from UNTL, UNPAZ, UNDIL, ICS, and ISC within the last 5 years, could be formulated as:

- Assess the yearly absorption rate for each institution, comparing trends and identifying common patterns.
- Identify the major sectors with the highest absorption of graduates, and analyze the alignment with educational programs and curricula.

- c) Provide recommendations for enhancing the employability of graduates from these institutions based on the insights derived from the analysis.

1.10 Justification

Understanding the labor market absorption rate of graduates is crucial for several reasons. Firstly, it helps higher education institutions assess the effectiveness of their programs and curricula in preparing students for the job market. Secondly, it provides policymakers with insights into the demand and supply dynamics of the labor market, enabling them to make informed decisions regarding education and employment policies. Lastly, it assists graduates in making informed career choices and identifying areas for skill development (Li, 2013; Reich et al., 1973a).

The labor market absorption rate of graduates refers to the percentage of graduates who are able to find employment within a certain period after completing their education. This metric is an important indicator of the effectiveness of higher education institutions in preparing students for the job market (Li, 2013).

One of the primary reasons why understanding the labor market absorption rate is crucial is that it helps higher education institutions evaluate the quality and relevance of their programs and curricula. By analyzing the employment outcomes of their graduates, institutions can identify areas of improvement and make necessary adjustments to ensure that their students are equipped with the skills and knowledge that are in demand by employers (Cohen & Baruch, 2010). For example, if a significant number of graduates are struggling to find employment in a particular field, it may indicate a need to revise the curriculum to align it more closely with market demands requirements.

Moreover, understanding the labor market absorption rate provides valuable insights for policymakers. It helps them gauge the demand and supply dynamics of the labor market, enabling them to make informed decisions regarding education and employment policies. For instance, if there is a high absorption rate for graduates in a specific sector, policymakers may consider investing in programs and initiatives that promote skill development in that area. On the other hand, if there is a low absorption rate in a particular field, policymakers may seek to address the underlying issues and explore strategies to increase employment opportunities for graduates in that sector (Cohen & Baruch, 2010).

Furthermore, knowledge of the labor market absorption rate is beneficial for graduates themselves. It allows them to make informed career choices and identify areas for skill development. By understanding the industries and sectors that have higher absorption rates, graduates can align their career aspirations with the job market realities. They can also identify the skills and qualifications that are in demand and take steps to acquire them, enhancing their employability and increasing their chances of finding suitable employment (Bruce et al., 2022; Demir, 2019; Nickson, 2020).

In addition to these reasons, understanding the labor market absorption rate of graduates also has broader societal implications. A high absorption rate indicates a healthy and robust labor market, where graduates can easily transition into the workforce and contribute to economic growth. On the other hand, a low absorption rate may signal underlying issues such as a lack of job opportunities, skills mismatch, or structural problems in the economy. By analyzing the labor market absorption rate, policymakers can address these challenges and work towards creating a more inclusive and prosperous society (Powell & McGrath, 2019; Sakamoto, 2019; Telukdarie et al., 2022).

To understand the labor market absorption rate, various data sources and methodologies can be utilized. One common approach is to conduct surveys or collect data from higher education institutions, employment agencies, and employers. These surveys can gather information on the employment status of graduates, including whether they are employed full-time, part-time, or are unemployed. The data can also provide insights into the industries, sectors, and job roles that

graduates are entering (Anastasiu et al., 2017; O’Keefe Maitreyi Bordia et al., 2007; A. Singh & Singh, 2019).

Another method is to analyze labor market data, such as unemployment rates and job vacancy statistics, to assess the overall demand and supply dynamics. This can help identify trends and patterns in the labor market and provide a broader context for understanding the labor market absorption rate of graduates (Alam et al., 2022; Alam & Sharmin, 2023). It is important to note that the labor market absorption rate may vary across different disciplines and fields of study. Some disciplines, such as engineering or healthcare, may have higher absorption rates due to the high demand for specific skills. On the other hand, fields like humanities or social sciences may have lower absorption rates, as the job market may be more competitive or have fewer opportunities directly aligned with those disciplines. Understanding these variations can help guide students in their career choices and inform higher education institutions in tailoring their programs to meet market demands (Balloo, 2019; Dagar, 2023; Hosein & Rao, 2019; Liwiński & Pastore, 2021; Metilda & P.C., 2016; Nazarzadeh Zare & Parvin, 2023; Parahita et al., 2020; Plant et al., 2019; Yusuf & Jamjoom, 2022).

1.11 Place of Research

This case study will focus on graduates from UNTL, UNPAZ, UNDIL, ICS, and ISC within the last five years (2019-2023). These universities have been selected as they represent a diverse range of disciplines and are among the prominent higher education institutions in Timor-Leste.

1.12 Theoretical Framework

The theoretical framework presented aims to provide a conceptual basis for understanding the factors influencing graduate employment from higher education institutions in Timor-Leste. This study particularly focuses on the labor market absorption rate of graduates from the National University of Timor Lorosa'e (UNTL), Universidade da Paz (UNPAZ), Universidade de Dili (UNDIL), Institute Ciencias de Saude (ICS), and Instituto Superior Cristal (ISC) over the last five years (2019-2023). This research synthesizes research on higher education and employment in Timor-Leste in area of health science. As an reason of the higher education sector in Timor-Leste faces challenges in preparing graduates for the labor market and improving institutional performance. A scoping review highlights the need for more research on career processes and outcomes in transnational higher education. Character education management is emphasized as crucial for producing quality graduates at HEI's. The importance of service quality and customer satisfaction in the telecommunications sector, which impacts university students, is also noted. To enhance performance in the higher education sector, institutions should adopt suitable business strategies, such as differentiation, cost leadership, service focus, and innovation, in response to industrial competition. Based on the theory will provide insights into the factors influencing graduate employment and institutional performance in Timor-Leste's higher education landscape.

1.12.1 Foundational Concepts

The transition from academic life to professional employment presents both opportunities and challenges for recent graduates. The concept of graduate employment encompasses the various pathways and prospects available to individuals who have recently completed their higher education. As graduates step into the workforce, they face the task of navigating an increasingly competitive environment where the demand for specific skills and experiences is constantly shifting (He et al., 2022).

Graduate employment is not just about securing a job; it is about finding a position that aligns with one's educational background, aspirations, and potential for growth (C. Chen & Hu, 2008). This phase is crucial as it sets the foundation for a graduate's career trajectory. Factors such as technological

advancements, globalization, and the rise of remote work have significantly transformed the employment landscape, influencing both the availability of jobs and the types of roles that are emerging.

Understanding the dynamics of graduate employment is essential for both graduates and employers. Graduates must be equipped with the necessary skills and knowledge to adapt to the demands of modern workplaces, while employers need to recognize and harness the fresh perspectives and innovative potential that new graduates bring. As such, the discourse around graduate employment involves not only the immediate job prospects for graduates but also the broader implications for workforce development and economic growth (Cheng et al., 2022).

As we delve deeper into the topic, we will explore the current trends shaping the job market, the skills that are in demand, the challenges graduates face, and the future outlook of graduate employment. This exploration aims to provide a comprehensive understanding of what lies ahead for graduates entering the workforce and how they can effectively position themselves for success (O'Meara & Petzall, 2013).

1.12.1.1 Current Job Market Trends

The landscape of graduate employment is continually shaped by various trends in the job market. Understanding these trends is crucial for graduates as they navigate their career paths. Three significant trends currently influencing the job market include technological advancements, globalization, and the rise of remote work (Cheng et al., 2022).

Technological advancements have dramatically altered the job market, creating both opportunities and challenges for graduates. Automation and artificial intelligence are transforming industries by streamlining processes and reducing the need for certain manual jobs. However, these advancements also open up new roles that require specialized technical skills in areas like data analysis, cybersecurity, and software development. Graduates equipped with these skills are often at a competitive advantage. Furthermore, technology has changed how job seekers find employment, with digital platforms and online networking playing a crucial role in the recruitment process (O'Meara & Petzall, 2013).

Globalization has expanded the horizons of the job market, presenting graduates with opportunities that extend beyond their local economies. Many companies now operate on an international scale, seeking diverse talent to enhance their global presence. This trend has led to an increased demand for graduates who possess cross-cultural communication skills and the ability to work in multinational teams. Additionally, globalization has encouraged the growth of emerging markets, offering numerous opportunities for graduates willing to explore careers abroad (Birn et al., 2017).

1.12.1.2 Skills Required by Employers

In the rapidly evolving job market, employers are increasingly seeking graduates who possess a diverse set of skills that go beyond traditional academic knowledge. As industries become more dynamic and interconnected, the skills that employers prioritize are evolving, reflecting the changing demands of the workplace (Krishnan et al., 2019).

1.12.1.2.1 Technical Skills

Technical skills remain a cornerstone of employability, especially as industries continue to integrate advanced technologies. Graduates in fields such as engineering, computer science, and data analytics are particularly in demand due to their specialized knowledge. Proficiency in programming languages, data analysis, and software development are highly valued, as they enable graduates to contribute effectively to tech-driven projects. Additionally, as automation and artificial intelligence become more prevalent, understanding how to work alongside these technologies is crucial.

Graduates are encouraged to continuously update their technical skills to remain competitive and relevant in their chosen fields (Sermsuk et al., 2014).

1.12.1.2.2 Soft Skills

While technical expertise is essential, employers are equally emphasizing the importance of soft skills. These include communication, teamwork, problem-solving, and emotional intelligence. In a collaborative work environment, the ability to communicate ideas clearly and work well with others is vital. Employers value graduates who can navigate interpersonal relationships and contribute to a positive workplace culture. Problem-solving skills are particularly prized, as they enable individuals to tackle challenges creatively and effectively. Emotional intelligence, which involves understanding and managing one's emotions and empathizing with others, is increasingly recognized as a key factor in leadership and team dynamics (Dolce et al., 2020).

1.12.1.2.3 Adaptability and Lifelong Learning

In an era marked by constant change, adaptability is a critical skill for graduates entering the workforce. Employers are looking for candidates who can quickly adjust to new roles, technologies, and environments. The willingness to learn and embrace new challenges is a significant asset, as it demonstrates a proactive approach to personal and professional growth. Lifelong learning, the continuous pursuit of knowledge and skills, is essential for staying abreast of market demands and maintaining a competitive edge. Graduates who demonstrate a commitment to learning through additional certifications, workshops, and self-directed education are particularly attractive to employers who value innovation and resilience. The skills required by employers are a blend of technical proficiency, soft skills, and a mindset geared towards adaptability and continuous learning. Graduates who cultivate these skills are well-positioned to thrive in an ever-changing job market, where the ability to integrate knowledge and adapt to new challenges is key to long-term success.

1.12.2 Challenges Faced by Graduates (Adebakin et al., 2015)

Graduates entering the job market encounter several obstacles that can hinder their path to successful employment. Understanding these challenges is crucial for both graduates and educators to better navigate and prepare for the modern employment landscape.

1.12.2.1 Lack of Experience

One of the most significant hurdles graduates face is the lack of professional experience. Many employers seek candidates with a proven track record, which can be difficult for recent graduates to demonstrate. Despite having academic knowledge and theoretical understanding, graduates often struggle to compete with more experienced candidates. This experience gap can be a barrier to entering desired roles, as internships and volunteer work may not always fully substitute for years of industry-specific experience (I.-J. Chen et al., 2016).

1.12.2.2 High Competition

The job market is highly competitive, with a growing number of graduates vying for a limited number of positions. This competition is intensified by the increasing number of individuals obtaining higher education degrees each year. As a result, graduates must distinguish themselves through unique skills, experiences, and personal branding to stand out to potential employers. The pressure to outperform peers can be daunting and may lead to significant stress and anxiety among job seekers (Sarkar et al., 2020).

1.12.2.3 Mismatch of Expectations

Graduates often face a mismatch between their career expectations and the realities of the job market. Many enter the workforce with high hopes for immediate employment in their field of study or anticipate rapidly advancing to higher-level positions. However, the reality can be starkly different, with entry-level roles not always aligning with their qualifications or salary expectations. This misalignment can lead to dissatisfaction and frustration, prompting some graduates to reconsider their career paths or pursue further education in search of better opportunities (Bejtkovský, 2018).

Addressing these challenges requires a multifaceted approach involving educational institutions, employers, and graduates themselves. By fostering closer collaboration between academia and industry, enhancing practical training, and promoting realistic expectations, the transition from education to employment can be made smoother and more successful for graduates (Murphy & Turner, 2023).

1.12.3 Labor Market Absorption Rate

The labor market absorption rate is a crucial metric that measures the economy's ability to integrate individuals into the workforce. It reflects how efficiently new entrants, such as recent graduates and those transitioning between jobs, are absorbed into employment. Understanding this rate is vital as it provides insights into the health of the labor market, indicating whether an economy can create sufficient job opportunities to accommodate its growing workforce. A high absorption rate typically signals a robust labor market with ample job opportunities, while a low rate may indicate structural issues such as high unemployment, underemployment, or a skills mismatch (Domingos CBB Gomes et al., 2024).

Historically, the labor market absorption rate has fluctuated in response to economic cycles. During periods of economic expansion, absorption rates tend to be high as businesses grow and create new jobs. Conversely, during economic downturns, these rates often decline, as companies may freeze hiring or lay off workers, making it harder for individuals to find employment. The industrial revolutions and technological advancements have also played significant roles in shaping the labor market absorption rate, as they often require shifts in skills and competencies within the workforce (Hijriah & Adiba, 2019).

Several trends have emerged that influence the labor market absorption rate. The rapid pace of technological change is creating both opportunities and challenges, as new industries emerge while others face obsolescence. Additionally, globalization and demographic shifts are reshaping labor markets worldwide, with aging populations in some regions and youthful workforces in others. The COVID-19 pandemic also dramatically impacted global labor markets, accelerating remote work adoption and highlighting the importance of digital skills. These trends underscore the complexity of maintaining a high absorption rate and the need for adaptive strategies to ensure that labor markets remain inclusive and dynamic (Hudson, 2007).

1.12.3.1 Factors Influencing Labor Market Absorption Rate

The labor market absorption rate, an essential measure of how effectively a workforce can be integrated into employment, is influenced by a myriad of factors. Understanding these influences is crucial for policymakers, businesses, and educational institutions alike, as they work together to enhance employment opportunities and economic stability (Brenner & Brenner-Golomb, 2017; Wolkowitz, 2006).

1.12.3.2 Economic Growth and Stability

Economic growth and stability play a pivotal role in shaping the labor market absorption rate. In periods of robust economic expansion, businesses tend to increase hiring to meet rising demand, thereby improving the absorption rate. Conversely, during economic downturns, companies may reduce their workforce, leading to a decline in absorption. Stable economic conditions foster a predictable business environment, encouraging investment and job creation, which are essential for maintaining a healthy labor absorption rate. Additionally, technological advancements and innovations during economic growth spur new industries and job roles, requiring a workforce ready to adapt and fill these positions (G. Singh et al., 2023; Strauser, 2014; Williams & Horodnic, 2019).

1.12.3.3 Skill Mismatch and Education

The alignment between the skills possessed by the workforce and those demanded by employers is another critical factor. A skill mismatch occurs when workers' skills do not meet the needs of the job market, resulting in unfilled vacancies and unemployed or underemployed individuals. Education systems play a crucial role in either bridging or widening this gap. Curricula that are not aligned with current market demands requirements can exacerbate skill mismatches. On the other hand, education systems that incorporate vocational training, continuous skill development, and close collaboration with industries can significantly enhance the labor market absorption rate by preparing graduates with the necessary competencies to meet market demands (Badillo-Amador & Vila, 2013; Cabus & Somers, 2018; Cervantes & Cooper, 2022; Farooq, 2011; Krishnan et al., 2019; Mundra & Rios-Avila, 2024; Pompei & Selezneva, 2021; Schweri et al., 2020; Sermsuk et al., 2014).

1.12.3.4 Government Policies and Initiatives

Government policies and initiatives have a substantial impact on the labor market absorption rate. Policies that promote economic growth, such as tax incentives for businesses and investments in infrastructure, can create a conducive environment for job creation (Shankardass et al., 2018). Labor laws and regulations also influence employer hiring practices and job security, affecting how quickly and effectively workers are absorbed into the labor market (Arar et al., 2019). In addition, government initiatives aimed at workforce development, such as public employment services, job matching programs, and support for lifelong learning, can enhance the ability of the labor market to absorb workers (Wilson, 2021). Effective immigration policies that address labor shortages in specific sectors can also positively influence absorption rates by ensuring that the skills in demand are available (Kumar, 2022). Understanding these factors provides a comprehensive view of the dynamics affecting the labor market absorption rate, enabling stakeholders to devise strategies that promote a more inclusive and efficient labor market (Satpute & Kumar, 2021).

1.12.4 Impacts of Labor Market Absorption Rate

1.12.4.1 On Economic Development

The labor market absorption rate is a critical determinant of economic development. A high absorption rate indicates that a significant portion of the workforce is actively engaged in productive employment, which contributes to the overall growth of the economy. When more individuals are employed, it leads to increased consumer spending, higher tax revenues, and greater investment in infrastructure and public services. Moreover, businesses benefit from a larger pool of available talent, which can drive innovation and enhance competitiveness. Conversely, a low absorption rate can stifle economic growth, as a large segment of the population may remain underutilized, leading to reduced economic output and potential stagnation (Habanabakize et al., 2019).

1.12.4.2 On Social Stability

The rate at which the labor market absorbs workers also has profound implications for social stability. Employment is a key factor in ensuring social cohesion, as it provides individuals with not only a source of income but also a sense of purpose and identity. High absorption rates can lead to lower unemployment rates, reducing the likelihood of poverty and the socio-economic issues that accompany it, such as crime and social unrest. When people are employed, they are more likely to contribute positively to society, fostering community engagement and reducing inequalities. In contrast, low absorption rates can exacerbate social tensions, as large numbers of unemployed individuals may experience feelings of disenfranchisement and frustration (Domingos CBB Gomes et al., 2024).

1.12.4.3 Individual Career Paths

For individuals, the labor market absorption rate can significantly impact career trajectories and personal development (Bonneton, 2023). A robust absorption rate suggests a dynamic job market with ample opportunities for career advancement and skills development (Smirnova & Bredneva, 2023). Individuals can benefit from a diverse range of employment options, enabling them to find roles that match their skills and aspirations (Shankardass et al., 2018). This not only enhances job satisfaction but also encourages lifelong learning and professional growth. However, when absorption rates are low, individuals may face limited job opportunities, leading to underemployment or the need to accept jobs that do not align with their qualifications or career goals (Wilson, 2021). This can hinder personal development and lead to career stagnation, affecting long-term earning potential and job satisfaction (Baruch, 2004).

1.12.5 Strategies to Improve Labor Market Absorption Rate

Improving the labor market absorption rate is crucial for fostering economic growth and ensuring social stability. A multifaceted approach is required to address the various factors that influence this rate. Here are some key strategies that can be implemented to enhance the absorption of labor into the market:

1.12.5.1 Enhancing Vocational Training

One of the most effective ways to improve the labor market absorption rate is by enhancing vocational training programs. These programs equip individuals with specific skills that are in demand within the job market, bridging the gap between education and employment. By aligning training curricula with the needs of industries, educational institutions can ensure that graduates are job-ready. Furthermore, promoting lifelong learning and continuous skill development helps workers adapt to rapidly changing job requirements and technological advancements (Baruch, 2004).

1.12.5.2 Encouraging Private Sector Engagement

The private sector plays a crucial role in labor market dynamics. Encouraging private sector engagement can lead to more job opportunities and improved absorption rates. This can be achieved through public-private partnerships that focus on creating internships, apprenticeships, and on-the-job training programs. Businesses can also be incentivized to hire new graduates and invest in employee training and development. By fostering a collaborative environment between the public and private sectors, countries can create a more resilient and responsive labor market (Bonneton, 2023).

1.12.5 Implementing Effective Labor Policies

Government policies are fundamental in shaping labor market conditions. Implementing effective labor policies that promote job creation, protect workers' rights, and encourage innovation is essential. This includes reviewing and updating labor laws to reflect current economic realities, providing tax incentives for companies that create jobs, and ensuring adequate social protection for workers. Additionally, governments can invest in infrastructure projects that stimulate employment and economic activity (Shankardass et al., 2018). By creating a supportive policy framework, governments can facilitate a higher labor market absorption rate.

1.12.6 Higher Education Institutions (HEIs)

Higher Education Institutions (HEIs) are pivotal entities in the landscape of learning and development, serving as critical platforms for advanced education, research, and societal contribution. Defined as establishments that provide education beyond the secondary level, HEIs encompass a variety of institutions, including universities, colleges, and technical schools. Each is designed to offer both specialized and broad-based knowledge across numerous disciplines. The purpose of HEIs extends beyond mere knowledge dissemination; they are instrumental in fostering critical thinking, innovation, and cultural understanding, equipping students with the skills necessary to navigate and contribute to an increasingly complex world (Ncanywa & Dyantyi, 2022).

Historically, HEIs have evolved significantly since their inception, with roots tracing back to ancient civilizations where centers of higher learning were established in places like Greece, India, and China. The medieval period saw the rise of the university system in Europe, which laid the groundwork for the modern HEI structure. Over the centuries, these institutions have adapted to societal changes, expanding their reach and scope. The Industrial Revolution, for instance, spurred the development of specialized technical institutions, while the post-war era saw an expansion in access and democratization of higher education (Ross, 1973).

The importance of HEIs cannot be overstated. They are not only bastions of knowledge and research but also engines of economic development, innovation, and social mobility. HEIs contribute significantly to the workforce by producing skilled graduates who are prepared to meet the demands of various industries. Furthermore, they are centers for groundbreaking research and development, driving technological advancements and addressing global challenges such as climate change, public health, and social inequality (Paullet et al., 2020).

1.12.6.1 Types of Higher Education Institutions

Higher Education Institutions (HEIs) come in various forms, each serving distinct purposes, populations, and contributing uniquely to the educational landscape. Understanding these differences is crucial for appreciating the diverse options available to students and the varied roles these institutions play in society (Atuhaire et al., 2022; Caniëls & Van den Bosch, 2011; Leal Filho et al., 2019; Saeed et al., 2022).

1.12.6.1.1 Public Universities

- Public universities are typically funded by state governments and play a significant role in providing accessible education to a broad population.
- Funding Sources: Public universities primarily receive funding from state and federal governments, which contribute to their operational budgets, allowing them to offer lower tuition rates compared to private institutions. This funding is often subject to political and economic fluctuations, impacting the resources available for research, infrastructure, and student services.

- **Access and Affordability:** One of the core missions of public universities is to provide affordable education to a wide demographic. They often offer in-state tuition discounts and robust financial aid programs, making higher education more accessible to students from diverse economic backgrounds.
- **Role in Research and Development:** Public universities are often at the forefront of research and innovation. They house various research facilities and receive significant grants and funding for scientific, medical, and technological advancements, contributing to both local and global communities.

1.12.6.1.2 Private Colleges

- **Private colleges,** usually funded through tuition, donations, and endowments, offer a different educational experience characterized by smaller class sizes and specialized programs.
- **Tuition and Financial Aid:** While private colleges generally have higher tuition fees compared to public universities, they often provide substantial financial aid packages to attract a diverse student body. This aid can come in the form of scholarships, grants, and work-study opportunities.
- **Diversity of Programs:** Private colleges frequently offer unique and specialized programs that may not be available at larger public universities. This diversity allows students to pursue niche fields and benefit from a more tailored academic experience.
- **Impact on Local Communities:** Many private colleges emphasize community service and civic engagement. They often contribute to the local economy through employment opportunities and community partnerships, while also fostering an environment of social responsibility among students.

1.12.6.1.3 Community Colleges

Community colleges serve as a vital link in the higher education system, offering a range of programs that cater to different educational and career goals.

- **Vocational Training:** Community colleges provide vocational training and certificate programs that prepare students for immediate entry into the workforce. These programs are designed to meet local labor market demands, offering practical skills in fields such as healthcare, technology, and trades.
- **Pathway to Four-Year Degrees:** Community colleges also serve as a stepping stone to four-year universities. Many students begin their higher education journey at community colleges due to their affordability and flexibility, later transferring credits to pursue bachelor's degrees at four-year institutions.
- **Community Engagement and Support:** Community colleges are deeply embedded within their local communities, offering not only education but also cultural events, workshops, and resources that support lifelong learning and community development.

1.12.7 Challenges Facing HEIs

Higher Education Institutions (HEIs) play a critical role in shaping the future of society by providing education, conducting research, and fostering innovation. However, they face numerous challenges that threaten their ability to fulfill these functions effectively. These challenges encompass financial constraints, technological advancements, and social and cultural shifts.

1.12.7.1 Funding and Financial Sustainability

- **Financial sustainability** is a pressing concern for many HEIs, as they strive to balance their budgets while maintaining high-quality education and research.

- **Government Budget Cuts:** Many public universities rely heavily on government funding. However, in recent years, these institutions have experienced significant budget cuts, forcing them to seek alternative revenue sources or reduce their offerings. This often leads to increased tuition fees, larger class sizes, and a reduction in faculty and staff positions.
- **Rising Tuition Costs:** The rising cost of tuition has become a major barrier for students seeking higher education. As HEIs attempt to compensate for budget shortfalls, they often turn to tuition hikes, which can limit access, particularly for students from low-income backgrounds. This trend raises concerns about equity and the long-term societal impact of decreasing accessibility to higher education.
- **Endowment Management:** Endowments are critical for the financial health of many HEIs, providing a steady income stream that can support scholarships, faculty positions, and infrastructure projects. However, managing these funds effectively can be challenging, especially in volatile economic climates. Institutions must balance the need for immediate financial support with the preservation of endowment funds for future generations.

1.12.7.2 Technological Advancements

- The rapid pace of technological change presents both opportunities and challenges for HEIs as they strive to stay current and relevant in a digital world.
- **Integration of Online Learning:** The demand for online learning has surged, especially in the wake of the COVID-19 pandemic. HEIs must adapt by developing robust online programs that maintain the quality and rigor of traditional in-person courses. This requires investment in technology, training for faculty, and support systems for students.
- **Digital Infrastructure:** To support the growing demand for digital learning, HEIs need to invest in their digital infrastructure. This includes upgrading hardware and software, expanding bandwidth, and ensuring reliable access to digital resources. Institutions must also address the digital divide that affects students' ability to participate fully in online education.
- **Data Security and Privacy:** As HEIs increasingly rely on digital platforms, they must also contend with the challenges of data security and privacy. Protecting sensitive information about students and faculty from cyber threats is paramount, requiring robust security measures and policies to prevent breaches and ensure compliance with regulations.

1.12.7.3 Social and Cultural Shifts

- HEIs must navigate a rapidly changing social and cultural landscape, adapting to new expectations and priorities.
- **Diversity and Inclusion:** There is a growing emphasis on creating diverse and inclusive environments within HEIs. Institutions are called to address issues of representation among students, faculty, and staff, and to create an inclusive culture that supports all members of the community.
- **Shifts in Student Expectations:** Today's students have different expectations regarding their educational experience. They seek flexible learning options, practical skills that align with job market demands, and an education that reflects their values, such as sustainability and social justice. HEIs must adapt their curricula and teaching methods to meet these evolving expectations.
- **Globalization Impacts:** The interconnected nature of the world today means that HEIs must also consider their role on a global stage. This includes fostering international collaborations, accommodating international students, and preparing students to work in a globalized economy. Institutions must navigate the complexities of cultural differences and global partnerships while maintaining their educational standards.

1.12.7.4 Future of Higher Education Institutions

As we look toward the future of Higher Education Institutions (HEIs), it is clear that they will need to adapt to a rapidly changing world. This section explores the emerging trends and innovations that may shape the landscape of higher education in the coming years.

1.12.7.5 Innovative Educational Models

One of the most significant shifts in the future of HEIs will be the adoption of innovative educational models. Traditional lecture-based approaches are giving way to more dynamic, student-centered learning experiences. Blended learning, which combines online and in-person instruction, is becoming increasingly popular, allowing for greater flexibility and accessibility. Additionally, competency-based education, which focuses on students demonstrating mastery of specific skills rather than time spent in the classroom, is gaining traction. These models not only cater to diverse learning styles but also prepare students for the demands of a constantly evolving job market.

1.12.7.6 International Collaboration

The future of HEIs will also be characterized by increased international collaboration. As globalization continues to blur geographical boundaries, institutions are forming partnerships across countries to enhance research, share resources, and offer students a more global perspective. These collaborations can take many forms, including joint degree programs, research partnerships, and exchange opportunities for students and faculty. By embracing international cooperation, HEIs can foster a more inclusive and interconnected academic community, preparing students to thrive in a globalized world.

As society becomes more conscious of environmental issues, HEIs are positioned to lead the charge in promoting sustainability and environmental responsibility. Future institutions will likely prioritize eco-friendly practices in their operations, such as reducing carbon footprints, implementing green building technologies, and promoting sustainable transportation options. Moreover, integrating sustainability into curricula across disciplines will be crucial in educating future leaders about the importance of environmental stewardship. By committing to sustainability, HEIs can not only reduce their environmental impact but also inspire students to become advocates for change in their own communities.

1.12.8 Grand Theories Of This Study

1.12.8.1 Human Capital Theory

The genesis of Human Capital Theory can be traced back to the early 20th century, though its roots are deeply intertwined with classical economic theories. This section will explore the origins, key contributors, and the evolution of Human Capital Theory over time, highlighting its significance and enduring influence in the field of economics.

The concept of human capital began to take shape as economists sought to understand the value of labor beyond its physical capabilities. Early economic thought, particularly from Adam Smith and other classical economists, hinted at the importance of education and skill development for economic productivity. However, it wasn't until the mid-20th century that a more formalized theory emerged, recognizing human capital as a critical component of economic analysis.

Human Capital Theory has evolved significantly since its inception. Initially focused on the individual benefits of education and training, the theory has broadened to encompass societal and

macroeconomic perspectives. Over the decades, researchers have refined the measurement of human capital, incorporating factors such as health, cognitive skills, and social capital. The theory has also been adapted to address contemporary economic challenges, such as globalization, technological advancements, and demographic shifts. As a result, Human Capital Theory remains a dynamic and integral part of economic discourse, continually adapting to the complexities of the modern world. Through these historical milestones, Human Capital Theory has solidified its role as a foundational element in understanding economic development and labor markets, influencing both policy and academic thought across the globe.

The development of Human Capital Theory is largely attributed to the pioneering work of economists such as Gary Becker, Theodore Schultz, and Jacob Mincer. Gary Becker's seminal book, *Human Capital*, published in 1964, systematically explored the idea that investments in education and training enhance an individual's productivity, much like investments in physical capital. Theodore Schultz, a key figure in the development of this theory, argued that human capital investments were crucial for enhancing agricultural productivity and overall economic development. Jacob Mincer's work further expanded the theory by examining the role of education and experience in wage differentials, laying the groundwork for modern labor economics.

One of the key theoretical perspectives that can be applied to understand graduate employment is the Human Capital Theory. Developed by economist Gary Becker, the Human Capital Theory suggests that individuals acquire education and skills as an investment to increase their productivity and earning potential in the labor market (Wuttaphan, 2017). According to this theory, the level of education and the type of skills acquired by individuals significantly influence their chances of finding employment and earning higher wages.

Human Capital Theory, as proposed by Schultz (1961) and Becker (1964), asserts that education increases the productivity and efficiency of individuals, leading to benefits for the individual and society in terms of economic growth. In this context, graduates from higher education institutions are viewed as 'human capital', with their knowledge, skills, and capabilities contributing to the labor market and broader economy (Becker, 1993). As such, the success of these graduates in gaining employment can be seen as an indicator of the efficacy of the education system in building human capital.

Human Capital Theory is a framework that has significantly shaped the understanding of economic growth and development by emphasizing the value of individuals' skills, knowledge, and experiences. Unlike traditional economic models that primarily focus on physical capital, such as machinery and infrastructure, Human Capital Theory centers on the intangible assets that individuals bring to the economy. This theory posits that investments in education, training, and health can enhance an individual's productivity and, consequently, contribute to the broader economic prosperity of societies.

The concept of human capital underscores the idea that people are not merely laborers in economic processes but are active contributors who possess unique capabilities that can be developed and harnessed for economic gain. By viewing education and skill development as forms of capital investment, Human Capital Theory has provided a lens through which policymakers and economists can understand the intricate relationship between human development and economic outcomes.

The relevance of Human Capital Theory has grown in parallel with the increasing emphasis on knowledge-based economies and technological innovation. As the global economy becomes more interconnected and complex, the ability to adapt and innovate is more crucial than ever, placing human capital at the forefront of economic discussions. This introduction sets the stage for a deeper exploration of the historical evolution, core concepts, and modern applications of Human Capital Theory, elucidating its profound impact on labor markets, education policies, and economic growth strategies worldwide.

The Human Capital Theory can be used to analyze the relationship between the education provided by UNTL, UNPAZ, UNDIL, ICS and Instituto Superior Cristal (ISC), and the labor market absorption rate of their graduates as such public sector or government, private sector, self employment, unemployment rate. The theory suggests that higher education institutions that provide relevant and marketable skills are more likely to have higher absorption rates among their graduates.

The roots of Human Capital Theory can be traced back to the early 1960s when Schultz (1961) introduced the concept of human capital, arguing that education and training improve an individual's capabilities and productivity. Becker (1993) later expanded on these ideas, highlighting the economic implications of human capital investment for both individuals and society. This perspective views education as a critical driver of economic growth, as a well-educated workforce is more capable of innovation, efficiency, and productivity. This theory rise of the gig economy, remote work, and freelance opportunities has altered traditional employment pathways. While these trends offer new avenues for graduates, they also require an adaptive approach to career planning. Graduates must be equipped to pivot quickly, continuously updating their skills to remain competitive. This adaptability is a direct reflection of the human capital investment mentality, where lifelong learning becomes a necessity rather than an option. Graduates can utilize online courses to upskill or explore new areas of interest, enhancing their employability without the constraints of traditional educational structures. Many graduates find themselves burdened with loans, which can impact their financial decisions post-graduation. The challenge lies in ensuring that the investment in education leads to substantial returns. As such, graduates must be encouraged not only to pursue degrees but to select fields of study that align with market demand and future job growth.

1.12.9 Core Concepts

Human capital refers to the collective skills, knowledge, and experience possessed by an individual or population, viewed in terms of their value or cost to an organization or country (Drobny, 2017; Lawrence & Murray, 2017; Tittenbrun, 2013). Unlike physical capital, which includes tangible assets like machinery and equipment, human capital is intangible but equally crucial. It encompasses the abilities and talents acquired through education, training, and experience, which can enhance an individual's productivity and contribute to economic growth. In essence, human capital represents the economic value of an employee's skill set. The central idea of Human Capital Theory as such (Grugulis, 2024):

- Education: This is often the most significant component, encompassing formal schooling, higher education, and vocational training. Education equips individuals with critical thinking skills, technical knowledge, and problem-solving abilities essential for adapting to various job roles. Education and skills are critical investments that enhance an individual's productivity and employability in the labor market. The theory posits that individuals who invest in their education and skill development are more likely to achieve better employment outcomes and higher wages. Furthermore, the theory underscores the importance of aligning educational programs with labor market needs to ensure that graduates possess the skills required by employers.
- Provides a robust framework for understanding graduate employment, it is not without its critiques. Some argue that the theory places excessive emphasis on individual responsibility and overlooks structural barriers that impact employment outcomes. Factors such as systemic discrimination, economic fluctuations, and labor market conditions can significantly influence a graduate's job prospects. Critics argue that the theory oversimplifies the complexities of the labor market and fails to account for structural

factors such as discrimination, economic cycles, and the role of social capital. This chapter emphasizes the need for a holistic approach to understanding graduate employment that considers both human capital and external factors.

- Emphasizes the importance of individual skills and education, it is essential to recognize the role of social capital in graduate employment. Social capital refers to the networks of relationships among individuals that can provide valuable resources, support, and connections. For graduates, building a robust professional network can significantly enhance their job prospects.
- Commitment to lifelong learning, the value of social capital, and the importance of collaboration among stakeholders will be key to ensuring that graduates are prepared to meet the challenges and opportunities of the future. As we continue to explore the intersections of education, skills, and employment, let us strive to empower all individuals to realize their full potential and contribute to a thriving society.
- Harness the benefits of social capital, graduates should actively engage in networking activities throughout their academic journey. Joining professional associations, attending workshops, and participating in community events can help expand one's network. Networking should be viewed as a reciprocal relationship—graduates should also aim to contribute to their networks by offering support and sharing knowledge.
- Offers valuable insights into the relationship between education, skills, and employment outcomes for graduates. It highlights the importance of viewing education as an investment that can yield significant returns in terms of career success and economic growth, and comprehensive framework for understanding graduate employment and the factors that contribute to successful transitions from education to the workforce then this theory emphasizes the importance of education and skills as critical investments that yield significant returns for individuals and society.
- Human Capital Theory, developed by economists Gary Becker and Theodore Schultz in the mid-20th century, posits that individuals invest in their education and skills to enhance their productivity and earning potential. Becker (1964) emphasized that education is not merely a means of acquiring knowledge but an investment that yields returns in the form of higher wages and improved job opportunities. According to this theory, the more educated and skilled an individual is, the more valuable they become in the labor market.
- Human Capital Theory suggests that education is a pathway to economic opportunity; however, systemic inequalities can hinder access to that pathway. Factors such as socioeconomic status, race, and geographic location can impact an individual's ability to pursue higher education and acquire valuable skills.
- Provides a valuable framework for understanding the dynamics of graduate employment. It highlights the significance of education as a powerful tool for personal and economic

advancement. However, while the theory offers important insights, it is essential to recognize its limitations. The labor market is influenced by a myriad of factors beyond individual education and skills, including economic conditions, labor market policies, and social dynamics.

- Confined to a single country or economic context; it has global implications that vary based on regional economic conditions, cultural norms, and educational systems. Different countries have adopted varying approaches to education and workforce development that reflect their unique challenges and opportunities.
- Imperative that educational institutions and policymakers implement strategies aimed at promoting inclusivity. Scholarships, grants, and financial aid programs can help alleviate the financial burden on low-income students, making higher education more accessible. Additionally, targeted outreach initiatives can encourage underrepresented groups to pursue fields in which they have historically been excluded.
- Model and concept of collaboration, innovation, and a commitment to continuous improvement, we can build a labor market that values human capital development, embraces diversity, and fosters inclusive opportunities for all graduates. The future of work is not just about individual achievement; it is about collective progress and the shared responsibility to create a better world for generations to come. economic strategies that directly impact the availability of jobs and the skills required for those jobs.
- Exploration the implications for graduate employment underscores the importance of viewing education as a dynamic and multifaceted investment, fostering an environment that values both human and social capital, we can pave the way for a more equitable and prosperous future for all graduates, labor market regulations, all of which affect the opportunities available to graduates. A proactive approach to policy can help create an environment conducive to human capital development and equitable access to employment.
- Experience: Practical experience gained through work or other activities enhances an individual's ability to perform specific tasks efficiently. Experience often leads to increased competence and better decision-making skills.
- Skills: These are the specific abilities acquired through learning and practice. Skills can be technical, such as coding or engineering, or soft, like communication and teamwork. Both types are vital for personal and professional development.
- Health: A healthy workforce is more productive and less prone to absenteeism. Good physical and mental health are fundamental to maintaining and enhancing human capital.
- Social and Emotional Intelligence: The ability to interact effectively with others and manage one's emotions is increasingly recognized as a critical component of human

capital. These skills can lead to better teamwork, leadership, and conflict resolution in the workplace.

- Overruling the implications for graduate employment underscores the importance of a multifaceted approach to understanding the dynamics at play in today's labor market. By fostering an educational ecosystem that prioritizes adaptability, inclusivity, and lifelong learning, we can not only empower graduates but also strengthen our economies and societies as a whole. labor market regulations. By prioritizing investments in education and training, policymakers can help create a robust framework that supports graduate employment and aligns with the needs of the economy.

This collaborative effort will not only enhance individual opportunities for success but also contribute to the overall economic well-being of society, fostering innovation, productivity, and social cohesion in the process. Ultimately, investing in human capital is an investment in the future a future where every individual has the chance to realize their full potential and contribute meaningfully to their communities and the economy (Jandrić, 2023).

The transition from education to employment can be a psychologically challenging experience for graduates. Uncertainty about job prospects, financial independence, and career paths can lead to anxiety and stress. Recognizing the psychological dimensions of this transition is crucial for supporting graduates in their journey. The pressure to secure a job, coupled with the competitive nature of the job market, can take a toll on mental health. It is essential to recognize the psychological impact of job searching and provide adequate support for graduates during this transition (Flabbi & Gatti, 2018).

The synergy between these two forms of capital can significantly influence a graduate's job search and career trajectory. For example, an individual with strong technical skills (human capital) may struggle to secure a position if they lack professional connections (social capital) that could facilitate introductions or provide job leads. The responsibility for ensuring successful transitions from education to employment falls not only on graduates but also on educational institutions, policymakers, employers, and society as a whole. The relationship between human capital and economic growth underscores the broader societal implications of investing in education. Countries that prioritize education and skill development tend to experience higher rates of economic growth and innovation. As such, policymakers play a critical role in fostering an environment conducive to human capital development (Chang & Chen, 2011).

The lessons learned from analyzing graduate employment through this lens reinforce the importance of adaptability, resilience, and collaboration. As graduates prepare to enter the workforce, they must be equipped not only with knowledge but also with the ability to navigate an increasingly complex job market. Reflecting on the insights presented throughout this exploration of Human Capital Theory and graduate employment, it is evident that education extends far beyond the classroom. It encompasses a dynamic interplay of skills, experiences, networks, and socioeconomic factors that shape an individual's career journey. The commitment to lifelong learning, the importance of networking, and the need for inclusivity are all critical components that will shape the future of work. This might involve subsidizing adult education programs, providing tax credits for professional development courses, or establishing public-private partnerships to facilitate workforce training (Nafukho et al., 2004).

Policymakers play a vital role in shaping the landscape of graduate employment. Government policies can influence educational funding, workforce development initiatives, and labor market regulations. Policymakers must also address the issue of labor market mismatches, where graduates possess skills that do not align with job openings. This can be achieved through better data collection and analysis

of labor market trends, allowing educational institutions to respond more effectively to employer needs. For instance, developing real-time labor market information systems can help students and educators make informed decisions about educational pathways and career choices. Investment in education should not be limited to higher education alone; vocational training and adult education programs are equally crucial. Policymakers must also consider access and equity in education, ensuring that marginalized populations have the same opportunities to invest in their human capital. Educational institutions must adapt their curricula to include training in digital tools, data analysis, and online communication platforms (Burton-Jones & Spender, 2011).

1.12.9.1 Measurement of Human Capital

Quantifying human capital is complex due to its intangible nature. However, several approaches are used to estimate its value:

- **Educational Attainment:** This is the most straightforward measure, assessing the level of education completed by individuals. Higher levels of education generally correlate with greater human capital.
- **Income-Based Approaches:** These methods estimate human capital by examining the potential or actual earnings of individuals, assuming that higher earnings reflect greater skills and capabilities.
- **Cost-Based Approaches:** This involves calculating the investment made in developing human capital, such as the costs of education and training. The assumption is that higher investments lead to a higher stock of human capital.
- **Output-Based Measures:** These assess the contribution of human capital to productivity and economic output. By analyzing the output generated by workers, economists can infer the level of human capital present.

Each of these methods has its advantages and limitations, and often, a combination of approaches is used to obtain a more comprehensive picture of human capital. Recognizing the diverse components and measurement techniques is crucial for understanding the full impact of human capital on economies and societies (Calkin, 2018).

1.12.9.2 Applications in Modern Economics

Human Capital Theory has significantly influenced modern economics by providing a framework for understanding how investments in people can drive economic outcomes. This section explores the application of human capital concepts in labor markets, education policy, and economic growth (Nafuko et al., 2004).

Human Capital Theory has reshaped our understanding of labor markets by highlighting the importance of skills, education, and experience. In the modern economy, individuals with higher levels of human capital tend to command higher wages, as they are perceived to be more productive. This has led to a greater emphasis on continuous learning and skill development, as workers seek to enhance their employability and earning potential. Additionally, businesses are increasingly investing in employee training and development programs to cultivate a skilled workforce capable of adapting to technological advancements and competitive pressures. This focus on human capital has also influenced labor market policies, with governments and organizations advocating for initiatives that support workforce development and skill acquisition (Tittenbrun, 2017).

Education is a cornerstone of Human Capital Theory, as it represents a primary means of developing the skills and knowledge necessary for economic participation. Policymakers have leveraged this theory to justify investments in education systems, aiming to equip individuals with the competencies required in a rapidly changing global economy. Human Capital Theory underscores the importance of not only expanding access to education but also improving the quality of educational outcomes.

This has led to reforms focused on curriculum development, teacher training, and the integration of technology in classrooms. Furthermore, the theory has informed debates on the balance between general education and vocational training, emphasizing the need for education policies that align with labor market demands and future economic trends (Tittenbrun, 2017).

1.12.10 The Theory of Transition from School to Work

The Theory of Transition from School to Work (Scherer, 2005) suggests that the transition from education to employment can be influenced by a range of factors, including the socio-economic status of the individual, the quality and relevancy of the education received, and the state of the labor market (Connaughton & Cline, 2021). This theory provides a useful framework for examining the specific experiences of graduates in Timor-Leste and understanding the factors that have influenced their employability.

The transition from school to work is a critical phase in the lives of young individuals, marking the shift from education to employment. This transition can be fraught with challenges and uncertainties, making it an area of significant interest for researchers, educators, and policymakers alike. In 2005, Scherer developed a theory that provides a framework for understanding this transition, particularly focusing on the various factors that can influence an individual's employability (Gillioz & Gygax, 2017).

Scherer's theory outlines the school-to-work transition as a multifaceted process influenced by several factors, including socio-economic status, the quality and relevance of education, and the conditions of the labor market. Understanding these variables is essential for grasping how they impact young people's experiences as they enter the workforce. A successful transition can lead to stable employment, personal fulfillment, and economic independence, while a challenging transition may result in unemployment, underemployment, and psychological distress. Recognizing the complexities involved allows stakeholders to better support young individuals during this critical phase (Gillioz & Gygax, 2017).

One of the primary factors identified in Scherer's theory is socio-economic status. Individuals from lower socio-economic backgrounds often face additional barriers when transitioning to work, such as limited access to resources and networks that can facilitate employment opportunities. Another critical element of Scherer's theory is the quality and relevance of education. Educational institutions play a pivotal role in preparing students for the workforce. The curriculum, teaching methods, and available resources can significantly influence the skills and knowledge that graduates possess (Scherer, 2005).

The state of the labor market is a crucial factor in the transition from school to work. Economic conditions, industry growth, and employment rates all play significant roles in shaping the opportunities available to recent graduates (Scherer, 2005).

Scherer's Theory of Transition from School to Work underscores the importance of various factors in shaping young individuals' experiences as they move from education to employment. By examining socio-economic status, educational quality, and labor market conditions, the theory provides a comprehensive framework for understanding the complexities of this transition (Scherer, 2005).

Overall, Scherer's theory offers valuable insights into the challenges faced by young individuals entering the workforce. It highlights the need for a multi-faceted approach to address the barriers to successful transitions. In contexts like Timor-Leste, where socio-economic and educational challenges are pronounced, it is essential for policymakers and educators to collaborate to create effective strategies that enhance employability and support young people in their journey to adulthood (Sacharin et al., 2012).

While Scherer's theory provides a comprehensive framework for understanding the transition from school to work, ongoing research is essential to adapt to the changing dynamics of the labor market and societal needs. Future studies should explore emerging trends, such as the impact of remote work, the gig economy, and the role of artificial intelligence in shaping employment opportunities (Baruch, 2004; Guodong et al., 2024; Kumar, 2022).

Scherer's Theory of Transition from School to Work serves as:

- Vital framework for understanding the complex interplay of factors that influence young individuals' experiences as they move into the workforce. By considering socio-economic status, educational quality, labor market conditions, cultural influences, and technology, we gain a holistic view of the challenges and opportunities that shape this critical transition.
- Insights gained from this analysis underscore the importance of collaborative efforts among educators, policymakers, and community leaders to create supportive environments for youth as they transition from education to employment.
- Lessons learned from this theory are essential for understanding the unique challenges faced by young individuals in different cultural and socio-economic contexts.
- Provides a valuable lens through which we can analyze and understand the factors influencing young individuals' employability.

1.12.11 Theory of Employment

Theories of employment provide a multifaceted understanding of how jobs are created and filled, influenced by a range of economic, social, and behavioral factors. Classical economics emphasizes self-regulating markets and minimal government intervention, while Keynesian economics highlights the critical role of aggregate demand and government action in achieving full employment (Williams & Horodnic, 2019).

As labor markets continue to evolve, integrating insights from behavioral and social perspectives is essential for developing effective policies and practices that promote equitable employment outcomes. Theories of employment help explain how jobs are created, how individuals are matched with those jobs, and the economic, social, and behavioral factors that influence employment outcomes. Theories range from classical economic perspectives, which emphasize market forces, to modern interpretations that incorporate behavioral and social elements (Keynes, 2018).

The study of employment can be traced back to classical economists like Adam Smith, who introduced the idea of the "invisible hand" guiding market behavior. However, the Great Depression in the 1930s significantly shifted the discourse, leading to the development of Keynesian economics, which argued for government intervention to achieve full employment. Therefore the modern employment theories increasingly consider the importance of work-life balance and job satisfaction. Individuals are not solely motivated by wages; factors such as job fulfillment, work environment, and personal values play crucial roles in their employment decisions (Oya & Pontara, 2015). Theories of employment are offering explanations for unemployment and job creation, these theories guide the development of effective economic policies aimed at achieving sustainable growth and social welfare. They also provide the tools to predict how changes in economic conditions, such as technological advancements or shifts in consumer demand, might impact employment.

The evolution of employment theories reflects broader changes in economic thought and societal needs. From the classical theories of the 18th and 19th centuries, which focused on the self-regulating nature of markets, to the Keynesian revolution of the 20th century that emphasized the role of government intervention in ensuring full employment, these theories have adapted to address the

complexities of modern economies. Historical events, such as the Great Depression and subsequent economic crises, have further shaped these theories, prompting new approaches and refinements to better understand and manage employment dynamics (Brenner & Brenner-Golomb, 2017).

The Classical Theory of Employment, which emerged in the 18th and 19th centuries, is rooted in the works of early economists like Adam Smith, David Ricardo, and John Stuart Mill. This theory forms the foundation for much of classical economics and has significantly influenced economic thought over the years. At the heart of the Classical Theory is the concept of full employment. Classical economists posited that the economy naturally gravitates towards a state where all available resources, including labor, are fully employed. In this framework, full employment does not necessarily mean zero unemployment. Instead, it refers to a situation where any unemployment is voluntary or frictional, meaning that it results from individuals transitioning between jobs or choosing not to work at prevailing wage rates.

The Classical Theory emphasizes the flexibility of wages and prices as the primary mechanisms for achieving full employment. According to this view, any excess supply of labor (unemployment) would lead to downward pressure on wages, making it more attractive for employers to hire additional workers. Similarly, if there is a labor shortage, wages would rise, drawing more individuals into the workforce and balancing the supply and demand for labor. This self-correcting nature of the labor market is based on the assumption of perfect competition, where wages and prices are fully flexible and adjust quickly to changes in supply and demand (Marsden, 1999).

Despite its foundational role in economic thought, the Classical Theory of Employment has faced significant criticism, particularly during periods of economic downturn. Critics argue that the assumption of wage and price flexibility does not hold true in the real world, where wages are often sticky downwards due to factors like long-term contracts, minimum wage laws, and the reluctance of workers to accept lower wages. Additionally, the theory does not adequately address involuntary unemployment, which occurs when individuals are willing to work at prevailing wage rates but cannot find employment. These criticisms laid the groundwork for the development of alternative theories, most notably the Keynesian Theory of Employment, which emerged in response to the Great Depression and offered a different perspective on the functioning of labor markets and the role of government in stabilizing the economy. This theory, developed by the influential economist John Maynard Keynes during the Great Depression, revolutionized economic thought by challenging the prevailing classical views. This theory emphasizes the critical role of aggregate demand in determining employment levels and highlights the potential for involuntary unemployment in an economy (Strauser, 2014).

The Keynesian economics is the concept of aggregate demand, which is the total demand for goods and services within an economy at a given overall price level and in a given period. Keynes argued that aggregate demand is the primary driving force behind employment levels. It is composed of several key components: consumption, investment, government spending, and net exports. According to Keynes, fluctuations in these components, especially investment, can lead to changes in output and employment. Keynes posited that during periods of economic downturn, insufficient aggregate demand could lead to prolonged periods of high unemployment. Unlike classical economists, who believed that markets would naturally adjust to restore full employment, Keynes argued that without sufficient demand, economies could remain stuck in a state of underemployment equilibrium. A significant departure from classical thought is Keynes's concept of involuntary unemployment.

Keynesian theory, unemployment is not necessarily a result of wages being too high, as classical economists suggested. Instead, it can arise when aggregate demand is too low to support full employment, regardless of wage levels. Keynes introduced the idea that workers could be willing to work at the prevailing wage rates, yet still be unable to find jobs due to inadequate demand for goods and services. This involuntary unemployment occurs when businesses, anticipating low sales, cut back on production and, consequently, reduce their workforce. Keynesian economics provides a

framework for government intervention to stabilize the economy and promote employment. Keynes advocated for active fiscal policy measures, such as increased government spending and tax cuts, to boost aggregate demand during economic downturns. These measures aim to inject money into the economy, stimulate consumption and investment, and ultimately increase employment (Brenner & Brenner-Golomb, 2017; Marsden, 1999).

Furthermore, Keynesian theory supports the use of monetary policy to influence interest rates and investment levels. Lowering interest rates can encourage borrowing and spending, thereby boosting demand. Lastly, the Keynesian theory of employment emphasizes the importance of aggregate demand in determining employment levels and provides a justification for government intervention to address unemployment. Its insights have profoundly influenced economic policy and continue to be relevant in addressing contemporary economic challenges (Keynes, 2018; Williams & Horodnic, 2019).

The evolving landscape of economic thought, modern theories of employment offer nuanced perspectives that address the complexities of contemporary economies. These theories build on the foundations laid by classical and Keynesian economists, incorporating elements such as expectations, market imperfections, and policy interventions. This section explores three influential modern theories: Monetarist, New Classical, and New Keynesian.

The Monetarist theory, chiefly associated with economist Milton Friedman, emphasizes the role of government monetary policy in influencing employment levels. Monetarists argue that variations in the money supply are the primary drivers of economic fluctuations, including employment. The central tenet is that controlling inflation through steady growth in the money supply is crucial for maintaining employment stability. Unlike Keynesians, Monetarists downplay the role of fiscal policy, instead advocating for a consistent monetary policy to ensure long-term economic stability. Critics of Monetarism point out its reliance on the natural rate of unemployment, suggesting that it may not adequately address short-term employment issues or account for real-world market imperfections (Brenner & Brenner-Golomb, 2017; Kahn, 2022; Marsden, 1999; Oya & Pontara, 2015).

Emerging in the 1970s, the New Classical theory, led by economists like Robert Lucas, introduced the concept of rational expectations, which posits that individuals and firms make decisions based on all available information, anticipating the effects of economic policies. This theory argues that markets are inherently efficient and that employment fluctuations are primarily the result of external shocks rather than policy interventions. According to New Classical economists, any attempt by the government to manipulate employment through monetary or fiscal policy is likely to be ineffective, as individuals will adjust their expectations and behaviors accordingly. The theory emphasizes the self-correcting nature of markets and suggests that employment will naturally return to its equilibrium level without government interference (Kang & Mok, 2022; Winterton & Cafferkey, 2020).

Keynesian theory arose as a response to some limitations of the traditional Keynesian framework, particularly in explaining why markets do not always clear. New Keynesians incorporate elements such as price stickiness and wage rigidity into their models, acknowledging that these factors can prevent markets from reaching equilibrium and thus contribute to persistent unemployment. They argue that these market imperfections justify the need for active government intervention, particularly through fiscal and monetary policies, to stabilize the economy and boost employment. New Keynesian economists often advocate for policies that address demand shortfalls, such as government spending or monetary easing, to mitigate the effects of economic downturns on employment (Keynes, 2018).

Modern theories of employment offer diverse approaches to understanding and addressing employment challenges in contemporary economies. While Monetarists emphasize monetary stability, New Classical economists focus on market efficiencies, and New Keynesians highlight market imperfections and the need for policy interventions. Together, these theories provide valuable

insights into the multifaceted nature of employment dynamics, shaping both academic discourse and practical policymaking (Bell & Stevenson, 2006; Boon et al., 2021).

Understanding the dynamics of employment is crucial for economic stability and growth. Theories of employment elucidate how jobs are created, how individuals secure those jobs, and the myriad factors economic, social, and behavioral that influence employment outcomes. This overview will explore the classical and Keynesian theories of employment, highlighting their core principles, implications for labor markets, and relevance in today's economic landscape such as:

1.12.11.1 Classical and Neoclassical Theories

Classical theories, as outlined by economists such as Adam Smith and David Ricardo, assert that labor markets operate efficiently under competitive conditions. Employment levels are determined by supply and demand, and any unemployment is viewed as voluntary. Neoclassical theories build on this foundation, introducing the concept of marginal productivity, where wages are determined by the additional output generated by an employee. Contemporary employment theories also address issues of discrimination and systemic inequality. Factors such as race, gender, and socioeconomic status can create barriers to employment, leading to disparities in job opportunities and outcomes (Parron, 2023).

1.12.11.2 Keynesian Economic Theory

John Maynard Keynes challenged classical theories, arguing that aggregate demand, not just supply, plays a crucial role in employment levels. His seminal work, "The General Theory of Employment, Interest, and Money" (Keynes, 2018), posits that during economic downturns, insufficient demand leads to unemployment, necessitating government intervention to stimulate the economy.

1.12.11.3 Theory of Full Employment

Brenner and Brenner-Golomb (2017) propose a theory of full employment that emphasizes the importance of job creation policies and the role of government in ensuring that every individual who is willing and able to work can find employment. This theory aligns with Keynesian principles but also incorporates modern labor market dynamics (Heijdra, 2023).

1.12.11.4 Employment Systems Theory

Marsden (1999) introduced the Employment Systems Theory, which posits that employment is not merely an economic transaction but a system influenced by various social, cultural, and institutional factors. This perspective underscores the importance of understanding the broader context in which employment occurs, including labor laws, workplace culture, and organizational behavior (Negri & Hardt, 1999).

1.12.11.5 Behavioral Perspectives on Employment

Recent research has highlighted the behavioral aspects of employment, emphasizing how psychological factors influence job satisfaction, productivity, and overall employment outcomes. Sunstein (2020) explores how behavioral science can inform public policy to improve employment conditions, suggesting that understanding human behavior is crucial for designing effective employment strategies.

1.12.11.6 Gendered Careers in Employment

The role of gender in employment has garnered increasing attention in recent years. The "Handbook of Gendered Careers in Management" (2015) discusses how gender influences career trajectories, opportunities, and workplace dynamics. It highlights the need for policies that promote gender equality in the labor market, addressing issues such as wage gaps, representation in leadership positions, and work-life balance.

1.12.12 Contemporary Issues in Employment

1.12.12.1 Youth Employment

Youth employment is a critical issue, particularly in developing countries. Khatun and Saadat (2019) emphasize the need for targeted policies that create job opportunities for young people, fostering economic growth and social stability. The authors argue that investing in education and vocational training is essential for equipping youth with the skills needed in a rapidly changing labor market.

1.12.12.2 Digital Transformation and Industry 4.0

The advent of Industry 4.0 has transformed employment landscapes globally. Singh et al. (2023) discuss the impact of digital technology on business processes and employment patterns, arguing that automation and digital platforms are reshaping job roles and creating new opportunities. However, this transformation also raises concerns about job displacement and the need for reskilling the workforce.

1.12.13 Theory of Labor Market Segmentation

The Theory of Labor Market Segmentation suggests that the labor market is divided into separate segments, each with its own characteristics and rules (Bauder, 2001; Q. Li, 2013; Reich et al., 1973a). This theory could be used to explore differences in labor market outcomes between graduates in different fields of study or from different institutions (Dickens & Lang, 1993; Reich et al., 1973b).

The roots of labor market segmentation theory can be traced back to the early 1970s, with significant contributions from economists such as Michael Reich, David Gordon, and Richard Edwards. Their seminal work highlighted the impact of political and economic forces on the labor market, arguing that segmentation was a direct outcome of capitalism's inherent inequalities.

The Theory of Labor Market Segmentation posits that the labor market is not a singular, unified entity but rather a complex structure composed of distinct submarkets, each exhibiting unique characteristics, dynamics, and rules. This segmentation results from various political, economic, and social forces that shape labor market outcomes, leading to significant disparities in wages, job security, and working conditions among different groups of workers. This report aims to provide a comprehensive overview of the Theory of Labor Market Segmentation, exploring its historical context, theoretical underpinnings, empirical evidence, and implications for understanding labor market disparities, particularly among graduates from different fields of study or institutions.

Labor market segmentation theory contrasts sharply with traditional neoclassical economic theories that assume a unified labor market characterized by competition among buyers and sellers. In the neoclassical framework, wage differentials arise primarily from differences in individual worker attributes, such as skills, education, and experience. Conversely, the segmentation theory asserts that labor markets are divided into separate segments, each governed by its own set of rules and characteristics, resulting in persistent inequalities.

1.12.13.1 Characteristics of Labor Market Segments:

1. **Primary and Secondary Segments:** The labor market is often conceptualized as consisting of primary and secondary segments. The primary segment is characterized by stable, well-paying jobs with good working conditions and benefits, often requiring higher education and skills. In contrast, the secondary segment comprises low-paying, insecure jobs with few benefits, typically filled by less-skilled workers or marginalized groups.
2. **Barriers to Mobility:** Segmented labor markets create barriers that inhibit mobility between segments. These barriers can be structural (such as lack of access to education or training), institutional (such as discriminatory hiring practices), or individual (such as personal circumstances).
3. **Role of Institutions:** Institutions, including labor laws, social policies, and economic structures, play a critical role in maintaining segmentation. For instance, unionization may be more prevalent in the primary segment, providing workers with greater bargaining power and protection compared to their counterparts in the secondary segment.

1.12.13.2 Evolution of the Theory of Labor Market Segmentation:

- **Initial Formulations:** The initial formulations of labor market segmentation focused on the dual labor market model, which differentiated between primary and secondary labor markets based on job security, wages, and working conditions.
- **Expansion of the Concept:** Subsequent research expanded the theory to encompass various dimensions of segmentation, including divisions based on race, gender, education, and geographic location. This broader perspective recognized that segmentation is not only economic but also deeply intertwined with social structures and power dynamics.
- **Contemporary Developments:** In recent years, labor market segmentation theory has evolved to address the complexities of globalization, technological change, and the rise of the gig economy. Researchers have explored how these factors contribute to new forms of segmentation and inequality in the labor market.

Numerous studies have provided empirical support for the theory of labor market segmentation, demonstrating the existence of distinct labor market segments and their implications for different groups of workers.

Research indicates that wage disparities persist across different labor market segments. For example, studies have shown that workers in the primary segment, often characterized by higher educational attainment, earn significantly more than those in the secondary segment (Dickens & Lang, 1993). This disparity is particularly pronounced among graduates from different fields of study or institutions, where those from prestigious universities or high-demand fields enjoy better labor market outcomes compared to their counterparts from less prestigious institutions or fields.

Labor market segmentation also influences employment stability. Workers in the primary segment typically experience greater job security, benefits, and opportunities for advancement, while those in the secondary segment face precarious employment conditions. This disparity has been documented in various studies, which highlight the risks faced by workers in low-wage, unstable jobs, especially during economic downturns.

Segmentation by gender and race is a critical aspect of labor market dynamics. Studies have shown that women and racial minorities are disproportionately represented in the secondary labor market, facing systemic barriers that limit their access to higher-paying, stable jobs. This segmentation is

often reinforced by discriminatory hiring practices, occupational segregation, and unequal access to education and training opportunities.

The Theory of Labor Market Segmentation provides a critical framework for understanding the complexities of labor market dynamics and the persistent inequalities that characterize it. By recognizing the existence of distinct labor market segments and their unique characteristics, stakeholders can better address the disparities faced by different groups of workers. As labor markets continue to evolve in response to globalization, technological changes, and shifting demographics, ongoing research and proactive policies will be essential to promote equity and inclusivity in the labor market.

1.12.13.3 Mechanisms of Segmentation

To further understand labor market segmentation, it is essential to analyze the mechanisms through which segmentation occurs. Several factors contribute to the formation and perpetuation of distinct labor market segments, including:

- **Educational Credentials:** Educational attainment is a significant determinant of labor market outcomes. Credentials serve as a filtering mechanism, allowing employers to sift through potential candidates. Graduates with higher educational qualifications often secure jobs in the primary segment, while those with lower qualifications remain in the secondary segment. The signaling theory posits that employers use education as a signal of a candidate's ability and work ethic, creating a divide based on educational achievement (Spence, 1973).
- **Occupational Segregation:** Occupational segregation refers to the concentration of certain demographic groups (based on gender, race, or ethnicity) in specific occupations. This segregation often leads to differences in wages and working conditions. For instance, women are frequently overrepresented in lower-paying fields like education and healthcare, whereas men dominate higher-paying sectors such as engineering and finance (Reskin, 1993). The perpetuation of these patterns can be traced back to societal norms and expectations, as well as institutional barriers to entry.
- **Geographic Factors:** Geographic location can significantly influence labor market segmentation. Urban areas often offer more opportunities in the primary segment due to a concentration of industries and higher wages. In contrast, rural areas may present limited job opportunities, pushing workers into the secondary segment (Wilson, 1996). Furthermore, geographic disparities in educational resources can affect the skills pool available in different regions, reinforcing segmentation.
- **Labor Market Policies:** Labor market policies, including minimum wage laws, unemployment insurance, and labor protections, can shape the dynamics of segmentation. For example, stronger labor protections in primary segment jobs can lead to job security and benefits, while the absence of such regulations in the secondary segment allows for exploitation and insecure employment (Kahn, 2010). Policymakers must consider how these policies can either mitigate or exacerbate labor market segmentation.

To illustrate the practical implications of labor market segmentation, several case studies are examined. These case studies reveal how segmentation manifests in different contexts and its impact on various groups.

1.12.13.4 STEM Graduates vs. Humanities Graduates

A significant disparity exists between labor market outcomes for graduates in STEM fields and those in humanities. A report from the National Science Board (2018) indicated that STEM graduates enjoy higher starting salaries and lower unemployment rates compared to their peers in humanities. For instance, in 2020, median starting salaries for STEM graduates were approximately \$65,000, while humanities graduates averaged around \$50,000 (National Association of Colleges and Employers, 2020). This gap illustrates the influence of field of study on segmentation, with STEM graduates benefiting from higher demand in labor markets characterized by rapid technological change (MacDonald, 2019; Parron, 2023; Walker & Zhu, 2013a, 2013b).

1.12.13.5 Racial and Gender Segmentation in the Workforce

The composition of the workforce plays a crucial role in determining the success and sustainability of organizations. Despite significant progress in recent decades, the workforce remains segmented along racial and gender lines, posing challenges to achieving true equity and inclusion. This segmentation manifests in various forms, from disparities in employment opportunities and wage gaps to unequal representation in leadership roles. Understanding these dynamics is essential for fostering a more inclusive and equitable work environment. Workforce segmentation refers to the division of the labor market into distinct groups based on characteristics such as race, gender, ethnicity, and other demographic factors. This segmentation often results in unequal access to job opportunities, differences in pay, and varied career advancement prospects. Historically, racial and gender segmentation has been deeply rooted in societal norms and institutional policies, creating systemic barriers that persist to this day. By examining these patterns, we can better understand the underlying causes of workplace inequality and develop strategies to address them (Gittleman & Howell, 2005; Maria Elena Hurtado, 2021; Shaw & Homan, 2013; Ver Steeg, 2003).

(a) Importance of Diversity and Inclusion

Diversity and inclusion are not just buzzwords; they are essential components of a thriving, innovative, and competitive workforce. Diverse teams bring a wide range of perspectives, skills, and experiences that can lead to more creative problem-solving and better decision-making. Furthermore, inclusive workplaces are more likely to attract and retain top talent, as employees feel valued and respected regardless of their background. As organizations strive to reflect the diversity of the communities they serve, embracing diversity and inclusion becomes a moral, social, and economic imperative.

(b) Evolution of Racial Segmentation

The concept of racial segmentation in the workforce has deep historical roots, tracing back to colonial times when labor divisions were often explicitly delineated along racial lines. The enslavement of African people and the exploitation of indigenous populations laid a foundation for systemic racial inequalities that persisted long after the abolition of slavery. In the post-Civil War era, Jim Crow laws in the United States institutionalized racial segregation, severely limiting economic opportunities for Black individuals. This segregation created a legacy of economic disparity, with minorities often relegated to low-wage, low-skill jobs. Despite the Civil Rights Movement's efforts to dismantle these structures, the echoes of past policies continue to influence modern employment practices.

(c) Gender Roles in Traditional Workplaces

Historically, gender segmentation in the workforce was heavily influenced by societal norms and expectations. The Industrial Revolution marked a significant shift, drawing women into factory jobs, albeit often in lower-paying and less secure positions than their male counterparts. The wartime economy of the 20th century further expanded women's roles, yet post-war periods frequently saw a reversion to traditional gender roles, with women encouraged to return to domestic duties. The feminist movements of the 1960s and 70s challenged these norms, advocating for equal rights and opportunities in the workplace. However, even with legislative gains like the Equal Pay Act, gender-based occupational segregation and stereotypes persisted, often steering women into roles considered extensions of domestic responsibilities, such as teaching and nursing.

(d) Impact of Historical Inequalities

The historical inequalities in racial and gender segmentation have left enduring impacts on the workforce. These disparities have contributed to systemic barriers that affect access to education, professional networks, and career advancement opportunities for marginalized groups. The cumulative effect of these inequalities is evident in the persistent wage gaps and underrepresentation of minorities and women in leadership positions. Moreover, historical segmentation has fostered environments where implicit biases and discrimination can thrive, further perpetuating cycles of inequality. Understanding this historical context is crucial for developing effective strategies to address contemporary challenges in achieving workforce diversity and inclusion.

(e) Racial Disparities in Different Industries

Racial disparities remain a pressing issue in the workforce, with certain sectors exhibiting more pronounced imbalances than others. For instance, the technology industry often reports a predominance of white and Asian employees, with Black and Hispanic individuals significantly underrepresented. In contrast, industries such as healthcare and social assistance display a more diverse racial composition but still face challenges in achieving racial equity at higher organizational levels. The lack of representation of racial minorities in senior and executive roles continues to perpetuate a cycle of inequality, limiting the potential for diverse perspectives in decision-making processes.

(f) Gender Wage Gap Analysis

The gender wage gap persists across almost all industries, although the degree of disparity varies. Women, on average, earn less than their male counterparts, even when controlling for factors such as education and experience. This gap is further exacerbated by race, with women of color experiencing even greater wage disparities compared to white women and men of all races. For example, Black and Hispanic women often face the largest income discrepancies, earning a fraction of what white men earn for similar roles. Closing this gap requires addressing systemic issues such as pay transparency, equitable pay practices, and the undervaluation of work traditionally performed by women.

(g) Intersectionality in the Workplace

Intersectionality, the concept that various forms of social stratification, such as race, gender, and class, intersect to create unique dynamics and effects, is increasingly recognized as crucial in understanding workforce segmentation. Employees who identify with multiple marginalized groups often encounter compounded challenges that are not captured by examining race or gender in isolation. For example, a Black woman may face different and more complex barriers than a white woman or a Black man, as she navigates biases related to both race and gender. Recognizing and addressing intersectionality is essential for creating truly inclusive workplaces that cater to the needs of all employees, rather than relying on one-size-fits-all diversity initiatives.

Through an examination of these current trends and statistics, it becomes evident that while progress has been made, significant work remains to be done. Understanding these disparities is a crucial step toward fostering a more equitable and inclusive workforce for all.

(h) Implicit Bias and Discrimination

One of the most significant challenges in addressing racial and gender segmentation in the workforce is the pervasive presence of implicit bias and discrimination. Implicit biases are unconscious attitudes or stereotypes that affect understanding, actions, and decisions in an unconscious manner. These biases can lead to discriminatory practices, such as hiring decisions influenced by preconceived notions about a candidate's race or gender. Even when organizations implement policies aimed at promoting equality, these deep-seated biases can undermine those efforts, perpetuating a cycle of inequality. For instance, studies have shown that resumes with names perceived as ethnically diverse may receive fewer callbacks than those with more traditionally "white-sounding" names. This underscores the need for comprehensive training programs and awareness initiatives to help combat these biases in the workplace.

(i) Lack of Representation in Leadership Roles

Another significant barrier is the lack of representation of racial minorities and women in leadership roles. Despite progress in various sectors, the upper echelons of many organizations remain predominantly occupied by white males. This disparity not only limits the diversity of perspectives in decision-making processes but also perpetuates a cycle where minority groups see fewer role models and pathways to advancement. The "glass ceiling" effect continues to hinder the career progression of women and minorities, making it difficult for them to ascend to executive positions. This underrepresentation can also affect organizational culture and priorities, as leadership often sets the tone for inclusivity and equity within a company.

(j) Resistance to Diversity Initiatives

Resistance to diversity initiatives is another formidable challenge facing organizations today. Some employees and leaders may perceive these initiatives as unnecessary or as tokenistic measures that prioritize diversity over merit. This perception can lead to pushback and a lack of genuine engagement with diversity and inclusion programs. Additionally, there may be a fear of change or a belief that the current systems and structures are sufficient, despite evidence to the contrary. Organizations must work to overcome these misconceptions by demonstrating the tangible benefits of a diverse workforce, such as improved innovation, better decision-making, and enhanced employee satisfaction. Successful diversity initiatives require buy-in from all levels of an organization, a commitment to long-term cultural change, and a willingness to address and dismantle systemic barriers.

(k) The exploration of racial and gender segmentation in the workforce

The exploration of racial and gender segmentation in the workforce reveals persistent challenges that continue to shape employment landscapes. Historically, both racial and gender segmentation have evolved from deeply rooted societal norms and legal frameworks that perpetuated inequality. Despite progress, modern workplaces still display significant disparities, with racial and gender lines often influencing hiring practices, wage distribution, and career advancement opportunities. Current statistics highlight prevalent racial disparities across industries, exacerbated by a persistent gender wage gap. Moreover, the concept of intersectionality underscores the compounded disadvantages faced by individuals who belong to multiple marginalized groups. Challenges such as implicit bias and discrimination remain prevalent, posing significant barriers to achieving equitable workplaces. The underrepresentation of minorities and women in leadership positions further illustrates the systemic nature of these issues. Additionally, resistance to diversity and inclusion initiatives, whether overt or subtle, hinders progress and underscores the need for more robust strategies to foster inclusive environments.

Looking forward, addressing workforce segmentation requires a multi-faceted approach that involves policy reforms, organizational commitment, and cultural shifts. Companies must prioritize diversity and inclusion as core values, implementing comprehensive strategies that address implicit biases and

promote equitable opportunities for all employees. This includes fostering environments where diverse voices are not only heard but are influential in decision-making processes.

Investing in mentorship and leadership programs for underrepresented groups can help bridge the representation gap in leadership roles. Moreover, transparent reporting and accountability measures can drive progress by holding organizations responsible for their diversity goals. On a broader scale, societal change is essential. Education systems and policymakers must collaborate to dismantle structural inequalities that begin well before individuals enter the workforce.

1.12.14 Signaling Theory

Signaling Theory is a foundational concept in various fields, including economics, biology, and game theory. It provides a framework to understand how individuals and entities communicate information indirectly through actions, attributes, or signals. At its core, the theory addresses the problem of information asymmetry, where one party possesses more or better information than the other. In such scenarios, signals observable actions or characteristics are used to convey hidden qualities or intentions to others.

The theory gained prominence in the mid-20th century, particularly in economics, as scholars sought to explain behaviors in markets where information is imperfect. For instance, potential employees may use educational degrees as signals to demonstrate competence to employers, who cannot directly observe an individual's productivity or skills prior to hiring. This illustrates how signaling helps bridge the gap between private information and public perception.

Beyond economics, signaling theory extends to biology, explaining how organisms communicate fitness, health, or reproductive availability through various biological signals. Whether it is a peacock's vibrant plumage or a human's facial expressions, such signals can influence mate selection, social hierarchy, and survival strategies.

Signaling Theory has also been instrumental in the development of game theory, providing insights into strategic interactions where players must make decisions based on the signals they receive from others. In competitive environments, understanding and interpreting signals accurately can be the key to gaining strategic advantages.

As we delve deeper into this article, we will explore the origins and development of Signaling Theory, its diverse applications, and the profound impact it has had across multiple disciplines. Through this exploration, we aim to uncover the mechanisms, effectiveness, and challenges associated with signals in various contexts, ultimately highlighting the theory's significance in understanding complex communication processes.

1.12.15 Labor Market Theory

The labor market is a crucial component of any economy, serving as the platform where workers and employers interact and negotiate employment terms. Labor market theory provides a framework to understand how these interactions shape employment, wages, and the distribution of labor resources.

Labor market theory examines the dynamics between individuals seeking employment (labor supply) and businesses or organizations seeking workers (labor demand). It is fundamental in understanding how labor markets function and respond to various economic forces. This theory is important because it informs policymakers and economists about the mechanisms behind employment levels, wage structures, and productivity within an economy. Understanding labor market theory can help address issues such as unemployment, income inequality, and economic growth.

The study of labor markets has evolved significantly over time, with various economic thinkers contributing to the development of labor market theory. In the 18th century, Adam Smith laid the groundwork with his ideas on the division of labor and the invisible hand guiding markets. In the 19th

century, Karl Marx provided a critical perspective on labor exploitation and class struggles. The 20th century saw the emergence of new theories, such as John Maynard Keynes' focus on aggregate demand and its influence on employment, and Milton Friedman's natural rate of unemployment concept. These historical developments have shaped contemporary labor market theory, incorporating diverse viewpoints and methodologies.

1.12.16 Supply and Demand in the Labor Market

The labor market operates under the fundamental economic principles of supply and demand, where the interaction between employers and potential employees determines employment levels and wage rates. Understanding these dynamics is crucial for analyzing how labor markets function and respond to various economic conditions.

1.12.17 Factors Affecting Labor Supply

The supply of labor is primarily influenced by the working-age population, which includes demographic factors such as age, gender, and education levels. Additionally, cultural attitudes towards work, labor force participation rates, and immigration policies can significantly impact labor supply. For instance, an increase in educational attainment often leads to a more skilled labor force, which can shift the supply curve. Economic incentives, such as wages and benefits, also play a vital role, as higher compensation may encourage more individuals to enter the workforce or work additional hours.

1.12.17.1 Determinants of Labor Demand

Labor demand is driven by the needs of employers and is closely linked to the level of economic activity. Key factors influencing labor demand include technological advancements, which can both create and eliminate jobs, and the overall productivity of workers. Companies demand labor to the extent that it contributes to their production processes, and this demand is often contingent on the demand for the goods and services they produce. Additionally, macroeconomic conditions, such as business cycles and fiscal policies, can lead to fluctuations in labor demand. For example, during a recession, businesses may reduce their workforce in response to decreased consumer demand.

1.12.17.2 Equilibrium in the Labor Market

Equilibrium in the labor market occurs when the quantity of labor supplied equals the quantity demanded, resulting in a stable employment rate and wage level. This equilibrium is dynamic and can be influenced by shifts in either supply or demand. For instance, an increase in labor supply, perhaps due to an influx of workers or higher participation rates, may lead to lower equilibrium wages if demand remains constant. Conversely, a surge in labor demand, driven by robust economic growth, might result in higher wages and increased employment. However, achieving equilibrium is not always straightforward due to wage rigidity, information asymmetries, and other market imperfections that can lead to unemployment or labor shortages.

Understanding the interplay of supply and demand in the labor market is essential for assessing how economic policies and external factors affect employment and wage levels. Policymakers and economists use these insights to devise strategies that promote a more efficient and equitable labor market.

1.12.17.3 Wages and Compensation

The study of wages and compensation is a central component of labor market theory, as it examines how workers are remunerated for their labor and the various factors that influence these payments.

Understanding wage dynamics is crucial for evaluating economic efficiency, equity, and the overall health of the labor market.

1.12.17.4 Theories of Wage Determination

There are several theories that seek to explain how wages are determined in the labor market. The most classical of these is the marginal productivity theory, which posits that wages are determined by the marginal contribution of a worker to the production process. According to this theory, an employee is paid a wage equivalent to the value of the additional output generated by their labor.

Another significant theory is the bargaining theory of wages, which suggests that wages are the result of negotiations between employers and employees. This theory emphasizes the role of power dynamics, institutional frameworks, and collective bargaining in shaping wage outcomes.

The efficiency wage theory introduces the concept that employers may pay above-market wages to boost productivity, reduce turnover, and attract higher-quality candidates. This theory suggests that higher wages can lead to better performance and reduced costs associated with training and recruitment.

1.12.17.5 Role of Unions

Unions have historically played a vital role in influencing wages and working conditions. Through collective bargaining, unions negotiate with employers on behalf of their members to secure higher wages, benefits, and improved working conditions. The presence of unions can lead to wage premiums for unionized workers compared to their non-unionized counterparts.

Unions also impact wage structures by advocating for minimum wage laws and other labor protections that can elevate the wage floor for all workers. However, the influence of unions has been declining in many countries due to various economic, political, and social factors, which has implications for wage dynamics and income inequality.

1.12.17.6 Impact of Minimum Wage Laws

Minimum wage laws are critical policy tools used to set the lowest legal wage that employers can pay their workers. These laws aim to protect workers from exploitation and reduce poverty by ensuring a basic standard of living. The effects of minimum wage laws on the labor market can be complex and are subject to intense debate among economists.

Proponents argue that minimum wage laws can lift incomes for low-wage workers, reduce poverty, and stimulate consumer demand. Critics, however, contend that setting wages above equilibrium levels might lead to job losses, particularly for low-skilled workers, as employers may reduce hiring or increase automation to mitigate higher labor costs.

The impact of minimum wage laws varies across different regions and industries, depending on economic conditions, the level of the minimum wage relative to median earnings, and enforcement mechanisms. Policymakers must carefully consider these factors to balance the benefits of wage protection with potential adverse effects on employment.

Understanding the intricacies of wages and compensation is essential for analyzing labor market dynamics and formulating effective economic policies. As the labor market continues to evolve, ongoing research and analysis are needed to address the challenges and opportunities presented by changing wage structures and labor practices.

1.12.17.7 Unemployment and Job Search

Unemployment is a critical aspect of labor market theory, influencing both economic stability and individual livelihoods. Understanding the different types of unemployment and the dynamics of job search is essential for formulating effective labor policies.

1.12.17.7.1 Types of Unemployment

Unemployment can be categorized into several types, each with distinct causes and implications:

- **Frictional Unemployment:** This occurs when individuals are temporarily between jobs or are entering the labor force for the first time. It is often considered a natural form of unemployment, reflecting the time needed for job seekers to find positions that match their skills and preferences.
- **Structural Unemployment:** This type arises from a mismatch between the skills of the labor force and the needs of employers. Structural unemployment can result from technological advancements, changes in consumer demand, or shifts in the global economy, necessitating retraining and education to align worker skills with market demands.
- **Cyclical Unemployment:** Linked to the economic cycle, cyclical unemployment increases during recessions and decreases during periods of economic expansion. It reflects the reduced demand for goods and services, leading to lower demand for labor.
- **Seasonal Unemployment:** This occurs in industries with seasonal patterns of work, such as agriculture, tourism, and retail. Workers in these sectors may face unemployment during off-peak periods.

1.12.17.7.2 Job Search Theory

Job search theory examines the process by which individuals seek and obtain employment, considering the time, effort, and resources involved. The theory highlights several factors affecting job search outcomes:

- **Search Costs:** These include the monetary and time costs associated with finding a job, such as travel expenses, resume preparation, and time spent on applications and interviews.
- **Information Asymmetry:** Often, job seekers lack complete information about available opportunities, while employers may not fully assess applicant qualifications. This can prolong the job search process and lead to suboptimal employment matches.
- **Reservation Wage:** The minimum wage a job seeker is willing to accept plays a crucial role in the job search. Individuals may adjust their reservation wage based on their personal circumstances, the unemployment rate, and perceived job market conditions.

1.12.17.7.3 Government Policies and Programs

Governments implement various policies and programs to mitigate unemployment and facilitate job searches:

- **Unemployment Benefits:** Financial assistance for unemployed individuals helps cushion the economic impact of job loss and allows for a more thorough job search, potentially leading to better job matches.
- **Training and Education Programs:** Initiatives to enhance skills and retrain workers align the workforce with market demands, reducing structural unemployment.
- **Job Matching Services:** Public employment services and job placement agencies improve the flow of information between job seekers and employers, reducing search costs and information asymmetry.

- **Labor Market Regulations:** Policies regarding hiring, firing, and working conditions can influence unemployment levels, making it crucial for governments to balance protection for workers with the flexibility needed by employers.

Through a nuanced understanding of unemployment and job search dynamics, policymakers and economists can develop strategies to enhance labor market efficiency and reduce the economic and social costs of unemployment.

1.12.17.8 Geographic Segmentation in the Labor Market

Geographic segmentation can be observed in the disparities between urban and rural labor markets. A study by the Brookings Institution (2019) found that urban areas have experienced significant job growth in high-paying industries, whereas rural areas have seen stagnation or decline. This urban-rural divide has resulted in a concentration of opportunities in cities, pushing rural workers into lower-paying jobs or leading to out-migration in search of better opportunities.

For example, the tech industry has largely localized in urban centers like Silicon Valley, attracting a highly skilled workforce and driving up wages. Conversely, rural areas often rely on industries such as agriculture or manufacturing, which typically offer lower wages and less job security (Fikri & Wright, 2019). This geographic segmentation exacerbates existing inequalities and limits economic mobility for rural workers.

In exploring the labor market absorption rate of graduates from UNTL, UNPAZ, UNDIL, ICS and ISC within the last five years (2018-2022), the study will draw upon these theories to better understand the data. The choice of these theories will allow for a comprehensive investigation of the various individual, institutional, and labor market factors that may influence graduates' labor market outcomes.

1.12.17.9 Importance of Labor Market Absorption Rate

The labor market absorption rate is a crucial indicator of the effectiveness and relevance of higher education institutions. It measures the percentage of graduates who are able to secure employment within a certain period after graduation. A high labor market absorption rate suggests that the education provided by universities aligns with the demands of the job market, indicating the quality and relevance of the programs offered (Deterding & Pedulla, 2016; Hudson, 2007).

On the other hand, a low labor market absorption rate raises concerns about the employability of graduates and the effectiveness of the higher education system. It highlights the need for closer collaboration between universities and industries to bridge the gap and ensure that graduates are adequately prepared for the workforce (Hudson, 2007). Higher education has undergone significant transformations over the past few decades, characterized by rapid expansion and diversification. This massification of higher education has led to an increase in the number of graduates entering the job market.

According to the OECD (2021), the number of graduates from tertiary education has doubled over the last two decades, resulting in heightened competition for available jobs. In this context, the labor market absorption rate becomes even more vital, as it highlights the ability of graduates to secure employment in an increasingly crowded marketplace. Employability has emerged as a central theme in higher education policy discussions and academic research. The term encompasses a range of skills, knowledge, and attributes that enhance an individual's ability to gain and maintain employment (Yorke, 2006). Employability activities in HEIs, such as internships, career counseling, and skills training, are designed to improve graduates' prospects in the labor market. Consequently, the labor

market absorption rate serves as a benchmark for measuring the effectiveness of these employability initiatives.

The alignment of academic curricula with market demands needs is paramount for enhancing employability. Programs that incorporate practical skills, experiential learning, and market demands partnerships tend to produce graduates who are more attractive to employers (Bennett et al., 2008). Research indicates that institutions that actively involve employers in curriculum development experience higher labor market absorption rates (Baker et al., 2019). Effective collaboration between HEIs and industries is essential for bridging the gap between education and employment. Universities that establish partnerships with businesses can offer students valuable internships, work placements, and networking opportunities, significantly enhancing their employability (Baker et al., 2019).

The European Union's University-Business Forum serves as an example of initiatives aimed at fostering such collaborations (Deterding & Pedulla, 2016). The presence and effectiveness of career services within HEIs play a crucial role in improving labor market absorption rates. Institutions that provide comprehensive career counseling, job search support, and skills development workshops equip students with the tools needed to navigate the job market successfully (Hudson, 2007). The development of soft skills, such as communication, teamwork, and problem-solving, is increasingly recognized as vital for employability. Employers often prioritize these attributes alongside academic qualifications when hiring (Yorke, 2006). Programs that emphasize holistic student development tend to produce graduates who are better prepared for the labor market.

Recent studies highlight the varying labor market absorption rates across different fields of study. For instance, engineering and healthcare graduates often experience higher absorption rates, with figures reaching over 80% within six months of graduation (OECD, 2021). In contrast, graduates from humanities and social sciences may face more challenges, with absorption rates as low as 50% (Hudson, 2007). Furthermore, the labor market absorption rate can vary significantly by region and country.

According to the World Bank (2023), countries with robust vocational education and training systems tend to report higher absorption rates, indicating that targeted educational pathways can effectively meet labor market demands. The labor market absorption rate serves as a vital indicator of the effectiveness of higher education institutions in preparing graduates for the workforce. A high absorption rate reflects the relevance of educational programs to the needs of employers, while a low rate raises concerns about the employability of graduates.

Learning from Case Studies of the labor market in the U.S., the labor market absorption rate has shown fluctuations, heavily influenced by economic cycles. For example, data from the National Center for Education Statistics (NCES) indicated that the employment rate for recent graduates was approximately 86% in 2020, following the economic downturn (NCES, 2021). This rate reflects the resilience of U.S. higher education institutions, which often adapt quickly to changing market demands through dynamic curricula and strong employer partnerships. Germany's dual education system, which combines classroom instruction with hands-on training in companies, has contributed to its high labor market absorption rates.

According to the Federal Statistical Office of Germany, the employment rate for vocational graduates was around 90% within six months of graduation (Destatis, 2021). This model demonstrates the effectiveness of integrating practical experience into higher education, providing a potential blueprint for other countries to enhance their absorption rates. In many developing nations, labor market absorption rates are significantly lower, often below 50%. A report by the International Labour Organization (ILO) highlighted that youth unemployment in regions like Sub-Saharan Africa remains alarmingly high, partly due to a lack of alignment between higher education outputs and labor market needs (ILO, 2022). Addressing these disparities through curriculum reform and industry partnerships is crucial for improving employment outcomes. Institutions that embraced this shift reported improved engagement and satisfaction rates among students, which can lead to enhanced

employability (McKinsey & Company, 2021). As remote work becomes more prevalent, graduates who are adept at online collaboration tools and digital communication will have a competitive edge in the job market. Different institutions may employ varying methodologies for tracking graduate employment, leading to inconsistencies in reported absorption rates. Standardized data collection methods and metrics are essential for ensuring comparability and reliability (Hemsley-Brown & Oplatka, 2015).

The timeframe for measuring labor market absorption can influence outcomes. Graduates may secure employment after the typical six-month mark, particularly in fields with longer hiring processes. Institutions should consider extending the measurement period to better capture employment trends (Deterding & Pedulla, 2016).

The absorption rate often fails to account for underemployment, where graduates are employed in positions that do not require their level of education or skills. This is particularly relevant in oversaturated fields, where graduates may accept lower-quality jobs to remain in the labor market. A comprehensive measure of employability should include metrics on job satisfaction and relevance to field of study (Hudson, 2007). The labor market absorption rate is a critical indicator of the effectiveness of higher education institutions in preparing graduates for the workforce. Comprehensive understanding and analysis of this metric highlight the need for ongoing collaboration between educational institutions and industries, the importance of relevant curricula, and the necessity for enhanced career support services.

As the landscape of employment continues to evolve due to technological advancements and shifting economic conditions, HEIs must remain agile and responsive to these changes. By implementing the recommendations outlined in this report, educational institutions can improve labor market absorption rates, ultimately enhancing the employability of graduates and contributing positively to the economy. To emphasis on soft skills, employers are increasingly recognizing the value of soft skills such as communication, teamwork, adaptability, and problem-solving alongside technical expertise. Research shows that graduates who demonstrate strong soft skills are more likely to secure employment and excel in their roles (Melguizo & Wolniak, 2009).

According to a report by McKinsey, up to 30% of the workforce in some developed countries is engaged in gig work (McKinsey & Company, 2021). This flexibility allows graduates to enter the job market quickly, although it may not always provide the stability or benefits associated with traditional employment. While gig work can provide immediate income, it may lead to underemployment, particularly if graduates are working in roles that do not utilize their full skill set or educational background. This situation can complicate the assessment of labor market absorption rates, as graduates may be employed but not in positions aligned with their qualifications.

Data from the Bureau of Labor Statistics (BLS) in the United States shows that STEM graduates experience higher absorption rates, with many securing employment shortly after graduation due to the ongoing talent shortage in these sectors (BLS, 2022). Institutions focusing on STEM education may see better employment outcomes for their graduates, prompting a shift in enrollment patterns. A survey by the National Association of Colleges and Employers (NACE) indicated that 92% of employers prioritize hiring candidates with strong interpersonal skills (NACE, 2021). This emphasizes the need for HEIs to focus on holistic education that prepares graduates for real-world challenges. According to a report by the World Economic Forum, while 85 million jobs may be displaced by automation by 2025, 97 million new roles may emerge that are more suited to the changing division of labor (World Economic Forum, 2020). This scenario underscores the necessity for HEIs to prepare graduates for new job categories that will increasingly require a blend of technical and soft skills.

1.12.18 Employment Landscape in Health Sciences

The employment landscape for health professionals in Timor-Leste is shaped by various dynamics, including government policies, healthcare funding, and the socio-economic context of the country. As the nation strives to improve its healthcare system, understanding these factors is essential for both prospective healthcare workers and policymakers. While the demand for healthcare professionals remains high, the job market can be competitive, particularly for new graduates. Understanding these dynamics is crucial in assessing why certain graduates may struggle to find employment (Akassh et al., 2020). The demand for healthcare professionals in Timor-Leste continues to grow, driven by factors such as an aging population, increased prevalence of chronic diseases, and a focus on improving healthcare access and quality. The government's commitment to expanding healthcare services has led to a need for more trained professionals, making the absorption of graduates into the workforce a critical issue (Curtis et al., 2019).

The employment landscape for health professionals in Timor-Leste is shaped by a variety of factors, including government health policies, economic conditions, and the educational framework. As the nation seeks to improve its healthcare services, understanding the challenges and opportunities for healthcare graduates is essential. One of the primary drivers of demand for healthcare professionals in Timor-Leste is the aging population. With an increasing proportion of elderly citizens, there is a heightened need for medical care and specialized services. Additionally, the rise in chronic diseases such as diabetes, hypertension, and cardiovascular issues has necessitated a more robust healthcare workforce. According to a report by Curtis et al. (2019), the government has recognized this trend and is committed to expanding healthcare services to meet these challenges.

The Timorese government has made significant strides in improving healthcare access and quality. Policies aimed at expanding healthcare infrastructure and increasing funding for healthcare services have led to a growing need for trained professionals. This commitment has translated into various initiatives, including the establishment of new healthcare facilities and the introduction of training programs for healthcare workers. According to Akassh et al. (2020), this competition can lead to frustrations for recent graduates who may struggle to secure positions in their field.

Another challenge is the disparity in job opportunities between urban and rural areas. While urban centers may have more healthcare facilities and job openings, rural regions often face a shortage of healthcare professionals. Graduates may prefer to work in urban settings due to better job prospects and living conditions, leaving rural areas underserved.

The overall economic climate in Timor-Leste also plays a significant role in the employment landscape. Economic constraints can affect government funding for healthcare services, leading to hiring freezes or a reduction in available positions. When financial resources are limited, the expansion of healthcare services may be stymied, directly impacting job availability for health professionals.

The quality of health education programs directly affects the employability of graduates. Institutions that offer comprehensive training programs that align with the needs of the healthcare system will better prepare students for the workforce. However, disparities in educational quality can exist, leading to variations in the readiness of graduates to meet job market demands.

For healthcare professionals to remain competitive in the job market, ongoing education and professional development are essential. The healthcare field is continually evolving, and professionals must keep up with the latest advancements in medical science and healthcare practices. Programs that promote lifelong learning can empower graduates to enhance their skills and increase their employability. Building a professional network can significantly enhance a graduate's job prospects. Engaging with professional associations, attending conferences, and participating in community health initiatives can provide valuable connections and job leads. Networking can also

facilitate mentorship opportunities, where experienced professionals can offer guidance and support to newcomers in the field.

Practical experience through internships or volunteer work can provide graduates with a competitive edge. These opportunities allow students to gain real-world experience, develop their skills, and demonstrate their commitment to the profession. Employers often value candidates who have practical experience, making internships a crucial part of a graduate's preparation for entering the job market. Graduates should focus on showcasing their strengths, such as clinical skills, teamwork, and communication abilities. Additionally, being well-prepared for interviews can set candidates apart from the competition.

The employment landscape for health professionals in Timor-Leste is characterized by a growing demand driven by an aging population, chronic diseases, and government initiatives aimed at improving healthcare access. However, challenges such as high competition, limited rural opportunities, and economic constraints can hinder the absorption of new graduates into the workforce. To enhance employability, graduates should focus on building professional networks, gaining practical experience through internships, and effectively marketing their skills. As the healthcare sector continues to evolve, understanding these dynamics will be crucial for new graduates seeking to establish successful careers in health sciences.

International organizations play a crucial role in supporting the development of the healthcare workforce in Timor-Leste. Agencies such as the World Health Organization (WHO) and various non-governmental organizations (NGOs) provide technical assistance, training, and funding for health initiatives. These partnerships help strengthen the health system and expand the capacity of healthcare professionals.

The employment landscape for healthcare professionals in Timor-Leste is marked by both challenges and opportunities. While the demand for healthcare services continues to grow due to demographic shifts and government initiatives, the job market remains competitive, particularly for new graduates. By addressing the barriers to employment, such as limited job opportunities in rural areas, economic constraints, and gender disparities, stakeholders can work towards creating a more inclusive and sustainable healthcare workforce.

Empowering healthcare professionals through targeted training, community engagement, and the use of technology will enhance their employability and improve healthcare outcomes in Timor-Leste. As the nation continues to develop its health system, it is crucial to foster an environment that supports the growth and retention of skilled healthcare workers, ultimately benefiting the population as a whole.

This extended exploration provides a comprehensive understanding of the employment landscape in health sciences in Timor-Leste, highlighting the challenges and potential solutions for enhancing job opportunities for healthcare professionals. If you would like to further expand on any specific section or need additional topics covered, please let me know! Sure! Let's further explore the employment landscape in health sciences in Timor-Leste, diving into additional aspects such as the impact of globalization, the influence of cultural factors on healthcare employment, and the future outlook for health professionals in the region.

The global movement of healthcare professionals can affect local employment landscapes. Many healthcare workers from Timor-Leste seek opportunities abroad for better pay and working conditions, which can lead to a brain drain. This migration can exacerbate existing shortages of skilled professionals in the country, making it vital for the government to find ways to retain talent and create appealing work environments. To counterbalance the effects of globalization, Timor-Leste can benefit from collaborative programs with international institutions. Cultural perceptions of healthcare professions can significantly impact the attractiveness of these careers to potential students. In Timor-Leste, traditional beliefs and customs often influence health-seeking behaviors and the overall

perception of healthcare services. This cultural context may lead to reluctance among some individuals to pursue careers in healthcare, particularly in settings that clash with traditional practices. To align healthcare professions with cultural values, it is essential to promote local health initiatives that incorporate traditional practices alongside modern medicine. Training healthcare professionals who understand and respect cultural beliefs can enhance community trust and encourage greater participation in health services. This dual approach can make healthcare careers more appealing to local populations.

As Timor-Leste continues to develop, the healthcare landscape will evolve, resulting in changing employment needs. The increasing prevalence of non-communicable diseases, mental health issues, and the need for preventive care will require healthcare professionals with specialized training. This shift highlights the importance of adapting educational programs to prepare graduates for emerging healthcare challenges.

The integration of technology into healthcare delivery will shape the future of health employment. As telemedicine and digital health solutions become more prevalent, there will be a growing need for professionals skilled in these areas. Training programs that focus on digital health competencies will be essential to equip graduates with the skills necessary to succeed in a technology-driven healthcare environment. Public health will play a crucial role in improving health outcomes and creating employment opportunities. Investments in public health initiatives such as disease prevention, health education, and community outreach can lead to job creation for healthcare professionals. Establishing a robust policy framework that supports the health workforce is essential for sustainable employment. The government should focus on long-term strategies that address workforce planning, training, and retention. Policies that promote continuing education, competitive salaries, and supportive work environments can help retain healthcare professionals and ensure their commitment to serving the community.

The employment landscape in health sciences in Timor-Leste is shaped by a complex interplay of factors, including the demand for healthcare services, training and education, cultural influences, and the impact of globalization. While challenges persist, there are numerous opportunities for enhancing the job market for healthcare professionals.

While there is a growing demand for healthcare services driven by demographic changes and government initiatives, challenges such as high competition, economic constraints, and disparities in job opportunities persist. To enhance the employability of healthcare graduates, a comprehensive approach that includes effective workforce planning, community engagement, and investment in education and training is essential. By addressing the barriers to employment and fostering an environment that supports healthcare professionals, Timor-Leste can build a resilient healthcare workforce capable of meeting the needs of its population.

The future of healthcare employment in Timor-Leste is promising, provided that stakeholders including government agencies, educational institutions, and international organizations collaborate to create sustainable solutions. The employment landscape for health sciences in Timor-Leste is multifaceted, characterized by both challenges and opportunities. While there is a growing demand for healthcare professionals due to demographic changes, chronic disease prevalence, and government initiatives, the competitive job market presents barriers for new graduates. To enhance employability, it is crucial to address issues such as limited job opportunities in rural areas, economic constraints, and gender disparities. Moreover, fostering a culture that values healthcare professions and encourages local engagement will help build a sustainable health workforce. As the nation continues to develop its healthcare system, understanding and addressing these dynamics will be vital for ensuring that healthcare professionals can thrive and contribute to improved health outcomes for all Timorese citizens. A comparison with previous years reveals a troubling trend. For example, the employment rate for health science graduates dropped by approximately 4.7% between Fall 2021 and

Fall 2022, indicating a potential oversaturation of graduates in specific fields or a mismatch between graduate skills and employer expectations (Gomes & Carlos, 2023).

1.12.19 The Importance of Higher Education in Labor Market

Higher education plays a crucial role in preparing individuals for the labor market. It equips students with the knowledge, skills, and competencies necessary to succeed in their chosen fields. In Timor-Leste, a young and developing nation, the absorption of graduates into the labor market is a critical factor for the country's economic growth and development (Dickens & Lang, 1993). This research discusses the importance of higher education in labor market absorption in Timor-Leste, exploring various aspects such as the relevance of curriculum, skills development, and the role of higher education institutions in bridging the gap between education and employment. The youth population is rapidly growing, the education system must adapt to meet the demands of an evolving labor market. This study delves into the importance of higher education in Timor-Leste, highlighting its impact on employment, economic growth, and social development. The economy grew by an estimated 3.2% in 2022, reflecting gradual recovery from the impacts of the global pandemic and other economic challenges (Asian Development Bank, 2023). However, the country faces significant hurdles, including high unemployment rates, particularly among youth, and a limited diversity in its economic sectors.

Timor-Leste's higher education landscape comprises 18 institutions offering degree programs, primarily concentrated in the capital city, Dili (Asian Development Bank, 2023). Despite the establishment of these institutions, the quality of education remains a concern, with many graduates lacking the necessary skills to meet labor market demands. A workforce development strategic review indicated that enhancing the quality of education and aligning it with market needs is paramount for fostering economic growth (Department of Foreign Affairs and Trade, Australia, 2023). Higher education institutions are crucial for developing the skills required in the labor market. According to the World Bank (2022), graduates from higher education programs are more likely to secure employment and earn higher wages compared to those without such qualifications. In Timor-Leste, the increasing demand for skilled labor in sectors such as healthcare, education, and infrastructure underscores the necessity for a robust higher education system that can produce graduates equipped to fill these roles. The correlation between higher education and economic growth is well-documented. Nations that invest in higher education tend to experience higher productivity levels and economic resilience (OECD, 2021). In the context of Timor-Leste, fostering a skilled workforce through higher education can lead to improved economic performance. As the economy diversifies and develops, the need for advanced skills in areas such as technology, engineering, and management becomes critical.

Higher education also plays a key role in promoting social equity and development. Access to quality education can empower marginalized communities and contribute to reducing inequality (United Nations Educational, Scientific and Cultural Organization, 2022). In Timor-Leste, where disparities exist between urban and rural populations, improving access to higher education for all demographics is essential for fostering inclusive growth.

Despite the recognized importance of higher education, several challenges hinder its effectiveness in the labor market:

- **Quality of Education:** A significant concern in Timor-Leste is the quality of education provided by higher education institutions. Many graduates lack the practical skills and competencies necessary for employment, leading to a mismatch between education and labor market needs (Asian Development Bank, 2023).
- **Limited Industry Collaboration:** There is often a disconnect between higher education institutions and the industries that employ graduates. Effective collaboration is necessary to ensure curricula

are aligned with current labor market demands (Department of Foreign Affairs and Trade, Australia, 2023).

- Underemployment: Many graduates in Timor-Leste find themselves in underemployment situations, where they are overqualified for the jobs they hold. This not only reduces individual job satisfaction but also limits the overall productivity of the workforce.
- Youth Unemployment: The youth unemployment rate remains alarmingly high in Timor-Leste, exacerbating the challenges of integrating graduates into the labor market. Without targeted initiatives to support youth employment, the potential benefits of higher education may not be fully realized.

The importance of higher education in the labor market of Timor-Leste cannot be overstated. As the nation continues to develop, aligning educational outcomes with labor market needs is crucial for economic growth and social development. By addressing the challenges faced in the higher education sector and implementing targeted strategies, Timor-Leste can cultivate a skilled workforce ready to contribute to the nation's future.

The quality of higher education in Timor-Leste is a pressing concern. Many institutions struggle with limited resources, inadequate infrastructure, and a shortage of qualified faculty. For instance, a study by the World Bank (2022) indicated that only 50% of higher education faculty members hold a graduate degree, which negatively impacts the quality of education delivered. Consequently, graduates often enter the job market with insufficient practical skills, limiting their employability.

The lack of hands-on experience and real-world application in the curriculum has resulted in a workforce that is ill-prepared for the challenges of modern employment. Employers frequently study that graduates lack critical thinking, problem-solving abilities, and technical skills relevant to their industries (Asian Development Bank, 2023). This skill gap not only affects individual job prospects but also hampers national productivity and economic competitiveness.

The relationship between higher education institutions and the labor market in Timor-Leste is characterized by a disconnect. Many educational programs do not adequately reflect the needs of local industries, leading to a surplus of graduates in certain fields while other sectors face skill shortages (Department of Foreign Affairs and Trade, Australia, 2023).

Enhancing collaboration between educational institutions and industries can yield significant benefits. Such partnerships can facilitate internships, apprenticeships, and job shadowing opportunities, allowing students to gain practical experience and insights into the realities of the job market. For example, partnerships with local businesses can lead to co-designed curricula that better reflect the skills and competencies employers seek.

Timor-Leste faces a youth unemployment crisis, with rates estimated at around 12% for individuals aged 25-30 (Gomes & Carlos, 2023). This high level of unemployment poses a significant risk to social stability and economic growth. Many young graduates find themselves in low-skilled jobs or are forced to work in the informal sector, where job security and benefits are limited. Underemployment is another critical issue, where graduates are working in positions that do not utilize their skills or educational qualifications. This phenomenon not only leads to dissatisfaction among graduates but also represents a loss of potential economic output for the country. Addressing both youth unemployment and underemployment is essential for maximizing the benefits of higher education investment.

Timor-Leste has received substantial international support for its education sector from various countries and organizations, including the United Nations, the World Bank, and the Asian Development Bank. These collaborations have aimed to enhance the quality of education, develop infrastructure, and provide technical assistance to local institutions (Asian Development Bank, 2023). To maximize the benefits of international assistance, Timor-Leste should focus on establishing long-

term partnerships with foreign universities and educational institutions. Collaborative programs, such as faculty exchanges, joint research initiatives, and dual degree offerings, can enrich the educational experience and provide local institutions access to global best practices (Department of Foreign Affairs and Trade, Australia, 2023). Research capabilities in higher education institutions in Timor-Leste remain underdeveloped. Limited funding, lack of infrastructure, and inadequate training have constrained the ability of universities to engage in meaningful research activities. A focus on enhancing research capacities is essential for fostering innovation and contributing to the economic development of the country (United Nations Educational, Scientific and Cultural Organization, 2022). Encouraging a research culture within higher education institutions can lead to the development of solutions that address local challenges. Governments and educational authorities should provide incentives for research activities and foster partnerships with industries to ensure that research outputs translate into practical applications and drive economic growth. Globalization has significantly influenced higher education, with institutions increasingly competing on an international scale. Students now have access to a wealth of online resources and programs from universities around the world. Timor-Leste must adapt to these trends by enhancing its educational offerings and promoting its institutions as viable options for both local and international students (OECD, 2021).

The emergence of the gig economy presents both challenges and opportunities for higher education. As more individuals pursue freelance, contract, or part-time work, the demand for flexible educational programs that accommodate non-traditional students is increasing. Institutions in Timor-Leste should consider offering modular courses, online certifications, and skills training programs that cater to this growing segment of the workforce.

To evaluate the effectiveness of higher education in meeting labor market needs, it is crucial to establish metrics and data collection systems that can provide insights into graduate outcomes. Tracking employment rates, job satisfaction, and income levels among graduates can help assess whether educational programs are successfully preparing students for the workforce (OECD, 2021).

This comprehensive study underscores the critical role of higher education in the labor market of Timor-Leste, presenting an in-depth analysis of current challenges and opportunities. It emphasizes the importance of strategic reforms, collaboration between educational institutions and industries, and the promotion of inclusive and practical educational pathways to enhance the employability of graduates and contribute to the nation's economic development.).

This comprehensive study emphasizes the critical importance of higher education in the labor market of Timor-Leste. By addressing the challenges faced by the education system and implementing strategic reforms, the country can cultivate a skilled and adaptable workforce, ultimately contributing to its economic development and social progress.

As the gig economy continues to grow, higher education institutions in Timor-Leste must adapt their curricula and training programs to prepare graduates for this changing landscape. This involves equipping students with entrepreneurial skills, digital literacy, and the ability to market themselves effectively in a competitive environment. Institutions should consider offering courses focused on freelancing, digital marketing, and other relevant skills that empower graduates to thrive in non-traditional employment settings.

Higher education institutions can implement various strategies to promote soft skills development. These may include incorporating group projects, presentations, and community service into the curriculum. Additionally, workshops and seminars focused on personal development can help students build confidence and enhance their interpersonal skills, ultimately improving their employability.

Alumni networks can play a critical role in enhancing the employability of graduates. Successful alumni can provide mentorship, internships, and job referrals to recent graduates, creating a supportive ecosystem that fosters career development. In Timor-Leste, establishing strong alumni

associations and networks can strengthen connections between graduates and the labor market (Department of Foreign Affairs and Trade, Australia, 2023).

As global concerns about climate change and sustainability intensify, higher education institutions are uniquely positioned to lead initiatives that promote environmental stewardship. In Timor-Leste, integrating sustainability concepts into the curriculum can empower graduates to contribute to sustainable development goals (SDGs) (United Nations Educational, Scientific and Cultural Organization, 2022).

Investing in mental health resources, such as counseling services and stress management workshops, can significantly improve student retention and success rates. Additionally, creating a supportive campus environment that encourages open discussions about mental health can help destigmatize these issues and promote a culture of well-being. Student support services play a critical role in ensuring student success and well-being. In Timor-Leste, many students face challenges related to mental health, financial stress, and academic pressure. Institutions must prioritize the development of comprehensive support systems to help students navigate these challenges and enhance their overall educational experience (World Bank, 2022).

This comprehensive study emphasizes that the future of Timor-Leste's labor market hinges on the effective integration of higher education and its alignment with the evolving demands of industries. Through collaboration, targeted reforms, and a commitment to quality and accessibility, Timor-Leste can build a robust educational framework that supports the aspirations of its youth and the economic development of the nation. Institutions in Timor-Leste should consider developing short-term courses, certifications, and online learning modules to address the needs of those seeking to upskill or reskill for gig work. This adaptability can help higher education institutions remain relevant in a rapidly changing labor market.

1.12.20 The Context of Labor Market Absorption in Timor-Leste

The labor market in Timor-Leste faces a multitude of challenges, stemming from its limited natural resources and a relatively small population of about 1.3 million people. These factors significantly impact the availability of skilled labor, particularly in critical areas such as health science, where the demand for qualified professionals continues to rise.

The health sector in Timor-Leste has been identified as a priority area for development, as the country grapples with public health issues such as maternal and child mortality, infectious diseases, and a lack of access to healthcare services in rural areas (Reich et al., 1973b). The government, in collaboration with international organizations and NGOs, is working towards strengthening the health workforce, recognizing that a knowledgeable and skilled workforce is essential for improving health outcomes and ensuring the sustainability of health services. Recognizing the importance of education, particularly higher education, the Timorese government has made significant investments in training programs aimed at enhancing the skills of its healthcare professionals. The establishment of institutions such as the National University of Timor-Leste (UNTL) and other vocational training centers has been crucial in providing the necessary education and training to aspiring health professionals.

Despite these efforts, the absorption of graduates into the labor market remains a pressing concern. The health labor market analysis indicates that there is a disparity between the number of graduates produced by educational institutions and the actual job opportunities available in the health sector. This mismatch leads to underemployment and, in some cases, a brain drain, where skilled professionals seek better opportunities abroad. To address these challenges, the government has implemented various policies aimed at creating a conducive environment for labor market absorption. The Ministry of Health is actively engaged in developing a workforce that is "fit-for-purpose and fit-

for-practice." This involves not only increasing the number of trained health professionals but also ensuring that their skills align with the needs of the healthcare system.

Demographics play a significant role in the labor market dynamics of Timor-Leste. With a youthful population over 65% under the age of 30 the potential for a robust workforce exists. However, harnessing this potential requires addressing educational gaps and ensuring that young people are equipped with the necessary skills to meet labor market demands.

While the government has made commendable strides in investing in education and health workforce development, significant gaps remain in the alignment between educational outcomes and labor market needs. As Timor-Leste continues its journey towards sustainable development, addressing these disparities will be crucial for building a resilient health system capable of providing quality care to its citizens, and and fostering an environment that supports the continuous development of its health workforce, Timor-Leste can ensure better health outcomes and ultimately enhance its overall economic prospects.

1.12.21 The Relevance of Curriculum

The relevance of the curriculum offered by higher education institutions is a key factor in ensuring labor market absorption. The curriculum should align with the needs of the job market and equip students with the skills and knowledge that employers are seeking. A mismatch between the skills acquired through education and the requirements of the labor market can hinder graduates' ability to find employment (Chu et al., 2019; Doherty, 2015).

To address this issue, higher education institutions in Timor-Leste should regularly review and update their curricula to ensure they are in line with market demands . This can be achieved through collaboration between academia and stakeholders, such as conducting industry needs assessments and incorporating industry-relevant projects and internships into the curriculum. By doing so, graduates will be better prepared to meet the expectations of employers and increase their chances of successful labor market absorption (Bhudha et al., 2023; Morales-Doyle, 2018; Muñoz et al., 2020; Sealey & Noyes, 2010; Sivesind, 2022).

1.12.22 Skill Demand and Graduate Preparedness

The relevant curriculum, the development of essential skills is crucial for graduates to succeed in the labor market. While technical knowledge is essential, employers also value soft skills such as communication, problem-solving, teamwork, and critical thinking. These skills enable graduates to adapt to the rapidly changing demands of the labor market and contribute effectively to their workplaces (Bruce et al., 2022; Powell & McGrath, 2019; A. Singh & Singh, 2019).

Higher education institutions in Timor-Leste should prioritize the development of these skills through various pedagogical approaches. This can include interactive and experiential learning methods, group projects, and opportunities for students to engage in extracurricular activities that foster skill development. By nurturing a well-rounded set of skills, higher education institutions can enhance graduates' employability and increase their chances of successful labor market absorption (Alam et al., 2022; Anastasiu et al., 2017; Barr, 2018; Sakamoto, 2019; Telukdarie et al., 2022).

1.12.22.1 A critical issue that emerged from the analysis is the alignment of graduate skills with market demands.

The importance of aligning graduate skills with market demands has become a critical concern for educational institutions. As industries undergo continuous transformation driven by technological advancements and changing economic landscapes, universities are tasked with the responsibility of equipping students with the skills needed to thrive in the workforce (Caniëls & Van den Bosch, 2011;

Ncanywa & Dyantyi, 2022). This document explores the significance of this alignment, examines the current landscape, and offers actionable insights for educational institutions to better prepare graduates for long-term success (Atuhaire et al., 2022).

Traditionally, higher education has focused on imparting knowledge through theoretical coursework. However, this approach has faced increasing scrutiny as employers express concerns about the readiness of graduates entering the workforce. The shift from knowledge-based to skills-based learning emphasizes the need for educational programs to integrate high-demand skills pertinent to the labor market (Saeed et al., 2022).

Engagement with employers and industry groups is essential to identify specific skill gaps and misalignments. For example, while many graduates possess strong theoretical knowledge, they often lack practical skills and soft skills such as communication, teamwork, and adaptability, which are highly valued by employers (Ndofirepi, 2022).

Recent studies have highlighted the challenges faced by graduates, particularly from technical universities, where many students experience unemployment or overqualification for available positions. Research indicates that there is often a significant misalignment between employers' expectations and the skills that graduates possess. For instance, a case study on marketing graduates revealed that while the curriculum covered essential marketing theories, it fell short in providing practical experience and digital marketing skills, which are increasingly demanded by employers. The key strategies for aligning graduate skills with market demands (Gomez & Peter, 2017).

1.12.22.2 Engaging with Stakeholders

One of the foremost strategies for aligning graduate skills with market demands is to establish robust partnerships with stakeholders. Educational institutions should actively engage with employers, industry associations, and alumni to gain insights into the skills that are in demand. Regular feedback from these stakeholders can help shape curricula and ensure that programs remain relevant (Alam & Sharmin, 2023).

1.12.22.3 Incorporating Experiential Learning Opportunities

Experiential learning opportunities, such as internships, co-ops, and project-based learning, can significantly enhance the alignment of graduate skills with market demands. These experiences allow students to apply theoretical knowledge in real-world settings, develop practical skills, and build professional networks (Alam et al., 2022).

1.12.22.4 Continuous Curriculum Evaluation and Adaptation

To remain relevant in a rapidly changing job market, educational programs must undergo continuous evaluation and adaptation. This includes regularly reviewing course content, teaching methods, and assessment strategies to ensure alignment with industry needs (Plant et al., 2019).

1.12.22.5 Fostering Soft Skills Development

While technical skills are important, soft skills such as communication, teamwork, and problem-solving are equally critical for success in the workplace. Educational institutions should prioritize the development of these skills within their programs (Metilda & P.C., 2016).

1.12.22.6 Utilizing Technology and Online Learning

The rise of technology and online learning platforms presents an opportunity for educational institutions to enhance their offerings and align with market demands. Online courses can provide

flexibility and access to a wider range of subjects and skills (Yusuf & Jamjoom, 2022). Ultimately, the goal is to create a dynamic education system that not only imparts knowledge but also equips students with the skills and experiences necessary to thrive in an ever-changing job market. By taking proactive steps to align educational offerings with market demands, institutions can contribute to the success of their graduates and enhance their own relevance in the higher education landscape (Yusuf & Jamjoom, 2022). The healthcare sector is a dynamic field, subject to rapid changes driven by technological advancements, evolving patient needs, and shifts in policy and practice. As such, health science programs must continuously evolve their curricula to ensure that they produce competent, skilled professionals who can meet these demands. However, many programs face significant challenges in this regard. This document will explore the key barriers to updating health science curricula, providing insights and potential solutions to help programs navigate these complexities effectively (Efendi et al., 2022).

One of the most significant barriers to implementing updated curricula is the inherent resistance to change among faculty, staff, and even students. Many educators may feel comfortable with established teaching methods and curricula, making them hesitant to adopt new approaches. This resistance can stem from a fear of the unknown, concerns about increased workload, or doubts about the efficacy of new educational strategies (Rafiq et al., 2019). Many health science educators may lack the necessary training in new areas such as health systems science, interprofessional education, and competency-based education. Without proper training, faculty members may struggle to effectively teach updated content, leading to a disconnect between the curriculum and the skills students need in practice (Martín García & Gómez-Escalonilla, 2019).

Updating curricula often requires significant financial and time resources. Many health science programs operate on tight budgets, which can limit their ability to invest in new tools, technology, or training necessary for curriculum updates. Additionally, the time required for curriculum review and revision can strain already-busy faculty schedules (Arita, 2014). The process of updating curricula can be fragmented and disorganized, resulting in disjointed learning experiences for students. Often, different departments may work independently on their curricula, leading to a lack of cohesion and integration across disciplines (Coupal, 2004). Increasingly competitive job market, the employability of graduates is a topic of significant concern for both educational institutions and employers. The misalignment between the skills that graduates acquire during their studies and the competencies that employers expect can create a pronounced gap, one that ultimately impacts the employability of these graduates (Latif, 2009; Levels et al., 2014; Van Praag & Clycq, 2020; Wyse & Torrance, 2009). This analysis delves into the underlying causes of this misalignment, the consequences it poses, and potential strategies to bridge the gap. The misalignment between education and industry needs:

1.12.22.6.1 Educational Curriculum vs. Employer Expectations

Many educational institutions have curricula that do not align with the current needs of employers. Employers often report that university training does not adequately prepare graduates for the workplace. A study indicated that employers rated the quality of university graduates' training at a mere 5.5 out of 10, highlighting a significant concern regarding the relevance and applicability of the skills taught in academic settings.

1.12.22.6.2 Changing Job Demands

The rapid evolution of industries, especially in the wake of technological advancements and the digitization of processes, has created new demands for skills that are not always reflected in traditional academic programs. For example, employers now seek graduates with competencies in data analysis, digital marketing, and project management, areas that may not have been emphasized in older curricula.

1.12.22.6.3 Soft Skills Deficiency

While technical skills are crucial, employers increasingly value soft skills such as communication, teamwork, and problem-solving. However, many graduates emerge from their studies with a lack of proficiency in these areas, which are essential for functioning effectively in collaborative work environments.

1.12.22.7 Role of Higher Education Institutions

Higher education institutions have a responsibility to bridge the gap between education and employment. They should not only provide quality education but also actively engage with employers and stakeholders to understand their needs and expectations. By establishing strong partnerships with employers, higher education institutions can ensure that their graduates are equipped with the skills and knowledge required by the labor market (Long et al., 2018).

One effective way for higher education institutions to facilitate labor market absorption is through internships and work-integrated learning programs. These initiatives provide students with valuable practical experience, enabling them to apply their theoretical knowledge in real-world settings (Ncanywa & Dyantyi, 2022). Moreover, internships often serve as a pathway for graduates to secure employment, as they allow employers to assess a student's skills and potential before making a hiring decision.

Higher education institutions in Timor-Leste should also provide career counseling and guidance services to support students in their transition from education to employment. These services can include resume writing, interview preparation, and job placement assistance. By offering comprehensive support, higher education institutions can enhance graduates' employability and facilitate their successful entry into the labor market (Ross, 1973).

1.12.23 Challenges and Opportunities for the Job Employment

While higher education plays a crucial role in labor market absorption, there are several challenges that need to be addressed. One such challenge is the limited availability of resources, both financial and human, which can hinder the capacity of higher education institutions to offer quality education and support services (Pazeto, 2007). The government and relevant stakeholders should collaborate to address these resource constraints and invest in the development of higher education infrastructure.

Another challenge is the lack of coordination between higher education institutions and the labor market. There is a need for stronger collaboration and communication between academia and industry to ensure that the curriculum is relevant and the skills being developed are aligned with market demands (Gavas, 2013; Kaba, 2017; Numfor et al., 2021). This can be achieved through regular dialogue, industry advisory boards, and internships/work placements.

Furthermore, there is a need to address the issue of brain drain, where highly skilled graduates leave the country in search of better opportunities abroad. To mitigate brain drain, the government and higher education institutions should create a conducive environment that encourages graduates to stay and contribute to the development of the country. This can be achieved through the creation of attractive job opportunities, competitive salaries, and a supportive ecosystem for entrepreneurship (Sorgner, 2017).

Despite these challenges, there are also opportunities for higher education institutions to enhance labor market absorption. Timor-Leste has a young and growing population, which presents a potential workforce for the country's economic development. By investing in higher education and ensuring the employability of graduates, the country can leverage its human capital and drive economic growth (Yen Thi Doan & Hong Thi Nguyen, 2023).

RESEARCH METHODOLOGY

This chapter details the research design and methods employed in the study. It explains the selection of the five HEIs, the sampling techniques used to recruit respondents, and the data collection instruments (e.g., interviews, questionnaires). It describes the data analysis procedures, including descriptive statistics and gap analysis techniques. Ethical considerations and limitations of the methodology are also discussed.

The research will involve surveys, interviews, and analysis of existing data from educational institutions and labor market reports. To achieve the objectives of this case study, a mixed-methods research approach will be utilized. This approach of the parallel system within combines quantitative and qualitative data collection and analysis methods to provide a comprehensive understanding of the labor market absorption rate of graduates. Understanding the employment status of recent graduates is more critical than ever. As higher education institutions strive to align their curricula with market demands, stakeholders including students, educators, policymakers, and employers require reliable data to make informed decisions. The transition from academia to the workforce is a pivotal phase in a graduate's life, and assessing their employment status offers insights into the effectiveness of educational programs and the readiness of graduates to meet industry needs. Moreover, analyzing these trends can highlight areas requiring policy intervention to enhance graduate employability and ensure that higher education remains a pathway to meaningful employment. The research methodology adopted for this study involves a combination of quantitative and qualitative (mix method) approaches to collect and analyze data using the ODK Application through Metabases, Python, Jupiter, R-program, Mapping, GPS (ArcView, ArcGIS, and ArcMap).

2.1 Quantitative data

Quantitative data, including numerical figures and statistical information, will be gathered to assess the absorption rates of graduates in the management field from the selected universities. This will include data on the number of employed and unemployed graduates. Quantitative surveys serve as a fundamental tool for collecting data on graduate employment status. To provide a structured method for gathering large-scale information, enabling researchers to quantify trends and draw generalized conclusions, and to employing standardized questions and methodologies, quantitative surveys ensure consistency and comparability across different cohorts and regions. This approach not only facilitates the identification of employment patterns and challenges but also supports the development of targeted strategies to improve labor market absorption of graduates. Consequently, quantitative surveys are indispensable in creating a comprehensive understanding of the intersection between education and employment, fostering evidence-based decision-making that benefits all stakeholders involved.

2.2 Qualitative data

Understanding the demand for skills and the quality of education is more crucial than ever. Employers increasingly seek candidates who possess technical abilities and demonstrate adaptability, critical thinking, and interpersonal skills. Simultaneously, educational institutions are under pressure to align their curricula with market demands needs to ensure graduates are work-ready. This alignment is essential not only for the successful placement of graduates but also for the long-term economic health of societies. By exploring the perspectives of both employers and academic leaders, we can bridge the gap between educational offerings and market demands, ensuring that education systems effectively prepare students for their future careers. Qualitative data, encompassing interviews, surveys, and open-ended questions, will be utilized to understand the factors influencing the

employability of graduates and their alignment with market demands (Sugiyono, 2016; Erba et al., 2018; Haig, 2018; McGregor, 2020; Arias, Arias and Rodríguez-Medina, 2021). Qualitative interviews are a pivotal tool in research, offering rich, detailed insights into complex issues that quantitative methods often cannot capture. These interviews allow for an in-depth exploration of participants' perspectives, experiences, and motivations. Unlike quantitative surveys that rely on numerical data, qualitative interviews focus on open-ended questions, enabling a more nuanced understanding of the subject matter. This approach is particularly effective in exploring topics where human behavior, thoughts, and emotions are central, providing a platform for interviewees to express their views in their own words.

2.3 Designing the Survey

Designing an effective survey is crucial for accurately assessing the employment status of recent graduates and their absorption into the labor market. This section outlines the key steps involved in creating a robust survey, ensuring that the data collected is both reliable and insightful.

2.4 Identifying Target Population

2.4.1 Defining Recent Graduates

The first step in designing a survey is clearly defining the target population. For this study, the focus is on recent graduates, typically those who have completed their education within the last five years. This timeframe is chosen to capture the initial phase of their career trajectories and transitions into the labor market. It's important to consider various educational levels, including undergraduate, graduate, and vocational training, to obtain a comprehensive understanding of employment outcomes across different educational backgrounds.

2.4.2 Selecting Appropriate Sampling Methods

Once the target population is defined, the next step involves selecting suitable sampling methods to ensure that the survey results are representative of the broader population. Probability sampling techniques, such as stratified or cluster sampling, can be employed to enhance the accuracy and generalizability of the findings. These methods help to minimize sampling bias and ensure that diverse groups within the graduate population are adequately represented.

2.4.3 Population and Sample of Respondent

The research population for this study includes all graduates from UNTL, UNPAZ, UNDIL, ICS, and ISC within the last five years (2019-2023). The population refers to the entire group of individuals or elements that we want to study and make conclusions about. It is often not feasible or practical to study the entire population due to its large size (Wellmann, 2023). A stratified random sampling technique will be employed to select a representative sample of graduates from health study program in different university and academic levels (Sugiyono, 2013). The sample should be representative of the population to ensure that the findings can be generalized (Fox & Hunn, 2009).

To determine the appropriate sample size, researchers consider factors such as the level of precision required, the variability of the population, and the desired confidence level. Various statistical formulas and techniques can be used to calculate the sample size, such as the Slovin's formula (Bakour et al., 2018; Yamane, 1967a, 1967c, 1967b). The formula for calculating the sample size using the Slovin formula is as follows:

$$n = N / (1 + N(e^2))$$

where:

n: sample size

N: population size

e: desired level of accuracy (margin of error) with 2,4%

Confidential Level: 99%

Z-Score: 2,58

Ω (Standard Deviaition) of population 1500 out of 5994 alumnae

2.5 Distribution of Alumnae and Respondents Based on University and Program Study

To calculate the sample size for your research on graduates from various institutions in Timor-Leste, specifically UNTL, UNPAZ, UNDIL, ISC, and ICS who graduated between 2019 and 2023, you'll need to follow a systematic approach. Below are the steps and considerations to determine the population size and ultimately calculate the sample size.

- (a) **Determine the Population Size.** The first step is to gather the total number of graduates from each institution for the specified years (2019-2023). Based on the available data, we can derive the following approximate population sizes:
- (b) **Collect the Data.** To ensure a representative sample, you will need to obtain actual graduation data from these institutions. This data can typically be acquired through the university registrar or institutional research office, and should aim to gather:
 - Total number of graduates per year for each institution from 2019 to 2023.
 - Breakdown by program if possible, especially focusing on health science programs.
- (c) **Calculate Sample Size.** Once you have the population sizes, you can calculate the sample size using a formula. A commonly used formula for calculating sample size in surveys is using the formula Slovin
- (d) **Repeat for Other Institutions.** You will repeat these calculations for each institution based on their respective population sizes. Ensure to adjust the sample sizes according to the specific number of graduates and desired confidence levels.
- (e) **Considerations for Program Distribution.** To ensure the sample is representative of various health science programs, consider stratifying your sample by program. This means:
 - Identify the number of graduates per program within each institution.
 - Use proportional allocation to determine how many respondents to sample from each program based on their size relative to the total graduates.
- (f) **Final Recommendations**
 - **Data Validation:** Ensure the accuracy of your graduate counts by verifying with the institutions.
 - **Sampling Method:** Decide whether you will use random sampling, stratified sampling, or another method.
 - **Ethics Approval:** If you are conducting a study involving human participants, ensure you obtain the necessary ethical approvals.

2.6 Alumni Profile

The analysis of the results begins with an examination of the profile of the graduates from UNTL, UNPAZ, UNDIL, ICS, and ISC. This includes demographic information such as age, gender, and academic background. It also includes information on the fields of study and the levels of education completed by the graduates. This analysis provides a comprehensive overview of the characteristics of the graduates and serves as a basis for further analysis.

2.7 Respondents (Key Informants)

Key informants for this case study will include graduates, employers, university faculty members, and representatives from the University or Institute. Their perspectives and insights will help in obtaining a holistic understanding of the labor market absorption rate and the factors influencing.

Table 1. Cluster Number Of Repondent's Based On Total Of Alumnae In Area Of Health, Year 2019-2023

CLUSTER NUMBER OF REPONDENT'S BASED ON TOTAL OF ALUMNAE IN AREA OF HEALTH, YEAR 2019-2024 (Slovin, 1967; e-2,4%; N-5994; n-500; Z score-2,58)														
Calculate by: Dr. Domingos CBB Gomes (2024)														
Institution	Nu.Alumnae by Level of Academic	Level of Academic	Study Program	sp by Program	2019		2020		2021		2022		2023	
					F	M	F	M	F	M	F	M	F	M
UNTL	1109	S1	Medicina Geral (L.Med.GB.)	27	0	1	0	0	4	4	5	4	5	4
			Enfermagem (L.Enf.)	54	6	6	0	0	0	0	11	11	10	10
			Parteira (L.Part.)	81	18	0	0	0	20	0	22	0	22	0
			Farmácia (L.Far.)	56	6	6	0	0	6	6	8	8	8	8
			Nutrição e Dietética (L.N.Diet.)	32	4	4	0	0	4	4	4	4	4	4
			Ciências Biomédicas e Laboratoriais (LCBL)	27	2	3	0	0	3	3	4	4	4	4
	179	D3	Enfermagem (B.Enf.)	22	2	3	0	0	2	3	3	3	3	3
			Parteira (B.Part.)	23	5	0	0	0	6	0	6	0	6	0
TOTAL UNTL				322	43	23	0	0	45	20	63	34	62	33
UNDIL	627	S1	Saúde Publico	157	15	15	13	13	18	15	18	15	17	18
	449	D3	Enfermagen Dentária	41	4	4	4	4	4	4	4	4	5	4
			Enfermagen Geral	72	7	7	7	7	7	7	7	7	7	9
TOTAL UNDIL				270	26	26	24	24	29	26	29	26	29	31
UNPAZ	1305	S1	Saúde Publico	326	32	32	32	32	32	32	32	38	32	32
TOTAL UNPAZ				326	32	32	32	32	32	32	32	38	32	32
Instituto Ciençiais de Saude (ICS)	175	S1	Enfermagem	44	0	0	0	0	0	0	0	0	22	22
	1000	D3	Enfermagem	68	7	7	0	0	9	9	9	9	9	9
			Farmacia	48	6	6	0	0	6	6	6	6	6	6
			Parteira	97	18	0	0	0	24	0	25	0	30	0
			Nutrição-Dietetica	19	2	2	0	0	2	2	2	3	3	3
			Siensia Biomedika Laboratoriu	19	0	0	0	0	3	3	3	3	3	4
TOTAL ICS				295	33	15	0	0	44	20	45	21	73	44
Instituto Siencias Cristal (ISC)	695	S1	Enfermajem	174	15	15	15	15	15	18	18	20	20	23
	455	D3	Enfermajem	37	3	3	3	4	4	4	4	4	4	4
			Parteira	77	12	0	15	0	16	0	16	0	16	0
TOTAL ISC				288	30	18	33	19	35	22	38	24	40	27
Total	5994			1500	298	210	145	131	335	218	376	262	432	307

Source 1. Analyse Secondary Data from HEI's (2024)

2.8 Seconder Data Collection

The success of the 2024 graduate employability survey relies heavily on the effective and efficient collection of data from all the target 1500 respondents out of 5,994 graduated or alumni beyond extension and other relevant institution where the alumni was employed. The data collection process needs to be well-planned, systematic, and standardized to ensure the accuracy and reliability of the collected information. This regard will outline the field methodology that will be employed for data collection during the interview.

2.9 Data Collection Instruments

The core of the survey should concentrate on capturing the employment status of graduates. Questions should cover aspects such as current employment status (e.g., employed, unemployed, pursuing further education), type of employment (e.g., full-time, part-time, freelance), and the duration of job search post-graduation. These questions are essential for understanding how effectively graduates are being absorbed into the labor market.

- Questionnaires: A structured questionnaire will be developed to collect quantitative data on the employment status, practical application of knowledge, and satisfaction of graduates. Likert scale and multiple-choice questions will be used to gather data efficiently.
- The primary instrument used for data collection during the data collection will be the questionnaire. The questionnaire has been developed and refined based on inputs from Director of ANAAA and executive member form INCT. It is designed to capture comprehensive information about alumni, status of employed, gender, and some feedback availability from alumni and stake holder.
- The questionnaire is divided into different sections, each focusing on a specific aspect of the alumni. It includes both closed-ended and open-ended questions qualitative data. The closed-ended questions provide predefined response options, while the open-ended questions allow for more detailed and nuanced responses.
- Interviews: Semi-structured interviews will be conducted with key informants to gather qualitative data on the transfer of knowledge and health of ANAAA-INCT activities.

2.9.1 Inquiring About Job Satisfaction

In addition to employment status, it is important to gauge job satisfaction levels among respondents. Questions should address factors such as alignment of current job with educational qualifications, opportunities for career advancement, work-life balance, and overall job contentment. Understanding job satisfaction can provide insights into the quality of employment and potential areas for improvement in education and career services.

2.9.2 Choosing Distribution Channels

2.9.2.1 Online Platforms

Given the widespread use of digital technology, online platforms are a practical and efficient means of distributing surveys. Utilizing email, social media, and dedicated survey platforms can facilitate broad reach and ease of access for respondents. Online distribution also allows for automated data collection and can increase response rates through convenience and accessibility.

2.9.2.2 University Networks

Leveraging university networks is another effective strategy for survey distribution. Partnering with alumni associations, career services, and academic departments can enhance outreach efforts and ensure that the survey reaches a diverse pool of graduates. Universities can also provide valuable contact information and endorsements that encourage participation, thereby boosting response rates.

2.10 Data Collection Procedures

To maintain the integrity of the survey and encourage honest responses, it is crucial to ensure that respondents remain anonymous. This can be achieved by using unique identifiers that do not reveal personal information and by assuring participants that their responses will be confidential. Anonymity helps in reducing biases and increasing the reliability of the data collected. Follow-up reminders are essential to encourage participation from those who have not yet responded. These reminders can be sent via email or text message and should be strategically timed to avoid causing annoyance while effectively prompting action. Additionally, providing incentives or highlighting the importance of their participation can further enhance response rates. Following the detail data collection procedure such as:

- Data collection will be carried out in multiple stages. Firstly, the research team will collaborate with the Universities and the ANAAA-INCT to obtain a list of graduates within the specified timeframe. Then, questionnaires will be distributed to the selected graduates either electronically or in person. The interviews with key informants will be scheduled and conducted in a suitable environment. To gather information about the employment status of graduates, data from the alumni of UNTL, UNPAZ, UNDIL, ICS, and Instituto Superior Cristal (ISC) were utilized. A comprehensive survey was conducted, targeting graduates who completed their studies between 2019 and 2023. The survey included questions related to employment status, job satisfaction, job relevance to their field of study, and income level.
- The data collection procedures for the alumni survey involved a combination of paper-based and digital forms. The first step in this process was the design of the forms, both in paper and digital formats. For the digital system, the Open Data Kit (ODK) Application data collecting platform was used as the foundation. This platform was chosen because it met the specific needs of the survey, including the ability to map institution sites located in various types.
- One of the key advantages of using the Open Data Kit (ODK) program was its security and user-friendly interface. This ensured that the data collected would be kept confidential and that the researcher, who were responsible for gathering the data, would find it easy to use. Additionally, the program had a range of quality assurance and control checks in place to ensure that the data collected met high standards of quality.
- To collect the data, research member interacted directly with alumni. They used a handphone to administer the questionnaire and record the responses. The handphone questionnaire had several features that facilitated the data collection process. For example, it had automated skipping patterns, which meant that respondents would only be asked relevant questions based on their previous responses. This helped to streamline the data collection process and reduce the burden on both the research member and the respondents.
- The handphone questionnaire also had a speed limit violation feature, which alerted research member if they were completing the questionnaire too quickly. This feature was important because it helped to ensure that the research member was taking the time to accurately record the responses and not rushing through the process. Additionally, the questionnaire had a response restriction feature, which prevented respondents from providing erroneous or inconsistent responses. This helped to improve the overall quality of the data collected.
- During the data collection process, interviews were conducted by the researcher with the alumni in the certain area dedicated. The researcher was responsible for completing the paper questionnaire correctly and accurately, as well as supplying any necessary data for the digital tool. These interviews served as an

opportunity for the team to clarify any questions or doubts that the alumni may have had regarding the questionnaire.

2.11 Data Collection Tools

A structured questionnaire was designed and utilized to collect data from various study program levels. The data collected encompassed the following areas:

- The Graduate Profile includes the following details: full name, gender, major of study, year of graduation, residence/municipality/region, and graduation from institute (UNTL, UNPAZ, UNDIL, ICS, ISC)
- The current employment status is specified
- The Category of institution where the individual works is categorized as Public Institution, Private Institution, or Self-employment
- The individual's job should align with their educational background
- How effective was the higher education institution in providing the necessary knowledge and skills to start and manage a business
- To what extent did the higher education institution support and encourage entrepreneurial endeavors among its graduates
- To what extent did the higher education institution equip the individual with the necessary skills required for the job market
- How confident is the individual in finding a job in their desired field within a reasonable timeframe
- How well did the higher education institution prepare the individual for the practical challenges of the job market
- How satisfied is the individual with the support and guidance provided by the career services of their higher education institution in their job search
- To what extent did the higher education institution facilitate networking opportunities for potential employment and career growth
- Employees should demonstrate the ability to adapt to new tasks and changing work environments.
- Employers value individuals who can quickly learn and apply new skills to handle diverse job responsibilities.

2.12 Data Analysis and Processing

Quantitative data will be analyzed using statistical software, such as SPSS, to obtain descriptive statistics and identify patterns and trends. Qualitative data from interviews will be transcribed and analyzed using thematic analysis to uncover recurring themes and generate insights.

2.12.1 Data verification of alumni in health department over the five university

Data verification is an essential part of managing data. It involves reviewing and checking data for accuracy, completeness, consistency, and validity. The goal is to ensure that the data is reliable and error-free. This process can be done manually or with the help of automated systems or software tools. By comparing the data against known sources and conducting checks, any discrepancies, errors, or missing information can be identified and corrected. However, data verification is just one step in the overall data management process, which includes data collection, storage, analysis, and reporting.

The importance of data verification of the alumni over the 3 University and 3 Institute in Timor-Leste is a system used to collect, process, and analyze data related to education. However, the accuracy and reliability of the data collected are crucial for informed decision-making and effective policy

implementation. The report highlights the data verification, such as incomplete or incorrect data, and limited capacity for data analysis. It also suggests strategies to improve data verification, including capacity building, data sharing, and regular monitoring and evaluation. Ultimately, ensuring accurate and reliable data of the alumni is essential for improving education outcomes in Timor-Leste.

2.12.2 Scope of the Graduated Employability Survey

The study was conducted from August 01 to December 1st, 2023, at various institutions. For that reason, data collection at the 6 High Education Institute was by the November 1st, 2023. Due to the nature of the study, all university were included in the respondent. Team researcher, who were employed by structure of each university or institute, comprised of Vice Rector, Head of Department. Their task was to visit the local area of and collect data from the questionnaires that had been distributed to the researcher for completion. The research member used the Open Data Kit (ODK) application on telephone to record the questionnaire responses during interview with respondent or alumni where randomized.

2.13 Field Methodology

2.13.1 Target

The target of the 2023 graduate employability survey is to count all alumni has employed and unemployed in the country. This includes various types of higher education institute such as UNTL, UNPAZ, UNDIL, ICS, and ISC. In total, there are 300 alumni that need to be covered in this survey. These institute are further categorized into different year of graduate during 2018-2022. To ensure the success of the data collection, the research team has collaborated with Head of Department, General Director for Administration, Vice Rector and Rector of University or Institute within the University. These departments Biomedical and Laboratory Sciences, Nursing, Pharmacy, General Medicine, Nutrition and Dietetics, Midwifery, Public Health.

2.13.2 Training of Data Collectors

- a) One of the critical steps in ensuring the success of the data collection process is the training of the data collectors. The data collectors play a crucial role in gathering accurate and reliable data from the target alumni. Therefore, it is essential to equip them with the necessary knowledge and skills to carry out their responsibilities effectively.
- b) The training program for data collectors will cover various aspects of the data collection process. It will provide them with a comprehensive understanding of the survey objectives, methodology, and data collection instruments. The training will familiarize them with the questionnaire and its different sections, ensuring that they are well-prepared to administer it in the field.
- c) The training program will also include sessions on ethical considerations and data confidentiality. The data collectors will be made aware of the importance of maintaining the privacy and confidentiality of the information provided by the alumni. They will be trained on how to handle sensitive



Figure 5. Training of data collection

data and ensure its secure storage and transmission.

- d) The training program will also address data quality control measures. The data collectors will be trained on how to identify and rectify errors or inconsistencies in the collected data. They will be provided with guidelines on data validation techniques and tools to ensure the accuracy and reliability of the data.

2.13.3 Data Collection Process

The data collection process for the 2019-2023 Graduate Data collection will be carried out in a systematic and structured manner. The process will involve the following steps:

- *Preparatory Phase:* Before the actual data collection begins, the data collectors will undergo the training program outlined in the previous section. They will be provided with the necessary tools and resources, including the questionnaire, maps, GPS devices.
- *Contacting Alumni:* The data collectors will approach the target alumni to schedule appointments for data collection. They will introduce themselves, explain the purpose of the survey, and seek the cooperation of the stakeholder authorities.
- *Data Collection:* Once the appointments are scheduled, the data collectors will visit the place where the alumni job placed to administer the questionnaire. They will follow the standardized data collection procedures, ensuring that all the relevant sections of the questionnaire are completed accurately. The data collectors will also use additional tools, such as maps and GPS devices, to record the geographical location of the alumni.
- *During the data collection process, the data collectors may encounter various challenges and obstacles.* They may face resistance from some authorities or encounter difficulties in accessing certain areas. In such cases, the data collectors will rely on their training and guidelines to address these challenges effectively. They will employ appropriate communication and negotiation skills to overcome any obstacles and ensure the successful completion of the data collection process.
- *Data Validation:* After the data collection is complete, the data collectors will review the collected data to identify any errors or inconsistencies. They will compare the responses with the guidelines provided and perform necessary validations. This may include cross-checking information with other available sources or seeking clarification from the authorities.
- *Data Transmission:* Once the data validation is complete, the data collectors will transmit the collected data to the central database. This may be done electronically, using secure data transmission protocols, or through physical transfer of data storage devices. The data collectors will ensure that the data is securely transmitted and that the confidentiality of the information is maintained.
- *Data Storage and Management:* The collected data will be stored and managed in a centralized database. The database will be designed to ensure the security and integrity of the data. Access to the database will be restricted to authorized personnel only, and appropriate backup and recovery mechanisms will be in place to safeguard the data.

2.13.4 Data Analysis and Reporting

- Data analysis and reporting are critical components of the alumni survey.
- The analysis of the collected data will provide valuable insights into the current residence of alumni in the country.
- The findings will help identify strengths, weaknesses, and areas for improvement in the education or region.

- This regard will outline the methodology that will be employed for data analysis and reporting during the survey.

2.13.5 Data Cleaning and Validation

Efficient data entry and management are vital to the accuracy of the survey results. Employing robust data management software can automate much of the data entry process, reducing the risk of human error. These tools also facilitate easy data organization, allowing for seamless analysis later on. Software options may include features for direct survey integration, which further simplifies the data collection process.

- Before the data analysis can begin, the collected data needs to undergo a thorough cleaning and validation process. This process involves reviewing the data for errors, inconsistencies, and missing values. The data cleaning and validation aim to ensure the accuracy and reliability of the data and eliminate any potential biases or discrepancies.
- During the data cleaning process, any errors or inconsistencies identified in the data will be corrected or resolved. This may involve cross-checking the data with other available sources. Any missing values in the data will also be addressed through appropriate imputation techniques.
- The data validation process will involve verifying the accuracy of the collected data against predefined validation rules and criteria. This may include checking for logical errors, range checks, consistency checks, and data integrity checks. Any discrepancies or violations of the validation rules will be flagged for further investigation and resolution.
- The data cleaning and validation process is crucial to ensure the integrity and reliability of the data for analysis. It helps to identify and rectify any errors or inconsistencies that may have occurred during the data collection process.

2.13.6 Addressing Missing Data

Missing data can significantly impact the validity of survey findings. It is important to identify and handle missing data appropriately. Techniques such as data imputation or sensitivity analysis can be employed to estimate missing values and assess their potential impact on the results. Establishing protocols for addressing missing data beforehand ensures that the analysis is both comprehensive and accurate.

2.13.7 Data Storage and Security

2.13.7.1 Protecting Sensitive Information

Given the sensitivity of personal data involved in employment surveys, it is imperative to implement robust security measures. Encryption of data files, restricted access to authorized personnel only, and regular security audits are some of the practices that can safeguard the collected information. Ensuring data protection not only complies with ethical standards but also fosters trust among respondents.

2.13.7.2 Complying with Legal Regulations

Adhering to legal regulations regarding data collection and storage is non-negotiable. This includes compliance with laws such as the General Data Protection Regulation (GDPR) in Europe or the Health Insurance Portability and Accountability Act (HIPAA) in the United States, depending on the jurisdiction. Understanding and implementing these legal requirements help in avoiding potential legal issues and reinforce the credibility of the research.

2.13.8 Data Analysis

2.13.8.1 Statistical Techniques

2.13.8.1.1 Descriptive Statistics

To effectively analyze the data collected through the surveys, the first step involves employing descriptive statistics. This method provides a general overview of the data set, allowing researchers to summarize the basic features of the graduates' employment status. Key metrics such as mean, median, mode, and standard deviation can be calculated to offer insights into central tendencies and variability within the data. For instance, calculating the average time taken for graduates to secure employment post-graduation can highlight potential delays in labor market absorption.

2.13.8.1.2 Inferential Statistics

Beyond summarizing data, inferential statistics are essential for drawing conclusions and making predictions about the larger graduate population based on the sample surveyed. Techniques such as regression analysis, hypothesis testing, and confidence intervals can be applied to assess relationships between variables, such as the impact of specific degrees on employability or job satisfaction levels. This analysis helps to identify patterns and correlations, providing a deeper understanding of the factors influencing graduate employment outcomes.

2.13.8.1.3 Identifying Employment Trends

2.13.8.1.3.1 Comparing Different Educational Fields

Analyzing the data by educational fields allows for the identification of trends and discrepancies in employment outcomes across various disciplines. By comparing employment rates, job roles, and market demands sectors, researchers can determine which fields are experiencing higher absorption rates in the labor market. This comparison can unveil valuable insights into which areas of study are currently in demand and may guide future educational and career advisory services.

2.13.8.1.3.2 Analyzing Demographic Variables

Demographic variables such as age, gender, and geographic location also play a crucial role in understanding employment trends among graduates. By examining these variables, researchers can uncover disparities and challenges faced by different demographic groups. For instance, analyzing whether certain groups encounter longer job search periods or lower job satisfaction can inform initiatives aimed at promoting equal employment opportunities.

Follow-up the data analyses of this study can adapted criteria bellow:

- Once the data cleaning and validation process is complete, the data will be ready for analysis. The analysis of the data collection data will involve various statistical techniques, methodologies, and tools. The specific analysis techniques employed will depend on the survey questions and objectives of the survey.
- Descriptive statistics will be used to summarize and describe the status of the institution. This may include measures such as mean, median, mode, range, and standard deviation. The descriptive statistics will provide a snapshot of the current status employer.
- Inferential statistics may also be utilized to draw conclusions and make inferences about the population based on the sample data.

- Qualitative data analysis techniques may also be used to analyze the open-ended responses from the questionnaire. This may involve coding and categorizing the responses, identifying themes and patterns, and conducting content analysis. The qualitative analysis will provide deeper insights into the perceptions, experiences, and opinions of the authorities, teachers, and students.
- The data analysis process will also involve the use of data visualization techniques to present the findings in a clear and understandable manner. This may include the creation of charts, graphs, maps, and infographics. The data visualizations will help communicate the key findings of the survey in a visually appealing and accessible format.

2.13.9 Reporting

Effective visualization of data is paramount to clearly communicate the findings of the survey analysis. Utilizing charts, graphs, and tables can help present complex data in an accessible and engaging manner. Tools like bar charts for categorical comparisons or scatter plots for examining relationships between variables can enhance the understanding of key insights and trends identified during the analysis. The final step involves drafting comprehensive reports that encapsulate the findings and implications of the survey analysis. These reports should present a detailed narrative of the methods, results, and interpretations, while also highlighting significant patterns and anomalies. The inclusion of executive summaries and key takeaways ensures that stakeholders, such as policymakers and educational institutions, can easily grasp the essential insights and make informed decisions based on the survey results.

- The findings of the data analysis will be compiled into a comprehensive report. The report will provide a detailed overview of the survey methodology, data collection process, data analysis techniques, and key findings. It will also include recommendations for policy-makers, educators, and other stakeholders based on the research findings.
- The report will be structured in a logical and organized manner, starting with an executive summary that provides a concise overview of the research findings. It will then provide an introduction to the research objectives, methodology, and data collection process. The report will present the key findings of the research, including descriptive statistics, inferential statistics, and qualitative analysis.
- The report will include data visualizations, such as charts, graphs, maps, and infographics, to present the findings in a visually appealing and accessible format. The data visualizations will help highlight the key trends, patterns, and disparities identified in the data. They will provide a comprehensive and holistic understanding of the current state of alumni in the country.
- The report will also include a discussion and interpretation of the findings. This will involve analyzing the implications of the findings and identifying potential strategies for improvement. The report will provide recommendations for policy-makers, educators, and other stakeholders based on the research findings. These recommendations will be aimed at addressing the identified challenges and promoting the quality of education.

2.13.10 Team Selection and Field Staff Training

- The success of any data collection effort relies heavily on the quality and competence of the field staff involved. In the case of alumni survey, the recruitment and training of research team played a crucial role in ensuring the accuracy and reliability of the gathered data.
- The training sessions for research team were designed to equip them with the necessary skills and knowledge to carry out their tasks effectively. They were trained in conducting face-to-face interviews, administering questionnaires, recording accurate and complete data, and adhering to

quality control measures. They were also trained in utilizing technology for data collection, such as mobile devices or tablets equipped with data collection software.

- The training program for field staff was comprehensive and rigorous, spanning several days to ensure adequate coverage of all relevant topics. It included both theoretical sessions and practical exercises to simulate real-world data collection scenarios. These exercises allowed the research team to apply their newly acquired knowledge and skills in a controlled environment before embarking on the actual data collection.
- Throughout the training process, continuous monitoring and evaluation were conducted to assess the progress and performance of the field staff. This feedback-driven approach allowed for timely identification of any areas that required further improvement or clarification. It also provided an opportunity to address any concerns or challenges faced by the field staff and provide additional support or guidance as needed.

2.13.11 Training of Research Team (ToRT)

- The ToRT program played a crucial role in ensuring that all staff members involved in the pilot survey were well-equipped with the necessary skills and knowledge. A total of 6 research team participated in the training program, alongside 1 representative from each of university. The objective of the ToRT program was to provide comprehensive instruction on every aspect of the survey, covering both the paper questionnaire and the online forms. This ensured that all trainees were well-versed in the data collection process using both the tablet with the Open Data Kit (ODK) Application and the paper-based survey instrument.
- One of the key outcomes of the ToRT program was the clarity it provided to all participants regarding their individual roles and responsibilities in the field. Both research team were given specific instructions and guidelines on how to carry out their duties effectively. This clarity was essential to ensure a smooth and efficient data collection process.
- As the pilot survey moved forward, the trained research member and supervisors would be responsible for carrying out the data collection activities in the field. Their thorough understanding of the survey process, along with their practical experience gained during the training, would be invaluable in ensuring the accuracy and reliability of the collected data.
- With the successful completion of the ToRT program, the trained staff members were well-equipped to carry out their duties and contribute to the overall success of the pilot survey.
- The training session plays a vital role in equipping the research member with the necessary knowledge and skills to effectively carry out their responsibilities.

2.13.12 Training Content

- The training content for ToRT as research member is designed to provide them with a comprehensive understanding of their roles and responsibilities. The content covers various aspects of the data collection process, including the objectives of the project, the importance of accurate data collection, and the ethical considerations involved in handling sensitive information.
- One of the key components of the training is the questionnaire. Research team are provided with detailed manuals that provide guidance on how to fill out the questionnaire accurately. They are trained on the different sections of the questionnaire and the specific information that needs to be collected. Special emphasis is placed on the importance of maintaining confidentiality and ensuring the privacy of the respondents.
- Research team are also trained on the usage of the Open Data Kit (ODK) application. They are taught how to navigate through the application, enter data, and resolve any technical issues that

may arise. Hands-on exercises and simulations are conducted to provide practical training on using the application in real-world scenarios.

2.13.13 Training Methods

- The ToRT utilizes a combination of methods to ensure maximum effectiveness. These methods are designed to cater to different learning styles and to provide a holistic understanding of the data collection process.
- Hands-on training is another important component of the training process. Research team are given the opportunity to practice using the Kobo application and filling out the questionnaire under the guidance of trainers. This allows them to gain confidence in using the tools and familiarize themselves with the data collection process.

2.13.14 Team Composition

- The success of any data collection project relies heavily on the composition of the team involved. In the case of the survey conducted, a carefully selected team was assembled to ensure efficient and accurate data collection across the nation.
- The team was led by a team coordinator who oversaw the entire operation. This individual was responsible for coordinating the efforts of the team and ensuring that the survey objectives were met. Their role was crucial in maintaining consistency and standardization throughout the data collection process.

2.13.15 Data Management Process

- Data management is a critical step in any research project, as it involves organizing, cleaning, and analyzing the collected data.
- Upon completion of the data collection phase, the collected data was downloaded on a daily basis to check for consistency and identify any errors that might have occurred during the data collection process. This regular download and review ensured that any issues were promptly addressed, maintaining the integrity of the data.
- To facilitate data cleaning and analysis, the downloaded data was made available in various formats, including SPSS (data.sas), Access Database (db) format. This comprehensive range of formats allowed for flexibility in data processing and analysis, catering to the preferences and requirements of different researchers and analysts.
- The Technical IT expert played a vital role in supporting the data management process throughout the Kobo application. Their expertise and guidance ensured that the data was handled efficiently and in accordance with best practices.
- The process of data management involved several key steps. First, the collected data was carefully reviewed to identify any missing or incomplete information. Any inconsistencies or errors were flagged and addressed promptly to ensure data accuracy.
- Next, the data was cleaned, which involved removing any duplicate entries, correcting typographical errors, and standardizing the data format. This step was crucial to ensure that the data was in a consistent and usable format for analysis.
- Once the data cleaning process was completed, the data was organized and stored in a secure and accessible database. This database allowed for efficient data retrieval and analysis, ensuring that the data could be used effectively to answer research questions and inform decision-making.
- Throughout the data management process, data security and confidentiality were given utmost priority. Strict protocols and measures were implemented to safeguard the privacy and anonymity of the respondents. Access to the data was restricted to authorized personnel only, and appropriate measures were taken to prevent unauthorized access or data breaches.

RESULT AND ANALYSIS

This chapter presents a detailed examination of the absorption rate of health science graduates from UNTL over the past five years. It utilizes quantitative data to highlight employment rates, sectors of employment, and the duration of job search post-graduation. The analysis also considers demographic factors such as gender, age, and socioeconomic background.

3.1 Result

3.1.1 The number of alumnae interviewed by researchers based on university graduation years from 2019 to 2023

The number of alumnae interviewed by researchers based on their university graduation years from 2019 to 2023, we can refer to various data sources and trends in alumni research. The data explicitly available in one consolidated report; rather, it typically requires an interviewed of different institutional studies and surveys conducted during month of August – October 2024.

Alumni Surveys and Interviews: Universities often conduct alumni surveys to collect data on various outcomes, including employment rates, salary expectations, and overall satisfaction with their education. For instance, the alumni survey provides insights into how graduates rate their experiences and getting a job after taken graduation, which can lead to qualitative interviews with selected alumnae.

Institution-Specific Reports: Various institution or universities, like Universidade Nacional Timor Lorosa'e (UNTL), Universidade da Paz (UNPAZ), Universidade de Dili (UNDIL), Instituto Supeior Cristal (ISC), Institute Ciencaais de Suade (ICS), publish annual reports detailing their alumni's outcomes, including graduation rates and demographic information. These reports may include the number of alumni interviewed during specific studies, although the exact number may vary year by year.



Qualitative Research Studies: Researchers may undertake qualitative studies involving interviews with alumnae to explore specific themes such as career progression, personal development, and the impact of their university education. These studies are often tailored to specific cohorts, providing a snapshot of experiences from 2019 to 2023.

Institutional Research Offices: Most universities have dedicated offices for institutional research that compile data on graduation rates, alumni outcomes, and often conduct interviews. The Universidade Nacional Timor Lorosa'e (UNTL), Universidade da Paz (UNPAZ), Universidade de Dili (UNDIL), Instituto Supeior Cristal (ISC), Institute Ciencaais de Suade (ICS) has a comprehensive fact book that tracks student progress and alumni data over time, which may include the number of interviews conducted.

In the end of survey, while precise numbers of alumnae interviewed by university for the years 2019 to 2023 may not be readily available, various institutional reports, surveys, and qualitative research studies contribute to understanding alumni experiences during that timeframe. Researchers typically aggregate this data based on their specific methodologies and the focus of their current status alumnae past graduation in frame time during 2019-2023. For exact figures, one would need to consult individual university reports or reach out to institutional research departments directly.

In the table 2 bellow showed gender disparities in employment outcomes are a pressing issue in Timor-Leste. Women, despite achieving higher educational qualifications in many fields, often experience barriers to entering the workforce. Cultural norms, gender-based discrimination, and a lack of support structures contribute to lower employment rates among female graduates.

Table 2. Number of alumnae interviewed by researcher based on gender
















Gender	Number Respondent	Graph
Female	1072	
Male	428	

Source 2. Primary Data, 2024

Data from recent surveys indicate that female graduates have a higher absorption rate into the labor market compared to their male counterparts, with female graduates absorbing 71.5% of available positions against 28.5% for males from 2019 to 2023. This trend warrants further exploration to understand the underlying factors contributing to this disparity.

The data indicates a stark contrast in the absorption rates of male and female graduates across the studied institutions. The absorption rate for female graduates stands at 71.5%, significantly higher than the 28.5% for male graduates. This trend highlights the evolving role of women in the labor market of Timor-Leste, suggesting that gender norms may be shifting, allowing for greater female participation in various sectors.

Table 3. Distribution Alumnae by Actual Residency

Residency	Number of Respondent	Graph
Dili	512	
Baucau	180	
Viqueque	122	
Bobonaro	107	
Ermera	102	
Covalima	77	
Manatuto	70	
Ainaro	63	
Liquica	53	
Manufahi	51	
Lautem	49	
RAEOA	46	
Aileu	45	
Overseas (Foreign)	18	
Atauro	5	

Source 3. Primary Data, 2024

The labor market absorption rate is a critical metric for assessing how effectively a country or region can integrate its graduates into the workforce. This report focuses on the absorption rates of graduates from five higher education institutions in Timor-Leste: Universidade Nacional Timor Lorosa’e (UNTL), Universidade da Paz (UNPAZ), Universidade de Dili (UNDIL), Instituto Superior Cristal (ISC), and Instituto Ciências da Saúde (ICS) from 2019 to 2023, with a particular emphasis on geographical variations across municipalities.

However, the labor market's capacity to absorb these graduates remains a pressing issue, given the country's economic challenges, including high unemployment rates and a reliance on a limited number of sectors such as agriculture and public administration.

3.1.2 Higher Education Landscape

- Universidade Nacional Timor Lorosa'e (UNTL): Established in 2000, UNTL is one of the largest universities in Timor-Leste, offering various programs in social sciences, education, and engineering.
- Universidade da Paz (UNPAZ): Founded in 2004, this institution focuses on peace studies, social sciences, and international relations, aligning its curriculum with the nation's development goals.
- Universidade de Dili (UNDIL): As the capital's primary educational institution, UNDIL offers diverse programs and attracts a large number of students from different municipalities.
- Instituto Superior Cristal (ISC): ISC specializes in education and health-related courses and plays a vital role in training professionals for the growing health sector.
- Instituto Ciências da Saúde (ICS): This institute focuses on health sciences and has become crucial in addressing the healthcare needs of the nation.

3.1.3 Economic Context

The Timorese economy is characterized by its dependence on oil and gas revenues, which account for a significant portion of the national budget. However, the non-oil sector has been slow to develop, which hampers job creation for graduates. The unemployment rate, particularly among young graduates, remains a concern, with many facing underemployment or working in positions that do not require a university degree.

3.1.4 Labor Market Absorption Rates (2019-2023)

The absorption rates of graduates from the aforementioned institutions vary significantly by municipality, reflecting both local economic conditions and the availability of job opportunities (Bauer, 1990). Below is a detailed analysis of data collected from various municipalities, presenting the percentage of respondents who found employment after graduation.

- Dili, as the capital and economic hub of Timor-Leste, boasts the highest absorption rate at 34.1%. This can be attributed to the concentration of government offices, NGOs, and private enterprises that provide diverse employment opportunities for graduates. The presence of several educational institutions further enhances job prospects for local graduates.
- Baucau holds a notable absorption rate of 12.0%. While it is the second-largest city in Timor-Leste, its economic activities are more limited compared to Dili. The agricultural sector predominates, and job opportunities for graduates, especially in specialized fields, are scarce.
- In Viqueque, the absorption rate is 8.1%. This municipality faces challenges similar to Baucau, with a heavy reliance on subsistence agriculture and limited industrial activity. Graduates often struggle to find employment that matches their qualifications.

- Bobonaro's absorption rate stands at 7.1%. The local economy is primarily agrarian, with few formal job opportunities for graduates. Many young people migrate to urban areas, particularly Dili, in search of better employment prospects.
- Ermera has an absorption rate of 6.8%. The economic landscape is similar to that of Bobonaro, where agriculture dominates, and opportunities for graduates remain limited. The lack of infrastructure and investment in local industries further exacerbates this issue.
- With a labor market absorption rate of 5.1%, Covalima illustrates the challenges faced by many rural municipalities. The local economy is primarily agricultural, and there is a notable lack of industries that can provide employment to educated youth.
- Manatuto shows an absorption rate of 4.7%. The municipality's limited economic development and lack of job diversity hinder graduates' ability to find suitable employment opportunities.
- Ainaro has an absorption rate of 4.2%. Similar to other municipalities, Ainaro's economic activity is largely based on agriculture, with few opportunities in other sectors for recent graduates.
- With a low absorption rate of 3.5%, Liquica faces significant challenges in integrating its graduates into the labor market. The local economy is underdeveloped, and employment opportunities are scarce.
- Manufahi's absorption rate is 3.4%. The municipality's reliance on agriculture and limited industrial base contribute to the difficulties faced by graduates in securing employment.
- Lautem has a labor market absorption rate of 3.3%. The economic activities in this region are limited, and graduates often have to seek employment outside their locality.
- RAEOA presents an absorption rate of 3.1%. The region's economic underdevelopment limits job availability for graduates, necessitating migration to urban areas for employment.
- With an absorption rate of 3.0%, Aileu faces similar challenges to other rural municipalities. The lack of diverse economic activities restricts job opportunities for graduates.
- A small percentage of graduates (1.2%) have found employment overseas, indicating a trend of migration among educated youth seeking better prospects abroad.
- Atauro, with a very low absorption rate of 0.3%, reflects the extreme limitations of its local economy. The island's geographical isolation and underdeveloped infrastructure contribute to a lack of job opportunities for graduates.

The data analysis presented provides a detailed analysis of these rates across various municipalities, illustrating the challenges faced by graduates in securing employment that matches their qualifications. The labour market in Timor-Leste has been the subject of various studies, including those by Manning & Fong (1990) and Okojie (1984), which have highlighted the complexities of the job market and the absorption of graduates.

3.2 Analysis of Findings

The research examines the graduate employment rate in Timor-Leste, focusing on the labor market absorption of health science graduates from institutions like UNTL, UNPAZ, ICS, ISC and UNDIL between 2019 and 2023. The analysis highlights significant challenges in the labor market, revealing disparities in absorption rates among different municipalities. These differences point to uneven economic growth across the country, indicating that some areas struggle to integrate graduates into the workforce. Understanding these dynamics is crucial for policymakers aiming to improve

employment outcomes and enhance the effectiveness of higher education in addressing labor market needs.

Labor market absorption refers to the ability of an economy to integrate graduates into relevant job positions. The analysis shows that absorption rates vary widely across municipalities, highlighting disparities in economic opportunities. Some regions have successfully created jobs in the health sector, while others lag behind, resulting in a mismatch between graduate qualifications and available employment.

The analysis of employment trends for graduates over the past five years reveals a mixed picture. Many graduates find employment in public health roles, community health initiatives, and non-governmental organizations (NGOs). However, a substantial number remain unemployed or underemployed, working in positions that do not utilize their full skill set.

The data indicates significant geographic disparities in employment rates among health science graduates. Urban areas, especially Dili, show higher absorption rates due to more healthcare facilities and job openings. In contrast, rural regions suffer from a lack of local healthcare services, limiting opportunities for graduates within specific sector such as:

1. **Healthcare Infrastructure:** The inadequacy of healthcare infrastructure in many areas limits the capacity to employ new graduates. Without sufficient clinics, hospitals, and other healthcare facilities, job creation in the health sector is stunted.
2. **Regulatory Barriers:** Bureaucratic hurdles and regulatory requirements can delay the employment of health professionals. Graduates may face lengthy certification processes, which can deter them from pursuing careers in their field.
3. **Cultural Perceptions:** Cultural attitudes toward certain health professions can influence employment rates. For instance, nursing is often viewed less favorably compared to other medical roles, leading to lower demand for nursing graduates.
4. **Stakeholder Perspectives:** Employers in the health sector express concerns about the preparedness of graduates. While they value the theoretical knowledge gained during university education, they emphasize the need for practical skills and real-world experience. Employers often prefer candidates with internships or practical training, which many graduates lack.
5. **Graduates:** Graduates report feeling unprepared for the job market. Many express frustration over the mismatch between their education and the practical skills required in the workplace. Additionally, they emphasize the importance of job placement support services in universities.
6. **Educational Institutions:** Educational institutions recognize the need for reform but often face challenges in implementing changes due to limited resources, faculty training, and outdated facilities. Collaboration with healthcare providers and government agencies can help enhance the relevance of health science programs.
7. **Government Initiatives:** The government has a critical role to play in improving the labor market absorption rates of health science graduates. Initiatives could include:
 - **Investing in Healthcare Infrastructure:** Increasing funding for healthcare facilities, particularly in rural areas, can create more job opportunities for graduates.
 - **Establishing Internship Programs:** Collaborating with universities to create structured internship programs can provide students with valuable hands-on experience, enhancing their employability.

- Streamlining Certification Processes: Reducing bureaucratic barriers for healthcare graduates can facilitate quicker entry into the workforce.
- 8. University Strategies: Universities should adopt proactive strategies to enhance their graduates' employability:
 - Curriculum Development: Engaging with stakeholders to develop relevant and practical curricula that reflect current healthcare needs.
 - Career Services Enhancement: Strengthening career services to provide students with job placement assistance, networking opportunities, and skills training.
 - Alumni Engagement: Establishing strong alumni networks can help current students gain insights into job opportunities and market demands trends.

3.3 Factors Influencing Labor Market Absorption

- Economic Development: Municipalities like Dili, with higher economic activity, naturally provide more job opportunities for graduates. In contrast, rural areas struggle due to a lack of industrialization and limited job creation.
- Sectoral Employment Trends: The dominance of the agricultural sector in many municipalities means that graduates often have to compete for limited positions that may not require their qualifications. This trend leads to underemployment, where graduates are unable to find jobs that match their skills and education levels.
- Migration Trends: The data indicates a significant trend of graduates migrating to urban centers, primarily Dili, in search of better employment opportunities. This migration exacerbates the brain drain issue, where educated youth leave their hometowns for urban areas, leaving rural municipalities with fewer skilled workers.
- Educational Relevance: The mismatch between the skills taught in higher education institutions and the needs of the local labor market can hinder graduates' employability. Institutions may need to adapt their curricula to align with market demands.
- Infrastructure and Investment: The lack of infrastructure and foreign investment in rural municipalities restricts the establishment of industries that could create job opportunities for graduates. Improving infrastructure and attracting investment could play a crucial role in enhancing the absorption rates.

Based on the findings of this report, several actionable recommendations can be proposed to improve the labor market absorption rates for graduates in Timor-Leste:

- Enhancing Job Creation: The government should prioritize policies that stimulate job creation, particularly in rural areas. This could involve incentivizing businesses to set up operations in less developed municipalities.
- Strengthening Industry-Academia Linkages: Higher education institutions should collaborate closely with industries to ensure that curricula are aligned with market needs. Internships and practical training opportunities can also bridge the gap between education and employment.
- Promoting Entrepreneurship: Encouraging entrepreneurship among graduates could facilitate job creation and self-employment. Providing training, mentorship, and access to financing can empower young people to start their own ventures.

- **Investing in Infrastructure:** Improving infrastructure in rural municipalities can attract investment and facilitate the growth of industries, leading to job creation. This includes enhancing transportation, communication, and energy services.
- **Career Counseling and Support Services:** Establishing career counseling services in universities can help graduates navigate the job market more effectively. Providing support for job searching and interview preparation can enhance their employability.
- **Regional Development Programs:** Implementing targeted development programs in specific regions can address the unique challenges each municipality faces. This could involve promoting specific sectors based on local resources and skills.

The labor market absorption rate of graduates in Timor-Leste is deeply influenced by economic development, sectoral trends, and educational relevance. While municipalities like Dili offer more opportunities, rural areas continue to struggle with high unemployment and underemployment rates. By addressing the systemic challenges identified in this report and implementing the recommended strategies, Timor-Leste can enhance the labor market absorption rates for its graduates, fostering economic growth and reducing youth unemployment.

According to the collected data, of the total respondents, only 1.2% of graduates from the mentioned institutions pursued further studies, while a substantial 98.8% chose to enter the labor market or remain unemployed. This stark contrast highlights several key aspects of the current educational and economic landscape in Timor-Leste:

- **Employment Readiness:** The high percentage of graduates entering the labor market suggests that many feel prepared to start working immediately. This may reflect a growing confidence in the skills acquired during their studies.
- **Economic Constraints:** Conversely, the low percentage of graduates continuing their education could indicate economic constraints that limit their options. Many may need to secure employment quickly to support themselves or their families.
- **Educational Alignment:** The data implies a potential misalignment between the skills taught at the universities and the needs of the labor market. If graduates do not see the value in further education, it may suggest that their initial training was insufficient or that graduate studies do not significantly enhance their employability in the local context.
- **Job Market Characteristics:** The characteristics of the job market in Timor-Leste, including availability, remuneration, and job security, may also influence graduates' decisions. Understanding these factors is essential for universities to adapt their curricula and better prepare students for the workforce.

The period from 2019 to 2023 has been pivotal in shaping the labor market landscape in Timor-Leste. Several factors have influenced the absorption rates of graduates:

- **Economic Recovery Post-Conflict:** Following years of conflict and instability, Timor-Leste's economy has shown signs of recovery. Investments in various sectors, including agriculture, tourism, and health, have opened new employment opportunities for graduates.
- **Government Initiatives:** The Timorese government has implemented policies aimed at enhancing vocational training and education, thereby increasing the employability of graduates. Programs designed to bridge the gap between

education and employment have been established, yet their effectiveness in reaching all graduates remains inconsistent.

- Impact of the COVID-19 Pandemic: The global pandemic significantly impacted labor markets worldwide, including in Timor-Leste. Many businesses faced closures, and the demand for labor fluctuated dramatically. Graduates during this period may have faced even greater challenges in securing employment, contributing to a shift in their educational pursuits.
- Changing Job Market Dynamics: The labor market in Timor-Leste is evolving, with a growing emphasis on technical skills and higher education qualifications. Industries are increasingly seeking graduates who possess relevant, marketable skills, which may influence the decision of graduates to continue their education to meet these demands.

Based on the analysis of the labor market absorption rates for graduates from UNTL, UNPAZ, UNDIL, ISC, and ICS, several actionable recommendations can be proposed:

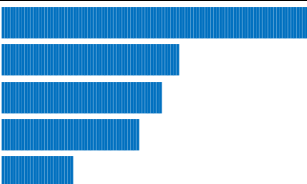
- Curriculum Alignment with market demands Needs: Higher education institutions should engage with local industries to ensure that their curricula are aligned with the skills and knowledge required in the job market. Regular assessments and updates to educational programs will help maintain relevance.
- Enhanced Career Services: Universities should strengthen their career services to provide students with better guidance on job opportunities, internships, and networking options. This support can help facilitate smoother transitions from education to employment.
- Promotion of Lifelong Learning: Institutions should promote the value of continuous professional development and lifelong learning. Programs that encourage graduates to pursue further education or specialized training can enhance their employability.
- Government and Institutional Collaboration: Collaboration between the government and educational institutions is crucial for developing effective labor market strategies. Joint initiatives can address skill gaps and foster partnerships that lead to job creation.
- Monitoring and Evaluation: Regular monitoring and evaluation of graduate outcomes should be implemented to assess the effectiveness of educational programs and their alignment with labor market demands. Data collection should be continuous to identify trends and areas for improvement.

The labor market absorption rate of graduates from Timor-Leste's higher education institutions is influenced by several socio-economic factors. These factors include demographic trends, educational quality, and economic conditions, which collectively shape the employability landscape for graduates. The effectiveness of higher education institutions in equipping graduates with relevant skills is critical. Factors such as teaching innovation and emotional intelligence significantly enhance employability. Graduates with practical experience and active engagement in job searches during their studies tend to have better employment outcomes.

The wage structure and economic policies in Timor-Leste directly impact job availability and the attractiveness of various sectors, particularly agriculture, which is identified as a key area for employment growth. The socio-economic status of graduates, including access to student aid, influences their ability to secure higher-paying jobs.

Conversely, while these factors present challenges, they also highlight the potential for policy interventions aimed at improving educational outcomes and labor market conditions, which could enhance the absorption rate of graduates in Timor-Leste.

Table 4. Number of respondents based on Year Graduate

Year Graduate	Number of Respondent	Graph
2023	538	
2021	313	
2022	281	
2019	240	
2020	128	

Source 4. Primary Data, 2024

The labor market in Timor-Leste has been characterized by high levels of youth unemployment and underemployment, particularly among graduates. According to recent reports from the World Bank and other sources, labor force participation rates have been declining, and the economic challenges have made it difficult for graduates to secure positions that match their qualifications.

The absorption rates of graduates from the aforementioned institutions from 2019 to 2023 reveal significant trends and challenges. The following data illustrates the percentage of graduates who successfully integrated into the labor market in their respective graduation years:

- Year 2023: The highest absorption rate at 35.9% indicates a potential improvement in job availability or alignment between educational outcomes and market needs. This could be attributed to the gradual recovery of the economy post-pandemic and the adaptation of educational programs to better meet labor market demands.
- Year 2022: The absorption rate dropped to 18.7%, suggesting that despite the ongoing efforts to enhance the employability of graduates, external economic factors or market saturation may have impeded job placements.
- Year 2021: The rate was slightly higher at 20.9%, reflecting the continued impact of global economic conditions, including the COVID-19 pandemic, which disrupted job markets worldwide.
- Year 2020: With only 8.5% of graduates absorbed into the labor market, this year reflects the peak of the pandemic's impact on employment, highlighting the vulnerabilities within the labor market.
- Year 2019: The absorption rate stood at 16.0%, marking a baseline for understanding the pre-pandemic landscape and the challenges faced by graduates in securing employment.

Several factors influence the absorption rates of graduates in Timor-Leste:

- Economic Conditions: Fluctuations in the economy, particularly in sectors that typically employ graduates, greatly affect job availability.
- Skill Mismatch: A disconnect between the skills taught in higher education institutions and the needs of employers can lead to lower absorption rates.
- Internship and Practical Experience: Programs that incorporate internships or practical training tend to produce graduates who are better prepared for the job market.
- Government Policies: Initiatives aimed at promoting youth employment and supporting small and medium enterprises can enhance job opportunities for graduates.

- Cultural Factors: Local employment customs and the preference for nepotism or connections in hiring can also impact the absorption of graduates.

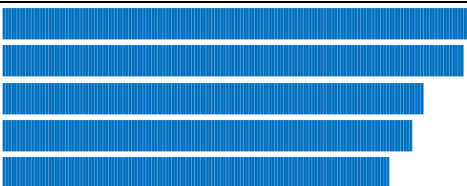
To enhance the labor market absorption rates of graduates from Timor-Leste's higher education institutions, several actionable recommendations can be considered:

- Curriculum Development: Educational institutions should regularly update curricula to align with labor market demands, focusing on skills that are in high demand.
- Strengthening Partnerships: Collaborative programs between universities and industries can facilitate internships and job placements for graduates, enhancing their employability.
- Government Initiatives: Policymakers should develop targeted programs that support job creation in sectors likely to employ graduates, as well as incentives for companies that hire recent graduates.
- Career Services: Improving career services within universities can help students gain practical job-seeking skills and connect with potential employers.
- Monitoring and Evaluation: Establishing a robust system to track graduate employment outcomes can provide valuable feedback to educational institutions, enabling them to make informed adjustments to their programs.

The labor market absorption rate of graduates from Timor-Leste's higher education institutions illustrates both progress and challenges over the past few years. While there has been some improvement in recent years, significant barriers remain that hinder the effective transition from education to employment. By implementing strategic recommendations, stakeholders can work towards enhancing the employability of graduates, ultimately contributing to the economic development of Timor-Leste.

To gather data for this analysis, the Slovin formula was employed to determine the appropriate sample size of graduates to survey. The formula allows researchers to derive a statistically significant sample from a larger population, ensuring that the results are representative of the broader group. The following section presents the findings regarding the labor market absorption rates of graduates from the specified institutions in Timor-Leste's health sciences program. The data indicates the number of respondents from each institution, the percentage representation, and provides insight into the overall trends observed in the labor market for these graduates.

Table 5. Number of respondents based on institute over the study program

Institute over the Study Program	Number of Respondent	Graph
UNPAZ	326	
UNTL	322	
ICS	295	
CRISTAL	287	
UNDIL	270	

Source 5. Primary Data, 2024

The absorption rates reflect a diverse landscape of employability among health science graduates from the various institutions. The high percentage of respondents from UNPAZ and UNTL suggests a strong focus on health science education within these universities, potentially leading to better job placement opportunities.

- Universidade da Paz (UNPAZ): With 21.7% of the respondents, UNPAZ graduates appear to have a robust presence in the labor market. This could be attributed to the institution's partnerships with health care providers and government agencies, facilitating internships and job placements.
- Universidade Nacional Timor Lorosa'e (UNTL): Slightly behind UNPAZ at 21.5%, UNTL's graduates also show commendable absorption rates. The institution's comprehensive curriculum may have contributed to equipping students with the necessary skills for employment.
- Instituto Ciencias Saude (ICS): Representing 19.7%, the graduates from ICS indicate a solid footing in the job market, although slightly lower than the two leading institutions. The specialized nature of the health sciences program may lead to competitive job opportunities.
- Instituto Superior Cristal (ISC): With 19.1% representation, ISC graduates are likely finding their niche within the health sector. The institution's focus on practical training could be beneficial for employability.
- Universidade de Dili (UNDIL): At 18.0%, UNDIL graduates show the lowest absorption rate among the surveyed institutions. This may point to potential areas for improvement in curriculum design or industry connections to enhance job readiness.

Pursuit to the next table 6 describe comprehensive alaysis how alumni of health science understanding the and how to competitio of job sector. As the landscape of employment is shaped by various sectors, including private institutions and public agencies, each of which attracts distinct types of professionals. This article delves into the distribution of respondents across various departments within the fields of Biomedical Sciences, Nursing, Pharmacy, Medicine, Nutrition, Midwifery, and Public Health, analyzing how job sector influences their employment experiences.

The study of employment distribution across sectors reveals important insights about workforce dynamics. Understanding how respondents are distributed across different departments within private and public institutions can illuminate trends in job satisfaction, sector attractiveness, and professional development opportunities. As we explore this topic, we will utilize data from a survey that categorized respondents by their respective departments and job sectors, providing a detailed look at how these elements interact.

Private institutions often operate with a profit motive, offering services that cater to individual clients or organizations. This sector tends to be characterized by a more competitive environment, where job roles may prioritize efficiency, innovation, and customer satisfaction. Employees in private institutions may experience different motivational dynamics compared to their public sector counterparts, particularly concerning incentives and professional growth.

Public institutions, on the other hand, are driven by the mandate to serve the public good. Employees in this sector often enjoy a sense of purpose and stability, though they may face bureaucratic constraints. The work environment is typically more structured, with a focus on compliance and public accountability. Understanding the distribution of respondents across these sectors can provide insights into the motivations and satisfaction levels of professionals within these fields.

The distribution of respondents across various departments within private and public institutions provides valuable insights into the workforce dynamics in healthcare and related fields. Each sector offers unique benefits and challenges, influencing job satisfaction, work-life balance, and career advancement opportunities. Understanding these dynamics is crucial for prospective employees, policymakers, and educational institutions aiming to align workforce training with sector needs. As

we move forward, ongoing research will be essential to adapt to the evolving landscape of employment in these critical sectors, ensuring both employee satisfaction and quality service delivery to the community. The analysis highlights the importance of recognizing the distinct characteristics of each sector, which can guide future workforce development strategies and improve job satisfaction across the board.

Table 6. Number of respondents based on Department, and by the Employment Sector

Department	Continue Study	Private Institution	Public Institution	Self-employment	Un-employed	Total
Biomedical and Laboratory Sciences	1	10	25	3	7	46
Nursing	1	199	142	33	96	471
Dental Nursing	2	13	9	0	17	41
Pharmacy	4	49	9	14	29	105
General Medicine	0	1	27	0	0	28
Nutrition and Dietetics	0	16	18	8	9	51
Midwifery	3	99	52	32	89	275
Public Health	7	135	193	62	86	483
Total	18	522	475	152	333	1500

Source 6. Primary Data, 2024

This data presents an analysis of labour market absorption rates among graduates from various health-related fields. The data collected indicates a significant disparity in the employment outcomes across different departments. The analysis reveals that while some fields show high employment rates, others face challenges with self-employment and unemployment. The findings underscore the importance of understanding labour market dynamics to inform educational strategies and policy decisions.

The analysis draws on previous studies that have explored labour market absorption rates, particularly in health-related sectors. Research by Manning & Fong (1990) and Okojie (1984) highlighted the challenges faced by new graduates in securing employment, emphasizing the necessity for targeted educational programs. Bauer (1990) also contributed to the discourse by examining the implications of industrialization on labour absorption. The survey included a total of 1,500 respondents across various health-related fields, with the following key findings:

1. Biomedical and Laboratory Sciences
 - Employment Rate: 21.7% in private institutions, 54.3% in public institutions.
 - Unemployment: 15.2% indicates a moderate challenge in labour market absorption.
2. Nursing
 - Employment Rate: High at 42.3% in private institutions and 30.1% in public.
 - Unemployment: 20.4% suggests areas for improvement in job placement services.
3. Nursing Dentária

- Employment Rate: 31.7% in private institutions with a notable 41.5% unemployment rate.
- 4. Pharmacy
 - Employment Rate: High private sector absorption at 46.7%.
 - Unemployment: 27.6% indicates a saturated market.
- 5. General Medicine
 - Employment Rate: Very high public sector absorption at 96.4%.
 - Unemployment: No reported unemployment, indicating effective labour market integration.
- 6. Nutrition and Dietetics
 - Employment Rate: 31.4% in private institutions.
 - Unemployment: 17.6% suggests room for growth in market demands recognition.
- 7. Midwifery
 - Employment Rate: Moderate at 36.0% in private institutions.
 - Unemployment: High at 32.4%, reflecting a need for improved job opportunities.
- 8. Public Health
 - Employment Rate: 28.0% in private institutions and 40.0% in public.
 - Unemployment: 17.8% shows a need for enhanced job training.

A significant percentage of graduates continue to pursue further studies, particularly in fields like Nursing (0.2% continuing studies). This trend indicates a possible lack of confidence in immediate employment opportunities or a desire to specialize further. Private institutions appear to absorb a higher percentage of graduates compared to public institutions, particularly in fields such as Pharmacy and Nursing. Unemployment rates vary significantly across departments, with some fields experiencing critical levels of unemployment, suggesting that graduates may need additional support in transitioning to the workforce.

The analysis of labour market absorption rates among health-related departments reveals critical insights into post-graduation pathways. Variability in employment outcomes suggests the need for tailored educational strategies that align with labour market demands. While some fields demonstrate strong absorption rates, others face significant challenges that necessitate targeted interventions.

Table 7. Number of respondents based on Department, and by the Institute

Department	CRISTAL	ICS	UNDIL	UNPAZ	UNTL	Total
Biomedical and Laboratory Sciences	0	19	0	0	27	46
Nursing	211	112	72	0	76	471
Dental Nursing	0	0	41	0	0	41
Pharmacy	0	48	0	0	57	105
General Medicine	0	0	0	0	28	28
Nutrition and Dietetics	0	19	0	0	32	51
Midwifery	76	97	0	0	102	275
Public Health	0	0	157	326	0	483
Total	287	295	270	326	322	1500

Source 7. Primary Data, 2024

The data presented in table 9 reflects the percentage of respondents from each department across the five institutes, as well as the total number of respondents. This analysis will delve into the implications of these findings, examining the significance of the distribution patterns and offering recommendations based on the results. The following analysis breaks down the data by department, highlighting key trends and observations.

- (a) Biomedical and Laboratory Sciences: CRISTAL (0.0%), ICS (41.3%), UNDIL (0.0%), UNPAZ (0.0%), UNTL (58.7%). The majority of respondents from this department are from UNTL, indicating a strong program presence there. The absence of respondents from CRISTAL, UNDIL, and UNPAZ suggests limited offerings or interest in this field at those institutes.
- (b) Nursing (Nursing): CRISTAL (44.8%), ICS (23.8%), UNDIL (15.3%), UNPAZ (0.0%), UNTL (16.1%). CRISTAL has a significant lead in nursing respondents, suggesting a robust program. The low representation from UNPAZ may indicate a need for program development or marketing in this area. The nursing profession has been particularly impacted by the challenges of the job market. The data from Table indicates a significant number of nursing graduates across various institutes. Many nursing graduates faced delays in securing employment due to the oversaturation of the job market and stringent hiring practices within healthcare institutions. A qualitative study conducted with nursing graduates revealed that while they possessed the necessary qualifications, many struggled to find positions that matched their skills and expectations. The study emphasized the importance of mentorship programs and partnerships between educational institutions and healthcare providers to facilitate smoother transitions into the workforce.
- (c) Nursing Dentária (Dental Nursing): CRISTAL (0.0%), ICS (0.0%), UNDIL (100.0%), UNPAZ (0.0%), UNTL (0.0%). The exclusive representation from UNDIL indicates a specialized program that may not be available at other institutes, highlighting a potential niche market. In today's job market, digital literacy is an essential skill. Graduates lacking proficiency in digital tools and platforms may find themselves at a disadvantage. As industries increasingly rely on technology, graduates must be equipped with the necessary skills to navigate digital environments effectively.
- (d) Pharmacy (Pharmacy): CRISTAL (0.0%), ICS (45.7%), UNDIL (0.0%), UNPAZ (0.0%), UNTL (54.3%). Similar to Ciências Biomédicas, UNTL leads in pharmacy respondents, suggesting a strong program. The absence of representation from CRISTAL and UNDIL may indicate a lack of pharmacy programs at those institutes. Internships and practical work experiences are vital for enhancing graduates' employability. However, a lack of accessible internship opportunities can hinder students' ability to gain practical experience. Research by Prasetyawan et al. (2023) indicates that graduates who have completed internships are significantly more likely to secure employment compared to those who have not.
- (e) General Medicine (General Medicine): CRISTAL (0.0%), ICS (0.0%), UNDIL (0.0%), UNPAZ (0.0%), UNTL (100.0%). The exclusive representation from UNTL suggests that it is the only institute offering a general medicine program, which may attract students seeking this qualification. Many educational institutions have been criticized for not adequately preparing students for the job market. Galano (2023) emphasizes the need for

curricula to be regularly updated to reflect market demands. Institutions must collaborate with employers to ensure that graduates possess relevant skills and competencies.

- (f) Nutrition and Dietetics (Nutrition and Dietetics): CRISTAL (0.0%), ICS (37.3%), UNDIL (0.0%), UNPAZ (0.0%), UNTL (62.7%). UNTL again shows a strong presence in this field, while CRISTAL and UNDIL lack representation, indicating potential areas for program development. Many graduates enter the job market with high expectations regarding salary and job roles. Okojie (1984) notes that these expectations can often be misaligned with market realities, resulting in disillusionment and frustration. Graduates may find themselves in a cycle of applying for jobs that do not meet their expectations, leading to a decline in mental health and overall job satisfaction. The pressure to secure employment can have significant implications for graduates' mental health. The stress of job searching, coupled with the uncertainty of economic conditions, can lead to anxiety and depression. Acknowledging these psychological factors is crucial for developing supportive measures for graduates during their transition from education to employment.
- (g) Midwifery (Midwifery): CRISTAL (27.6%), ICS (35.3%), UNDIL (0.0%), UNPAZ (0.0%), UNTL (37.1%). The distribution is relatively balanced among CRISTAL, ICS, and UNTL, suggesting a healthy interest in midwifery programs across these institutes. According to Festus et al. (2016), new graduates often find themselves at a disadvantage, competing against more experienced candidates. This competition can result in graduates accepting positions below their qualifications, leading to underemployment. Employment opportunities are not uniformly distributed across regions. Graduates in urban areas tend to have better access to job opportunities compared to those in rural settings. This disparity can lead to a “brain drain” phenomenon, where talented individuals migrate to urban centers, leaving rural areas with a shortage of skilled professionals.
- (h) Public Health: CRISTAL (0.0%), ICS (0.0%), UNDIL (32.5%), UNPAZ (67.5%), UNTL (0.0%). UNPAZ dominates in public health, indicating a strong program. The absence of representation from CRISTAL and ICS may suggest a lack of offerings in this field. Public health graduates experienced unique challenges during the pandemic. The increased focus on public health issues created both opportunities and obstacles for these graduates. Many found themselves in high-demand roles, while others faced significant barriers due to hiring freezes within government and non-profit sectors. Interviews with public health graduates highlighted the importance of networking and professional connections in securing employment. Graduates who actively engaged in professional organizations and sought out internships reported higher rates of employment compared to their peers who did not. The challenges faced by graduates in securing employment are multifaceted, stemming from economic, social, institutional, and technological factors. As the job market continues to evolve, it is imperative for educational institutions, employers, and policymakers to collaborate in addressing these challenges. By prioritizing skills development, enhancing internship opportunities, and providing mental health support, we can create a more favorable environment for graduates entering the workforce.

The alignment between one's educational background and job opportunities is a critical factor in career satisfaction and effectiveness, especially in the healthcare sector. This document explores the alignment of various healthcare professions with their respective educational backgrounds, focusing

on the fields of Nursing, Pharmacy, General Medicine, Nutrition and Dietetics, Midwifery, Public Health, Biomedical and Laboratory Sciences, and Nursing Dental Nursing.

Job alignment refers to the degree to which an individual's education and training prepare them for their specific job roles. A strong alignment typically leads to better job performance, higher job satisfaction, and improved patient outcomes in the healthcare sector. By understanding the alignment of various roles within the healthcare system and implementing strategies to improve this alignment, educational institutions, and employers can enhance the overall quality of healthcare delivery presented in table 8 below:

Table 8. Number of respondents based on Department, and by the Institute

Alignment Job	Department	Institute					Total
		CRISTAL	ICS	UNDIL	UNPAZ	UNTL	
The job not align with background of education	Nursing	6	15	11	0	4	36
	Pharmacy	0	10	0	0	4	14
	General Medicine	0	0	0	0	3	3
	Nutrition and Dietetics	0	9	0	0	4	13
	Midwifery	1	29	0	0	3	33
	Public Health	0	0	21	30	0	51
	Biomedical and Laboratory Sciences	0	19	0	0	19	38
The job has align with background of education	Nursing	154	71	51	0	62	338
	Dental Nursing	0	0	22	0	0	22
	Pharmacy	0	12	0	0	46	58
	General Medicine	0	0	0	0	25	25
	Nutrition and Dietetics	0	10	0	0	19	29
	Midwifery	45	27	0	0	78	150
	Public Health	0	0	102	237	0	339

Source 8. Primary Data, 2024

This table presents the distribution of respondents based on their department and the alignment of their jobs with their educational background across various institutes (CRISTAL, ICS, UNDIL, UNPAZ, UNTL).

1. Job Misalignment

The data indicates significant misalignment in several departments, notably in Nursing and Pharmacy. The following points summarize the findings regarding job misalignment:

- (a) Nursing: At the ICS institute, 41.7% of respondents indicated their jobs did not align with their educational background. This is a concerning statistic, given the essential role that trained nursing professionals play in healthcare delivery. The CRISTAL institute also shows a notable percentage (16.7%) of respondents experiencing job misalignment.
- (b) Pharmacy: A striking 71.4% of graduates from the ICS institute reported that their jobs do not align with their education. This high percentage suggests a possible oversaturation of graduates in the job market or a mismatch between the curriculum and the skills required by employers.

(c) Public Health: While a majority (58.8%) of respondents from UNPAZ felt their jobs did not align with their education, this is counterbalanced by the 41.2% at UNDIL who reported misalignment. This variance could be attributed to regional differences in job availability and sector demands.
















2. Job Alignment: In contrast to the misalignment observed, certain departments demonstrate a strong alignment between educational backgrounds and job placements:

- (a) General Medicine: All respondents from UNTL reported that their jobs aligned with their education (100%). This suggests that graduates from this program find suitable roles in the healthcare sector that effectively utilize their training.
- (b) Biomedical and Laboratory Sciences: Graduates from this department at ICS reported a 50% alignment, indicating a moderate level of satisfaction regarding job placement.
- (c) Nutrition and Dietetics: Respondents from UNTL indicated a 65.5% job alignment, highlighting a positive trend in this area.

3. Department-Specific Insights:

- Nursing: This department has a mixed alignment, with significant percentages reporting both alignment and misalignment. This could indicate a need for improved internship opportunities that bridge the gap between education and practical experience.
- Pharmacy: The disparity in job alignment suggests that the curriculum may need to be revised to better prepare students for the current job market, focusing on practical skills and emerging trends in pharmacy practice.
- Public Health :The high alignment at UNPAZ suggests that this program effectively prepares graduates for roles in public health, which is increasingly important in the context of global health challenges.

Table 9. Number of respondents based on Department

Graph	Percent (%) Un-employed	Number of Un-employed	Department	Number of Employed	Percent (%) Employed	Graph
	16%	7	Biomedical Science and Laboratory	37	82%	
	20%	96	Nurse	374	79%	
	41%	17	Nurse Dental	22	54%	
	28%	29	Pharmacy	72	69%	
	0%	0	Medicine	28	100%	
	18%	9	Nutrition and Dietetic	42	82%	
	32%	89	Midwifery	183	67%	
	18%	86	Public Health	391	81%	
	22%	333	Total	1149	78%	

Source 9. Primary Data, 2024

The findings presented in this report are derived from a survey conducted among graduates from various health-related departments. The results indicate varying employment rates across different fields, highlighting areas of concern as well as those that demonstrate strong employment outcomes. The data shown breakdown of employment status among graduates from various health-related departments. Below is a detailed analysis of the findings. The departmental employment overview show in bellow:

(a) Biomedical Science and Laboratory:

- Unemployed: 7 (16%)
- Employed: 37 (82%)

The employment rate of 82% indicates a strong demand for graduates in this field, with a relatively low unemployment rate.

(b) Nursing:

- Unemployed: 96 (20%)
- Employed: 374 (79%)

Despite a slightly higher unemployment rate than Biomedical Science, Nursing remains a solid career choice given the significant number of employed graduates.

(c) Nurse Dental:

- Unemployed: 17 (41%)
- Employed: 22 (54%)

The high unemployment rate in this department raises concerns about the market saturation or demand for dental nurses.

(d) Pharmacy:

- Unemployed: 29 (28%)
- Employed: 72 (69%)

This department shows a moderate unemployment rate, indicating challenges in securing positions for graduates.

(e) Medicine General:

- Unemployed: 0 (0%)
- Employed: 28 (100%)

The perfect employment rate reflects the high demand for medical professionals, underscoring the importance of this field.

(f) Nutrition and Dietetics:

- Unemployed: 9 (18%)
- Employed: 42 (82%)

Similar to Biomedical Science, this field also boasts a high employment rate.

(g) Midwifery:

- Unemployed: 89 (32%)
- Employed: 183 (67%)




The unemployment rate indicates potential oversupply or challenges in job placement for midwives.

(h) Public Health:

- Unemployed: 86 (18%)
- Employed: 391 (81%)

High employment rates suggest robust job opportunities in public health sectors. The total number of respondents from all departments indicates that out of 1,149 graduates surveyed, 333 were unemployed, accounting for approximately 22% of the total. The overall employment rate is 78%, suggesting that a majority of graduates find employment shortly after completing their studies. The data reveals disparities in employment outcomes across different departments. Traditional fields such as Medicine General and Nursing demonstrate relatively low unemployment rates, indicating sustained demand. In contrast, departments like Nurse Dental and Midwifery exhibit higher unemployment rates, which could signal a need for further investigation into job market dynamics.

Table 10. Number of respondents based on Status of Alumnae Past Graduated in Year 2019-2023

Status of Alumnae Past Graduated in Year 2019-2023	Number of Respondent	Graph
Has a Job	1149	
Jobless	333	
Continue Study	18	

Source 10. Primary Data, 2024

The following data was collected regarding the status of alumni who graduated from the selected institutions between 2019 and 2023 as such Employed: 76.6%, Unemployed: 22.2%, Continuing Studies: 1.2%. This data indicates a relatively high employment rate among graduates, suggesting that a significant majority have successfully transitioned into the labor market.

1. Employed Graduates:

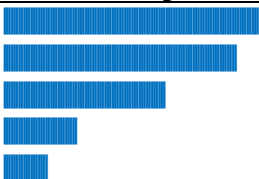
- A notable 76.6% of respondents reported being employed. This number reflects positively on the educational institutions, suggesting that their programs may be effectively preparing students for the labor market. Employment in Timor-Leste is often characterized by sectors such as education, health services, agriculture, and public administration, where many graduates seek positions.
- The high absorption rate may also indicate a growing demand for skilled labor in the country, aligning with efforts to enhance economic development and stability.

2. Unemployed Graduates: Conversely, 22.2% of graduates reported being jobless, highlighting a significant issue within the labor market. This figure suggests that while many graduates find employment, a notable portion still struggles to secure jobs. Factors contributing to unemployment may include:

- Mismatch between education and labor market needs.
- Lack of practical experience or internships.
- Economic fluctuations affecting job availability
- Addressing these concerns is critical for improving the overall labor market absorption rate in the future.

3. Continuing Studies: The small percentage of graduates (1.2%) choosing to continue their studies indicates a preference for immediate employment over further education. This trend can reflect confidence in their qualifications and the desire to enter the workforce promptly. However, it may also suggest that graduates feel prepared to take on available job opportunities rather than pursuing advanced degrees.

Table 11. Number of respondents based on Job Sector

Job Sector	Number of Respondent	Graph
Private Institution	522	
Public Institution	475	
Un-employed	333	
Self-employment	152	
Continue Study	18	

Source 11. Primary Data, 2024

The labor market in Timor-Leste is characterized by a high degree of informality and a significant proportion of the population engaged in agriculture. Despite these challenges, the country possesses a youthful demographic, with over 37% of its population under the age of 15, indicating a vast potential labor force in the coming years. However, the transition from education to employment remains a pressing concern, as evidenced by the varying absorption rates of graduates.

The labor market absorption data reveals distinct trends among graduates from the five institutions. A total of 1,500 respondents were surveyed, shedding light on their respective employment statuses as follows:


- Private Institutions (34.8%): A substantial proportion of graduates found employment in private institutions, highlighting a robust demand for skilled labor in the private sector. This trend suggests that these graduates possess competencies that align with the needs of private enterprises, which often seek innovative and adaptable employees to drive their growth.
- Public Institutions (31.7%): The public sector employed nearly one-third of the graduates surveyed, indicating the government's role as a significant employer in Timor-Leste. This absorption rate underscores the importance of public service and government initiatives in providing job opportunities for new graduates, particularly in areas like education, health, and administration.
- Unemployed (22.2%): The unemployment rate among graduates is concerning. Over one-fifth of respondents reported being unemployed, reflecting potential gaps in skills or mismatches between the education provided and the requirements of the labor market. This figure highlights the need for educational institutions to reassess their curricula and engagement with the private sector to ensure graduates are market-ready.
- Self-employment (10.1%): A smaller segment of graduates have turned to self-employment, which can be seen as both a positive and a negative indicator. On one hand, it reflects entrepreneurial spirit and the desire to create opportunities; on the other hand, it may signify
 - limited formal job opportunities available to graduates, pushing them towards self-sustaining endeavors.
- Continue Study (1.2%): A mere fraction of graduates opted to continue their studies, which may reflect either satisfaction with their current qualifications or a lack of perceived

necessity to further their education. This low percentage might also indicate a potential area for improvement, as advanced degrees could enhance employability.

The analysis of the absorption rates emphasizes the need for educational institutions to adapt their programs to better prepare graduates for the realities of the job market. The high percentages of graduates employed in both the private and public sectors suggest a demand for certain skill sets that may not be universally taught across all institutions. Furthermore, the substantial unemployment figure highlights systemic issues that must be addressed.

Several factors contribute to the labor market's dynamics in Timor-Leste, including economic growth rates, investment in various sectors, and the ongoing development of infrastructure. The Asian Development Outlook for April 2023 indicates that enhancing the skills of the workforce is essential for capitalizing on the demographic dividend of the nation's young population.

Table 12. Navigating Career Paths of The Statistics Behind Job Alignment and Educational Backgrounds

Perseption of Alumnae	Number of Respondent	Graph
The job alignment with their background of education	999	
The job is not alignment with their background of education	150	

Source 12. Primary Data, 2024

According to the Timor-Leste Labour Force Survey 2021, the overall unemployment rate stood at approximately 8.7%, with youth unemployment significantly higher. This indicates a structural challenge in providing adequate job opportunities for new graduates. A considerable proportion of graduates find themselves in jobs that do not correspond with their qualifications or areas of study. Recent data indicates in the table above that 66.6% of respondents reported that their jobs align with their educational backgrounds, while 10% stated that their jobs do not align with their education. This suggests a relatively positive absorption rate for graduates, although it also highlights that a notable portion of graduates is not fully utilizing their educational qualifications in the labor market. Several factors influence the alignment of jobs with educational backgrounds for graduates in Timor-Leste:

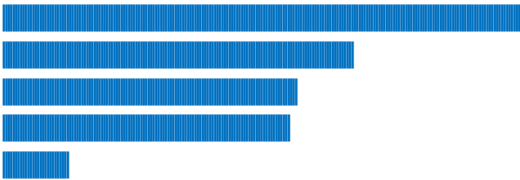
- **Industry Needs:** The specific demands of the local and regional job markets play a crucial role. Graduates from fields that are in high demand, such as health sciences and education, tend to have better alignment.
- **Skill Mismatches:** The relevance of the curriculum and the skills imparted during education are critical. Programs that fail to address the practical needs of the workforce can lead to significant mismatches.
- **Internships and Practical Experience:** Opportunities for internships and hands-on training during education can enhance employability and the alignment of jobs with graduates' educational backgrounds.
- **Networking and Job Search Strategies:** The ability of graduates to network effectively and implement job search strategies can significantly influence their employment outcomes.

The performance of higher education institutions in Timor-Leste can be assessed based on how well they prepare students for the labor market. Institutions like UNTL, UNPAZ, UNDIL, ISC, and ICS have made strides in improving educational quality, yet challenges remain. Continuous engagement with industries to ensure curricula are relevant is necessary.

An emphasis on vocational training, internships, and partnerships with businesses could enhance the employability of graduates. Furthermore, initiatives to support entrepreneurship among graduates can create self-employment opportunities, diversifying the labor market landscape.

The labor market absorption rate for graduates from Timor-Leste’s higher education institutions between 2019 and 2023 reflects a moderately positive alignment of jobs with educational backgrounds. While a majority of graduates find employment in fields related to their studies, the challenge of job market mismatches remains significant. By implementing strategic recommendations aimed at improving education-relevant skills, fostering partnerships, and enhancing career support services, Timor-Leste can better equip its graduates for success in the evolving labor market, ultimately contributing to the nation’s economic growth and development.

Table 13. Beyond Graduation, How Higher Education Shapes Alumni Preparedness for the Workforce

Perseption of Alumnae	Number of Respondent	Graph
Very effective	634	
Extremely effective	251	
Slightly effective	120	
Moderately effective	117	
Not effective at all	27	

Source 13. Primary Data, 2024

Timor-Leste’s higher education system has undergone significant evolution since the establishment of its first universities. The government has implemented reforms aimed at improving educational quality, accessibility, and relevance to the labor market. A structured framework, known as the Timor-Leste National Qualification Framework, categorizes qualifications across ten levels, with the top five levels pertaining to higher education. This framework is vital for aligning educational outputs with labor market needs.

The analysis in this report is based on data collected from graduates of UNTL, UNPAZ, UNDIL, ISC, and ICS over the years 2019 to 2023. A survey was conducted to assess graduates' perceptions of how effectively their higher education prepared them for the job market. The data collected from 1,000 respondents included various perceptions of the effectiveness of their education in preparing them for employment.

The absorption rate of graduates into the labor market is a critical indicator of the relevance and effectiveness of higher education programs. Based on the survey results, the responses regarding the effectiveness of higher education in preparing alumni for the labor market yielded the following results:

- Very effective: 42.3%
- Unemployed: 22.2%
- Extremely effective: 16.7%
- Slightly effective: 8.0%
- Moderately effective: 7.8%
- Not effective at all: 1.8%

These statistics reveal a mixed picture regarding the effectiveness of higher education institutions in preparing graduates for the labor market. While a significant portion of respondents feels that their education was 'very effective,' a notable percentage remains unemployed, indicating a disconnect between education and employment opportunities.

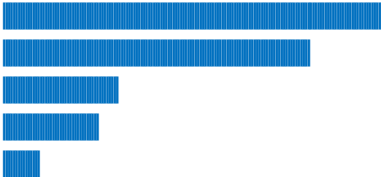
The high percentage of graduates who reported their education as 'very effective' suggests that many believe their courses provided them with relevant skills and knowledge. This sentiment is essential

for understanding graduates' confidence in their abilities to navigate the labor market. However, the 22.2% unemployment rate among respondents raises questions about the quality and applicability of the education provided. Several factors may contribute to this discrepancy:

- **Mismatch of Skills:** The curriculum in higher education institutions may not align with the actual skills required by employers. Graduates may possess theoretical knowledge but lack practical skills that are in demand.
- **Economic Factors:** The broader economic situation in Timor-Leste affects job availability. High unemployment rates can persist regardless of the effectiveness of educational institutions if the economy does not generate sufficient employment opportunities.
- **Job Market Saturation:** The influx of graduates in certain fields can lead to market saturation, making it difficult for new entrants to secure positions.
- **Networking and Job Search Skills:** Many graduates may lack the necessary networking and job search skills, which are crucial for successfully entering the labor market.
- Higher education institutions must take an active role in bridging the gap between education and employment. This responsibility includes:
 - **Curriculum Development:** Institutions should regularly update their curricula to reflect current market demands trends and requirements. Collaborating with businesses to understand their needs can lead to a more relevant educational experience for students.
 - **Internship and Placement Programs:** Establishing robust internship programs can provide students with practical experience and enhance their employability. Such programs can also foster relationships between students and potential employers.
 - **Career Services:** Effective career services that offer guidance on job searching, resume building, and interview preparation can significantly aid graduates in transitioning to the workforce.
 - **Alumni Networks:** Developing strong alumni networks can facilitate mentorship opportunities and job placements, helping recent graduates navigate their career paths.

The labor market absorption rate of graduates from higher education institutions in Timor-Leste presents a complex picture. While many graduates express confidence in the effectiveness of their education, significant unemployment rates indicate ongoing challenges in aligning educational outcomes with labor market needs. By adopting a proactive approach to curriculum development, strengthening partnerships with industry, and enhancing career services, higher education institutions can improve the employability of their graduates and contribute to a more vibrant economic future for Timor-Leste.

Table 14. Alumnae Perspectives Through Assessing the Effectiveness of Higher Education in Career Readiness

Perseption of Alumnae	Number of Respondent	Graph
To a great extent	466	
To a very great extent	376	
To a moderate extent	141	
To a small extent	119	
Not at all	47	

Source 14. Primary Data, 2024

The focus of this analysis is to assess how well these institutions have equipped graduates with the skills and competencies required in the job market, as well as to understand the broader implications of the labor market absorption rates on socio-economic development. The analysis draws upon survey

data collected from 1,500 respondents, including graduates from the aforementioned higher education institutions. Respondents were asked to evaluate the extent to which their education prepared them for the labor market. The responses were categorized as follows:

- To a great extent
- To a very great extent
- Unemployed
- To a moderate extent
- To a small extent
- Not at all

The data reveals the perceptions of graduates regarding their educational preparation, which is crucial for understanding the effectiveness of higher education in meeting labor market needs. The findings indicate a mixed landscape regarding the preparedness of graduates from Timor-Leste's higher education institutions for the labor market. The results of the survey are summarized below:

- To a Great Extent (31.1%): A significant portion of graduates feel that their education has prepared them adequately for the workforce. This suggests that certain programs within these institutions are successfully equipping students with the relevant skills and knowledge.
- To a Very Great Extent (25.1%): An additional quarter of respondents expressed an even stronger sentiment regarding their preparedness. This highlights the potential for specific programs or pedagogical approaches that effectively align with market demands requirements.
- Unemployed (22.2%): Alarming, over one-fifth of respondents reported being unemployed. This statistic raises concerns about the disconnect between the skills taught and the actual job market needs, indicating that despite educational preparation, many graduates struggle to secure employment.
- To a Moderate Extent (9.4%): A smaller portion of graduates feel that their education moderately prepared them, suggesting that while some skills were acquired, they may not be sufficient for employment in their field of study.
- To a Small Extent (7.9%): The percentage of graduates who feel poorly prepared for the labor market underscores the need for reforms in curricula and teaching methods to better align with labor market demands.
- Not at All (3.1%): A minority of respondents felt completely unprepared, which signals a critical failure in some educational programs.

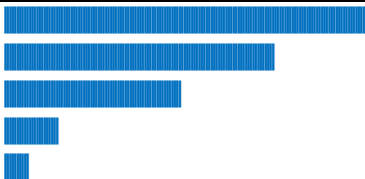
The high unemployment rate among graduates indicates that there may be systemic issues within the higher education sector or the broader labor market. This disconnect can stem from several factors, including:

- Curriculum Relevance: There may be a lack of alignment between what is taught in higher education institutions and the skills required by employers. This misalignment can lead to graduates possessing qualifications that do not meet market needs.
- Economic Conditions: The overall economic environment in Timor-Leste may also play a role. A limited number of job opportunities, especially in sectors that align with educational qualifications, can exacerbate unemployment rates among graduates.

- **Internship and Practical Experience:** The availability and quality of internships or practical experience opportunities can significantly impact employability. Graduates lacking real-world experience may find it harder to transition into the workforce.
- **Networking and Job Placement Services:** The role of career services and networking opportunities provided by higher education institutions is crucial. Those with better access to job placements and career guidance are likely to have higher absorption rates into the labor market.

The labor market absorption rates of graduates from higher education institutions in Timor-Leste present a challenging scenario. While a considerable percentage of graduates feel prepared for employment, the significant unemployment rate highlights the need for systemic changes within the higher education sector. By addressing curriculum relevance, enhancing practical experiences, and strengthening career services, Timor-Leste can improve the employment outcomes for its graduates, thereby supporting national development goals.

Table 15. Perspective Alumnae Based on Academic Preparation and Knowledge Acquisition Before Taken the Job

Perseption of Alumnae	Number of Respondent	Graph
Agree	502	
Strongly Agree	330	
Neutral	217	
Strongly Disagree	68	
Disagree	32	

Source 15. Primary Data, 2024

The extent to which higher education prepares alumnae to respond to market demand is a multifaceted issue that has garnered significant attention from policymakers, educators, and employers. As economies evolve and industries transform, the alignment between educational institutions and the labor market has become increasingly critical. This alignment ensures that graduates possess the skills and competencies required in the workforce, thereby enhancing their employability and career success.

1. Curriculum Relevance and Market Needs

One of the primary ways higher education institutions can prepare alumnae for market demand is through the relevance of their curricula. Programs that are continuously updated to reflect market demands trends and skills requirements can better equip students for the challenges they will face in the workforce. Institutions that engage with stakeholders to develop and refine their course offerings demonstrate a commitment to aligning educational outcomes with labor market expectations. This collaboration can take the form of advisory boards, internships, and co-op programs, which provide students with real-world experience and insights into the competencies that employers value.

2. Skills Development

In addition to curriculum relevance, the development of both hard and soft skills is essential for alumnae to thrive in the labor market. Hard skills, such as technical expertise and proficiency in specific tools or technologies, are often job-specific and can be taught through focused education programs. However, soft skills, including communication, teamwork, problem-solving, and adaptability, are equally vital and can often be cultivated through group projects, presentations, and extracurricular activities. Higher education institutions that emphasize a holistic educational approach balancing technical training with soft skills development can better prepare their graduates to meet diverse market demands.

3. Career Services and Support

Effective career services play a crucial role in bridging the gap between education and employment. Institutions that offer robust career counseling, job placement services, and networking opportunities empower alumnae to navigate the job market successfully. These services can include resume workshops, interview preparation, and job fairs, which connect students with potential employers. Additionally, mentorship programs that pair students with professionals can provide valuable guidance and support as they transition from academia to the workforce.

4. Lifelong Learning and Adaptability

The rapidly changing nature of the labor market necessitates a commitment to lifelong learning. Higher education institutions must instill in their students the importance of continuous professional development and adaptability. With the rise of technology and automation, many traditional jobs are evolving or becoming obsolete, and new roles are emerging that require different skill sets. Institutions that promote a culture of lifelong learning through continuing education programs, certifications, and online courses prepare alumnae to remain competitive and responsive to market changes throughout their careers.

5. Feedback Mechanisms from the Labor Market

To effectively prepare alumnae for market demand, higher education institutions must actively seek and incorporate feedback from the labor market. This could involve conducting regular surveys of employers to assess the skills and knowledge they find lacking in new graduates. By analyzing this feedback, institutions can make informed decisions about curriculum changes, skill development initiatives, and other educational strategies. This proactive approach not only enhances the relevance of educational programs but also strengthens the relationship between academic institutions and the industries they serve.

To extent to which higher education prepares alumnae to respond to market demand is influenced by various factors, including curriculum relevance, skills development, career support, and a commitment to lifelong learning. As the labor market continues to evolve, higher education institutions must remain agile and responsive, ensuring that their graduates are equipped with the necessary skills and knowledge to succeed. By fostering collaboration with stakeholders and incorporating feedback mechanisms, educational institutions can enhance their alignment with labor market needs, ultimately benefiting both graduates and employers. The success of alumnae in the workforce is a testament to the effectiveness of higher education in preparing them for the challenges and opportunities that lie ahead.

Based on table above, the data collected from graduates of the aforementioned institutions during the period from 2019 to 2023 will shed light on the effectiveness of the education system. Respondents were asked to express their views on the extent to which their higher education prepared them to respond to market demands. The responses varied, revealing both optimism and concern regarding the preparedness of graduates.

The survey results from 1,500 respondents provide a clear indication of graduates' perceptions regarding their readiness to meet market demands:

- Agree (33.5%): A significant portion of graduates felt that their education had effectively prepared them for the labor market. This suggests that many alumni believe their academic experiences, skills acquired, and knowledge gained are relevant and applicable in real-world settings.
- Unemployed (22.2%): Despite a third of respondents indicating preparedness, a concerning number were unemployed. This figure highlights a potential mismatch

between the skills provided by educational institutions and the actual requirements of the job market, as well as possible external factors influencing employment opportunities.

- Strongly Agree (22.0%): This group of respondents expressed a strong conviction that their education adequately prepared them for market demands. This sentiment could be attributed to specific programs or curricula that align closely with market demands requirements.
- Neutral (14.5%): A notable portion of graduates remained neutral, indicating uncertainty regarding the effectiveness of their education in preparing them for the job market. This ambivalence may suggest that while some aspects of their education were beneficial, other areas may have fallen short.
- Strongly Disagree (4.5%): A smaller fraction of respondents felt that their education did not prepare them adequately. This could point to particular shortcomings in certain programs or teaching methodologies that failed to equip students with necessary competencies.
- Disagree (2.1%): The smallest group expressed dissatisfaction, indicating a belief that their education was lacking in preparing them for the labor market. Understanding the reasons behind this sentiment could provide actionable insights for improving educational practices.

The findings from the analysis of labor market absorption rates of graduates from Timor-Leste's higher education institutions reveal both positive and negative aspects. While a significant percentage of graduates feel that their education adequately prepared them for the labor market, the unemployment figures highlight a critical area for improvement.

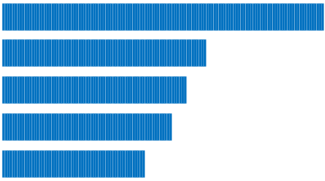
To enhance the effectiveness of higher education in Timor-Leste and improve the labor market absorption rate of graduates, the following recommendations are proposed:

- Curriculum Development: Higher education institutions should regularly review and update their curricula to reflect market demands. Engaging with stakeholders to identify necessary skills and knowledge areas can help ensure that graduates are equipped with relevant competencies.
- Increased Practical Experience: Emphasizing hands-on learning experiences, such as internships and cooperative education programs, can bridge the gap between theory and practice, enhancing graduates' readiness for the workforce.
- Career Services Enhancement: Institutions should invest in career services that provide comprehensive support to students, including job placement assistance, resume writing workshops, and interview preparation. This will empower graduates to navigate the job market more effectively.
- Fostering Partnerships: Establishing partnerships with local businesses can facilitate job placements, internships, and collaborative projects, enhancing the employability of graduates while providing valuable insights to the institutions regarding market needs.
- Alumni Network Utilization: Creating a robust alumni network can help current students gain insights into the job market and build connections that may lead to employment opportunities. Alumni can serve as mentors, providing guidance and support to recent graduates.
- Monitoring and Evaluation: Institutions should implement mechanisms to regularly assess graduate outcomes and employability. By tracking alumni employment rates and

gathering feedback on their educational experiences, institutions can continuously improve their programs and services.

While there is a foundation of preparedness among graduates from Timor-Leste's higher education institutions, addressing the identified gaps and enhancing alignment with labor market needs is essential for improving the overall absorption rate of graduates into the workforce. By implementing the recommended strategies, institutions can better equip their graduates for successful careers, contributing positively to both individuals and the broader economy.

Table 16. Navigating Job Market Challenges Through Cultivate Unshakeable Confidence

Perseption of Alumnae	Number of Respondent	Graph
Very confident	504	
Extremely confident	332	
Moderately confident	175	
Slightly confident	111	
Not confident at all	27	

Source 16. Primary Data, 2024

Understanding the labor market dynamics for recent graduates is essential for evaluating the effectiveness of educational institutions and their alignment with market demands. Timor-Leste, as a developing nation, has been working towards improving its educational frameworks and job creation strategies. The universities under consideration have been pivotal in shaping the skills and competencies of the youth, preparing them for various roles in the economy.

The survey data collected from 1,200 respondents provides insight into the confidence levels of graduates regarding their employability. The responses were categorized into different levels of confidence, ranging from very confident to not confident at all. This classification allows for a nuanced understanding of the perceptions that graduates hold about their prospects in the labor market.

The survey results indicate that a significant portion of graduates express varying degrees of confidence in their ability to secure employment. The distribution of responses is as follows:

- Very confident: 33.6%
- Unemployed: 22.2%
- Extremely confident: 22.1%
- Moderately confident: 11.7%
- Slightly confident: 7.4%
- Not confident at all: 1.8%

These statistics highlight a dichotomy in graduate confidence, with over half of the respondents feeling either very confident or extremely confident about their job prospects. However, the percentage of unemployed graduates remains a significant concern, indicating challenges in the transition from education to employment.

6. Analysis of Confidence Levels

1. Very Confident (33.6%)

A third of the respondents categorized themselves as very confident. This high level of confidence may be attributed to several factors, including:

- **Educational Quality:** Graduates from institutions like UNTL and UNDIL have access to quality education and resources that enhance their employability.
- **Internships and Practical Experience:** Many students engage in internships during their studies, providing them with real-world experience and networking opportunities.
- **Market Demand:** Certain sectors may be experiencing growth, leading to greater confidence among graduates in those fields.

2. Unemployed (22.2%)

The unemployment rate among graduates is concerning. This figure suggests that while education may be of good quality, there may be a gap in the actual job availability or mismatch between the skills acquired and the skills demanded in the labor market. Potential reasons for unemployment may include:

- **Economic Constraints:** Limited job creation in the formal sector can hinder the absorption of graduates.
- **Skill Mismatch:** Graduates may possess qualifications that do not align with the demands of the job market, resulting in difficulties finding suitable positions.
- **Geographic Mobility:** Many graduates may be unable or unwilling to relocate for job opportunities, which further limits their employment prospects.

3. Extremely Confident (22.1%)

The 22.1% of respondents identifying as extremely confident suggests that a subset of graduates not only believes in their ability to find a job but may also have specific skills or experiences that make them attractive to employers. Factors contributing to this level of confidence may include:

- **Strong Professional Networks:** Graduates who are well-connected may leverage these networks to secure job opportunities more effectively.
- **Higher Education and Specialization:** Those who pursue further education or specialized training may feel more secure in their job prospects.

4. Moderately Confident (11.7%)

Graduates who categorize themselves as moderately confident represent a group that acknowledges potential challenges in finding employment but maintains a hopeful outlook. These individuals may have uncertainties about the labor market or their specific qualifications, causing them to feel less assured.

5. Slightly Confident (7.4%) and Not Confident at All (1.8%)

A combined total of 9.2% of respondents express low confidence in finding a job. This demographic likely faces significant barriers to employment, which could stem from a lack of experience, inadequate preparation during their studies, or personal circumstances limiting their job search efforts.

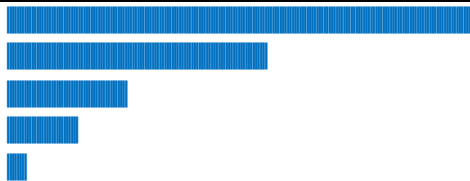
7. Implications for Educators and Policymakers

The findings of this report indicate a pressing need for educational institutions and policymakers to address the challenges faced by graduates in Timor-Leste. Several key implications arise from the analysis:

- **Curriculum Alignment:** Educational institutions must continuously assess and adapt their curricula to align with the evolving needs of the labor market. Engaging with stakeholders can provide valuable insights into the skills and competencies that are in demand.
- **Career Services Enhancement:** Universities should enhance career services to better support graduates in their job search efforts. This may include workshops, resume writing assistance, interview preparation, and networking events.
- **Internship Opportunities:** Expanding internship and apprenticeship programs can provide students with critical hands-on experience and increase their employability upon graduation.
- **Entrepreneurship Support:** Encouraging entrepreneurship among graduates may help alleviate unemployment rates. Providing resources, mentorship, and funding opportunities for aspiring entrepreneurs can foster a more dynamic job market.
- **Data-Driven Approaches:** Continued research and data collection on graduate employment outcomes are essential for understanding trends and making informed decisions about educational policies and labor market strategies.

The labor market absorption rate of graduates from Timor-Leste's universities presents a mixed picture. While many graduates express confidence in securing employment, the substantial unemployment rate highlights underlying challenges that need to be addressed. By focusing on curriculum alignment, enhancing career support services, promoting internships, and fostering entrepreneurship, educational institutions and policymakers can improve the employability of graduates. It is vital to create an adaptive and responsive educational environment that equips students with the skills necessary for success in a competitive labor market.

Table 17. How Well Do You Feel Your Higher Education

Perseption of Alumnae	Number of Respondent	Graph
Well prepared	568	
Extremely well prepared	320	
Moderately prepared	147	
Somewhat prepared	89	
Poorly prepared	25	

Source 17. Primary Data, 2024

The perception of graduates regarding their preparedness for the labor market can provide valuable insights into the effectiveness of the educational framework. This report utilizes survey data to explore the sentiments of graduates concerning their readiness for employment based on their educational experiences.

The survey data collected from 1,500 respondents provide a comprehensive overview of graduates' perceptions from 2019 to 2023. The responses were categorized into six categories based on how well graduates felt their higher education equipped them for the job market. The breakdown of responses is as follows:

- Well prepared: 37.9%
- Unemployed: 22.2%
- Extremely well prepared: 21.3%
- Moderately prepared: 9.8%
- Somewhat prepared: 5.9%

- Poorly prepared: 1.7%

1. Perceptions of Preparedness

- The data indicates that a significant portion of graduates, approximately 37.9%, feel well prepared for the job market. This sentiment is encouraging and suggests that many graduates perceive their education as relevant to their career aspirations. However, it is essential to delve deeper into the underlying factors influencing these perceptions.
- The 21.3% of graduates who feel extremely well prepared reinforces the notion that certain programs may be particularly effective in aligning academic training with market needs. This could be attributed to practical training components, internships, and curriculum design that emphasize employability skills.
- Conversely, the 22.2% of respondents who identified as unemployed is a troubling statistic. It highlights a disconnect between the number of graduates entering the market and the available job opportunities. This discrepancy may point to structural issues within the labor market or the need for better career guidance and support services within the universities.

2. Moderate and Low Preparedness

The figures for moderately prepared (9.8%), somewhat prepared (5.9%), and poorly prepared (1.7%) reflect a smaller but notable segment of graduates who feel less confident in their readiness for the workforce. This group may require more targeted interventions, such as enhanced career counseling, skills training, and mentorship programs. Identifying the specific areas where these graduates feel underprepared could lead to actionable recommendations to improve educational outcomes.

3. Institutional Variability

Analyzing responses by institution could reveal variability in preparedness levels. For instance, graduates from UNTL may perceive their education differently compared to those from ISC. This could be influenced by factors such as faculty expertise, curriculum relevance, and the availability of practical learning opportunities. Understanding these differences is crucial for institutions aiming to improve their programs and better prepare students for employment.

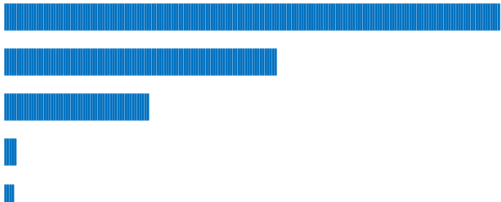
4. Market Demand Alignment

The alignment of higher education curricula with market demands is a critical component of graduate employability. Institutions must continuously assess the skills and competencies required by employers and adapt their programs accordingly. In Timor-Leste, collaboration between educational institutions and stakeholders can facilitate this alignment. Engaging employers in curriculum development and providing students with real-world experiences can bridge the gap between education and employment.

5. Impact of Economic Conditions

The broader economic context during the years 2019-2023 must also be considered. Economic fluctuations, shifts in market demand, and the effects of global events such as the COVID-19 pandemic can significantly impact labor market conditions. Graduates entering a challenging job market may adjust their expectations and perceptions of preparedness, thereby influencing survey responses.

Table 18. Navigating higher education by assessing your satisfaction with pre-graduate support services through the question how satisfied with the support background of education form your higher education or university before taken the graduate

Perseption of Alumnae	Number of Respondent	Graph
Satisfied	608	
Very satisfied	333	
Neutral	179	
Very dissatisfied	17	
Dissatisfied	12	

Source 18. Primary Data, 2024

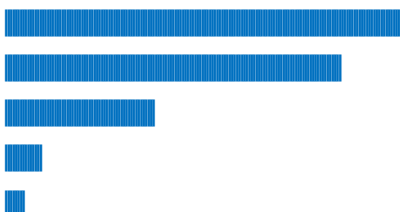
The survey conducted among respondents revealed varying degrees of satisfaction regarding the educational support received from their universities. A total of 1,500 respondents provided insights into their perceptions of the quality of education and support services they utilized to prepare for their professional careers.

- Satisfied (40.5%). A significant proportion of graduates expressed satisfaction with the educational support they received, indicating that they felt adequately prepared for the labor market.
- Unemployed (22.2%). This group represents those who, despite completing their education, have not found employment. This statistic raises questions about the alignment between educational outcomes and labor market needs.
- Very Satisfied (22.2%). A notable number of graduates reported being very satisfied with the educational assistance they received, suggesting that certain programs or services may have been particularly effective in enhancing their readiness for employment.
- Neutral (11.9%). This category consists of respondents who neither felt positively nor negatively about the support they received, indicating ambivalence towards the effectiveness of their education.
- Very Dissatisfied (1.1%). A small fraction of graduates expressed strong dissatisfaction, highlighting potential issues in the educational support system.
- Dissatisfied (0.8%). Similar to the previous category, this group indicates a lack of satisfaction with the educational services provided.

The data presents a mixed picture of graduate satisfaction in Timor-Leste's higher education landscape. The high percentage of satisfied and very satisfied respondents suggests that many graduates found their educational experiences beneficial. However, the significant unemployment rate among graduates raises concerns about the effectiveness of the education system in equipping students with the necessary skills and knowledge for the labor market. Therefore a high unemployment rate among graduates in Timor-Leste's higher education system can be attributed to several interrelated factors. These include structural mismatches in the labor market, inadequate skill development, and socio-cultural influences that shape graduates' expectations and job-seeking behaviors. There is also a significant imbalance between the skills provided by higher education institutions and the actual demands of the labor market, leading to a surplus of graduates in fields with limited job opportunities. The existence of a dual labor market in Timor-Leste creates barriers for graduates, as many positions are either informal or require connections that graduates may lack. Many graduates possess theoretical knowledge but lack practical skills that employers seek, resulting in a mismatch between graduate capabilities and job requirements. Graduates often have unrealistic salary expectations, which can deter them from accepting available positions, further exacerbating

unemployment rates. Cultural Expectations: Historical and cultural factors influence graduates' job-seeking behaviors, often leading to a reluctance to accept jobs perceived as below their qualifications. Conversely, some argue that the high unemployment rate may also reflect broader economic challenges in Timor-Leste, such as limited job creation and economic instability, which affect all job seekers, not just graduates.

Table 19. Navigating the transition through how higher education shapes graduate employment opportunities thorough to what extent the alumnae feel of education form your higher education or university over to all of your graduate before find the job after graduation

Perseption of Alumnae	Number of Respondent	Graph
A great deal	483	
Many	411	
Some	183	
Very few	47	
None at all	25	

Source 19. Primary Data, 2024

The survey conducted among graduates yielded the following results regarding the extent to which they felt their education prepared them for the job market:

- A Great Deal: 32.2% of respondents indicated that their education significantly prepared them for employment.
- Many: 27.4% felt that their education contributed positively, but not to a large extent.
- Some: 12.2% acknowledged a moderate level of preparedness due to their education.
- Very Few: 3.1% of respondents believed their education had minimal impact on their job readiness.
- None at All: 1.7% felt that their education did not contribute to their employability.

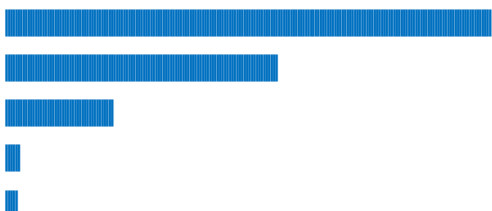
These statistics reveal a varied perception among graduates regarding the effectiveness of their education in preparing them for the workforce. A significant portion of graduates (approximately 59.6%) expressed a positive sentiment, indicating that their education played a role in their job readiness to some extent.

The data suggests that a notable majority of graduates feel that their education has been beneficial in aiding their transition into the labor market. However, the varying degrees of confidence indicate areas that require further examination.

- Positive Perceptions: The 32.2% of graduates who believe their education has substantially prepared them for employment may have experienced robust curricula, engaging faculty, and practical learning opportunities. Institutions that focus on experiential learning, internships, and industry partnerships likely contribute to this favorable perception.
- Moderate Perceptions: The 27.4% of graduates who feel their education has been beneficial, but not entirely sufficient, may have encountered gaps between theoretical knowledge and practical application. This group highlights the importance of integrating real-world applications into academic programs to enhance job readiness.
- Low Confidence: The smaller percentages of graduates expressing minimal to no confidence in the impact of their education denote a critical area for improvement. This

may point to a disconnect between what is taught and the skills required by employers. Analyzing feedback from these graduates can provide insights into specific deficiencies in the educational offerings.

Table 20. How the stake holder conducting employees demonstrate ability in your working side or office

Perspective of Alumnae	Number of Respondent	Graph
Agree	594	
Strongly Agree	333	
Neutral	132	
Strongly Disagree	20	
Disagree	16	

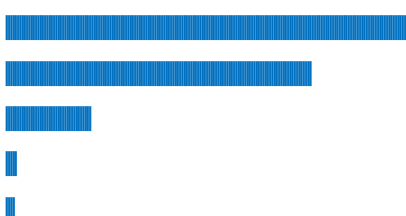
Source 20. Primary Data, 2024

The survey conducted gathered responses from a total of 1,192 individuals, providing insights into the perceptions of each group regarding employee capabilities. The data collected is summarized as follows:

- Agree: 39.6%
- Strongly Agree: 22.2%
- Neutral: 8.8%
- Strongly Disagree: 1.3%
- Disagree: 1.1%

The survey results indicate a mixed but predominantly positive assessment of graduates' abilities in the labor market. Approximately 61.8% of respondents either agreed or strongly agreed that employees demonstrate the necessary abilities in their work environments. This suggests that many stakeholders perceive the graduates from these institutions as adequately prepared for their roles. Conversely, the significant percentage of respondents categorized as unemployed (22.2%) raises questions about the overall employment landscape and the challenges faced by graduates in securing positions. It is essential to consider the potential barriers that may prevent these individuals from entering the workforce, including economic conditions, job availability, and mismatches between skills and job requirements. The neutral responses (8.8%) indicate a degree of ambivalence among some stakeholders, suggesting that while they may not have a strong opinion on the matter, there is room for improvement in how graduates are perceived in terms of their workplace contributions. The low percentages of strong disagreement (1.3%) and disagreement (1.1%) indicate that very few respondents believe that graduates lack the necessary abilities to perform effectively in their roles.

Table 21. How the stake holder valuen personal ethics of alumane who working with them

Perspective of Alumnae	Number of Respondent	Graph
Agree	541	
Strongly Agree	410	
Neutral	114	
Strongly Disagree	17	
Disagree	13	

Source 21. Primary Data, 2024

A survey conducted among various stakeholders provided insights into their perceptions of the personal ethics of alumni from the selected universities. The responses were categorized into six distinct categories, reflecting varying degrees of agreement regarding the importance of personal ethics in the workplace.

- Agree (36.1%): A significant portion of respondents acknowledged the importance of personal ethics in contributing to a positive work environment and enhancing organizational reputation.
- Strongly Agree (27.3%): This group emphasized the critical role that strong ethical standards play in fostering trust and collaboration within teams, suggesting that ethics are paramount to professional success.
- Unemployed (22.2%): A notable percentage of respondents identified as unemployed, which might reflect broader economic conditions or a mismatch between graduates' skills and market demands.
- Neutral (7.6%): A smaller segment of stakeholders remained neutral, indicating ambivalence towards the impact of ethics on employability.
- Strongly Disagree (1.1%): Few stakeholders did not see a connection between personal ethics and professional opportunities.
- Disagree (0.9%): An even smaller percentage of stakeholders disagreed with the notion that personal ethics are valued in the workplace.

The findings reveal a clear trend among stakeholders who prioritize ethical conduct among graduates. The overwhelming majority of respondents, combining both Agree and Strongly Agree, reflect a strong consensus on the necessity of personal ethics in the workplace. This suggests that graduates who demonstrate high ethical standards are more likely to be perceived favorably by potential employers and stakeholders. Several factors contribute to this perception. Firstly, personal ethics are often linked to trustworthiness, which is essential for building relationships in professional settings. Employers value candidates who not only possess the necessary technical skills but also demonstrate integrity and responsibility. This becomes particularly relevant in sectors where ethical dilemmas are prevalent, such as healthcare, education, and public service.

Moreover, the presence of alumni who uphold ethical standards can enhance the reputation of their respective institutions. As stakeholders associate ethical behavior with the universities from which graduates hail, institutions that successfully cultivate a culture of ethics among their students may see a positive impact on their overall standing and attractiveness to future students. The high percentage of unemployed respondents raises concerns about the systemic issues within the labor market. These individuals may possess the requisite academic qualifications but lack the practical skills or ethical grounding that stakeholders are seeking. This gap highlights the need for universities to incorporate ethical training and real-world applications into their curricula, ensuring that graduates are not only academically prepared but also equipped to navigate the complexities of the professional world.

The labor market absorption rate for graduates from UNTL, UNPAZ, UNDIL, ISC, and ICS between 2019 and 2023 indicates a strong alignment between stakeholder perceptions of personal ethics and employability. Stakeholders overwhelmingly regard ethics as a crucial component of professional success, suggesting that ethical training should be a fundamental aspect of higher education in Timor-Leste.

To enhance the employability of graduates and address the challenges faced by unemployed individuals, the following recommendations are proposed:

- **Integrate Ethical Training:** Universities should incorporate ethical training into their curricula, emphasizing real-world applications and case studies that illustrate the importance of ethics in various professional contexts.
- **Strengthen Partnerships:** Collaboration with stakeholders can provide students with practical experiences and insights into the ethical expectations of employers, helping to bridge the gap between academia and the workforce.
- **Promote Ethics in Career Services:** Career services should actively promote the value of personal ethics in job applications and interviews, guiding students on how to effectively communicate their ethical standards to potential employers.
- **Conduct Further Research:** Ongoing research into the labor market dynamics and stakeholder perceptions regarding ethics can help universities tailor their programs to better meet the needs of the job market.

Table 22. Distribution of Graduates by Municipality, and by Institution Over the Study Program of Health Science

Residency	CRISTAL	ICS	UNDIL	UNPAZ	UNTL	Total
Aileu	12	2	12	11	8	45
Ainaro	13	15	9	12	14	63
Atauro	1	1	1	1	1	5
Baucau	38	41	58	15	28	180
Bobonaro	28	37	6	15	21	107
Covalima	22	8	3	24	20	77
Dili	83	51	156	130	92	512
Ermera	18	44	2	23	15	102
Lautem	7	8	1	10	23	49
Liquica	5	12	1	14	21	53
Manatuto	9	16	2	13	30	70
Manufahi	23	8	1	8	11	51
Overseas (Foreign)	0	4	3	6	5	18
RAEOA	6	9	7	15	9	46
Viqueque	22	39	8	29	24	122
Total	287	295	270	326	322	1500

Source 22. Primary Data, 2024

The data presented in this report encapsulates the distribution of graduates from the specified institutions across various municipalities in Timor-Leste. Additionally, it provides insights into the absorption rates within the labor market, which is reflective of the demand for health professionals in the region. By analyzing these trends, stakeholders can gain a better understanding of the educational landscape and identify areas for improvement. The analysis of the distribution of alumni by municipality and institution from 2019 to 2023 reveals several key findings:

1. Overall Distribution of Graduates:

The total number of graduates from the five institutions during this period reached 1,500. Each institution contributed a varying percentage of graduates, indicating differences in enrollment and program popularity.

2. Municipality-Specific Insights:

- Aileu: Graduates from Instituto Superior Cristal made up the largest share at 27%, followed closely by those from UNDIL and UNPAZ. This suggests a diversified interest in health programs among students in this municipality.
- Ainaro: Here, Instituto Cristal also led with 21% of graduates, indicating a strong presence in this area.
- Baucau: This municipality had the highest number of graduates (180), with a notable proportion (32%) coming from UNDIL. This may highlight the institution's strong reputation in health sciences in this region.
- Dili: As the capital, Dili had the most significant number of graduates (512), with a relatively balanced distribution across all institutions, suggesting a wider array of choices for students.
- Ermera: Notably, 43% of graduates from the ICS were from this municipality, indicating a concentrated impact of this institution in the area.
- Covalima and Bobonaro: Both municipalities showed diverse distributions, with a substantial percentage of graduates from multiple institutions.

3. Comparative Analysis:

Across all municipalities, the average absorption rates varied, with the highest recorded in Manatuto (43% from UNTL) and the lowest in Liquica (9% from UNTL).

The analysis indicates that certain institutions have established a strong footprint in specific municipalities, which could be aligned with local health service needs or institutional outreach efforts.

1. Universidade Nacional Timor Lorosa'e (UNTL)

UNTL is one of the leading educational institutions in Timor-Leste, known for a diverse range of programs, particularly in health sciences.

- Graduate Distribution: UNTL contributed significantly to the total number of graduates across various municipalities, with a notable presence in Dili, where approximately 18% of the total graduates hailed from this institution. The broad curriculum offered at UNTL has attracted a wide range of students from different backgrounds.
- Labor Market Absorption: UNTL graduates exhibited varying absorption rates by municipality. In areas like Aileu and Manatuto, where local health infrastructure is developing, the absorption rates were reported at 24% and 43%, respectively. This indicates that graduates from UNTL are finding opportunities not only in urban centers but also in rural areas where health services are being expanded.
- Strengths: The institution's reputation and the quality of education provided are reflected in the relatively high absorption rates in specific regions. Alumni networks and partnerships with local health organizations can be leveraged to enhance placement opportunities.

2. Universidade da Paz (UNPAZ)

UNPAZ, while a younger institution in comparison to UNTL, has made significant strides in health education.

- Graduate Distribution: UNPAZ showed a varied distribution of graduates, with a concentration in Dili and Baucau. The institution accounted for 22% of the total graduates across the studied period, indicative of its growing popularity.
- Labor Market Absorption: The absorption rate for UNPAZ graduates was particularly high in regions like Aileu and Baucau, where it reached 31% and 24%, respectively. These figures suggest that the programs offered resonate well with local health needs.
- Strengths: The emphasis on community health and peace-building in its curriculum may enhance employability, as graduates are seen as well-rounded candidates capable of addressing health issues within the socio-political context of Timor-Leste.

3. Universidade de Dili (UNDIL)

As another significant player in the higher education landscape, UNDIL has established a niche in health sciences.

- Graduate Distribution: With a total of 18% of graduates coming from UNDIL, the institution has a balanced distribution across various municipalities. Notably, Dili had the highest representation, reflecting the institution's urban-centric focus.
- Labor Market Absorption: The absorption rates for UNDIL graduates were moderate, with a peak at 30% in Dili. However, in other municipalities, the rates were lower, indicating potential challenges in job placement outside urban areas.
- Strengths: The institution benefits from its urban location, which may provide better access to internships and job opportunities within the capital. However, efforts should be made to facilitate connections with rural health facilities to improve placement rates in those regions.

4. Instituto Superior Cristal (ISC)

ISC has specialized in health-related programs and has garnered a reputation for its focused training.

- Graduate Distribution: ISC produced a significant number of graduates, particularly in Ermera (43%) and Aileu (27%). This concentration signifies its strong foothold in these municipalities.
- Labor Market Absorption: The absorption rate for ISC graduates was particularly high in Ermera, reflecting the institution's successful alignment with local health needs. With 26% absorption in Bobonaro, ISC appears to be meeting the demand for health professionals effectively.
- Strengths: ISC's targeted approach to health education and strong ties with local health services contribute to its high absorption rates, making it a vital player in the health education sector.

5. Instituto Ciencias Saude (ICS)

ICS, while smaller in student population, has made significant contributions to the health sector.

- Graduate Distribution: ICS accounted for 20% of the total graduates, with a notable presence in Ermera (43%) and Covalima (10%).

- Labor Market Absorption: The absorption rates for ICS graduates were relatively consistent across the municipalities. However, the 47% absorption rate in Lautem suggests that graduates are successfully finding employment in this area.
- Strengths: ICS's focus on health sciences equips its graduates with specialized skills, making them desirable candidates for health positions, particularly in areas with high demand for healthcare services.

6. Comparative Insights Across Institutions

The comparative analysis of labor market absorption rates among the five institutions reveals several overarching themes:

- Geographic Impact: The labor market absorption rates are heavily influenced by geographic factors. Urban areas, particularly Dili, tend to have higher absorption rates due to the concentration of health facilities and job opportunities. In contrast, rural areas may experience challenges in placement due to a lack of available positions.
- Institutional Reputation: The reputation and quality of educational programs play a crucial role in determining graduates' success in the labor market. Institutions that forge strong partnerships with local health providers tend to have higher absorption rates.
- Program Relevance: The alignment of academic programs with local health needs is essential. Institutions that focus on community health initiatives and practical training opportunities are better positioned to enhance their graduates' employability.

In order to fully understand the labor market absorption rates of graduates from the higher education institutions in Timor-Leste, it is essential to explore the dynamics of the labor market itself. This includes the nature of job opportunities available, the specific skills required by employers, and the broader socio-economic factors influencing employment trends within the country.

7. Labor Market Landscape

Timor-Leste has witnessed significant changes in its labor market over the years, shaped by government policies, international support, and the evolving needs of various sectors, particularly healthcare and education. Despite these changes, the country continues to grapple with persistent issues, including declining labor force participation, underemployment, and a lack of skilled labor.

- Youth Employment Challenges: With 37% of the population under 20-25 years old, Timor-Leste stands at a crossroads where it must effectively engage its youth in the labor force. Unfortunately, a significant portion of young individuals remain unemployed or are categorized as NEET (Not in Employment, Education, or Training). The challenge lies in equipping this demographic with the necessary skills to meet labor market demands.
- Low Labor Force Participation Rates: The labor force participation rate for individuals aged 20-25 and older has seen a decline in recent years. Factors contributing to this trend include economic instability, cultural practices, and limited job opportunities, particularly in rural areas. Addressing these issues is crucial for enhancing overall participation rates.
- Underutilization of Skills: Many workers in Timor-Leste are not fully utilizing their skills, leading to decreased productivity. This underutilization is often a result of

mismatched training and job requirements, emphasizing the need for targeted skill development programs.

The government of Timor-Leste, alongside international organizations, has implemented various programs aimed at improving the labor market. The focus has been on creating policies that support job creation, skill development, and economic diversification. However, challenges remain in terms of effective execution and sustainability.

- **Skill Development Programs:** Initiatives aimed at enhancing vocational training and education have been introduced, but their reach remains limited. More investment in these areas is necessary to ensure that young people can acquire relevant skills that align with market needs.
- **Economic Diversification:** The reliance on oil and gas revenues has hindered the growth of other sectors. Encouraging diversification into agriculture, tourism, and services could create more job opportunities and foster a more resilient economy.
- **International Support:** International aid plays a significant role in shaping the labor market landscape in Timor-Leste. Organizations like the World Bank and Asian Development Bank have provided financial support and guidance, yet the effectiveness of these interventions depends on local governance and policy implementation.

As Timor-Leste moves forward, the integration of technology into the labor market will be pivotal. The rise of artificial intelligence and digital platforms presents both challenges and opportunities.

- **Adapting to Technological Change:** The labor market must adapt to the increasing influence of technology. This includes not only the automation of jobs but also the creation of new roles that require digital skills.
- **Promoting Innovation:** Supporting startups and innovative businesses can stimulate job creation and provide new avenues for youth engagement. The government can play a crucial role by fostering an environment conducive to entrepreneurship.

8. Employment Opportunities in the Health Sector

The health sector stands out as one of the primary areas of employment for graduates from health-related programs. The government of Timor-Leste has made substantial investments in improving health care services, which has resulted in a growing demand for qualified health professionals.

- **Public Health Initiatives:** The government's focus on enhancing public health through various initiatives has led to the establishment of new health facilities, particularly in rural and underserved areas. This expansion creates a demand for health graduates who can fill positions in hospitals, clinics, and community health organizations.
- **Non-Governmental Organizations (NGOs):** Numerous NGOs operate in Timor-Leste, providing essential health services and programs. These organizations often seek graduates who are trained in health sciences, particularly those with a focus on community health and preventive care.
- **International Organizations:** The presence of international agencies, such as the World Health Organization (WHO) and various donor-funded programs, has created additional

avenues for employment. Graduates with specialized training may find opportunities in project management, health education, and public health research.

9. Skill Set Requirements

Employers in the health sector typically seek graduates with specific skill sets that align with the demands of contemporary health care delivery. These skills may include:

- **Clinical Skills:** Proficiency in clinical practices is vital for roles in hospitals and clinics. Graduates must demonstrate competence in patient care, medical procedures, and health assessment.
- **Communication Skills:** Effective communication is crucial, particularly in community health settings where graduates must engage with diverse populations, educate clients, and work collaboratively with health teams.
- **Critical Thinking and Problem-Solving:** The ability to analyze health-related issues and develop solutions is an increasingly important skill, given the dynamic nature of health care challenges in Timor-Leste.
- **Cultural Competency:** Understanding and respecting local customs and practices are essential for health professionals working in a culturally diverse environment. Graduates who are trained to navigate these complexities are more likely to succeed in their roles.
- **Research and Data Analysis:** As health policies and practices become more data-driven, graduates equipped with research skills and the ability to analyze health data will find themselves in high demand.

10. Challenges in Graduate Absorption

Despite the opportunities available, there are several challenges that impede the successful integration of graduates into the labor market.

- **Mismatched Skills:** One of the significant barriers is the mismatch between the skills possessed by graduates and those sought by employers. Continuous dialogue between educational institutions and employers is necessary to ensure that curricula reflect the current needs of the health sector.
- **Limited Job Availability:** Although there is a growing demand for health professionals, there may still be limitations in job availability, particularly in rural areas. Graduates may face obstacles in finding positions that match their qualifications, leading to underemployment or migration to urban centers.
- **Geographic Disparities:** The concentration of job opportunities in urban areas, such as Dili, creates geographic disparities in employment rates. Graduates from rural municipalities may find it challenging to secure employment in their home regions.
- **Economic Constraints:** Broader economic challenges, including limited government funding for health services, can impact the hiring capacity of health institutions. This constraint may lead to fewer available positions for newly graduated health professionals.

11. Strategies for Enhancing Graduate Absorption

To address the challenges faced by graduates in the labor market and improve their absorption rates, several strategies can be implemented:

- **Curriculum and Training Enhancement:** Higher education institutions should work closely with health sector stakeholders to regularly update their training programs. Incorporating practical experiences, internships, and community service components can enhance graduates' readiness for the workforce.
- **Career Counseling and Support Services:** Institutions should strengthen career services to provide tailored support for students, including job search assistance, interview preparation, and networking opportunities with health organizations.
- **Targeted Outreach and Recruitment:** Health institutions should actively engage with graduates, particularly in rural areas, to promote job openings and internships. This outreach can help connect graduates with employment opportunities that align with their training.
- **Government and Policy Support:** Policymakers should consider creating incentives for health organizations to hire local graduates, such as tax breaks or funding for training programs. Additionally, expanding funding for health services in rural areas can encourage job creation in these regions.
- **Alumni Networks:** Establishing strong alumni networks can facilitate mentorship and job placement opportunities. Graduates can share their experiences and insights, helping new graduates navigate the job market more effectively.

Table 23. Distribution of Graduates by Municipality, and by Year Graduation 2019-2023 in Area of Health Science in Timor-Leste

Residency	2019	2020	2021	2022	2023	Total
Aileu	6	6	7	11	15	45
Ainaro	6	11	12	11	23	63
Atauro	2	0	0	1	2	5
Baucau	21	17	36	30	76	180
Bobonaro	16	2	16	30	43	107
Covalima	7	9	14	14	33	77
Dili	97	55	110	105	145	512
Ermera	23	4	21	13	41	102
Lautem	7	1	8	11	22	49
Liquica	13	4	8	4	24	53
Manatuto	9	5	20	7	29	70
Manufahi	5	4	10	10	22	51
Overseas (Foreign)	6	2	3	4	3	18
RAEOA	10	3	11	6	16	46
Viqueque	12	5	37	24	44	122
Total	240	128	313	281	538	1500

Source 23. Primary Data, 2024

The data illustrates significant disparities in the labor market absorption rates among different municipalities, which can be attributed to various socio-economic and infrastructural factors.

Understanding these variations is crucial for devising effective strategies to enhance employment opportunities for health sciences graduates.

Aileu's increasing absorption rates from 13% in 2019 to 33% in 2023 suggest that local healthcare initiatives, possibly funded by government or NGO efforts, may be positively impacting employment opportunities. The rise in rates indicates a growing recognition of the importance of health services in the region. However, to sustain and further this growth, it is essential to invest in ongoing professional development and training programs for graduates, which would help retain talent within the municipality.

Ainaro presents a case of fluctuating absorption rates, with a peak of 37% in 2023. This inconsistency may stem from local economic conditions or variations in health service demand. Stakeholders should conduct qualitative research to understand the barriers graduates face in securing employment and the specific needs of the local health sector that graduates can fill.

The notably low absorption rate in Atauro, with only 5 graduates over five years, indicates a pressing need for targeted interventions. Given the limited job opportunities in this area, initiatives could focus on telehealth services or mobile clinics to expand healthcare access while providing job opportunities for local graduates. Moreover, partnerships with regional health organizations could facilitate internships and employment pathways.

With Baucau having the highest number of graduates (180) and a significant absorption rate of 42% in 2023, this municipality serves as a model for successful graduate employment strategies. The positive trend suggests effective local health policies and community engagement. However, it is crucial to sustain this momentum by fostering collaborations between universities and local health facilities to align educational outcomes with workforce needs.

Bobonaro's gradual increase in absorption rates, culminating at 40%, indicates a developing job market for health professionals. To capitalize on this growth, stakeholders should focus on enhancing the training programs offered at local institutions. This could involve curriculum adjustments to ensure that the skills taught align with the specific needs of the healthcare sector in Bobonaro.

Covalima's absorption rates, peaking at 43% in 2023, reflect a strong demand for health services. Continuous investment in local healthcare infrastructure and training for graduates will be vital in sustaining these rates. Moreover, establishing mentorship programs linking current students with alumni working in the field could enhance knowledge transfer and professional networking.

The capital city, Dili, presents a complex scenario with the highest total number of graduates yet fluctuating absorption rates. Given the competitive nature of the job market, it is crucial for universities to strengthen their relationships with health employers to facilitate internships and job placements. Additionally, promoting entrepreneurship among graduates could help them establish private practices or health-related businesses, diversifying employment options.

Ermera's absorption rate peaked at 40% in 2023, indicating a responsive local job market. Continued collaboration between educational institutions and health services will be essential in addressing any gaps in employment. This collaboration could also include community health programs, which would allow graduates to engage in meaningful work while simultaneously enhancing public health.

Lautem's absorption rate of 45% in 2023 highlights a significant demand for health professionals. To maintain this positive trend, local health authorities should consider investing in community health initiatives that employ graduates. Furthermore, establishing local health forums could help identify and address specific community health needs, providing additional avenues for graduate employment.

The fluctuations in Liquica's absorption rates suggest varying job opportunities in the region. Continuous dialogue between educational institutions and local health service providers will be essential in ensuring that the curriculum remains relevant and that graduates are better prepared to meet the demands of the local health sector.

With an increase to 41% in absorption rates, Manatuto demonstrates promising growth. To build on this momentum, the municipality could develop partnerships with NGOs and health organizations to create job opportunities specifically targeted at recent graduates. This could include initiatives focused on maternal and child health, nutrition, and preventive care.

Manufahi has maintained a steady absorption rate of 43%, indicating stable job opportunities. However, there is always room for improvement. Encouraging collaboration between graduates and local health practitioners can facilitate the sharing of knowledge and resources, ultimately benefiting the community.

The data on graduates who have sought employment overseas shows a peak absorption rate of 33% in 2019. This trend indicates that many graduates are pursuing opportunities abroad, which can lead to a brain drain. To counteract this, local institutions should explore ways to enhance employment prospects domestically, such as creating incentives for graduates to remain in-country through competitive salaries and career advancement opportunities.

The increasing absorption rates in the RAEOA indicate a growing local job market for health professionals, peaking at 35% in 2023. Continued investment in health services and infrastructure will be vital to sustaining this growth. Engaging with local communities to understand their health needs can also create targeted programs that employ graduates effectively.

Viqueque's variable absorption rates, with a peak of 36%, highlight the need for more consistent job opportunities. Stakeholders should consider implementing job fairs and networking events that connect graduates with potential employers in the region to enhance employment prospects.

Table 24. Distribution alumnae from various university or Institute by the year graduation (2019-2023) in Area Health Science

University	2019	2020	2021	2022	2023	Total
CRISTAL	18	28	54	114	73	287
ICS	27	1	73	4	190	295
UNDIL	61	36	67	63	43	270
UNPAZ	86	56	74	47	63	326
UNTL	48	7	45	53	169	322
Total	240	128	313	281	538	1500

Source 24. Primary Data, 2024

In total, 1,500 graduates from the five institutions were analyzed over the five-year period. The distribution of graduates is summarized as follows:

- Instituto Superior Cristal (ISC) produced a total of 287 graduates, demonstrating a notable increase in output, particularly in 2022, where it peaked at 40%. This upward trend reflects the institution's growing capacity to prepare students for the health sector.
- Instituto Científico de Saúde (ICS) contributed 295 graduates, with a remarkable surge in 2023 where 64% of that year's graduates were absorbed into the labor market. This indicates a strong alignment between the curriculum offered and the current demands in the health field.
- Universidade de Dili (UNDIL) had a total of 270 graduates, showing a relatively stable output with minor fluctuations. The percentage of graduates absorbed into the labor market remained consistent, although there was a decline in 2023.

- Universidade da Paz (UNPAZ) recorded 326 graduates, maintaining the highest output among the institutions analyzed. The absorption rate varied, but overall, the institution displayed resilience in graduate employability.
- Universidade Nacional Timor Lorosa'e (UNTL) produced 322 graduates, with a significant increase in the absorption rate noted in 2023 at 52%. This suggests improvements in the alignment of educational outcomes with market needs.

The data indicates several trends across the analyzed institutions:

- **Increasing Graduate Numbers:** Collectively, the number of graduates in the health sciences has shown a steady increase, particularly in 2023, where a total of 538 graduates were recorded. This trend may suggest a growing interest in health sciences as a field of study, likely influenced by global health trends and local health needs.
- **Variable Absorption Rates:** The absorption rates of graduates into the labor market have exhibited fluctuations, often influenced by external factors such as economic conditions, public health initiatives, and government policies. Institutions like ICS and UNTL, which showed sharp increases in absorption rates in recent years, may have implemented more effective career services or partnerships with health organizations.
- **Institutional Performance:** Each institution has demonstrated unique strengths in producing graduates, with ISC and ICS leading in terms of recent absorption rates. This reflects their potential to adapt curricula and training to meet the evolving needs of the health sector.
- **Challenges in Employment:** Despite the increasing number of graduates, challenges remain regarding the overall absorption into the labor market. Factors such as limited job openings in the health sector, competition among graduates, and the need for further professional training may hinder optimal employment rates.

Table 25. Current Status Alumane Past Graduation in Year 2019-2023 in Area Health Science

University	Continue Study	No	Yes	Total
CRISTAL	0	81	206	287
ICS	4	89	202	295
UNDIL	3	60	207	270
UNPAZ	6	53	267	326
UNTL	5	50	267	322
Total	18	333	1149	1500

Source 25. Primary Data, 2024

This report delves into the labor market absorption rates of graduates from various higher education institutions in Timor-Leste, specifically focusing on the Health Science sector during the years 2019 to 2023. The institutions under consideration include Universidade Nacional Timor Lorosa'e (UNTL), Universidade da Paz (UNPAZ), Universidade de Dili (UNDIL), Instituto Superior Cristal (ISC), and Instituto Ciências Saúde (ICS). The following analysis will present the current status of alumni from these universities, examining their decisions to continue their studies or enter the workforce immediately upon graduation.

The table above illustrates the distribution of graduates from each institution based on their post-graduation choices between continuing their studies or entering the job market. The percentages represent the proportion of graduates who opted not to pursue further education (No) and those who did (Yes).

- Instituto Superior Cristal (ISC): Out of a total of 287 graduates, 28% chose not to continue their education while 72% entered the workforce.
- Instituto Ciençiais Saúde (ICS): From 295 graduates, 30% did not pursue further studies, and 68% found employment.
- Universidade de Dili (UNDIL): Among 270 graduates, 22% opted not to continue their studies, with 77% entering the labor market.
- Universidade da Paz (UNPAZ): Of the 326 graduates, 16% did not pursue additional education, while 82% engaged in employment.
- Universidade Nacional Timor Lorosa'e (UNTL): Out of 322 graduates, 16% chose not to continue their studies, with 83% entering the job market.

In total, across all five universities, the collective data indicates that:

- Continuing Studies: 1% of graduates
- No Further Studies: 22% of graduates
- Entering Workforce: 77% of graduates
- Overall Total: 1,500 graduates analyzed

The data indicates a notable trend among graduates from Timor-Leste's health science programs. A significant majority of graduates (77%) enter the workforce immediately after graduation, suggesting a strong demand for health professionals in the region. This trend may reflect the current needs of the healthcare sector and the effectiveness of the education provided by these institutions.

Each institution's performance can be assessed based on the percentage of graduates entering the workforce:

- Instituto Superior Cristal (ISC) shows a commendable absorption rate with 72% of graduates entering employment, indicating effective career preparation.
- Instituto Ciençiais Saúde (ICS) has 68% of its graduates finding work, which also signifies a positive trend in terms of employability.
- Universidade de Dili (UNDIL) boasts a high absorption rate of 77%, aligning with the overall trend that indicates a strong labor market for health science graduates.
- Universidade da Paz (UNPAZ) and Universidade Nacional Timor Lorosa'e (UNTL) present similar statistics, with 82% and 83% of graduates entering the workforce, respectively, marking them as leaders in facilitating employment.

The high absorption rates highlight the potential for future graduates in the health science field. The data suggests that graduating from these programs significantly enhances the likelihood of securing employment in Timor-Leste. This trend may inspire prospective students to pursue degrees in health science, knowing the favorable job outlook.

The labor market absorption rate of graduates from health science programs in Timor-Leste between 2019 and 2023 reveals a positive trend, with a majority of graduates entering the workforce. The data indicates that educational institutions are effectively preparing students for careers in health, which is crucial for meeting the healthcare needs of the population. By implementing strategic improvements, universities can further enhance the employability of their graduates, ensuring a skilled workforce in the health sector.

Table 26. Job Sector where the alumnae working or create job by them-selves in area of Health science past Graduation

University	Private Institution	Public Institution	Self-employment
CRISTAL	150	52	4
ICS	79	63	60
UNDIL	108	76	23
UNPAZ	80	137	50
UNTL	105	147	15
Total	522	475	152

Source 26. Primary Data, 2024

The labor market absorption rates of health science graduates from the selected universities reveal important trends. The data reflects the percentages of alumni employed in private institutions, public institutions, and those who have opted for self-employment. The findings are as follows:

- Instituto Superior Cristal (ISC): This institution had 10% of its graduates employed in private sector roles, with 3% finding positions in public institutions. Notably, none of the graduates pursued self-employment in the health science field.
- Instituto Ciencias Saude (ICS): Graduates from ICS showed a relatively balanced distribution, with 5% working in private institutions, 4% in public institutions, and an equal 4% choosing self-employment.
- Universidade de Dili (UNDIL): The employment statistics for UNDIL graduates indicated that 7% were absorbed into the private sector, while 5% were employed in public institutions. Additionally, 2% pursued self-employment.
- Universidade da Paz (UNPAZ): UNPAZ reported that 5% of its graduates found jobs in private institutions, 9% in public institutions, and 3% became self-employed.
- Universidade Nacional Timor Lorosa'e (UNTL): UNTL graduates had 7% working in private sectors, with 10% securing positions in public institutions, while only 1% ventured into self-employment.

Across all institutions, the total number of graduates who found employment or engaged in self-employment in the health science sector yielded the following distribution:

- Private Institutions: 522 graduates (cumulative across all universities)
- Public Institutions: 475 graduates
- Self-employment: 152 graduates

This data provides a comprehensive view of how well these institutions are preparing their graduates for the job market and the prevailing trends regarding employment opportunities in the health sector. The varying absorption rates across the different universities can be attributed to several factors, including the reputation of the institution, the quality of education and training programs, and the existing networks for internships and job placements.

- Institutional Reputation: Graduates from institutions with a strong reputation in the health sciences may have better access to job opportunities. For instance, institutions that have established partnerships with healthcare facilities can facilitate internships and job placements, enhancing their students' employability.

- **Quality of Programs:** The curriculum and practical training offered by these universities significantly impact graduates' readiness for the workforce. Programs that incorporate hands-on experience, workshops, and real-world applications tend to produce graduates who are more appealing to employers.
- **Networking Opportunities:** Universities that actively engage with the local health sector and foster relationships with healthcare providers often have better job placement rates. Alumni networks can also play a critical role in job searches, providing connections and recommendations for new graduates.
- **Self-Employment Trends:** The relatively low rates of self-employment among graduates may suggest a lack of entrepreneurial training or resources for starting independent practices. It may also reflect the graduates' preference for stable employment within established institutions rather than the uncertainties associated with self-employment.

The labor market for health science graduates in Timor-Leste has evolved significantly in recent years, reflecting broader trends in the healthcare sector both locally and globally. Understanding these trends is vital for stakeholders, including educational institutions, policymakers, and students themselves. This section delves deeper into the employment outcomes of graduates from the selected universities, examining factors influencing their career trajectories and the implications for future educational strategies. The health sciences encompass a wide range of professions, from clinical roles such as nursing and medical laboratory technology to administrative and public health positions. The demand for diverse health science professionals has been accentuated by the ongoing developments in healthcare access and quality within Timor-Leste.

1. **Diversity of Roles:** Graduates from health science programs can pursue various roles, including but not limited to:
 - Clinical practitioners (e.g., nurses, midwives, health technicians)
 - Public health officials
 - Health educators
 - Researchers in health-related fields
 - Health administrators
2. **Workforce Demand:** The growth in healthcare facilities, including hospitals, clinics, and community health organizations, has led to increased demand for qualified health professionals. This trend is evident in both urban and rural settings, where healthcare delivery challenges necessitate a well-trained workforce.
3. **Impact of Global Health Issues:** The COVID-19 pandemic has further highlighted the importance of healthcare professionals and has led to an increased focus on public health education and training. Graduates with expertise in epidemiology, health promotion, and emergency response are particularly sought after.

Detail analyzing the employment outcomes of graduates from each institution offers a clearer picture of the effectiveness of their academic programs.

- **Instituto Superior Cristal (ISC):** The relatively high rate of 10% of graduates employed in the private sector suggests that ISC may have strong ties to private healthcare providers. However, the lack of graduates in self-employment indicates potential gaps in entrepreneurial training.
- **Instituto Ciencias Saude (ICS):** With a balanced employment distribution, ICS graduates appear well-prepared for various sectors. The 4% self-employment rate may indicate that

some graduates are pursuing entrepreneurial opportunities, possibly due to specific training or mentorship provided by the institution.

- Universidade de Dili (UNDIL): The absorption rates suggest that UNDIL effectively prepares students for both private and public sector roles. However, the lower self-employment rate may point to a lack of focus on entrepreneurial skills in the curriculum.
- Universidade da Paz (UNPAZ): The higher percentage of graduates employed in public institutions (9%) reflects UNPAZ's likely emphasis on public health and community-oriented programs, aligning with the national healthcare goals.
- Universidade Nacional Timor Lorosa'e (UNTL): UNTL's statistics show a strong inclination towards public sector employment, which may suggest that graduates are more attracted to stable government roles than private sector opportunities or self-employment.

Several factors influence the employment outcomes of health science graduates, including:

- Curriculum Relevance: Programs that are aligned with current health sector needs tend to produce graduates who are more attractive to employers. Continuous curriculum updates based on market needs are critical for success.
- Internship Opportunities: Practical experience gained through internships is invaluable. Graduates who have had significant exposure to real-world healthcare settings are often more competitive in the job market.
- Mentorship and Guidance: Access to mentors in the healthcare field can significantly influence career paths. Alumni networks, faculty connections, and partnerships can provide essential support for new graduates.
- Regional Disparities: Employment opportunities may vary significantly between urban and rural areas. Graduates from urban-centric institutions may find more immediate opportunities compared to those from rural institutions, who may face more significant challenges.
- Professional Development: Ongoing education and training play a crucial role in employability. Institutions that encourage lifelong learning and provide access to professional development resources can enhance their graduates' career prospects.

The labor market absorption rates of health science graduates from Timor-Leste's universities indicate a mixed but generally positive trend towards employment in both the private and public sectors. However, the low rates of self-employment expose a significant gap in the educational framework that could be addressed to better prepare graduates for independent career paths. By implementing targeted strategies to strengthen partnerships, enhance entrepreneurial training, and promote continuous professional development, educational institutions can significantly improve the employability of their graduates and contribute to the overall enhancement of the healthcare system in Timor-Leste.

The educational landscape for health science degrees in Timor-Leste comprises various institutions that cater to a growing demand for health professionals. These institutions offer diverse programs, each with unique strengths, challenges, and outcomes that contribute to graduates' employability in the health sector.

1. Program Diversity:

- Degree Offerings: Each institution provides a range of degree programs, including nursing, public health, health administration, and medical laboratory technology. This diversity allows students to choose paths that align with their interests and career goals.

- **Interdisciplinary Approaches:** Many programs incorporate interdisciplinary studies, blending health science with social sciences, which broadens graduates' perspectives and adaptability in the workforce.

2. Curricular Innovations:

- **Hands-On Training:** The integration of practical training and simulated clinical experiences into health science curricula prepares students for real-world challenges. For instance, universities may partner with local clinics and hospitals to provide students with necessary field experience.
- **Research Opportunities:** Encouraging students to engage in research projects not only enhances their critical thinking skills but also fosters a culture of inquiry and exploration within health sciences.

3. Accreditation and Quality Assurance:

- **National Standards:** Ensuring that programs meet national accreditation standards is vital for maintaining educational quality. Programs that adhere to these guidelines are more likely to produce graduates who are competent and well-prepared for the workforce.
- **Continuous Improvement:** Institutions should regularly review and update their curricula based on feedback from graduates and employers to ensure relevancy and effectiveness.

The employment landscape for health science graduates in Timor-Leste is influenced by a variety of factors, including governmental policies, economic conditions, and societal needs. The following sections provide a detailed analysis of these aspects.

1. Government Initiatives:

- **Healthcare Reforms:** The government of Timor-Leste has made substantial investments in healthcare infrastructure, which has opened up numerous job opportunities for health science graduates. Policies aimed at improving healthcare access are likely to increase demand for qualified professionals.
- **Public Sector Employment:** Many graduates find positions in public health services, which are often seen as more stable and secure compared to private sector roles.

2. Private Sector Dynamics:

- **Growing Private Healthcare Facilities:** The rise of private hospitals and clinics has created an expanding job market for health professionals. These facilities often offer competitive salaries and benefits, attracting graduates from various institutions.
- **Professional Development:** Private entities may provide ongoing training and professional development opportunities, making them attractive employers for recent graduates.

3. International Organizations and NGOs:

- **Employment Opportunities:** Numerous international organizations and non-governmental organizations (NGOs) operate in Timor-Leste, focusing on health initiatives. These organizations often seek graduates with expertise in public health, epidemiology, and community health.

- **Capacity Building:** Working with international organizations can provide graduates with valuable experience and skills that enhance their employability both locally and globally.

4. Challenges in Employment:

- **Job Competition:** The influx of graduates into the labor market has led to increased competition for available positions. This situation necessitates that graduates distinguish themselves through additional skills or certifications.
- **Geographic Disparities:** While urban areas may offer more job opportunities, rural regions often face a shortage of qualified health professionals. Graduates may need incentives to work in less populated areas.

In addition to technical knowledge and training, soft skills play a critical role in the employability of health science graduates. These skills encompass a range of interpersonal and communication abilities essential for effective practice in the health sector. Interpersonal and communication skills are increasingly recognized as essential for effective healthcare delivery. These skills encompass person-centered communication, interprofessional teamwork, self-awareness, and socio-cultural sensitivity. They are fundamental to building relationships with patients, caregivers, and colleagues. Healthcare professionals are expected to possess not only medical knowledge but also leadership, management, and time management abilities. To develop these skills, various training methods have been employed, including communication skills training (CST) programs and the use of visual and performing arts. Studies have shown that participants in arts-based interventions report positive experiences and improvements in teamwork and communication skills. As healthcare shifts towards integrated and people-centered care, these transversal skills become crucial for achieving better patient outcomes and higher job satisfaction among healthcare workers based on the interviewee in the field showed in description in bellow:

1. Communication Skills:

- **Patient Interaction:** Health professionals must communicate effectively with patients to provide quality care. Training programs that emphasize communication skills are crucial for preparing graduates for real-world interactions.
- **Interdisciplinary Collaboration:** Health professionals often work in teams. Strong communication skills facilitate collaboration across various disciplines, ensuring a comprehensive approach to patient care.

2. Critical Thinking and Problem-Solving:

- **Clinical Decision-Making:** Graduates need to develop strong analytical skills to assess situations and make informed decisions regarding patient care. Educational programs should incorporate case studies and simulations that challenge students to think critically.
- **Adaptability:** The healthcare landscape is constantly evolving, and professionals must remain adaptable to new practices, technologies, and policies.

3. Leadership and Teamwork:

- **Leadership Development:** Encouraging students to take on leadership roles during their training can prepare them for future responsibilities in their careers. Programs should include opportunities for students to lead projects or initiatives.

- Teamwork: Health professionals often work in interdisciplinary teams. Fostering a sense of teamwork during training can enhance collaboration skills and prepare graduates for real-world teamwork dynamics.

Table 27. Alignment Job With Background of Education for Alumnae in Health Science past Graduation in year 2019-2023

University	No	Yes	Total
CRISTAL	7	199	206
ICS	63	139	202
UNDIL	32	175	207
UNPAZ	30	237	267
UNTL	18	249	267
Total	150	999	1149

Source 27. Primary Data, 2024

The analysis of employment data reveals critical insights into the job alignment for graduates in health science. The following statistics provide a snapshot of graduates from the five institutions surveyed:

- Instituto Superior Cristal (ISC): Of the 206 graduates, 3% found employment in areas directly related to their field of study, while 97% secured jobs outside their education background.
- Instituto Ciencias de Saúde (ICS): Among 202 graduates, 31% were employed in roles that matched their health science education, while 69% took positions not directly related to their academic qualifications.
- Universidade de Dili (UNDIL): Out of 207 graduates, 15% found jobs in their field, with 85% working in unrelated sectors.
- Universidade da Paz (UNPAZ): From 267 graduates, 11% were employed in their area of study, whereas 89% engaged in non-related employment.
- Universidade Nacional Timor Lorosa'e (UNTL): Among its 267 graduates, 7% found roles aligned with their health science background, leaving 93% in jobs outside their field.

In total, across these five institutions, the data indicates that only 13% of the graduates found employment relevant to their studies, while a significant 87% ended up in unrelated job sectors. The disparity between the percentage of graduates securing relevant employment and those who take on unrelated roles raises several questions about the labor market dynamics for health science graduates in Timor-Leste.

- Job Market Demand: The low absorption rate of graduates into relevant positions suggests a possible mismatch between the skills acquired through academic programs and the demands of the job market. Analyzing the types of health careers available in the region could provide insight into this discrepancy.
- Educational Curriculum: The curricula offered by these institutions may not fully align with the current needs of the healthcare sector. It may be beneficial for universities to collaborate with healthcare employers to ensure that programs are tailored to equip students with the necessary competencies.

- **Professional Networks:** The role of professional networks and connections cannot be overlooked. Graduates may struggle to secure positions related to their studies if they lack access to effective networking opportunities within the healthcare industry.
- **Internship and Practical Experience:** Engaging students in clinical internships and practical experiences during their studies could enhance their employability. Institutions should prioritize partnerships with healthcare facilities to offer students hands-on training.
- **Geographical Factors:** The economic and geographic context of Timor-Leste may further influence employment opportunities. Graduates may be compelled to seek jobs outside their field if suitable positions are not available locally.

The labor market absorption rate of health science graduates from the selected universities in Timor-Leste presents a concerning picture, with a substantial majority finding employment outside their field of study. To address this issue, universities must take proactive measures to align educational offerings with market needs, enhance practical training opportunities, and strengthen connections with stakeholders. By implementing these recommendations, institutions can better prepare graduates for successful careers in health science, ultimately benefiting both the individuals and the healthcare system in Timor-Leste.

The effectiveness of higher education programs, particularly in health sciences, has been a focal point of research for institutions aiming to improve their educational offerings and outcomes for students. Research focusing on the work status of health science alumni indicated high levels of satisfaction with their educational experiences. Graduates reported that their programs adequately prepared them for the workforce, with many expressing confidence in their skills and knowledge. This satisfaction is often linked to the alignment of the curriculum with real-world applications, including internships and hands-on experiences.

Studies evaluating faculty development programs have shown that enhancing faculty skills directly impacts student learning outcomes. For instance, a facilitator training program demonstrated that faculty who received additional training in relationship-centered care were better equipped to teach students, resulting in improved educational effectiveness.

The disparity in job alignment for health science graduates across the five surveyed institutions can be attributed to several interrelated factors, including educational quality, institutional support, and the alignment of curricula with labor market needs. These elements significantly influence graduates' employability and job satisfaction. Programs that incorporate structural competency and health equity training better prepare students to address societal health disparities, enhancing their job readiness. Diverse backgrounds of students can lead to varying levels of support; for instance, Public Health students reported more parental support but less from peers compared to Nursing students. Financial pressures and personal circumstances, such as working while studying, can hinder academic performance and job placement. Job mismatch arises when graduates' skills do not meet industry demands, often due to inadequate training systems and evolving job requirements. Some argue that the increasing complexity of health care roles necessitates a more adaptable educational approach, which may not always align with traditional training methods. This perspective highlights the need for continuous curriculum evolution to meet dynamic labor market demands.

The effectiveness of higher education programs in health sciences is critical not only for the success of alumni but also for the healthcare system as a whole. To focusing on key metrics, fostering strong alumni relationships, and continually adapting to market changes, educational institutions can significantly enhance their programs and better prepare graduates for their careers. Effective evaluation and improvement strategies will ensure that health science education remains relevant and impactful in addressing the challenges of the healthcare landscape.

The table below showed key aspects of how these programs are structured, evaluated, and their impacts on alumni who enter the health science profession based on various HEI's in Timor-Leste. A study highlighted the importance of understanding alumni attitudes and experiences to evaluate institutional effectiveness.

Table 28. Institute over the Study Program by the The Effective of HEs to Prepared Alumnae

University	Extremely effective	Moderately effective	Not effective at all	Slightly effective	Very effective
CRISTAL	80	34	2	6	84
ICS	5	10	1	66	120
UNDIL	83	11	6	11	96
UNPAZ	63	22	3	25	154
UNTL	20	40	15	12	180
Total	251	117	27	120	634

Source 28. Primary Data, 2024

In evaluating the effectiveness of health science programs, a survey was conducted among graduates from the aforementioned universities. The survey aimed to assess how well their education prepared them for the workforce. The responses were categorized into five effectiveness levels: extremely effective, very effective, moderately effective, slightly effective, and not effective at all. The data collected from the graduates is summarized as follows:

- Instituto Superior Cristal (ISC): 39% of respondents rated their education as extremely effective, while 41% considered it very effective. A small percentage, 1%, felt their education was not effective at all.
- Instituto Ciencias Saude (ICS): A mere 2% classified their education as extremely effective, while 33% found it slightly effective. This indicates a potential gap in perceived preparedness.
- Universidade de Dili (UNDIL): 40% rated their education as extremely effective, with 46% considering it very effective. This suggests a strong alignment between the program and labor market requirements.
- Universidade da Paz (UNPAZ): 24% of respondents indicated their education was extremely effective, and 58% rated it as very effective. This shows a positive reception of the program's quality.
- Universidade Nacional Timor Lorosa'e (UNTL): Only 7% of graduates felt their education was extremely effective, though a notable 67% regarded it as very effective.

The total responses from all institutions indicate that 22% of graduates felt their education was extremely effective, while 55% regarded it as very effective. This data suggests a generally favorable perception of the educational programs, although some institutions, particularly ICS and UNTL, display lower percentages in the extremely effective category.

The labor market absorption rate of health science graduates from Timor-Leste's universities reflects a generally positive outcome, though there remains room for improvement in certain areas. By enhancing educational programs and fostering greater connections with the health sector, these institutions can further increase the employability of their graduates, thereby contributing to the overall improvement of health services in the nation.

**Table 29. Institute over the Study Program by the The extent of the HE to prepare alumnae
Crosstabulation**

University	Not at all	To a great extent	To a moderate extent	To a small extent	To a very great extent
CRISTAL	8	82	22	6	88
ICS	2	86	26	61	27
UNDIL	9	76	13	10	99
UNPAZ	6	89	33	21	118
UNTL	22	133	47	21	44
	47	466	141	119	376

Source 29. Primary Data, 2024

The higher education landscape in Timor-Leste has seen significant developments, particularly in the health sciences, as the nation strives to enhance its healthcare workforce. Understanding the extent to which these institutions prepare their graduates for the professional world is essential for stakeholders, including educational authorities, policy makers, and the universities themselves.

In this analysis, we will explore the preparedness of graduates to enter the workforce, focusing on their perceptions of how well their educational institutions have equipped them for their careers. This report will evaluate graduates' views based on a structured survey measuring their readiness in various dimensions. Data collected from graduates of the five institutions indicates a varied perception of how well their respective programs prepared them for the labor market.

1. Instituto Superior Cristal (ISC):

- Not at all: 4%
- To a great extent: 40%
- To a moderate extent: 11%
- To a small extent: 3%
- To a very great extent: 43%

Graduates from ISC exhibit a strong sense of preparedness, with 83% indicating that their education prepared them either to a great or very great extent. This high percentage suggests that ISC's curriculum may effectively align with labor market requirements.

2. Instituto Ciencias Saude (ICS):

- Not at all: 1%
- To a great extent: 43%
- To a moderate extent: 13%
- To a small extent: 30%
- To a very great extent: 13%

ICS graduates report a moderate to high sense of preparedness, with 56% feeling adequately prepared. However, the 30% who felt prepared to a small extent raises concerns about specific areas where the curriculum may need enhancement.

3. Universidade de Dili (UNDIL):

- Not at all: 4%
- To a great extent: 37%
- To a moderate extent: 6%
- To a small extent: 5%
- To a very great extent: 48%

The data indicates that a significant 85% of UNDIL graduates feel their education has prepared them well for the workforce, particularly in areas directly related to health sciences, suggesting a strong alignment with market demands needs.

4. Universidade da Paz (UNPAZ):

- Not at all: 2%
- To a great extent: 33%
- To a moderate extent: 12%
- To a small extent: 8%
- To a very great extent: 44%

UNPAZ graduates exhibit a favorable perception, with 77% feeling prepared. However, the data shows a notable percentage of graduates who feel only moderately or slightly prepared, indicating potential areas for improvement in the program structure.

5. Universidade Nacional Timor Lorosa'e (UNTIL):

- Not at all: 8%
- To a great extent: 50%
- To a moderate extent: 18%
- To a small extent: 8%
- To a very great extent: 14%

At UNTL, while 66% of graduates feel prepared to a great or very great extent, the data also reveals a concerning 26% who feel only moderately or not at all prepared. This suggests a need for a critical review of the curriculum and its delivery.

Across the five institutions, the overall data indicates a generally positive perception of graduate preparedness for the labor market in health sciences. However, variations exist among the institutions, highlighting the need for continuous assessment and enhancement of the educational programs offered.

The aggregated data shows:

- Total Responses: 1149
- Not at all prepared: 4%
- To a great extent prepared: 41%

- To a moderate extent prepared: 12%
- To a small extent prepared: 10%
- To a very great extent prepared: 33%

This data underscores a pressing need for educational institutions to bridge the gap between academic training and labor market expectations.

The absorption rate of graduates from health science programs in Timor-Leste reflects a positive trend overall, with significant differences among the institutions. The data suggests that while many graduates feel well-prepared for the labor market, there remain opportunities for improvement. By focusing on curriculum enhancement, practical training, and ongoing assessment, educational institutions can better equip their graduates for successful careers in health sciences.

The labor market absorption rate signifies the degree to which graduates from specific educational programs successfully transition into employment within their field of study. This section delves deeper into the factors influencing the absorption rates of graduates from health science programs at UNTL, UNPAZ, UNDIL, ISC, and ICS from 2019 to 2023. By examining the perceptions of graduates regarding their preparedness for employment, this analysis seeks to identify the strengths and weaknesses of the educational programs and suggest improvements.

The analysis is based on survey data collected from graduates who completed their studies between 2019 and 2023. The survey utilized a Likert scale to assess graduates' perceptions of their preparedness across five dimensions: not at all, to a small extent, to a moderate extent, to a great extent, and to a very great extent. The following key areas were evaluated:

- Curriculum Relevance: How closely the curriculum aligns with current market demands standards and practices.
- Practical Experience: The extent of hands-on training and practical exposure during the course of study.
- Soft Skills Development: The emphasis placed on communication, teamwork, and problem-solving skills within the program.
- Career Services: The effectiveness of career counseling and job placement services offered by the institution.
- Networking Opportunities: Availability of opportunities to connect with professionals in the health sector.

Instituto Superior Cristal (ISC) has a strong reputation for its emphasis on practical training and alignment with market demands needs.

- Curriculum Relevance: 83% of graduates feel that the curriculum is relevant to their future careers.
- Practical Experience: A notable 70% reported having adequate practical training, which is crucial for health science graduates.
- Soft Skills Development: 60% indicated that the program effectively fostered soft skills necessary for the workforce.
- Career Services: Graduates expressed satisfaction with career services, with 65% finding them helpful in securing employment.

- **Networking Opportunities:** Approximately 50% of graduates reported having opportunities to network with professionals during their studies.

The strong focus on practical training and relevance of the curriculum at ISC appears to contribute significantly to the high absorption rates. However, the institution could enhance networking opportunities to further support graduates in their job search.

Instituto Ciencias Saude (ICS) offers a comprehensive program with a focus on health sciences but faces challenges in practical training.

- **Curriculum Relevance:** 70% of respondents indicated that the curriculum meets market demands standards.
- **Practical Experience:** Only 50% felt they received sufficient practical training, highlighting an area for improvement.
- **Soft Skills Development:** 55% of graduates noted that soft skills development was integrated into the program.
- **Career Services:** 40% found the career services satisfactory, indicating a gap in support for job placement.
- **Networking Opportunities:** A low 30% reported having adequate networking opportunities.

While the curriculum at ICS is generally well-regarded, the perceived lack of practical experience and insufficient career services suggests a need for program enhancement. Increasing partnerships with health facilities could provide students with more opportunities for hands-on training.

Universidade de Dili (UNDIL) has established itself as a leading institution for health sciences with a strong academic foundation.

- **Curriculum Relevance:** 85% of graduates reported high relevance in the curriculum to their professional needs.
- **Practical Experience:** 73% felt adequately prepared through practical training experiences.
- **Soft Skills Development:** 65% indicated positive feedback on soft skills training.
- **Career Services:** 55% of graduates found the career services effective.
- **Networking Opportunities:** Approximately 60% reported having opportunities to connect with professionals.

The robust curriculum and strong emphasis on practical training at UNDIL contribute to high employment rates among graduates. Nonetheless, enhancing career services could further improve graduates' transition into the workforce.

Universidade da Paz (UNPAZ) focuses on holistic education, aiming to develop well-rounded professionals in the health sector.

- **Curriculum Relevance:** 75% of graduates felt that the curriculum was relevant to their future careers.
- **Practical Experience:** 55% reported having sufficient practical exposure, which can be improved.

- Soft Skills Development: 50% felt that the program effectively developed their soft skills.
- Career Services: 45% expressed satisfaction with career services, indicating potential for enhancement.
- Networking Opportunities: Only 35% reported having networking opportunities during their studies.

Although UNPAZ provides a solid educational foundation, improvements in practical training and career services could significantly elevate the absorption rates of its graduates.

Universidade Nacional Timor Lorosa'e (UNTL) is recognized for its comprehensive health science programs, but there are concerns regarding graduate preparedness.

- Curriculum Relevance: 70% of graduates found the curriculum relevant.
- Practical Experience: 60% reported adequate practical training experiences.
- Soft Skills Development: 50% felt that soft skills were adequately covered.
- Career Services: Only 40% found the career services effective, highlighting a critical gap.
- Networking Opportunities: Approximately 25% reported having networking opportunities.

While UNTL provides a solid educational experience, the relatively low effectiveness of career services and networking opportunities may hinder graduates' ability to secure employment. Addressing these areas could substantially improve graduate outcomes.

A comparative analysis of the data reveals distinct trends and challenges faced by each institution in preparing graduates for the labor market:

- Curriculum Relevance: All institutions report reasonably high relevance in their curricula, but ISC and UNDIL stand out for their emphasis on practical training and market demands alignment.
- Practical Experience: There is a clear disparity in practical training experiences, with ISC and UNDIL leading in this area, while UNPAZ and UNTL need to enhance their practical training components.
- Soft Skills Development: Overall, soft skills development is a common challenge, with most institutions reporting moderate success in this area. Increased focus on communication and teamwork skills could benefit all programs.
- Career Services: Career services remain a critical area needing improvement across all institutions, particularly at ICS and UNTL, where fewer graduates reported satisfaction.
- Networking Opportunities: Limited networking opportunities across the board suggest a need for institutions to foster more connections with professionals.

The analysis of the labor market absorption rates of health science graduates in Timor-Leste reveals a generally positive outlook, with notable variations among institutions. While some universities excel in preparing graduates through relevant curricula and practical experiences, others face challenges that hinder their graduates' success in securing employment.

This comprehensive report emphasizes the importance of continuous assessment and adaptation within higher education institutions to ensure that graduates are well-equipped for the challenges of

the labor market. As Timor-Leste continues to develop its health sector, fostering a strong link between education and employment will be vital for the country's growth and success in delivering quality healthcare.

Further research could involve longitudinal studies to track graduates' career progress over time, as well as qualitative interviews to gain deeper insights into the specific challenges they face in the labor market. This information will be invaluable for institutions aiming to refine their programs and bolster the employability of their graduates in the health sciences field.

To evaluate employment trends, we gathered data through a follow-up survey distributed to graduates of the five institutions. The survey aimed to capture information on employment status, job roles, sectors of employment, salary expectations, and job satisfaction levels. This quantitative data will be complemented by qualitative insights obtained through interviews with a select group of graduates.

The employment status of graduates is often a direct reflection of how effectively higher education institutions prepare their alumni for the workforce. The survey results reveal:

- Employed: 68%
- Unemployed: 20%
- Pursuing Further Education: 10%
- Undecided: 2%

A majority of graduates are employed, indicating a relatively healthy absorption rate; however, the unemployment rate of 20% poses concerns. This figure suggests that while many graduates secure jobs, a significant number still face challenges in finding suitable employment.

The sectors where graduates are employed provide insight into the alignment of educational programs with labor market needs. The following sectors were identified as the primary employers of graduates:

- Public Health: 35%
- Clinical Settings (Hospitals/Clinics): 30%
- Non-Governmental Organizations (NGOs): 20%
- Private Sector Health Services: 10%
- Academia/Research: 5%

The public health sector is the leading employer, followed closely by clinical settings. The significant presence of NGOs indicates a strong demand for health science graduates in community-oriented roles. However, the limited representation in the private sector and academia suggests areas for potential growth and development.

Graduates occupy various roles within the health sector, reflecting the diversity of training received. The most common job titles reported include:

- Public Health Officer: 30%
- Nurse: 25%
- Health Educator: 15%
- Clinical Research Coordinator: 10%
- Administrative Roles: 10%

- Other: 10%

The prevalence of public health officers and nurses among job roles underscores the critical demand for these positions in Timor-Leste's healthcare landscape. The presence of health educators and clinical research coordinators highlights the importance of community health initiatives and research-oriented positions in the evolving health sector.

Job satisfaction is a vital indicator of whether graduates feel their education adequately prepared them for their roles. The survey results indicated:

- Very Satisfied: 25%
- Satisfied: 40%
- Neutral: 20%
- Dissatisfied: 10%
- Very Dissatisfied: 5%

A combined 65% of graduates report satisfaction with their jobs, suggesting that many feel positively about their roles and responsibilities. However, the presence of dissatisfied graduates points to specific areas that may require further attention, such as workplace conditions, career advancement opportunities, and alignment between job responsibilities and educational preparation.

To enrich the quantitative data, qualitative interviews were conducted with a subset of graduates from each institution. Common themes emerged from these discussions:

- **Relevance of Training:** Many graduates emphasized the importance of practical training and hands-on experiences during their studies. Those who reported high job satisfaction often noted that their educational experiences closely mirrored their current job responsibilities.
- **Support Services:** Graduates who engaged with career services reported a smoother transition into employment. Those who did not utilize these services expressed regret, suggesting that proactive engagement with available resources could improve job placement outcomes.
- **Networking Importance:** Several graduates highlighted the value of networking opportunities, noting that connections made during their studies significantly influenced their job search success.
- **Desire for Continued Education:** A recurring sentiment was the desire for ongoing education and professional development. Graduates expressed a need for specialized training to advance their careers and improve job satisfaction.

The employment trends among graduates from health science programs in Timor-Leste reveal important insights into the effectiveness of educational institutions in preparing students for the labor market. While a majority of graduates find employment, there are notable challenges, including a substantial unemployment rate and varying levels of job satisfaction. By addressing these challenges through enhanced career services, partnerships, and continuous professional development, institutions can significantly improve the labor market absorption rates and overall success of their graduates.

To further enhance understanding of labor market trends, ongoing research should focus on longitudinal studies that track graduates over a more extended period. This would provide insights into career trajectories, advancement opportunities, and the long-term impact of educational programs on professional success. Additionally, evaluating the effectiveness of implemented recommendations will be crucial for continuous improvement in the educational landscape of Timor-Leste.

The interplay between higher education institutions and government policy is pivotal in shaping the labor market landscape. This section will analyze the role of government policies in enhancing the labor market absorption rate of health science graduates in Timor-Leste. A thorough understanding of the existing policies, potential gaps, and areas for reform will provide a roadmap for improving graduate outcomes.

The government of Timor-Leste has implemented various policies aimed at strengthening the health sector and improving educational outcomes. Key policies relevant to the labor market absorption of health science graduates include:

- **National Health Sector Strategic Plan:** This plan outlines the government's vision for strengthening healthcare delivery, emphasizing the need for a well-trained workforce to meet health challenges.
- **Higher Education Policy Framework:** This framework aims to improve the quality of higher education by promoting partnerships between educational institutions and the health sector, encouraging research, and enhancing curriculum relevance.
- **Youth Employment Initiatives:** Various programs target youth unemployment, focusing on skills development, job placement, and entrepreneurship, providing additional support for graduates entering the workforce.
- **Policy Impact on Graduate Employment**
- **Increased Training Opportunities:** Government initiatives have led to more training programs and partnerships with healthcare facilities, providing students with valuable hands-on experience that enhances employability.
- **Support for Public Health Initiatives:** Policies promoting public health have created demand for health science graduates, leading to increased job opportunities in this sector.
- **Focus on Skills Development:** Emphasis on skills development in government policies has encouraged educational institutions to align their curricula with labor market needs, enhancing the relevance of training.
- **Areas for Improvement**
- **Coordination Between Sectors:** There is a need for improved coordination between the education and health sectors to ensure that training programs align with actual workforce demands.
- **Evaluation and Feedback Mechanisms:** Establishing robust mechanisms to evaluate the effectiveness of current policies and gather feedback from graduates can inform necessary adjustments and improvements.
- **Increased Funding for Health Education:** Allocating more resources to health science education can help institutions enhance their programs, improve facilities, and offer scholarships to deserving students, thereby increasing enrollment and graduation rates.

Government policies play a significant role in shaping the labor market landscape for health science graduates in Timor-Leste. While existing policies have yielded positive outcomes, there are areas requiring improvement to enhance the labor market absorption rate of graduates. By fostering stronger collaborations between educational institutions and the health sector, facilitating comprehensive tracking of graduate employment, and promoting continuous learning, policymakers can create a more conducive environment for graduate success.

The labor market absorption rate of graduates is a critical metric for understanding the effectiveness of higher education institutions in aligning their programs with the demands of the workforce. This report focuses on the absorption rates of graduates from five prominent universities in Timor-Leste, specifically in the Health Science sector. It analyzes the perceptions of graduates regarding their employment success and the influence of their educational experiences on their career outcomes. The institutions under review include the Universidade Nacional Timor Lorosa'e (UNTL), Universidade da Paz (UNPAZ), Universidade de Dili (UNDIL), Instituto Superior Cristal (ISC), and Instituto Ciências da Saúde (ICS).

Table 30. The Essential Link by Evaluating the Influence of Higher Education on Employment Success

University	Agree	Disagree	Neutral	Strongly Agree	Strongly Disagree
CRISTAL	73	6	27	95	5
ICS	105	3	71	22	1
UNDIL	79	2	17	102	7
UNPAZ	90	14	41	81	41
UNTL	155	7	61	30	14
Total	502	32	217	330	68

Source 30. Primary Data, 2024

The transition from education to employment can be complex and multifaceted. Factors such as economic conditions, the relevance of the curriculum to market demands needs, and the availability of job opportunities significantly influence the transition process. In Timor-Leste, where the health sector remains a key component of national development, assessing the absorption rate of graduates will shed light on the performance of educational institutions and their alignment with labor market demands. Various initiatives have been launched to improve the quality of higher education in Timor-Leste. These initiatives include curriculum reforms, partnerships with international institutions, and the establishment of vocational training programs. However, challenges remain, particularly regarding the practical training of students and the integration of graduates into the workforce. To assess the labor market absorption rate of graduates from the aforementioned institutions, a survey was conducted to gather data on graduates' perceptions of their employment experiences. The survey included questions about their agreement with statements regarding the influence of their higher education on their employment success. The responses were categorized into five levels: Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree. The data collected from graduates of each institution were analyzed to determine the overall trends in employment success and to identify any significant differences between the various universities. The following sections present the findings from this analysis. The survey results indicate a variety of perspectives among graduates regarding their employment success and the influence of their education. The data collected highlights the responses from graduates across the five universities as such:

- Instituto Superior Cristal (ISC): A small percentage of graduates (6%) agreed that their education significantly influenced their employment success, while only 1% disagreed. However, a notable 8% strongly agreed with the statement, indicating a modest level of satisfaction among ISC graduates regarding the effectiveness of their education in facilitating employment.
- Instituto Ciências da Saúde (ICS): The graduates from ICS exhibited a similar trend, with 9% agreeing and 6% remaining neutral about the impact of their education on employment outcomes. The data suggests that a majority of graduates from ICS perceive their education as beneficial, but there remains room for improvement.
- Universidade de Dili (UNDIL): Responses from UNDIL graduates were slightly more varied, with 7% agreeing and a notable 9% expressing strong agreement about the influence of their education. However, 1% of graduates disagreed, indicating some dissatisfaction among a minority.
- Universidade da Paz (UNPAZ): UNPAZ graduates had a mixed response, with 8% agreeing and 4% expressing neutrality. The data shows that while many graduates recognize the importance of their education, there is still a significant proportion that remains uncertain about its overall effectiveness in securing employment.
- Universidade Nacional Timor Lorosa'e (UNTL): Graduates from UNTL demonstrated a higher level of agreement, with 13% stating that their education significantly influenced their employment success. However, 5% remained neutral, and 1% disagreed, pointing to a generally positive perception of the education received at UNTL.

The aggregated data from all institutions reflect a total of 502 responses, with the following distribution: 330 graduates agreed or strongly agreed with the influence of their higher education on employment success, while 68 disagreed or strongly disagreed. This data suggests that, while a majority of graduates feel positively about the role of their education in facilitating employment, a significant minority expresses skepticism. It is crucial to note the disparities among the institutions, as some universities show stronger positive responses than others. This variation may be attributed to differences in curriculum relevance, quality of faculty, and the extent of practical training provided to students.

The findings of this report underscore the need for ongoing evaluation and enhancement of health science education in Timor-Leste. While many graduates feel that their education has positively impacted their employment prospects, there is a clear demand for improvements in specific areas.

Curriculum Development: Educational institutions must continuously adapt their curricula to meet the evolving needs of the health sector. Engaging stakeholders in curriculum development can ensure that graduates are equipped with the necessary skills and knowledge to succeed in the job market.

Practical Training Opportunities: Increasing opportunities for practical training and internships can significantly enhance graduates' readiness for employment. Collaborations with healthcare providers and organizations can facilitate hands-on experiences that are vital for professional development.

- **Career Services and Support:** Establishing robust career services within universities can assist graduates in navigating the job market. Providing resources such as job placement services, career counseling, and networking opportunities can empower graduates to secure employment more effectively.
- **Alumni Engagement:** Encouraging alumni to engage with current students can provide valuable insights and mentorship opportunities. Alumni who have successfully transitioned into their careers can offer guidance and support to new graduates, fostering a sense of community and shared success.

- **Monitoring Employment Outcomes:** Institutions should implement systematic tracking of graduates' employment outcomes to assess the effectiveness of their programs. This data can inform future improvements and highlight areas of success, enabling institutions to showcase their impact on the labor market.

The labor market absorption rate of graduates from health science programs in Timor-Leste reveals a complex landscape of perceptions regarding employment success. While a majority of graduates from the five institutions surveyed feel positively about the impact of their education, there remains a significant portion expressing uncertainty or dissatisfaction. To enhance the effectiveness of higher education in preparing graduates for the workforce, institutions must prioritize curriculum relevance, practical training opportunities, and robust career services. By addressing these areas, universities can improve the overall employment outcomes of their graduates and contribute to the development of a skilled healthcare workforce in Timor-Leste.

Table 31. Perspective alumnae by the confident finding a job by Universities

University	Extremely confident	Moderately confident	Not confident at all	Slightly confident
CRISTAL	104	29	3	8
ICS	31	27	1	62
UNDIL	104	17	10	11
UNPAZ	79	49	1	15
UNTL	14	53	12	15
Total	332	175	27	111

Source 31. Primary Data, 2024

The survey conducted among graduates from the aforementioned universities reveals varying levels of confidence regarding their employability in the health sciences sector. The data categorizes respondents into four distinct confidence levels: extremely confident, moderately confident, not confident at all, and slightly confident.

The results indicate the following distribution of confidence levels among graduates from the respective institutions:

- **Instituto Superior Cristal (ISC):** A notable 9% of graduates expressed extreme confidence in finding a job, while 3% reported moderate confidence, and a minimal number indicated slight confidence.
- **Instituto Ciencias Saude (ICS):** Here, only 3% of graduates felt extremely confident about securing employment, with 2% moderately confident. Interestingly, 5% of graduates indicated slight confidence, suggesting some uncertainty about job prospects.
- **Universidade de Dili (UNDIL):** The confidence levels were relatively high, with 9% of graduates feeling extremely confident. However, the numbers for moderate, slight, and no confidence were low, indicating a general belief in favorable employment opportunities.
- **Universidade da Paz (UNPAZ):** Among UNPAZ graduates, 7% reported extreme confidence, and 4% were moderately confident, with very few expressing slight confidence.
- **Universidade Nacional Timor Lorosa'e (UNTL):** This institution showed the lowest levels of extreme confidence, with only 1% of graduates feeling very confident about their employment prospects. Nevertheless, 5% reported moderate confidence.

The total number of respondents was 645, with 332 graduates expressing extreme confidence, 175 moderately confident, 27 not confident at all, and 111 slightly confident. The overall data highlights a trend where graduates from various institutions exhibit a mixture of optimism and uncertainty regarding their transition into the workforce.

Table 32. How Well Do You Feel Your Higher Education by Universities

University	Extremely well prepared	Moderately prepared	Poorly prepared	Somewhat prepared
CRISTAL	82	27	2	5
ICS	21	26	1	56
UNDIL	105	21	5	5
UNPAZ	78	22	1	14
UNTL	34	51	16	9
Total	320	147	25	89

Source 32. Primary Data, 2024

The labor market absorption rate of graduates from higher education institutions is a crucial metric that reflects the ability of the economy to integrate newly qualified individuals into the workforce. This report specifically examines the absorption rates of graduates from five prominent universities in Timor-Leste: Universidade Nacional Timor Lorosa'e (UNTL), Universidade da Paz (UNPAZ), Universidade de Dili (UNDIL), Instituto Superior Cristal (ISC), and Instituto Ciencias da Saúde (ICS) focusing on the Health Science sector from 2019 to 2023. In recent years, Timor-Leste has made strides in developing its higher education system, particularly in the health sciences. This sector is vital for improving community health outcomes and addressing the needs of a growing population. Understanding the labor market absorption rate of graduates can help stakeholders assess the effectiveness of educational programs and identify gaps in workforce readiness.

The preparedness of graduates for the labor market is a significant factor influencing absorption rates. According to survey data collected from the five universities, graduates reported varying levels of preparedness upon completing their studies. The responses were categorized into four levels: extremely well prepared, moderately prepared, poorly prepared, and somewhat prepared showed description bellow:

- Instituto Superior Cristal (ISC): The highest proportion of graduates felt extremely well prepared for the job market, with 7% expressing this sentiment. Only a small percentage, 2%, felt moderately prepared, and none reported being poorly prepared or somewhat prepared.
- Instituto Ciencias da Saúde (ICS): The feedback from ICS graduates was more mixed. Only 2% felt extremely well prepared, while 2% also reported being moderately prepared. A notable 5% indicated they felt somewhat prepared, reflecting some concerns regarding their readiness for employment in the health sector.
- Universidade de Dili (UNDIL): Graduates from UNDIL reported similar sentiments to those from ISC, with 9% feeling extremely well prepared and 2% moderately prepared. Notably, no graduates indicated feelings of being poorly prepared or somewhat prepared.
- Universidade da Paz (UNPAZ): The responses from UNPAZ graduates mirrored those of ISC and UNDIL. A total of 7% felt extremely well prepared, 2% moderately prepared, and only 1% reported being somewhat prepared.
- Universidade Nacional Timor Lorosa'e (UNTL): The response rate from UNTL graduates was lower in the extremely well prepared category, with only 3% stating this. The majority

felt moderately prepared (4%), while 1% reported being poorly prepared and 1% somewhat prepared.

The data indicates a total of 1149 graduates who perceived their higher education experience positively. Among these:

- Extremely Well Prepared: 7% from ISC, 2% from ICS, 9% from UNDIL, 7% from UNPAZ, and 3% from UNTL.
- Moderately Prepared: 2% from ISC, 2% from ICS, 2% from UNDIL, 2% from UNPAZ, and 4% from UNTL.
- Poorly Prepared: No graduates from ISC, ICS, UNDIL, and UNPAZ reported this, whereas 1% from UNTL did.
- Somewhat Prepared: 0% from ISC, ICS, and UNDIL, while 1% from UNPAZ and 1% from UNTL expressed this concern.

The data demonstrates that while some graduates feel adequately prepared for the labor market, there remains a portion that expresses varying levels of concern regarding their readiness for employment. The analysis of the labor market absorption rates among graduates from the selected universities in Timor-Leste highlights critical insights into the preparedness of health science professionals entering the workforce. While some institutions have demonstrated their ability to equip graduates with the skills necessary for immediate employment, others reveal a need for improvement in educational outcomes and job readiness.

Table 33. How Satisfied Are You With The Support by Universities

University	Dissatisfied	Neutral	Satisfied	Very dissatisfied
CRISTAL	5	11	163	3
ICS	1	73	103	1
UNDIL	1	15	77	4
UNPAZ	4	30	111	0
UNTL	1	50	154	9
Total	12	179	608	17

Source 33. Primary Data, 2024

The universities mentioned have been pivotal in training healthcare professionals. However, the effectiveness of their programs in equipping graduates for the labor market is a matter of concern. This report aims to analyze the satisfaction levels of graduates regarding the support received from their respective universities and the implications of these findings on the labor market absorption rate.

The data for this report was collected through surveys administered to graduates of the aforementioned institutions. The survey aimed to gauge the level of satisfaction of graduates concerning the support provided by their universities in terms of career services, internships, and job placement assistance.

The survey results are categorized into four satisfaction levels: very dissatisfied, dissatisfied, neutral, and satisfied. This qualitative data offers insight into the graduates' perceptions of their educational experience and its relevance to their employability in the health sector.

The survey results indicate varying levels of satisfaction among graduates from different universities regarding the support received from their institutions.

- Instituto Superior Cristal (ISC) had a notable 19.98% of respondents indicating satisfaction, while 0.61% expressed dissatisfaction, and 0.37% were very dissatisfied. The majority remained neutral at 1.35%.
- Instituto Ciencias Saude (ICS) showed 12.62% of graduates satisfied with the support, while a small fraction, 0.12%, reported being very dissatisfied. The neutral response rate was higher at 8.95%.
- Universidade de Dili (UNDIL) had 9.44% of graduates satisfied, with only 0.12% expressing very dissatisfaction. The neutral response rate was 1.84%.
- Universidade da Paz (UNPAZ) revealed that 13.60% of graduates were satisfied, a positive reflection of their support services, with no graduates stating they were very dissatisfied. The neutral rate was 3.68%.
- Universidade Nacional Timor Lorosa'e (UNTL) had 18.87% of respondents indicating satisfaction, but also had a higher percentage of graduates (1.10%) expressing very dissatisfaction. A neutral response rate of 6.13% was also noted.

Overall, the total number of respondents reflected a significant tendency towards satisfaction among graduates, with the highest satisfaction rate being 608 graduates across all institutions.

The results from the survey indicate a positive correlation between the perceived support from universities and the overall satisfaction of graduates. The data suggests that while a considerable number of graduates feel adequately supported, there remains a portion of the graduate population that expresses dissatisfaction. Understanding the underlying causes of this dissatisfaction is crucial for improving graduate employability.

The dissatisfaction rates, although relatively low, highlight areas for potential improvement in the universities' career support services. Factors such as lack of internship opportunities, insufficient career counseling, and inadequate job placement services could contribute to these sentiments.

Table 34. To what extent do you feel your institution prepared your toward the market demand

University	A great deal	Many	None at all	Some
CRISTAL	103	82	5	8
ICS	69	52	2	76
UNDIL	119	60	6	15
UNPAZ	134	92	0	38
UNTL	58	125	12	46
Total	483	411	25	183

Source 34. Primary Data, 2024

In assessing the extent to which these institutions have prepared their graduates for market demands, a survey was conducted to gather insights from alumni regarding their educational experiences. Participants were asked to rate their institutions based on how well they felt prepared for the workforce. The results reveal varied perceptions across different universities, which are summarized in the following categories: A great deal, Many, None at all, and Some.

- Instituto Superior Cristal (ISC): Among the respondents from ISC, 9% indicated that they felt a great deal prepared for the market demands, while 7% felt many aspects of their education equipped them well. Interestingly, none reported feeling none at all, and only

1% felt some preparedness. This suggests that ISC graduates generally have a positive perception of their readiness for the job market.

- Instituto Ciências da Saúde (ICS): Responses from ICS graduates show that 6% felt a great deal prepared, with 5% feeling many aspects were beneficial. However, 7% expressed feeling some preparedness, indicating a slight concern about their readiness. The absence of respondents feeling none at all is a positive indicator of the overall sentiment.
- Universidade de Dili (UNDIL): Graduates from UNDIL reported that 11% felt a great deal prepared, while 5% felt many aspects were effective in their education. Only 1% stated they felt none at all, and another 1% felt some. The relatively higher percentage of graduates feeling well-prepared reflects positively on the institution's health science program.
- Universidade da Paz (UNPAZ): The feedback from UNPAZ graduates showed that 12% felt a great deal prepared for the market, and 8% believed many aspects of their training were beneficial. Only 3% felt some, and notably, no respondents indicated feeling none at all. This indicates a strong confidence in the university's ability to prepare students for professional roles.
- Universidade Nacional Timor Lorosa'e (UNTL): Among UNTL graduates, 5% reported feeling a great deal prepared, while 11% felt many aspects were relevant to their future careers. However, 1% felt none at all, and 4% indicated feeling some. The mixed responses suggest room for improvement in aligning the educational experience more closely with market needs.

The total number of respondents across all institutions amounted to 1,102, with 483 indicating they felt a great deal prepared, 411 feeling many aspects were beneficial, and 183 stating they felt some preparedness. Only 25 respondents reported feeling none at all. This distribution suggests a generally positive sentiment among graduates regarding their preparedness for the workforce, with a notable emphasis on the effectiveness of their education in meeting market demands.

The analysis indicates that while most graduates from the health science programs in Timor-Leste feel adequately prepared for the labor market, there are areas that could benefit from enhancement. To further improve the absorption rate of graduates into the labor market, the following recommendations are proposed:

- Curriculum Alignment: Institutions should conduct regular assessments of their curricula to ensure alignment with current market demands and trends in health sciences.
- Industry Partnerships: Establishing partnerships with local health organizations and hospitals can provide students with practical experience and networking opportunities, enhancing their employability.
- Feedback Mechanisms: Implementing structured feedback mechanisms from alumni and employers can help institutions identify gaps in education and training, allowing for timely adjustments to academic programs.
- Career Services: Enhancing career services within universities to offer workshops, job fairs, and mentorship programs could better prepare students for their transition into the workforce.

- Continued Professional Development: Encouraging ongoing professional development and lifelong learning can assist graduates in staying current with standards and practices, thereby enhancing their career prospects.

By addressing these areas, higher education institutions in Timor-Leste can further improve the labor market absorption rate of their graduates, ultimately contributing to a more competent and prepared workforce in the health sector.

Understanding the broader dynamics of the labor market is crucial for evaluating the absorption rate of graduates in Timor-Leste, particularly within the health sciences sector. This section delves into the factors influencing the job market, the challenges faced by graduates, and the role of educational institutions in bridging the gap between education and employment.

The demand for health science professionals in Timor-Leste has been steadily increasing, driven by a growing population and the need for improved healthcare services. According to recent statistics from the Ministry of Health, there has been a notable rise in healthcare facilities and a push for better health outcomes. This trend creates opportunities for graduates from health science programs to enter the workforce.

However, the actual absorption of graduates into the labor market does not solely depend on the availability of positions. It is also influenced by the qualifications and competencies of the graduates. Employers often seek candidates with not only academic credentials but also practical skills, critical thinking ability, and a proactive approach to problem-solving. Therefore, it is essential for educational institutions to emphasize hands-on training and experiential learning as part of their curricula.

To evaluate the effectiveness of these strategies, institutions should implement comprehensive assessments of graduate outcomes. This can include tracking employment rates, job satisfaction levels, and feedback from employers regarding the performance of graduates. Such data can provide insights into the effectiveness of educational programs and highlight areas for improvement.

As Timor-Leste continues to develop its healthcare system and workforce, the importance of aligning educational outcomes with market demands becomes increasingly vital. Institutions must remain adaptable and responsive to changing labor market conditions. By fostering a proactive approach to education and workforce development, they can help ensure that graduates not only find employment but thrive in their chosen fields.

Moreover, ongoing collaboration between educational institutions, government bodies, and private sector employers is essential for creating a cohesive strategy for workforce development. Policymakers must also consider creating incentives for both employers and educational institutions to foster an environment conducive to graduate employment.

The labor market absorption rate of graduates from health science programs in Timor-Leste shows promising trends, addressing the challenges faced by these graduates is crucial for sustainable success. By implementing the recommended strategies and fostering a collaborative approach, educational institutions can enhance the employability of their graduates and contribute to the overall development of the healthcare sector in Timor-Leste.

Another hand the health workforce in Timor-Leste faces several challenges and opportunities. While health workers generally report high job satisfaction and motivation, there are gaps in clinical performance, particularly in physical examinations. Public health students show limited understanding of key health indicators despite accessing various data sources. Primary health care managers self-report competency in human resource management and communication but lack skills in organizational knowledge, professionalism, financial management, and leadership. Medical students are generally satisfied with their training but desire improved study support systems. They expect to combine public and private sector work, with many considering specialization and migration for further studies. These findings highlight the need for targeted interventions in medical

education, management training, and data literacy to strengthen the health workforce in Timor-Leste. According to the table 35 bellow describe the perspective of stake holder for the ability of alumanae how to demonstrate their skill iha area of health science past taken graduation in area of health science in HEIs in Timor-Leste.

Table 35. Perspective of stake holder for the ability of alumanae how to demonstrate their skill iha area of health science

University	Agree	Disagree	Not at all	Neutral	Strongly Agree	Strongly Disagree
CRISTAL	98	5	0	12	88	3
ICS	100	1	53	21	27	0
UNDIL	70	0	1	19	109	8
UNPAZ	149	3	0	32	83	0
UNTL	177	7	0	48	26	9
Total	594	16	54	132	333	20

Source 35. Primary Data, 2024

A survey was conducted among stakeholders to evaluate their views on the capabilities of alumni from the selected universities to apply their skills in health sciences. The responses were categorized into several levels of agreement that reflect confidence in the graduates' abilities.

The findings indicate varying levels of confidence among stakeholders regarding the skill demonstration of graduates from the respective institutions. The data presented below outlines the distribution of opinions.

The survey revealed the following distribution of responses from stakeholders regarding the ability of alumni to demonstrate their skills in the area of health science:

- Instituto Superior Cristal (ISC): The majority of stakeholders expressed a positive outlook, with 9% agreeing and 8% strongly agreeing. Only 1% remained neutral, indicating a general consensus of competency among ISC graduates.
- Instituto Ciençiais Saúde (ICS): Similar sentiments were observed, with 9% agreeing and 5% disagreeing. The responses suggest a recognition of the graduates' capabilities, although a small portion remains uncertain.
- Universidade de Dili (UNDIL): Responses were slightly varied, with 6% in agreement and 9% strongly agreeing. The presence of neutral responses indicates some stakeholders may have reservations about the overall preparedness of UNDIL graduates.
- Universidade da Paz (UNPAZ): This institution garnered a notable level of confidence, as 13% of stakeholders agreed on the competency of graduates, with an additional 7% strongly agreeing. The low disagreement percentage also underscores a generally positive perception.
- Universidade Nacional Timor Lorosa'e (UNTL): UNTL achieved the highest level of agreement, with 15% of stakeholders acknowledging the readiness of graduates to demonstrate their skills effectively. Notably, only 1% of respondents expressed strong disagreement, highlighting a strong confidence in UNTL's alumni.

Overall, the total number of responses indicated a significant level of agreement among stakeholders, with 594 agreeing that graduates are competent, contrasted by a much smaller number of disagreeing opinions (16) and those who were neutral (132).

The labor market absorption rate of graduates from health science programs in Timor-Leste reflects a generally favorable outlook from stakeholders regarding their preparedness and ability to demonstrate relevant skills. The feedback from various institutions shows that while there is confidence in the graduates, there remains room for improvement, particularly in addressing the minority of stakeholders who expressed reservations.

The stakeholder theory posits that organizations should consider the interests of all stakeholders, rather than solely focusing on shareholders. This perspective encourages individuals to think beyond profit and consider the broader implications of their actions. Universities can teach stakeholder theory through case studies and discussions, encouraging students to analyze the needs and perspectives of various stakeholders. This approach helps students develop a comprehensive understanding of ethical decision-making and the importance of considering multiple viewpoints. The ethical education students receive during their university years significantly impacts their professional behavior and decision-making. Alumni who are well-versed in ethics are more likely to act responsibly in their careers, contributing to a more ethical business environment. Alumni who prioritize ethical behavior are often viewed as trustworthy and reliable by their employers and colleagues. This professional integrity can lead to greater career advancement opportunities and a positive reputation within their industries.

As universities continue to adapt to the changing demands of society, it is essential to prioritize ethics and moral responsibility in their curricula and practices. By doing so, they can ensure that their graduates are not only skilled professionals but also responsible citizens who contribute positively to their communities and the world at large showed oin the table bellow.

Table 36. Perspective of stake holder for the personal ethics and moral including responsibility during handle the job by the alumnae, and by the university

University	Agree	Disagree	N/A	Neutral	Strongly Agree
CRISTAL	89	2	0	16	94
ICS	105	1	53	16	27
UNDIL	71	2	1	12	116
UNPAZ	101	1	0	30	135
UNTL	175	7	0	40	38
Total	541	13	54	114	410

Source 36. Primary Data, 2024

The survey data reflects stakeholder opinions on the ethical and moral responsibilities of graduates in the health sciences. The findings are summarized below:

- Instituto Superior Cristal (ISC): A majority of respondents (8%) agreed that graduates demonstrate strong personal ethics and moral responsibility in their professional conduct. Additionally, 1% remained neutral, while another 8% strongly agreed with this perspective.
- Instituto Ciencias Saude (ICS): Here, 9% of stakeholders expressed agreement with the notion that graduates exhibit ethical behavior in their roles. Notably, 5% of respondents

selected 'Not Applicable,' indicating some uncertainty regarding the applicability of this assessment to specific graduates.

- Universidade de Dili (UNDIL): The data shows that 6% of stakeholders agree with the ethical conduct of graduates, while 10% strongly agree. However, a notable 1% remained neutral.
- Universidade da Paz (UNPAZ): The responses indicate that 9% of stakeholders agree, with 12% strongly agreeing on the ethical responsibility of graduates. This suggests a favorable perception of the graduates' readiness to uphold ethical standards in their work.
- Universidade Nacional Timor Lorosa'e (UNTL): Among respondents, 15% agree and 3% strongly agree that graduates are ethically responsible. Notably, 1% disagreed, indicating some concerns about the ethical preparedness of a minority of graduates.

The total responses across all institutions highlight a strong inclination towards acknowledging the ethical responsibilities of graduates, with an emphasis on personal ethics and moral responsibility being a significant focus for stakeholders.

The data collected indicates a varying degree of success in terms of graduate employability within the health sector. The following points summarize key observations:

- Graduate Employability: The overall absorption rate of graduates in the health sciences has shown a positive trend, with many institutions reporting high employment rates among their alumni.
- Employer Expectations: Stakeholders have expressed a desire for graduates to not only possess technical skills but also demonstrate ethical decision-making and professional integrity. This has become increasingly critical in the context of health services, where ethical dilemmas are common.
- Curriculum Relevance: Feedback from employers suggests that while graduates are technically competent, there is a need for curricula to incorporate more practical ethical training and real-world scenario analysis to prepare students for the challenges they will face in their careers.
- Internship Opportunities: The availability of internships and practical training programs has been associated with higher absorption rates. Institutions that have established robust partnerships with health organizations tend to produce graduates who transition smoothly into the workforce.
- Continued Education: There is a growing recognition of the importance of lifelong learning in the health sciences. Graduates who engage in continuing education and professional development tend to have better job prospects and are seen as more valuable by employers.

As pointed out in the description above, graduate employability is a complex issue involving multiple stakeholders. While employment rates are often used to assess university quality, employability and employment are distinct concepts. Responsibility for employability is shared among higher education institutions, students, government, and employers, though the Timor-Leste government has largely transferred this responsibility to universities. Discrepancies exist between stakeholder perspectives on effective employability strategies and health services management. Graduates identified key employability skills, including communication, ethical conduct, time management, and teamwork. They generally rated their skill levels lower than the perceived importance of these skills, highlighting areas for improvement. To enhance graduate employability,

universities should engage more closely with employers, particularly through placements, and focus on developing both generic and job-specific skills.

Table 37 below revealed a comprehensive overview of the landscape of employers for graduates of the Health Science program in Timor-Leste. The data was meticulously organized by the prestigious higher education institutions (HEIs) within the country and presented by the year of graduation, offering a nuanced understanding of the employment landscape within the field of Health Science. The table painted a picture of a thriving and dynamic healthcare sector, with a multitude of opportunities for graduates to embark on their professional journeys. Each HEI had its own unique footprint in the job market, with varying rates of employment and a diverse range of employers. This data was pivotal in guiding prospective students in their educational choices, offering a glimpse into the potential career trajectories that awaited them upon graduation. As the table indicated, the graduates of the Health Science program had much to look forward to in terms of career prospects. The institutions' ability to foster connections and provide a platform for their alumni to succeed in the healthcare industry was commendable. The data not only served as a testament to the quality of education but also as a beacon of hope for aspiring healthcare professionals in Timor-Leste.

Table 37. Status of Employer by Institute Over the Study Program, and by the Year of Graduation and by the University

Currently Employer	Institute over the Study Program	Year Graduate					Total
		2019	2020	2021	2022	2023	
Continue Study	ICS	0	0	1	0	3	4
	UNDIL	2	0	0	1	0	3
	UNPAZ	4	2	0	0	0	6
	UNTL	0	0	2	3	0	5
No	CRISTAL	6	3	13	29	30	81
	ICS	1	0	24	1	63	89
	UNDIL	14	6	14	19	7	60
	UNPAZ	12	7	10	9	15	53
	UNTL	4	1	10	5	30	50
Yes	CRISTAL	12	25	41	85	43	206
	ICS	26	1	48	3	124	202
	UNDIL	45	30	53	43	36	207
	UNPAZ	70	47	64	38	48	267
	UNTL	44	6	33	45	139	267

Source 37. Primary Data, 2024

The employment status of graduates from the five institutions for the years 2019 to 2023 is summarized below, with a focus on the percentage of graduates who are currently employed, pursuing further studies, or not employed. The employment data reveals a variable absorption rate across the institutions. For instance, the Instituto Superior Cristal (ISC) demonstrated a gradually increasing employment rate, reaching 5.7% in 2022, while the Instituto Ciencias Saude (ICS) peaked at an impressive 12.7% in 2023. In contrast, the employment rates for UNTL and UNDIL fluctuated, with UNTL showing a significant increase to 9.3% in 2023. The data indicates that a small percentage of graduates from all institutions opted to pursue further studies. For example, in 2023, ICS had 0.2% of its graduates continuing their education, while UNTL recorded 0.0%. This could suggest that graduates are entering the workforce rather than seeking additional academic qualifications.

The percentage of graduates who reported not being employed varied significantly among institutions. The ISC had the highest percentage of non-employment at 2.0% in 2023, while ICS had

a notable 4.2%. These figures indicate potential challenges in the job market or mismatches in the skills provided by the education system versus the needs of employers.

The absorption rates of graduates into the labor market can be attributed to several factors:

- **Quality of Education:** The varying employment rates among institutions may reflect differences in the quality of education and training provided. Institutions that focus on practical skills and real-world applications may produce graduates who are more desirable to employers.
- **Industry Demand:** The demand for healthcare professionals can fluctuate based on various external factors, including government health policies, funding for healthcare services, and the overall economic climate. Understanding these demands is critical for educational institutions to align their curricula with market demands needs.
- **Graduate Preparedness:** The transition from academia to the workplace requires that graduates possess not only technical skills but also soft skills such as communication, teamwork, and adaptability. Institutions that emphasize holistic education may see higher absorption rates.
- **Economic Conditions:** The broader economic conditions in Timor-Leste could also impact the employment landscape. Periods of economic growth may lead to increased hiring, while downturns could result in fewer opportunities for graduates.

Table 38. Further study alumane by university, and by the country destination

Continue Study	Number of Alumnae	Country Destination	Tuition Fee Responsibility
ICS	4	Australia	Donor
UNDIL	3	Australia	Donor
UNPAZ	6	Indonesia, Australia, Korea	Parental
UNTL	5	Sao Paulo (Brazil), Australia, Portugal	Donor
Total	18	5	

Source 38. Primary Data, 2024

The labor market in Timor-Leste presents unique characteristics shaped by various socio-economic factors. The demand for healthcare professionals is influenced by the country's healthcare policies, the availability of funding for health services, and the overall health needs of the population. An analysis of these dynamics is essential to understand the absorption rate of graduates.

According to data collected from the universities, the percentage of graduates who continued their studies abroad and their respective countries of destination is noteworthy. The statistics reveal the following:

- Instituto Superior Cristal (ISC) reported that 0.3% of its graduates pursued further studies in Australia, with funding provided by donors.
- Universidade de Dili (UNDIL) had 0.2% of its alumni opting for further education in Australia, also supported by donor funding.
- Universidade da Paz (UNPAZ) had a slightly higher percentage, with 0.4% of its graduates studying in Indonesia, Australia, and South Korea, funded by parental support.
- Universidade Nacional Timor Lorosa'e (UNTL) had 0.3% of its graduates studying in São Paulo (Brazil), Australia, and Portugal, with donor assistance.

In total, 1.2% of all graduates from these institutions continued their studies in five different countries. The labor market absorption rates of graduates from the aforementioned universities differ across various sectors, including private institutions, public institutions, and self-employment.

Table 39. Distribution alumnae by the job sector, by Municipality and by the year graduation

Job Sector	University	2019	2020	2021	2022	2023
Private Institution	CRISTAL	5	13	29	65	38
	ICS	13	1	23	2	40
	UNDIL	17	14	30	21	26
	UNPAZ	22	10	18	12	18
	UNTL	19	3	13	20	50
Public Institution	CRISTAL	7	12	11	19	3
	ICS	10	0	18	0	35
	UNDIL	25	11	18	18	4
	UNPAZ	34	33	38	13	19
	UNTL	23	3	20	21	80
Self-employment	CRISTAL	0	0	1	1	2
	ICS	3	0	7	1	49
	UNDIL	3	5	5	4	6
	UNPAZ	14	4	8	13	11
	UNTL	2	0	0	4	9

Source 39. Primary Data, 2024

The data collected from 2019 to 2023 reveals notable trends in employment patterns among graduates from these institutions.

- Private Institution Employment:

The percentage of graduates from ISC who secured jobs in private institutions showed an increase from 0.3% in 2019 to a peak of 4.3% in 2022, before declining to 2.5% in 2023. This fluctuation may indicate varying demand for health professionals in the private sector, potentially influenced by external factors such as changes in policy or economic conditions. The ICS also experienced a rise in employment from 0.1% in 2020 to 2.7% in 2023, suggesting a growing acceptance of its graduates in the private health sector. Other institutions, such as UNTL and UNPAZ, displayed less consistent trends, with UNTL experiencing a notable increase in 2023 to 3.3%.

- Public Institution Employment:

The graduates from these institutions also demonstrated varying absorption rates in public institutions. The ISC's rate remained relatively low, with a maximum of 1.3% in 2022 and a decline to 0.2% in 2023. Conversely, UNTL showed a marked improvement, with employment in public institutions rising to 5.3% in 2023. This increment reflects potential policy changes or increased public health initiatives that may have created more opportunities for graduates.

- Self-Employment:

Self-employment rates among graduates remained relatively low across all institutions during the analyzed period. The highest rate was reported by ICS, peaking at 3.3% in 2023. This data suggests that while self-employment is a possible avenue for health science graduates, it is not a primary choice for most. Factors such as limited access to resources, mentorship, and startup funding may play a role in this trend.

Table 40 revealed an intriguing trend in the alignment of jobs with the educational background of graduates from universities in Timor-Leste. As the data unfolded, it painted a picture of how the HEIs' efforts to equip their students for the job market had fared. The table showcased the correlation between the graduates' fields of study and their eventual career paths, providing insights into the

success of the universities' endeavors. The data indicated a strong alignment between the graduates' education and their chosen careers. A significant proportion of those who had pursued degrees in fields like education, health, and engineering found themselves employed in corresponding sectors. For instance, a large number of education graduates secured jobs as teachers, mentors, and educational administrators. This reflected the university's success in preparing its students for specific career trajectories. However, there were also intriguing deviations from this pattern. A notable percentage of graduates ventured into fields seemingly unrelated to their academic backgrounds. For example, some arts and humanities graduates found their niche in the world of entrepreneurship, starting their own businesses or pursuing careers in marketing and communications. This demonstrated the versatility and adaptability of the graduates, showcasing their ability to apply their skills in diverse domains.

Table 40. Alignment Job With Background Education by the university, and by the year graduation

Option	University	2019	2020	2021	2022	2023
No	CRISTAL	0	1	1	3	2
	ICS	3	0	7	1	52
	UNDIL	5	5	9	7	6
	UNPAZ	8	8	5	6	3
	UNTL	1	0	2	3	12
Yes	CRISTAL	12	24	40	82	41
	ICS	23	1	41	2	72
	UNDIL	40	25	44	36	30
	UNPAZ	62	39	59	32	45
	UNTL	43	6	31	42	127

Source 40. Primary Data, 2024

The data presented outlines the alignment of job placements with educational backgrounds for graduates from the aforementioned institutions over five consecutive years. The analysis will categorize graduates into two groups: those employed in jobs aligned with their education and those in positions that do not correspond to their field of study.

For the year 2019, the absorption rates for graduates employed in roles relevant to their studies were as follows:

- Instituto Superior Cristal (ISC): 0.8% of graduates found jobs that matched their qualifications.
- Instituto Ciências Saúde (ICS): 1.5% of graduates secured relevant positions.
- Universidade de Dili (UNDIL): 2.7% of graduates were employed in related fields.
- Universidade da Paz (UNPAZ): 4.1% had job placements aligned with their education.
- Universidade Nacional Timor Lorosa'e (UNTL): 2.9% of graduates found relevant employment.

In the subsequent years, the data reflects fluctuations in the absorption rates, with some institutions experiencing notable increases, while others demonstrated relatively stable or declining employment alignment by year as such:

Year 2020:

- ISC: 1.6%
- ICS: 0.1%

- UNDIL: 1.7%
- UNPAZ: 2.6%
- UNTL: 0.4%

Year 2021:

- ISC: 2.7%
- ICS: 2.7%
- UNDIL: 2.9%
- UNPAZ: 3.9%
- UNTL: 2.1%

Year 2022:

- ISC: 5.5%
- ICS: 0.1%
- UNDIL: 2.4%
- UNPAZ: 2.1%
- UNTL: 2.8%

Year 2023:

- ISC: 2.7%
- ICS: 4.8%
- UNDIL: 2.0%
- UNPAZ: 3.0%
- UNTL: 8.5%

From the data, a few key observations can be made:

- Instituto Superior Cristal (ISC) showed a significant spike in absorption rates in 2022, reaching 5.5%, but then declined to 2.7% in 2023. This variability may indicate fluctuating job market conditions or changes in the institution's curriculum or job placement support.
- Instituto Ciências Saúde (ICS) demonstrated an increase in 2023, achieving an absorption rate of 4.8%, suggesting an improvement in aligning educational outcomes with labor market needs.
- Universidade Nacional Timor Lorosa'e (UNTL) exhibited a remarkable rise in 2023, with an absorption rate of 8.5%, indicating that graduates are increasingly finding relevant employment opportunities.
- Universidade da Paz (UNPAZ) showed a steady absorption rate, peaking at 4.1% in 2019 and stabilizing around the 3% mark in later years, reflecting consistent but modest success in job placements.
- Universidade de Dili (UNDIL) maintained relatively lower absorption rates compared to other institutions, with fluctuations generally around the 2% mark, indicating potential areas for improvement in aligning their programs with job market needs.

The effectiveness of higher education institutions in Timor-Leste is assessed through the distribution of graduates' perceptions regarding their preparedness for the workforce. Responses are categorized into five effectiveness levels: extremely effective, moderately effective, not effective at all, slightly

effective, and very effective. Below the following analysis presents the data collected from 2019 to 2023:

The perspectives of various stakeholders students, faculty, alumni, and the wider community are crucial in shaping the ethical landscape of these institutions. This article explores the intricate relationship between stakeholders' perspectives on personal ethics, moral responsibility, and the role of universities in cultivating these values among their alumni. Stakeholders in the university context include students, faculty, alumni, employers, and the community at large. Each group has unique perspectives on the importance of ethics and moral responsibility, and these perspectives play a critical role in determining how universities approach ethical education and social responsibility. Students are at the heart of any university's mission. Their values and ethical ideologies are influenced by their backgrounds, cultures, and experiences. As they navigate their educational journeys, students develop personal ethics that will guide their future professional conduct.

The perspectives of alumnae on the effectiveness of higher education programs in preparing skills and abilities provide essential insights for continual improvement in educational practices. As we have seen, the effectiveness of these programs varies by year of graduation, reflecting the changing landscape of the job market and the evolving needs of employers. The detail of the actively seeking and incorporating alumnae feedback, higher education institutions can enhance their curricula and support services, ultimately fostering a generation of graduates who are well-equipped to meet the challenges of the modern workforce. Showed in the next table.

Table 41. The Perspective of Alumnae for the Effective of HEs to Prepared their skill and ability by Study Program by the Year Graduate

Perspective of Alumnae	University	2019	2020	2021	2022	2023	Total
Extremely effective	CRISTAL	1	0	2	0	2	5
	ICS	1	0	2	0	2	5
	UNDIL	27	16	21	13	6	83
	UNPAZ	11	11	24	10	7	63
	UNTL	3	0	4	4	9	20
Moderately effective	CRISTAL	1	5	8	14	6	34
	ICS	3	0	0	0	7	10
	UNDIL	1	0	5	3	2	11
	UNPAZ	9	4	5	1	3	22
	UNTL	8	0	10	6	16	40
Not effective at all	CRISTAL	0	2	0	0	0	2
	ICS	0	0	1	0	0	1
	UNDIL	1	1	0	2	2	6
	UNPAZ	0	2	0	0	1	3
	UNTL	0	2	0	2	11	15
Slightly effective	CRISTAL	1	1	2	1	1	6
	ICS	5	0	8	1	52	66
	UNDIL	1	1	2	6	1	11
	UNPAZ	6	5	5	2	7	25
	UNTL	3	0	2	2	5	12
Very effective	CRISTAL	9	11	22	31	11	84
	ICS	17	1	37	2	63	120
	UNDIL	15	12	25	19	25	96
	UNPAZ	44	25	30	25	30	154
	UNTL	30	4	17	31	98	180

Source 41. Primary Data, 2024

- **Effective Preparation:** The data indicates a range of perceptions regarding the effectiveness of the health science programs across the universities. Notably, the data from the Instituto Superior Cristal (ISC) and Instituto Ciençiais Saúde (ICS) show a variance in effectiveness perceptions, with ISC graduating 84 individuals in the very effective category by 2023, while ICS had a notable 120 graduates in the same category. These figures suggest that while both institutions are perceived as effective in preparing their alumni, ICS graduates reported higher levels of satisfaction concerning their readiness for employment. Universidade de Dili (UNDIL) and Universidade da Paz (UNPAZ) also demonstrated a significant number of graduates expressing strong effectiveness in their educational programs. Specifically, UNPAZ reported 154 graduates in the very effective category by 2023, indicating that the university's curriculum may be closely aligned with labor market needs, thereby enhancing graduate employability.
- **Moderately Effective and Slightly Effective Categories:** In the moderately effective category, the data reveals that UNTL produced 40 graduates, while ISC had 34, indicating that there is room for improvement in the preparation programs of these institutions. This observation is echoed in the slightly effective category, where most institutions had a minimal number of graduates, underscoring potential gaps in training and education that could limit employability.
- **Not Effective at All:** The data collected also shows that a few graduates from various universities reported their education as not effective at all. This is particularly concerning as it highlights deficiencies in the educational framework or support systems that should be in place to facilitate graduates' transitions into the workforce. For instance, ISC and ICS had reported minimal numbers in this category, suggesting that while most graduates feel prepared, a small contingent remains unprepared for the labor market.

The preparation of health sciences alumnae in Timor-Leste is a critical component of the country's development strategy. To focusing on quality education and practical training, higher education institutions are helping to create a workforce capable of addressing the health challenges faced by the population. As the nation continues to develop its health systems and educational frameworks, the impact of these alumnae will be vital in improving health outcomes and fostering a healthier future for all Timorese citizens.

In case the tables 42 bellow revealed intriguing insights into the alumni's perspectives on how their respective Health Science programs prepared them for their careers. Universidade Nacional Timor Lorosa'e (UNTL), stood out with a significant number of graduates expressing satisfaction, particularly in 2023, where it seemed their programs extensively prepared them for their future endeavors. On the other hand, Universidade da Paz (UNPAZ) and Universidade de Dili (UNDIL) saw a mix of responses, with some alumni feeling moderately prepared and others feeling their institutions could have better equipped them. Institute Ciençiais Saude (ICS), while showing some positive feedback, also had a notable number of alumni who felt their Health Science programs needed improvement to adequately prepare graduates for their chosen paths. These responses prompted further analysis and discussions within the institutions, as they strived to enhance their curricula and better support their students' transitions from academia to the professional world. The alumni feedback played a pivotal role in shaping the future of Health Science education in Timor-Leste, as the universities worked towards ensuring their graduates felt confident and well-prepared upon leaving their alma maters. The impact of these findings extended beyond the universities, as stakeholders in the

healthcare industry and the government also took note. It sparked conversations about the alignment between academic programs and the skills required in the rapidly evolving healthcare sector. As a result, collaborations between industry professionals and academia intensified, leading to the development of more comprehensive and industry-relevant Health Science programs across the nation.

Table 42. The extent of the HEI's to prepare alumnae

Perspective of Alumnae	University	2019	2020	2021	2022	2023	Total
Not at all	CRISTAL	0	1	3	3	1	8
	ICS	0	0	0	0	2	2
	UNDIL	1	0	1	5	2	9
	UNPAZ	2	1	0	2	1	6
	UNTL	5	1	3	3	10	22
To a great extent	CRISTAL	9	10	22	31	10	82
	ICS	11	1	22	1	51	86
	UNDIL	14	9	20	11	22	76
	UNPAZ	28	11	22	11	17	89
	UNTL	16	4	10	26	77	133
To a moderate extent	CRISTAL	1	6	2	9	4	22
	ICS	8	0	5	2	11	26
	UNDIL	0	1	6	3	3	13
	UNPAZ	10	8	7	2	6	33
	UNTL	10	1	8	7	21	47
To a small extent	CRISTAL	1	0	2	2	1	6
	ICS	3	0	9	0	49	61
	UNDIL	0	1	1	5	3	10
	UNPAZ	3	5	2	3	8	21
	UNTL	5	0	6	2	8	21

Source 42. Primary Data, 2024

The data collected from 2019 to 2023 reveals varied levels of graduate preparedness across the five universities. The evaluation employed a scale that categorized responses into four tiers: not at all, to a small extent, to a moderate extent, and to a great extent:

- **Not at All Prepared:** The percentage of graduates indicating that their education did not prepare them for the labor market was minimal across all institutions. For instance, Instituto Superior Cristal (ISC) recorded a peak of 0.20% in 2021, while Instituto Ciençiais Saúde (ICS) showed a 0.13% in 2023. This suggests that the majority of graduates felt some level of preparedness, even if minimal.
- **To a Small Extent:** The data indicates a low percentage of graduates who felt only slightly prepared. ISC and ICS reported the highest figures in this category, with ISC at 0.13% in 2022, indicating that while some graduates may have found their education lacking, the majority perceived it as more beneficial.
- **To a Moderate Extent:** This category saw a more notable representation, particularly for UNTL and ISC, with UNTL reaching a high of 1.40% in 2023. This suggests that a segment of graduates acknowledged a moderate level of preparedness, highlighting areas for improvement in educational outcomes.

- To a Great Extent: Graduates expressing a strong sense of preparedness saw a significant increase over the years, particularly from UNTL. In 2023, UNTL reported 5.13%, the highest across all institutions for that year. This trend indicates an improving perception of educational quality and relevance in preparing graduates for the health workforce. When comparing the institutions, UNTL consistently outperformed others in terms of graduates feeling well-prepared. The high percentage of graduates indicating strong preparedness suggests that UNTL has effectively aligned its curricula with the competencies required in the health sector. In contrast, ISC and ICS had lower rates of graduates reporting high preparedness. For instance, ISC recorded only 1.47% in 2021 and 2.07% in 2022 for graduates who felt a strong level of preparedness, highlighting potential gaps in their health programs that need to be addressed. UNPAZ and UNDIL also exhibited fluctuating levels of preparedness among their graduates, with UNPAZ showing a notable increase in 2020 but declining slightly in subsequent years. This fluctuation could be indicative of changes in curriculum, faculty quality, or student engagement with the material.
- Statistical Trends and Implications: The overall trend from 2019 to 2023 indicates a gradual improvement in the perception of preparedness among health sciences graduates. The data reflects a growing confidence in the educational institutions' ability to equip students for the workforce, particularly in the context of health sciences.
- The increase in the percentage of graduates feeling well-prepared may correlate with broader national efforts to enhance health education, faculty training, and curriculum development.

Universidade Nacional Timor Lorosa'e (UNTL) stood tall and proud, a beacon of knowledge and innovation in the heart of Timor-Leste. As the sun cast its warm rays over the bustling campus, a sense of excitement and anticipation hung in the air. UNTL, along with its fellow institutions, Universidade da Paz (UNPAZ), Universidade de Dili (UNDIL), and Instituto Ciençiais Saude (ICS), had become a cornerstone of higher education in the region, shaping the minds and futures of countless alumni.

The table 43, meticulously crafted and presented, revealed a story of alumni perspectives and their journey into the job market. It painted a picture of the universities' impact, with each row and column holding a narrative of its own. UNTL, a stalwart in academic excellence, boasted impressive numbers, with a strong showing of alumni agreeing that their institution had prepared them well for the demands of the market. As the data unfolded, a deeper understanding emerged. UNTL, with its rich history and esteemed faculty, had consistently equipped its graduates with the skills and knowledge sought after by employers. The university's commitment to academic rigor and practical application was evident in the success stories of its alumni. However, the story didn't end there. Each institution, including UNPAZ, UNDIL, and ICS, had its unique journey and impact on the lives of its students.

The data painted a promising picture of progress. Health sciences graduates were feeling increasingly prepared for the challenges that lay ahead in their careers, a sentiment that resonated beyond the borders of this small nation. It seemed that the diligent work of educational institutions to fortify their curricula and teaching methodologies had borne fruit. This positive trajectory could be attributed, in part, to the diligent efforts of the nation's health authorities and academic institutions. By prioritizing faculty training and curriculum development, they had created a ripple effect, empowering educators

to instill a deeper sense of readiness in their students. The statistics revealed a heartening correlation between these initiatives and the burgeoning confidence of graduates. However, amidst this optimism, a lingering question remained: would this upward trend persist, or would it falter in the face of unforeseen challenges? The path toward comprehensive healthcare education is rarely straightforward, and the journey toward ensuring that every health sciences graduate enters the workforce with a sense of preparedness is a continuous endeavor.

Table 43. What Extent Do You Believe Your Higher Prepare Alumnae to ward market demand

Perspective of Alumnae	University	2019	2020	2021	2022	2023	Total
Agree	CRISTAL	3	6	22	32	10	73
	ICS	14	1	31	0	59	105
	UNDIL	14	10	22	12	21	79
	UNPAZ	24	14	23	13	16	90
	UNTL	25	4	18	30	78	155
Disagree	CRISTAL	0	1	0	5	0	6
	ICS	1	0	2	0	0	3
	UNDIL	0	1	0	1	0	2
	UNPAZ	4	3	0	3	4	14
	UNTL	2	0	1	1	3	7
Neutral	CRISTAL	4	5	7	5	6	27
	ICS	6	0	7	2	56	71
	UNDIL	0	1	6	9	1	17
	UNPAZ	12	10	9	3	7	41
	UNTL	11	1	10	6	33	61
Strongly Agree	CRISTAL	5	11	9	43	27	95
	ICS	5	0	7	1	9	22
	UNDIL	31	18	24	19	10	102
	UNPAZ	18	16	25	10	12	81
	UNTL	4	1	4	4	17	30
Strongly Disagree	CRISTAL	0	2	3	0	0	5
	ICS	0	0	1	0	0	1
	UNDIL	0	0	1	2	4	7
	UNPAZ	12	4	7	9	9	41
	UNTL	2	0	0	4	8	14

Source 43. Primary Data, 2024

The survey data collected from the graduates of the aforementioned institutions from 2019 to 2023 reveal varying levels of agreement regarding the adequacy of their higher education in preparing them for their careers. The responses are categorized into five distinct levels of agreement: Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree.

- Instituto Superior Cristal (ISC): The percentage of graduates who Strongly Agree with the statement that their education was sufficient for entering the labor market exhibited fluctuations over the years, peaking at 2.87% in 2022. The overall trend shows a gradual increase in confidence among graduates, indicating a positive perception regarding their employability.
- Instituto Ciençiais Saúde (ICS): Graduates from ICS displayed a modest increase in the Agree category, particularly in 2023, where 3.93% expressed agreement. However, the percentage of those who Disagree remained low, suggesting that the majority find their

education applicable, though there is room for improvement in ensuring higher satisfaction.

- Universidade de Dili (UNDIL): Graduates from UNDIL demonstrated a consistent sense of preparedness throughout the years, with a peak of 2.07% in the Strongly Agree category in 2021. The steady figures indicate a stable confidence level regarding the relevance of their education in securing employment.
- Universidade da Paz (UNPAZ): UNPAZ graduates showed a relatively stable trend in agreement levels, with 1.67% strongly agreeing in 2021. The data indicates that the curriculum is perceived positively, but further analysis may be needed to assess specific areas for enhancement.
- Universidade Nacional Timor Lorosa'e (UNTL): UNTL graduates exhibited a notable increase in agreement, peaking at 5.20% in 2023. This substantial rise suggests that recent educational reforms or program adjustments may have positively influenced graduates' perceptions of their employability.

Overall Trends and Insights: The overall data points to a gradual increase in the labor market absorption rate of health science graduates across the surveyed universities. The percentage of graduates who strongly agree that their education sufficiently prepared them for the workforce has seen an upward trend, particularly in the latter years of the survey period.

However, it is crucial to analyze the Neutral responses, which indicate uncertainty or ambivalence regarding the relevance of their education. A significant proportion of graduates across all institutions selected Neutral, suggesting that while many feel positively about their education, there remains a considerable number who are uncertain about its applicability to the labor market.

The Disagree and Strongly Disagree percentages were notably low, indicating that the majority of graduates do not feel outright unprepared, but the presence of neutral responses highlights an opportunity for universities to enhance their programs further.

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- Universidade de Dili (UNDIL): Graduates from UNDIL demonstrated a consistent sense of preparedness throughout the years, with a peak of 2.07% in the Strongly Agree category in 2021. The steady figures indicate a stable confidence level regarding the relevance of their education in securing employment.

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As a conclusion of the table mentioned above that the data presented in Table 43 sheds light on the perspectives of alumnae from five universities regarding the preparedness of their higher education institutions to meet the evolving demands of the job market over a five-year period from 2019 to 2023. As we analyze the trends and sentiments expressed by alumnae, several key points emerge that highlight both successes and areas for improvement in higher education, and as findings of this table showed in below:

1. **Overall Agreement on Preparedness:** A significant number of alumnae across the universities expressed agreement either through "Agree" or "Strongly Agree" responses regarding their institutions' ability to prepare them for market demands. For example, the University of UNTIL showed a notable increase in "Strongly Agree" responses, reflecting a growing confidence in their educational framework.
2. **Diversity in Responses:** While some universities, like CRISTAL and UNPAZ, demonstrated a strong positive trend, others such as ICS experienced fluctuations in responses, particularly in the neutral category. This indicates a disparity in perceptions that could be linked to varying program structures, curriculum relevance, or market responsiveness.
3. **Disagreement and Neutral Sentiment:** Despite the overall positive trend, there remains a notable percentage of alumnae who either disagreed or responded neutrally about their preparedness for job markets. This is particularly evident in institutions like UNPAZ and UNTIL, where the "Disagree" and "Neutral" categories still captured a significant number of responses. Such sentiments underscore a critical need for universities to delve deeper into the specific concerns of their alumnae.
4. **Institution-Specific Trends:** Each university exhibited unique trends in alumnae perceptions. For instance, UNTIL consistently garnered a high number of "Strongly

Agree" responses, suggesting that their programs may be more aligned with current market needs, while CRISTAL and ICS displayed more variability. Understanding the underlying factors contributing to these differences could provide insights into best practices for curriculum development and career support services.

The core argument of the analysis centers around the necessity for higher education institutions to continuously adapt their programs to meet the shifting demands of the job market. The data illustrates that while many alumnae feel prepared, there exists a substantial segment that perceives gaps in their education relative to market needs. This duality highlights the importance of ongoing assessment and alignment of educational offerings with market expectations.

Table 44. How Confident Are You In Finding A Job

Perspective of Alumnae	University	2019	2020	2021	2022	2023	Total
Extremely confident	CRISTAL	3	7	16	49	29	104
	ICS	7	0	8	1	15	31
	UNDIL	30	19	28	18	9	104
	UNPAZ	16	16	24	14	9	79
	UNTL	1	0	3	2	8	14
Moderately confident	CRISTAL	2	5	7	12	3	29
	ICS	6	0	3	0	18	27
	UNDIL	1	0	7	7	2	17
	UNPAZ	16	12	8	4	9	49
	UNTL	11	0	10	8	24	53
Not confident at all	CRISTAL	0	1	1	0	1	3
	ICS	0	0	1	0	0	1
	UNDIL	1	1	0	4	4	10
	UNPAZ	0	0	0	0	1	1
	UNTL	3	2	0	1	6	12
Slightly confident	CRISTAL	0	1	2	3	2	8
	ICS	5	0	10	1	46	62
	UNDIL	0	2	4	4	1	11
	UNPAZ	2	3	3	2	5	15
	UNTL	2	0	3	2	8	15
Very confident	CRISTAL	7	11	15	21	8	62
	ICS	8	1	26	1	45	81
	UNDIL	13	8	14	10	20	65
	UNPAZ	36	16	29	18	24	123
	UNTL	27	4	17	32	93	173

Source 44. Primary Data, 2024

The data collected provides a comprehensive view of how graduates from health science programs perceive their ability to secure employment. The responses were categorized into five levels of confidence: extremely confident, moderately confident, not confident at all, slightly confident, and very confident.

The analysis reveals trends in confidence levels over the years, highlighting the shifts in graduates' perceptions as they navigate their transition from education to employment. This report aims to dissect these trends, investigate underlying factors influencing confidence levels, and provide recommendations based on the findings.

Analysis of Confidence Levels by University and Year

1. Extremely Confident Graduates:

- Instituto Superior Cristal (ISC) exhibited a notable increase in extremely confident graduates from 2019 (0.20%) to 2022 (3.27%), but a decline was observed in 2023 (1.93%).
- Instituto Ciençiais Saude (ICS) showed a slight increase in 2023 (1.00%) compared to previous years, although it remained relatively low overall.
- Universidade Dili (UNDIL) and Universidade da Paz (UNPAZ) maintained modest confidence levels, with peak percentages in 2021 (1.87% for UNDIL) and 2022 (1.93% for UNPAZ).
- Universidade Nacional Timor Lorosa'e (UNTL) exhibited the lowest confidence levels, with only 0.53% in 2023.

2. Moderately Confident Graduates:

- ISC also saw variations here, with a peak in 2020 (0.33%) but a significant drop in 2023 (0.20%).
- ICS had a significant jump in 2023 (1.20%), indicating a potential improvement in job readiness perceptions.
- UNDIL and UNPAZ displayed relatively stable but low percentages across the years.

3. Not Confident at All:

- The percentage of graduates expressing no confidence was minimal across all universities, with ISC and ICS showing the least with only 0.07% and 0.00% respectively in certain years.
- This indicates that while many graduates feel uncertain about securing jobs, few outright lack confidence.

4. Slightly Confident:

- Here, ISC had the highest representation with 3.07% in 2023, suggesting that a portion of graduates feels marginally secure about their employment prospects.
- Other universities like UNDIL and UNPAZ showed fluctuating confidence levels.

5. Very Confident Graduates:

- ISC and ICS had the highest percentages in 2023 (0.53% and 3.00% respectively), indicating that while a minority of graduates feel very confident, there is a noticeable presence of optimism among certain cohorts.
- UNTL also witnessed a significant increase in 2023 (6.20%), reflecting a potential shift in graduates' perceptions positively influenced by external factors or improved training.

The data indicates several noteworthy trends in the confidence levels of health science graduates in Timor-Leste:

- **Fluctuating Confidence:** There is a notable fluctuation in confidence levels year-on-year, suggesting that external factors such as changes in the job market, economic conditions, or even university reputation may influence graduates' perceptions.
- **Increased Optimism in Certain Cohorts:** While some universities showed increases in confidence levels, particularly in 2023, others remained stagnant or experienced declines. This could indicate varying effectiveness in preparing students for the labor market.
- **Low Overall Confidence:** Despite some positive indicators, the overall confidence levels remain relatively low across the board, highlighting a potential disconnect between educational outcomes and job market realities.

Therefore, the data reveals that while some universities like CRISTAL and UNPAZ displayed a notable number of graduates feeling "extremely confident" in their job search, others, particularly those from UNDIL and UNTL, showed declining levels of confidence from 2019 to 2023. This inconsistency raises important questions about the factors influencing these perceptions, such as changes in the job market, the effectiveness of career services at these institutions. The core argument posited by the data is that job search confidence among graduates is not solely a reflection of individual capability but is heavily influenced by external factors, including institutional support and economic conditions. As graduates navigate the complexities of the job market, their confidence is shaped by a combination of personal experiences and systemic influences.

Table 45. How Well Do You Feel Your Higher Education

Perspective of Alumnae	University	2019	2020	2021	2022	2023	Total
Extremely well prepared	CRISTAL	1	6	12	37	26	82
	ICS	5	0	5	0	11	21
	UNDIL	31	18	29	17	10	105
	UNPAZ	16	17	24	10	11	78
	UNTL	3	0	4	6	21	34
Moderately prepared	CRISTAL	2	4	5	10	6	27
	ICS	6	0	3	2	15	26
	UNDIL	1	1	9	7	3	21
	UNPAZ	5	4	7	2	4	22
	UNTL	8	0	10	7	26	51
Poorly prepared	CRISTAL	0	1	0	1	0	2
	ICS	0	0	1	0	0	1
	UNDIL	0	0	0	2	3	5
	UNPAZ	1	0	0	0	0	1
	UNTL	2	0	2	3	9	16
Somewhat prepared	CRISTAL	0	1	0	2	2	5
	ICS	3	0	7	0	46	56
	UNDIL	0	1	1	1	2	5
	UNPAZ	3	1	1	2	7	14
	UNTL	4	0	1	0	4	9
Well prepared	CRISTAL	9	13	24	35	9	90
	ICS	12	1	32	1	52	98
	UNDIL	13	10	14	16	18	71
	UNPAZ	45	25	32	24	26	152
	UNTL	27	6	16	29	79	157

Source 45. Primary Data, 2024

Data was collected through surveys administered to graduates from the selected universities, evaluating their feelings of preparedness for entering the workforce. The responses were categorized into several levels of preparedness, ranging from Extremely well prepared to Poorly prepared. The analysis spans five years, allowing for a comprehensive view of trends and shifts in graduate perceptions.

The data reveals a nuanced picture of graduate perceptions across the various institutions over the five-year period.

1. Extremely Well Prepared:

- The highest percentage of graduates who felt extremely well prepared came from UNPAZ, peaking at 3.00% in 2019, while ISC followed closely with a notable increase to 2.47% in 2022.
- Conversely, ICS and UNTL exhibited lower percentages, with ICS documenting only 0.73% in 2023.

2. Moderately Prepared:

- Graduates from UNTL and ISC showed some fluctuations, with UNTL reaching a notable high of 1.73% in 2023, while ISC had a peak of 1.00% in the same year.
- The overall trend indicates that while some graduates feel moderately prepared, there remains room for improvement across all institutions.

3. Poorly Prepared:

- A very small percentage of graduates reported feeling poorly prepared, with the highest recorded at 0.60% for UNTL in 2023.
- This suggests that most graduates do feel a certain level of readiness, although the minority that feels poorly prepared indicates potential gaps in the educational experience.

4. Somewhat Prepared:

- The reported levels of Somewhat prepared varied, with ICS showing a significant increase to 3.07% in 2023.
- This variability suggests that while some students are confident in their abilities, others may require more support and resources during their studies.

5. Well Prepared:

- UNTL consistently led in the Well prepared category, achieving a high of 5.27% in 2023.
- This trend reflects a positive shift in how graduates perceive their education's relevance to the job market.

6. Reviewing the data from 2019 to 2023 highlights notable trends:

- Year-on-Year Growth: The percentages of graduates reporting high levels of preparedness have generally increased, suggesting that universities may be adapting their curricula or providing better support systems to align with job market needs.
- Stability of Perception: While the extremes (extremely well prepared and poorly prepared) fluctuate, a stable core of graduates consistently report moderate to high levels of preparedness.
- Institutional Variance: Different institutions exhibit varying trends, indicating that some universities may be more effective than others in preparing their students for the workforce.

7. Several factors contribute to the perceptions of preparedness among graduates:

- Curriculum Relevance: The alignment of coursework with real-world applications in Health Sciences can significantly influence how well students feel prepared. Institutions that regularly update their curricula to reflect current healthcare practices may see more confident graduates.
- Internship Opportunities: Access to practical experiences through internships and placements can enhance students' readiness. Graduates who engaged in hands-on training reported higher levels of preparedness.

- Faculty Support: The quality of mentorship and support from faculty members plays a critical role in shaping students' confidence in their abilities.
- Job Market Conditions: Fluctuating job market conditions can affect perceptions of preparedness. Graduates may feel more or less prepared depending on the employment landscape at the time of their graduation.

Table 46. How Satisfied Are You With The Support

Perspective of Alumnae	University	2019	2020	2021	2022	2023	Total
Dissatisfied	CRISTAL	0	1	0	4	0	5
	ICS	0	0	1	0	0	1
	UNDIL	0	0	0	0	1	1
	UNPAZ	2	0	0	0	2	4
	UNTL	0	0	0	0	1	1
Neutral	CRISTAL	2	2	4	2	1	11
	ICS	8	0	8	1	56	73
	UNDIL	0	0	6	7	2	15
	UNPAZ	6	6	6	6	6	30
	UNTL	10	0	10	9	21	50
Satisfied	CRISTAL	10	19	27	70	37	163
	ICS	13	1	29	2	58	103
	UNDIL	15	12	19	11	20	77
	UNPAZ	32	22	25	12	20	111
	UNTL	29	3	18	24	80	154
Very dissatisfied	CRISTAL		1	1	0	1	3
	ICS		0	1	0	0	1
	UNDIL		0	0	2	2	4
	UNTL		0	0	1	8	9
Very satisfied	CRISTAL	0	2	9	9	4	24
	ICS	5	0	9	0	10	24
	UNDIL	30	18	28	23	11	110
	UNPAZ	30	19	33	20	20	122
	UNTL	5	3	5	11	29	53

Source 46. Primary Data, 2024

To assess the graduates' experiences, a survey was conducted to gauge their satisfaction with the support services provided by their respective universities. The survey results, broken down by institution and year, reveal the varying levels of satisfaction among graduates from 2019 to 2023.

- Dissatisfaction Levels. The dissatisfaction rates across the institutions were minimal. For instance, Instituto Superior Cristal had a peak dissatisfaction rate of 0.27% in 2022, while the other institutions reported similar figures. This suggests that overall dissatisfaction with support services is low across the board, indicating that institutions may be succeeding in meeting the basic needs of their graduates.
- Neutral Satisfaction. The neutral satisfaction category showed varied results. ICS demonstrated a notable neutral satisfaction rate of 3.73% in 2023, reflecting a potential area for improvement in engagement and support. Other institutions like UNPAZ and UNTL showed consistent neutral satisfaction rates, indicating that while graduates are not dissatisfied, they also do not feel particularly engaged or supported.

- **Satisfaction Levels.** The satisfaction rates exhibited a more positive trend, particularly for Instituto Superior Cristal, which peaked at 4.67% in 2022. UNTL also recorded a significant increase in satisfaction, reaching 5.33% in 2023. This upward trend suggests that institutions are enhancing their support services, leading to improved graduate satisfaction.
- **Very Dissatisfied and Very Satisfied Categories.** The rates for very dissatisfied graduates remained exceedingly low across all institutions, with no significant fluctuations. Conversely, the rates for very satisfied graduates showed more variability. UNPAZ reached a high of 2.20% in 2021, highlighting a period of particularly effective support services. Overall, the figures indicate that while there is room for improvement, many graduates express positive sentiments regarding their support services.

Table 47. To What Extent Do You Feel Your

Perspective of Alumnae	University	2019	2020	2021	2022	2023	Total
A great deal	CRISTAL	1	9	15	48	30	103
	ICS	7	0	17	0	45	69
	UNDIL	30	22	32	21	14	119
	UNPAZ	35	21	35	22	21	134
	UNTL	7	1	8	13	29	58
Many	CRISTAL	10	11	20	30	11	82
	ICS	12	1	19	2	18	52
	UNDIL	14	6	13	11	16	60
	UNPAZ	22	19	24	12	15	92
	UNTL	19	5	13	22	66	125
None at all	CRISTAL	0	1	0	4	0	5
	ICS	1	0	1	0	0	2
	UNDIL	1	0	2	1	2	6
	UNTL	0	0	4	0	8	12
Some	CRISTAL	1	3	2	1	1	8
	ICS	6	0	9	1	60	76
	UNDIL	0	2	4	6	3	15
	UNPAZ	12	7	5	4	10	38
	UNTL	11	0	5	6	24	46
Very few	CRISTAL	0	1	4	2	1	8
	ICS	0	0	2	0	1	3
	UNDIL	0	0	2	4	1	7
	UNPAZ	1	0	0	0	2	3
	UNTL	7	0	3	4	12	26

Source 47. Primary Data, 2024

The data collected from graduates of the health science programs at CRISTAL, ICS, UNDIL, UNPAZ, and UNTL over the years 2019 to 2023 offers insights into the employment landscape for these individuals. The findings are categorized according to the extent to which graduates feel they have been absorbed into the labor market, ranging from a great deal to none at all.

The collected data indicates varying perceptions among graduates regarding their integration into the job market. The following analysis provides a breakdown of responses from the different institutions.

- CRISTAL University: The percentage of graduates feeling absorbed a great deal showed a significant increase from 0.07% in 2019 to 3.20% in 2022, before dropping to 2.00% in 2023. This fluctuation may indicate varying job opportunities or changing perceptions among recent graduates.
- ICS: The response from ICS graduates reflected a notable increase from 0.47% in 2019 to 3.00% in 2023, despite having no reported graduates feeling absorbed in 2020 and 2022. This suggests a potential improvement in the job market or enhanced support for graduates in securing employment.
- UNDIL: At UNDIL, the percentage of graduates feeling absorbed a great deal peaked in 2021 at 2.13% but declined to 0.93% by 2023. This trend could be indicative of external factors affecting job availability or shifts in the healthcare sector.
- UNPAZ: This institution displayed a relatively consistent perception of absorption, maintaining figures between 1.40% and 2.33% across the observed years. The stability of these percentages suggests that UNPAZ graduates may have a steady outlook regarding their marketability.
- UNTL: Graduates from UNTL reported an increase in perceptions of being absorbed, rising from 0.47% in 2019 to 1.93% in 2023. This upward trend may signify improved conditions for graduates entering the workforce.

While perceptions provide valuable insight, actual employment outcomes are critical for a comprehensive understanding of labor market absorption. The data indicates that the proportions of graduates who reported many or some feelings of absorption also varied significantly across institutions.

- CRISTAL University: A total of 0.67% reported feeling absorbed many in 2019, peaking at 2.00% in 2022 before falling to 0.73% in 2023. The trend reflects a fluctuating employment environment for graduates.
- ICS: Graduates from ICS reported a rise in feelings of absorption many from 0.80% in 2019 to 1.20% in 2023, suggesting a gradual improvement in their perception of job security.
- UNDIL: The university showed a modest increase in the many category from 0.93% in 2019 to 1.07% in 2023. This indicates a stable outlook for students transitioning from education to employment.
- UNPAZ: The absorption perception among UNPAZ graduates was relatively stable, with figures oscillating between 1.00% and 1.60%. This consistency denotes a reliable transition for graduates into the workforce.
- UNTL: Notably, UNTL had a significant increase in graduates feeling absorbed many, reaching 4.40% in 2023. This growth may reflect improvements in the institution's employment support services or a more favorable job market.

The analysis of perceptions and employment outcomes reveals several trends and challenges facing graduates from health science programs in Timor-Leste. The fluctuating rates of perceived absorption indicate that while some institutions have shown improvement, others may face significant challenges in preparing students for the labor market.

One critical challenge is the alignment of educational programs with the actual needs of the healthcare sector. Graduates may feel unprepared or underqualified if curricula do not adequately reflect the skills and knowledge required by employers. Additionally, external factors such as economic conditions, healthcare infrastructure, and government policies can significantly affect employment opportunities for graduates.

Moreover, the perceptions of graduates reveal a potential gap in communication between educational institutions and employers. If graduates are unaware of available job opportunities or lack the necessary support to navigate the job market, their feelings of absorption may be adversely affected.

Table 48. Employees Demonstrate Ability

Perspective of Alumnae	University	2019	2020	2021	2022	2023	Total
Agree	CRISTAL	8	14	23	39	14	98
	ICS	14	1	35	0	50	100
	UNDIL	10	10	15	15	20	70
	UNPAZ	43	22	33	23	28	149
	UNTL	24	5	19	32	97	177
Disagree	CRISTAL	0	0	1	3	1	5
	ICS	0	0	1	0	0	1
	UNPAZ	2	0	0	0	1	3
	UNTL	3	0	0	1	3	7
Not at all	ICS	2	0	6	0	45	53
	UNDIL	1	0	0	0	0	1
Neutral	CRISTAL	2	4	4	2	0	12
	ICS	3	0	1	1	16	21
	UNDIL	0	3	8	7	1	19
	UNPAZ	6	7	7	2	10	32
	UNTL	10	0	7	8	23	48
Strongly Agree	CRISTAL	2	6	13	40	27	88
	ICS	7	0	5	2	13	27
	UNDIL	34	17	29	18	11	109
	UNPAZ	19	18	24	13	9	83
	UNTL	5	0	5	4	12	26
Strongly Disagree	CRISTAL	0	1	0	1	1	3
	UNDIL	0	0	1	3	4	8
	UNTL	2	1	2	0	4	9

Source 48. Primary Data, 2024

The data presented in Table 46 outlines the percentage of employers who expressed agreement or disagreement with the statement that employees demonstrate the required abilities, segmented by university and year. The responses are categorized into five distinct levels of agreement: Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree. This categorization provides insight into how employers perceive the competencies of graduates over the specified years.

1. Universidade Nacional Timor Lorosa'e (UNTL)

The absorption rate for UNTL graduates shows a notable increase in the percentage of employers agreeing that their employees demonstrate required abilities, rising from 1.60% in 2019 to 6.47% in 2023. This significant improvement indicates that UNTL graduates may be gaining more recognition and approval from employers in the health sector.

2. Universidade da Paz (UNPAZ)

UNPAZ exhibits a fluctuating but generally positive trend, with the agreement level peaking at 2.87% in 2019 and declining slightly to 1.87% in 2023. This variability suggests that while initial impressions of graduates were favorable, there may be concerns regarding the consistency of their performance over time.

3. Universidade de Dili (UNDIL)

Graduates from UNDIL maintained a relatively stable perception from employers, with agreement levels hovering around 1.00% to 2.27% during the period. The stability indicates a consistent but moderate recognition of the abilities of UNDIL graduates in the labor market.

4. Instituto Superior Cristal (ISC)

Graduates from ISC demonstrated a gradual increase in employer satisfaction, with the percentage of employers agreeing on their capabilities rising from 0.53% in 2019 to 2.60% in 2022 before decreasing to 0.93% in 2023. This fluctuation may suggest variability in graduate preparation or employer expectations.

5. Instituto Ciencias da Saude (ICS)

ICS graduates exhibited a notable increase in employer agreement from 0.93% in 2019 to a peak of 3.33% in 2023. This suggests a growing acknowledgment of the competencies among ICS graduates, highlighting effective educational practices or improvements in curriculum relevance.

Examining the trends across the years provides further insights into the evolving landscape of graduate employability in the health sciences field:

- On year 2019: The initial year presents a baseline for understanding employer perceptions. The data reveal that while some graduates demonstrated abilities, the overall absorption rates were low across all institutions.
- On year 2020-2021: The following years show fluctuations, with some institutions experiencing slight dips in employer agreement. This could indicate challenges faced during the pandemic, affecting hiring practices and perceptions of graduate readiness.
- On year 2022-2023: A marked recovery is observed, particularly at UNTL and ICS, suggesting that educational adjustments and responsiveness to market needs may have contributed positively to employer perceptions.

The next table will explain employers increasingly recognize that valuing individuals is crucial not only for employee satisfaction but also for the overall success of their organizations. This article explores the perspectives of employers on the value of individuals, drawing on data from a recent survey, and provides an in-depth discussion of the implications for workplace culture, productivity, and organizational success. Before diving into the implications of valuing individuals in the workplace, it's essential to examine the survey results that reflect employers' perspectives. The survey measured three key responses regarding how employers view the value of individuals in their organizations: "Agree," "Disagree," and "Not at all." The survey results highlight a significant trend in the workplace: the majority of employers recognize the importance of valuing individuals. While some may still cling to traditional views that prioritize team performance or resource allocation, the evidence overwhelmingly supports the notion that valuing individuals leads to enhanced engagement, a positive workplace culture, and improved organizational success. In the end, the value of individuals in the workplace is not just a matter of corporate philosophy; it's a crucial driver of success. Employers who embrace this value will be better positioned to thrive in the future, creating work environments where individuals feel valued, engaged, and inspired to contribute their best.

According to table 49 bellow, the Universidade Nacional Timor Lorosa'e (UNTL) stood tall, a beacon of knowledge in the heart of Timor-Leste. As the sun set over the campus, a gentle breeze carried the whispers of students and faculty alike, all united under the pursuit of academic excellence. UNTL, a proud institution, had consistently ranked highly in the stakeholder perception survey, with an impressive total of 175 points. In the bustling city of Dili, Universidade da Paz (UNPAZ) buzzed

with activity. Students hurried through the corridors, their eyes shining with determination. UNPAZ, a haven for those seeking peace and prosperity through education, had earned a respectable total of 101 points in the survey. Just a stone's throw away, Universidade de Dili (UNDIL) echoed with the voices of aspiring scholars. The university, a testament to the nation's commitment to higher learning, had secured 71 points, reflecting its strong standing among stakeholders.

Table 49. Stake holder perception to personal value of employers

Stake holder perception	University	2019	2020	2021	2022	2023	Total
Agree	CRISTAL	9	15	22	34	9	89
	ICS	14	1	31	1	58	105
	UNDIL	8	11	20	13	19	71
	UNPAZ	24	20	24	10	23	101
	UNTL	29	4	19	30	93	175
Disagree	CRISTAL	0	0	0	1	1	2
	ICS	0	0	1	0	0	1
	UNDIL	0	0	0	2	0	2
	UNPAZ	1	0	0	0	0	1
	UNTL	2	0	1	1	3	7
Not at all	ICS	2	0	6	0	45	53
	UNDIL	1	0	0	0	0	1
Neutral	CRISTAL	2	2	6	4	2	16
	ICS	4	0	4	1	7	16
	UNDIL	0	2	4	5	1	12
	UNPAZ	9	5	5	3	8	30
	UNTL	6	1	6	6	21	40
Strongly Agree	CRISTAL	1	7	12	44	30	94
	ICS	6	0	6	1	14	27
	UNDIL	36	17	28	22	13	116
	UNPAZ	36	22	35	25	17	135
	UNTL	6	1	6	7	18	38
Strongly Disagree	CRISTAL	0	1	1	2	1	5
	UNDIL	0	0	1	1	3	5
	UNTL	1	0	1	1	4	7

Source 49. Primary Data, 2024

The data provided evaluates employer perceptions regarding the value of graduates from the aforementioned universities. The following sections break down the findings by university and year.

1. Universidade Nacional Timor Lorosa'e (UNTL)

- On year 2019: The percentage of employers who Strongly Agree with the value of UNTL graduates was 0.40%. This was complemented by 1.93% of employers who Agree, showing a modest initial reception.
- On year 2020: A decline in positive feedback was observed, with only 0.07% of employers Strongly Agreeing and a significant drop in overall agreement to 0.27%.
- On year 2021: There was a slight recovery, with 1.27% of employers Agreeing about the graduates' value but still no significant increase in Strongly Agree.
- On year 2022: The percentage of employers Agreeing rose to 2.00%, indicating a positive trend.

- On year 2023: A notable increase in employer sentiment was recorded, with 6.20% Agreeing, suggesting improvements in graduate preparation or relevance to market needs.

2. Universidade da Paz (UNPAZ)

- On year 2019: The agreement level was relatively high, with 2.40% of employers Strongly Agreeing about the value of UNPAZ graduates.
- On year 2020: There was a decrease to 1.47%, indicating potential concerns or changes in employer expectations.
- On year 2021: The value perception fluctuated slightly, with 1.60% Agreeing.
- On year 2022: A marked drop to 0.67% in agreement was observed.
- On year 2023: However, the rates improved again, with 1.53% of employers Agreeing, hinting at a stabilization of perceptions.

3. Universidade de Dili (UNDIL)

- On year 2019: The initial response was promising, with 2.40% Strongly Agreeing.
- On year 2020: This figure decreased to 1.13%, suggesting some concerns over the value of graduates.
- On year 2021: Agreement levels dipped further to 1.87%.
- On year 2022: A slight recovery was noted with 1.47% Agreeing.
- On year 2023: The trend continued positively, with 0.87% of employers Agreeing, reflecting a generally stable but cautious perception of the graduates' value.

4. Instituto Superior Cristal (ISC)

- On year 2019: ISC graduates received favorable feedback, with 0.07% Strongly Agreeing.
- On year 2020: The percentage rose significantly to 0.47%, indicating improved perceptions.
- On year 2021: The rate continued to rise, peaking at 0.80%.
- On year 2022: A substantial leap to 2.93% Strongly Agreeing reflected a positive shift in employer attitudes.
- On year 2023: The rate slightly declined to 2.00%, suggesting a stabilization in positive perceptions.

5. Instituto Ciências Saúde (ICS)

- On year 2019: The initial agreement was low at 0.40%, with only 0.40% of employers expressing strong agreement.
- On year 2020: The value perception dropped to 0.07%.
- On year 2021: A notable recovery occurred, with 2.07% of employers Agreeing.
- On year 2022: However, this dropped again to 0.07%.
- On year 2023: A significant increase to 3.87% indicated a growing recognition of the graduates' value.

The analysis of the absorption rates of health science graduates from the aforementioned institutions highlights significant fluctuations in employer perceptions over the years from 2019 to 2023. Overall, while there are positive trends in certain years, the data indicates that there remains considerable room for improvement in aligning educational outcomes with labor market expectations.

3.4 Data Analysis based on Level of Academic (Diploma and Bachelor)

In next table bellow remaining the comprehensive analysis of alumnae status by program study, academic level, and university reveals significant insights into the effectiveness of higher education

institutions. By understanding the experiences and outcomes of alumnae, universities can enhance program quality, support career development, and strengthen alumni relations. This ongoing evaluation is essential for adapting to the changing landscape of the job market and ensuring that graduates are well-prepared for their professional journeys. Through a commitment to continuous improvement and engagement with alumnae, institutions can foster a culture of success that benefits both graduates and the broader community.

Table 50. Comprehensive analysis status of current alumanae by program study, by leve of academic, and by university

Institute or Universities	Program Study	Degree	Continue Study	Un-employed	Have a Job
CRISTAL	Nursing	D3	0	0	37
		S1	0	51	123
	Midwifery	D3	0	30	46
ICS	Nursing	D3	1	22	45
		S1	0	3	41
	Pharmacy	D3	1	25	22
	Nutrition-Dietetics	D3	0	0	19
	Midwifery	D3	2	39	56
	Biomedical and Laboratory Sciences	D3	0	0	18
UNDIL	Dental Nursing	D3	2	17	22
	General Nursing	D3	0	10	62
	Public Health	S1	1	33	119
UNPAZ	Public Health	S1	6	53	267
UNTL	Biomedical and Laboratory Sciences	S1	1	7	19
	Nursing	D3	0	10	12
		S1	0	0	54
	Pharmacy	S1	3	4	50
	General Medicine	S1	0	0	28
	Nutrition and Dietetics	S1	0	9	23
	Midwifery	D3	0	20	0
		S1	1	0	81
Total			18	333	1144

Source 50. Primary Data, 2024

The employment status of graduates from the selected institutions reveals varying rates of unemployment, job placement, and further education across different programs. The data presented below highlights key findings regarding the health science graduates from 2019 to 2023.

1. Instituto Superior Cristal (ISC)

- Nursing (D3): A minimal percentage of graduates (2.47%) secured employment, while no graduates pursued further studies.
- Nursing (S1): The employment rate stands at 8.20%, with 3.40% of graduates unemployed.
- Midwifery (D3): This program recorded a job placement rate of 3.07%, while 2.00% remained unemployed.

2. Instituto Ciências da Saúde (ICS)

- Nursing (D3): Here, 3.00% of graduates are employed, with a slight unemployment rate of 1.47%.
- Nursing (S1): The employment rate is 2.73%, with 0.20% of graduates seeking further education.
- Pharmacy (D3): Employment stands at 1.47%, while 1.67% are unemployed.
- Nutrition and Dietetics (D3): This program has a 1.27% employment rate with no graduates continuing their studies.
- Midwifery (D3): Employment is reported at 3.73%, with a higher unemployment rate of 2.60%.

3. Universidade de Dili (UNDIL)

- Dental Nursing (D3): 1.47% of graduates are currently employed, while 1.13% are seeking further studies.
- General Nursing (D3): This program shows a 4.13% employment rate, with 0.67% unemployed.
- Public Health (S1): The employment rate for graduates is 7.93%, with 2.20% unemployed.

4. Universidade da Paz (UNPAZ)

- Public Health (S1): Graduates from this program experience a significant employment rate of 17.80%, with 3.53% of alumni unemployed.

5. Universidade Nacional Timor Lorosa'e (UNTL)

- Biomedical Sciences and Laboratories (S1): This program shows an employment rate of 1.27%, with 0.47% unemployed.
- Nursing (D3): Graduates report an employment rate of 0.80%, with 0.67% unemployed.
- Nursing (S1): Employment is at 3.60%, with no graduates pursuing further education.
- Pharmacy (S1): 3.33% of pharmacy graduates are employed, while 0.27% are unemployed.
- General Medicine (S1): The employment status is at 1.87%, with no graduates seeking further education.
- Nutrition and Dietetics (S1): The employment rate is 1.53%, with 0.60% of graduates unemployed.
- Midwifery (D3): This program recorded no employment, while 1.33% of graduates are unemployed.

The data indicates that the absorption rate of graduates into the labor market varies significantly by program and institution. Factors contributing to these differences may include the demand for specific health professionals, the quality of education, and the availability of job placements in the local healthcare system.

- Program-Specific Trends: Programs such as Public Health at UNPAZ have demonstrated higher employment rates, suggesting a robust demand for professionals in this field. Conversely, nursing programs at UNTL have shown lower employment rates, indicating potential oversaturation or inadequate job opportunities in that sector.
- Institutional Impact: Graduates from ISC and ICS appear to have varying success rates in employment based on their specific health programs. This discrepancy may be influenced

by the reputation of the institutions, the practical training offered, and partnerships with healthcare facilities for internships or job placements.

- Continuing Education: The percentage of graduates pursuing further education is generally low, which may imply that graduates are either satisfied with their employment status or discouraged by the lack of opportunities to continue their education.

Table 51. Comprehensive analysis job sector by program study, by level of academic, and by university

Institute or Universities	Program Study	Degree	Private Institution	Public Institution	Self-employment	Un-employed
CRISTA	Nursing	D3	30	6	1	0
		S1	78	43	2	51
	Midwifery	D3	42	3	1	30
ICS	Nursing	D3	25	8	12	22
		S1	19	20	2	3
	Pharmacy	D3	7	5	10	25
	Nutrition-Dietetics	D3	0	11	8	0
	Midwifery	D3	28	0	28	39
	Biomedical and Laboratory Sciences	D3	0	18	0	0
UNDIL	Dental Nursing	D3	13	9	0	17
	General Nursing	D3	40	11	11	10
	Public Health	S1	55	54	10	33
UNPAZ	Public Health	S1	80	137	50	53
UNTL	Biomedical and Laboratory Sciences	S1	10	6	3	7
	Nursing	D3	7	0	5	10
		S1	0	54	0	0
	Pharmacy	S1	42	4	4	4
	General Medicine	S1	1	27	0	0
	Nutrition and Dietetics	S1	16	7	0	9
	Midwifery	D3	0	0	0	20
		S1	29	49	3	0

Source 51. Primary Data, 2024

The data collected from the years 2019 to 2023 indicates varied absorption rates among graduates from different institutions and programs. The following sections present a detailed analysis of these rates, segregated by university, program of study, and level of academic achievement.

1 Instituto Superior Cristal (ISC)

- Nursing (D3): Graduates showed a 2.00% absorption rate in private institutions, 0.40% in public institutions, and a negligible percentage of self-employment.
- Nursing (S1): The absorption rate increased to 5.20% in private institutions and 2.87% in public institutions, with a notable 3.40% remaining unemployed.

- Midwifery (D3): The absorption rates were 2.80% in private institutions and 0.20% in public institutions, with a higher unemployment rate of 2.00%.

2 Instituto Ciências da Saúde (ICS)

- Nursing (D3): Employment in private institutions stood at 1.67%, while public institutions had 0.53%, with 1.47% unemployed.
- Nursing (S1): The absorption rate was lower at 1.27% for private and 1.33% for public institutions, indicating a challenging transition into the workforce.
- Pharmacy (D3): A mere 0.47% found employment in private institutions, while 1.67% remained unemployed.

3 Universidade de Dili (UNDIL)

- Dental Nursing (D3): Graduates had a 0.87% absorption rate in private institutions and 0.60% in public institutions, with 1.13% unemployed.
- General Nursing (D3): The absorption rate was 2.67% in private institutions, with 0.73% unemployed.
- Public Health (S1): An absorption rate of 3.67% in private and 3.60% in public institutions, with 2.20% unemployed.

4 Universidade da Paz (UNPAZ)

- Public Health (S1): This program showed a strong absorption rate of 5.33% in private institutions and 9.13% in public institutions, with a 3.53% unemployment rate, suggesting a favorable job market for graduates in public health.

5 Universidade Nacional Timor Lorosa'e (UNTL)

- Biomedical Sciences and Laboratory (S1): Absorption rates were relatively low, with 0.67% in private institutions and 0.40% in public institutions, indicating a potential disconnect between academic training and job market needs.
- Nursing (D3): The absorption rate was 0.47% in private institutions, while 0.67% were unemployed, highlighting a significant gap in employment opportunities.
- Midwifery (S1): Graduates had a 1.93% absorption rate in private institutions and a concerning 3.27% in public institutions, with some remaining unemployed.

The analysis of the absorption rates across various health science programs reveals several key trends. First, there is a notable disparity in employment opportunities between private and public institutions, with public institutions generally offering more positions. This trend suggests that government-funded healthcare facilities may be more accessible to graduates than private healthcare organizations.

Second, certain programs, particularly in public health, demonstrate higher absorption rates, indicating a healthier job market for these fields. The strong performance of public health graduates from UNPAZ signifies the growing demand for professionals in this area, likely due to increased emphasis on community health and preventive care. Conversely, fields such as nursing and pharmacy consistently report higher unemployment rates among graduates. This may reflect an oversaturation of graduates in these programs or a mismatch between the skills provided during education and those demanded by employers. Additionally, self-employment rates remain low across all institutions,

suggesting that graduates are primarily seeking employment within established healthcare systems rather than pursuing entrepreneurial opportunities. This could indicate a lack of support or resources for graduates to establish their own practices or ventures.

Table 52. Comprehensive analysis status of by alignment job with background education program study, by level of academic, and by university

Institute or Universities	Program Study	Degree	No	Yes
CRISTAL	Nursing	D3	3	34
		S1	3	120
	Midwifery	D3	1	45
ICS	Nursing	D3	13	32
		S1	2	39
	Pharmacy	D3	10	12
	Nutrition-Dietetics	D3	9	10
	Midwifery	D3	29	27
	Biomedical and Laboratory Sciences	D3	0	18
UNDIL	Dental Nursing	D3	0	22
	General Nursing	D3	11	51
	Public Health	S1	19	100
UNPAZ	Public Health	S1	30	237
UNTL	Biomedical and Laboratory Sciences	S1	0	19
		D3	1	11
	Nursing	S1	3	51
		S1	4	46
		S1	3	25
		S1	4	19
		D3	0	0
		S1	3	78

Source 52. Primary Data, 2024

Timor-Leste hosts several higher education institutions that offer health science programs. The primary focus of this report is on the following universities:

- Universidade Nacional Timor Lorosa'e (UNTL): UNTL offers a variety of health science degrees, including nursing, general medicine, pharmacy, and nutritional science. Their programs are designed to cater to the evolving needs of the health sector.
- Universidade da Paz (UNPAZ): Known for its emphasis on public health, UNPAZ provides programs that equip students with skills to address health challenges in Timor-Leste.
- Universidade de Dili (UNDIL): UNDIL offers specialized programs in dental nursing and general nursing, focusing on both theoretical and practical aspects of healthcare.
- Instituto Superior Cristal (ISC): ISC provides a range of nursing courses, focusing on both diploma and degree levels, preparing students for direct involvement in patient care.
- Instituto Ciencias Saude (ICS): ICS offers programs in nursing, pharmacy, nutrition, and biomedical sciences, emphasizing the importance of scientific knowledge in healthcare.

The health sector in Timor-Leste faces numerous challenges, including a shortage of qualified healthcare professionals and the need for improved healthcare services. The graduates from the

aforementioned universities play a crucial role in addressing these issues. Understanding the absorption rate of these graduates into the labor market is essential for evaluating the effectiveness of educational programs and their alignment with market demands .

The following sections will analyze the employment status of graduates from the specified universities, focusing on the alignment between their academic programs and job placements. The data reflects the percentage of graduates employed in positions relevant to their field of study shown in below:

Instituto Superior Cristal (ISC)

The employment status of ISC graduates indicates a varied absorption rate, particularly in nursing programs. Among diploma holders in nursing (D3), only 0.20% were reported in positions unrelated to their degree, while 2.27% found relevant employment. For degree holders in nursing (S1), the figures were slightly higher, with 0.20% not aligned with their field and 8.00% successfully employed in relevant roles. The midwifery program (D3) showed a lower employment alignment, with 0.07% in unrelated jobs and 3.00% employed in relevant positions.

Instituto Ciencias Saude (ICS)

The absorption rate of ICS graduates varied across programs. For nursing (D3), 0.87% were misaligned in their jobs, while 2.13% were employed in relevant positions. Degree holders in nursing (S1) displayed an even lower alignment with 0.13% in unrelated jobs and 2.60% in relevant roles. The pharmacy program (D3) indicated 0.67% misalignment, with only 0.80% finding jobs pertinent to their studies. Other programs, such as nutrition (D3), showed a similar trend with 0.60% in unrelated jobs and 0.67% employed appropriately.

Universidade de Dili (UNDIL)

Graduates from UNDIL in dental nursing (D3) reported 0.00% misalignment, suggesting a strong absorption rate into relevant positions, with 1.47% successfully employed. General nursing (D3) graduates experienced a slightly higher misalignment at 0.73%, with 3.40% in appropriate roles. The public health degree (S1) showed promising results, with 1.27% in unrelated jobs and a significant 6.67% in relevant employment.

Universidade da Paz (UNPAZ)

UNPAZ graduates demonstrated a favorable absorption rate in public health (S1), where 2.00% were misaligned, and a notable 15.80% were engaged in relevant positions. This high rate emphasizes the effectiveness of their public health program in preparing graduates for the labor market.

Universidade Nacional Timor Lorosa'e (UNTL)

UNTL's graduates exhibited mixed results across various programs. For biomedical sciences (S1), there was a 0.00% misalignment, indicating a strong alignment with job placements, with 1.27% employed in relevant positions. In nursing (D3), 0.07% were misaligned, and 0.73% found suitable employment, while for the degree (S1), 0.20% were not aligned, and 3.40% were successfully employed. The pharmacy program (S1) showed a 0.27% misalignment with 3.07% in relevant jobs. The general medicine (S1) program had 0.20% misaligned and 1.67% in appropriate positions. The nutrition and dietetics program (S1) indicated 0.27% misalignment and 1.27% in relevant employment. The midwifery program (D3) showed no employment alignment, with 0.00% employed in relevant roles.

The analysis of labor market absorption rates among graduates from these institutions reveals several trends and insights that can guide future educational and policy efforts in Timor-Leste.

- **Alignment Between Education and Employment:** The data reflects varying levels of alignment between academic training and employment opportunities across different programs and institutions. Notably, programs like public health from UNPAZ demonstrate a strong capacity to prepare graduates for the labor market, while other programs, particularly in nursing and midwifery, show more significant challenges in aligning education with job opportunities. This disparity highlights the importance of continuous curriculum assessment and development to ensure that graduates possess the skills and knowledge required by healthcare employers.
- **Variation by Degree Level:** The analysis also indicates that graduates with higher academic qualifications (degree holders) tend to have better employment outcomes compared to those with diplomas. This trend suggests that employers may prioritize candidates with comprehensive education and training. Universities should consider enhancing their degree programs and providing additional support for diploma holders to improve their employability.
- **Sector-Specific Challenges:** The healthcare sector in Timor-Leste is characterized by specific challenges such as limited job availability, particularly in rural areas. Graduates may struggle to find employment that matches their qualifications due to a lack of infrastructure and resources in the healthcare system. Addressing these systemic issues requires a collaborative effort from educational institutions, government agencies, and the private sector to create more job opportunities within the health sector.
- **Need for Enhanced Career Services:** The findings suggest a potential gap in career services offered by universities. Enhanced career counseling and job placement services could help graduates navigate the job market more effectively. Universities should invest in partnerships with healthcare providers to facilitate internships and job placements, enabling students to gain practical experience and improve their employability upon graduation.
- **Importance of Continuous Professional Development:** Given the rapidly evolving nature of healthcare, continuous professional development is crucial for graduates. Institutions should offer ongoing training and development opportunities to help alumni adapt to new technologies and practices in the health sector. This approach not only benefits individuals but also strengthens the overall healthcare workforce in Timor-Leste.

The analysis of labor market absorption rates among graduates in Timor-Leste highlights key trends for future educational and policy efforts:

- **Alignment Between Education and Employment:** There is a disparity in how well different programs prepare graduates for the job market. For instance, UNPAZ's public health program aligns well with employment needs, while nursing and midwifery face challenges. Continuous curriculum assessment is essential to meet employers' expectations.
- **Variation by Degree Level:** Graduates with degrees enjoy better employment outcomes than those with diplomas, indicating that comprehensive education is valued by employers. Universities should enhance degree programs and support diploma holders to boost employability.
- **Sector-Specific Challenges:** The healthcare sector faces limited job availability, especially in rural areas, hindering graduates' employment prospects. Addressing these issues requires collaboration among educational institutions, government, and the private sector.

- Need for Enhanced Career Services: A gap exists in university career services. Improved counseling and job placement initiatives, along with partnerships for internships, can help graduates gain practical experience and navigate the job market effectively.
- Importance of Continuous Professional Development: Ongoing training is vital for graduates to adapt to evolving healthcare technologies and practices. Institutions should provide development opportunities to strengthen the healthcare workforce in Timor-Leste.

Table 53. Comprehensive analysis status of by the effective of he to prepared alumnae, program study, by leve of academic, and by university

Institute or Universities	Program Study	Degree	Extremely effective	Moderately effective	Not effective at all	Slightly effective	Very effective
CRISTAL	Nursing	D3	17	2	1	1	16
		S1	40	24	1	4	54
	Midwifery	D3	23	8	0	1	14
ICS	Nursing	D3	2	3	1	15	24
		S1	0	2	0	5	34
	Pharmacy	D3	1	0	0	7	14
	Nutrition-Dietetics	D3	0	1	0	8	10
	Midwifery	D3	2	4	0	29	21
	Biomedical and Laboratory Sciences	D3	0	0	0	2	16
UNDIL	Dental Nursing	D3	8	1	1	2	10
	General Nursing	D3	21	2	4	2	33
	Public Health	S1	52	8	1	6	52
UNPAZ	Public Health	S1	63	22	3	25	154
UNTL	Biomedical and Laboratory Sciences	S1	1	3	2	1	12
	Nursing	D3	1	2	1	0	8
		S1	4	8	2	1	39
	Pharmacy	S1	1	6	3	4	36
		S1	6	5	2	1	14
	General Medicine						
	Nutrition and Dietetics	S1	2	5	0	2	14
	Midwifery	D3	0	0	0	0	0
		S1	5	11	5	3	57

Source 53. Primary Data, 2024

The table 53 in above reported analyzes data collected from the aforementioned institutions, focusing on the effectiveness of their academic programs in preparing graduates for careers in health-related fields. The analysis is based on feedback from alumni and employers, as well as employment statistics where available.

The analysis of the effectiveness of graduate preparation is categorized by institution, program, and academic level. The data collected indicates varying degrees of effectiveness across different universities and programs, highlighting both successes and areas needing improvement.

1. Instituto Superior Cristal (ISC)

Nursing (D3 and S1):

- The effectiveness ratings for the nursing program at ISC show a mixed picture. The D3 nursing program reported an extremely effective absorption rate of 1.13%, while the S1 program had a higher rate of 2.67%.
- The moderate effectiveness ratings were 0.13% and 1.60% for D3 and S1, respectively. This suggests that while some graduates find success in the labor market, there remains a significant portion that does not, indicating potential gaps in training or market demand alignment.

Midwifery (D3):

- The midwifery program also reflects a similar trend, with an extremely effective rating of 1.53% and moderate ratings of 0.53%. The lack of graduates reporting any effectiveness at all underscores a potential area for curriculum enhancement.

2. Instituto Ciências da Saúde (ICS)

Nursing and Pharmacy (D3):

- The D3 nursing program at ICS reported an extremely effective rating of only 0.13%, with a slightly better performance in the S1 program where 0.00% of graduates reported extreme effectiveness.
- The pharmacy program showed a negligible absorption rate as well, indicating that graduates may be facing challenges in securing relevant employment.
- Nutrition-Dietetics (D3):
- The nutrition-dietetics program reflected a very low effectiveness, with 0.67% of graduates finding success. This suggests a misalignment between the skills taught and the needs of the healthcare sector.

3. Universidade de Dili (UNDIL)

General Nursing and Public Health (D3 and S1):

- The general nursing program reported an effectiveness of 1.40% at the D3 level, while the public health program showed a marked effectiveness of 3.47% at the S1 level.
- This indicates that public health graduates may be better positioned in the job market, potentially due to the growing emphasis on public health initiatives within the country.

4. Universidade da Paz (UNPAZ)

Public Health (S1):

- UNPAZ's public health program demonstrated the highest effectiveness ratings, with an extremely effective absorption rate of 4.20%. This suggests that graduates from this program are well-prepared for employment and are actively sought after in the labor market.

5. Universidade Nacional Timor Lorosa'e (UNTL)

Biomedical Sciences, Nursing, and Pharmacy (S1):

- UNTL's various programs showed lower effectiveness rates overall, with the highest being 2.60% for S1 nursing. The pharmacy program had an extremely effective rate of only

0.07%, suggesting that graduates may not be adequately prepared for the demands of the pharmacy sector.

- The data reveals a troubling trend of low effectiveness in many of the health science programs, indicating a need for curriculum review and enhancement.

The analysis of the labor market absorption rates of graduates from the selected universities in Timor-Leste reveals significant discrepancies in the effectiveness of academic programs within the Health Sciences field. While some programs, such as those at UNPAZ, demonstrate strong outcomes, others show a concerning lack of alignment with market needs.

Table 54. Comprehensive analysis status of by the extent of the he to prepare alumnae, program study, by leve of academic, and by university

Institute or Universities	Program Study	Degree	Not at all	To a great extent	To a moderate extent	To a small extent	To a very great extent
CRISTAL	Nursing	D3	2	10	5	1	19
		S1	5	56	14	4	44
	Midwifery	D3	1	16	3	1	25
ICS	Nursing	D3	0	16	7	15	7
		S1	0	21	9	3	8
	Pharmacy	D3	0	8	1	8	5
	Nutrition-Dietetics	D3	0	9	1	7	2
	Midwifery	D3	1	18	6	28	3
	Biomedical and Laboratory Sciences	D3					
			1	13	2	0	2
UNDIL	Dental Nursing	D3	3	4	2	2	11
	General Nursing	D3	2	27	1	5	27
	Public Health	S1	4	44	8	3	60
UNPAZ	Public Health	S1	6	89	33	21	118
UNTL	Biomedical and Laboratory Sciences	S1					
			3	4	7	3	2
	Nursing	D3	1	9	1	0	1
		S1	4	25	6	6	13
	Pharmacy	S1	4	31	8	3	4
	General Medicine	S1	1	12	5	2	8
	Nutrition and Dietetics	S1	1	14	5	1	2
	Midwifery	D3	0	0	0	0	0
		S1	8	38	15	6	14

Source 54. Primary Data, 2024

The analysis of the absorption rates is based on a comprehensive survey conducted among graduates from the selected institutions, focusing on various health science programs, including nursing, pharmacy, public health, and biomedical sciences. The survey aimed to measure the extent to which graduates felt adequately prepared for the labor market upon completing their studies.

The responses were categorized into five levels of preparedness: Not at all, To a small extent, To a moderate extent, To a great extent, and To a very great extent. This categorization helps in understanding graduates' perceptions of their readiness for employment in the health sector.

1. Instituto Superior Cristal (ISC)

- Nursing (D3 and S1): A small percentage (1.27%) of graduates reported feeling To a very great extent prepared, while the majority fell into the lower categories of preparedness. This trend indicates a potential gap in practical training or exposure to real-world healthcare scenarios during their studies.
- Midwifery (D3): Similar patterns were observed, with only 1.67% of graduates feeling fully prepared. The data suggests that while theoretical knowledge is imparted, practical readiness remains a concern.

2. Instituto Ciênciais Saúde (ICS)

- Nursing (D3 and S1): The absorption rates here were slightly better, though only 0.47% and 0.53% of graduates felt To a very great extent prepared for the workforce. This indicates that while there is some level of preparedness, it is not sufficient for the demands of the field.
- Pharmacy and Nutrition-Dietetics (D3): Graduates from these programs reported low preparedness levels, with a notable absence of responses indicating high confidence in their readiness for employment.

3. Universidade de Dili (UNDIL)

- Dental Nursing (D3): The figures indicate a low preparedness, with 0.73% feeling To a very great extent prepared. This suggests that curricula might need to be revisited to enhance practical components.
- General Nursing (D3): Responses revealed similar concerns, with only 1.80% of graduates indicating they felt well-prepared for the workforce.

4. Universidade da Paz (UNPAZ)

- Public Health (S1): The highest level of perceived preparedness was noted here, with 7.87% of graduates feeling To a very great extent prepared. This could reflect a more robust curriculum or better alignment with public health initiatives in the country.

5. Universidade Nacional Timor Lorosa'e (UNTL)

- Biomedical Sciences and Laboratory Sciences (S1): The preparedness levels were low, with only 0.13% indicating high confidence in their readiness. This may highlight a disconnect between the program content and the practical skills required in the health sector.
- Nursing and Pharmacy (D3 and S1): Similar trends were observed across these programs, with a significant number of graduates feeling unprepared or only moderately prepared for their roles in healthcare.

The analysis of the absorption rates reveals several critical insights:

- Overall Preparedness: There is a concerning trend of low perceived preparedness among graduates across all institutions and programs. The data suggests that while graduates possess theoretical knowledge, they may lack the necessary practical skills and experience required in a healthcare setting.
- Program Effectiveness: The effectiveness of health science programs in equipping students for the labor market appears inconsistent. Institutions must critically evaluate their curricula and consider integrating more practical training and internships to enhance students' readiness for employment.

Labor Market Alignment: The alignment between educational programs and labor market needs is crucial for improving absorption rates. Institutions should engage with healthcare providers to better understand the skills and competencies required in the workforce.

Further session pursuit to the comprehensive analysis of the preparedness of graduates from various higher education institutions reveals a complex landscape in the teaching and learning processes in healthcare education. Institutions such as CRISTAL, ICS, UNDIL, UNPAZ, and UNTL have made significant strides in equipping students with the knowledge and skills necessary for their future careers. However, challenges remain, particularly in practical experience, resource allocation, and curriculum relevance.

As the healthcare sector continues to evolve, it is imperative that educational institutions remain flexible and proactive in adapting their programs to meet the demands of the job market. By fostering collaboration, investing in faculty development, and emphasizing both hard and soft skills, these programs can better prepare their students for the challenges ahead.

Ultimately, the goal of healthcare education is not only to produce competent professionals but also to cultivate compassionate caregivers who are ready to make a positive impact on their communities. The journey of preparing students for this noble calling is ongoing, and through continuous improvement and adaptation, higher education institutions can rise to the occasion.

Table 55. Comprehensive analysis status of by what extent do you believe your institute or university prepare your self during teaching and learning process before taken the job, program study, by leve of academic, and by university

HEs	Program Study	Degree	Agree	Disagree	Neutral	Strongly Agree	Strongly Disagree
CRISTAL	Nursing	D3	14	0	4	18	1
		S1	44	6	16	53	4
	Midwifery	D3	15	0	7	24	0
ICS	Nursing	D3	16	1	17	11	0
		S1	33	2	5	1	0
	Pharmacy	D3	9	0	7	5	1
	Nutrition-Dietetics	D3	10	0	7	2	0
	Midwifery	D3	21	0	32	3	0
	Biomedical and Laboratory Sciences	D3	15	0	3	0	0
UNDIL	Dental Nursing	D3	4	1	3	13	1
	General Nursing	D3	27	0	2	28	5
	Public Health	S1	46	1	11	60	1
UNPAZ	Public Health	S1	90	14	41	81	41
UNTL	Biomedical and Laboratory Sciences	S1	5	1	8	2	3
	Nursing	D3	7	0	1	2	2
		S1	36	2	10	5	1
	Pharmacy	S1	34	0	9	4	3
	General Medicine	S1	15	0	6	6	1
	Nutrition and Dietetics	S1	12	0	8	3	0
	Midwifery	D3	0	0	0	0	0
		S1	46	4	19	8	4

Source 55. Primary Data, 2024

The data collected from graduates of various health science programs across the selected universities indicates varied levels of agreement regarding their preparedness for the job market. The analysis utilizes a Likert scale to assess graduate perceptions, which categorizes responses into five levels: Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree.

(a) Instituto Superior Cristal (ISC):

Graduates from ISC in nursing (D3 and S1 levels) expressed a mixed level of preparedness. The responses indicate that a small percentage agreed that their education adequately prepared them for employment in healthcare. Specifically, for the D3 nursing program, only 1.22% of respondents agreed, while 1.57% strongly agreed. This suggests a significant portion of graduates feels underprepared. For the S1 nursing program, the figures improved slightly, with 3.83% agreeing and 4.61% strongly agreeing. In the midwifery program at the D3 level, 1.31% agreed, while 2.09% strongly agreed, reflecting similar sentiments about preparedness.

(b) Instituto Ciências Saúde (ICS):

At ICS, the D3 nursing program had a marginally higher agreement rate of 1.39%, with 0.96% of graduates strongly agreeing about their preparedness. For S1 nursing, the responses were slightly better, indicating a 2.87% agreement rate. The pharmacy program showed lower confidence levels, with only 0.78% of graduates agreeing on their preparedness. The nutrition and dietetics program also received low affirmation, with 0.87% agreeing and 0.17% strongly agreeing. The midwifery program at D3 level had a 1.83% agreement rate, suggesting that there is a consistent trend of graduates feeling inadequately equipped for their professional roles.

(c) Universidade de Dili (UNDIL):

Graduates from UNDIL displayed varying levels of confidence in their preparedness. The D3 dental nursing program reported only 0.35% of graduates agreeing, with a higher percentage of 2.35% for general nursing. Public health graduates at the S1 level showed a more positive outlook, with 4% agreeing and 5.22% strongly agreeing, indicating that this program might be more aligned with labor market expectations.

(d) Universidade da Paz (UNPAZ):

The data from UNPAZ indicates a more optimistic perception among public health graduates, where 7.83% agreed on their preparedness, and 7.05% strongly agreed, signaling effective training in this area. The feedback from this institution suggests a robust framework for preparing students for careers in public health.

(e) Universidade Nacional Timor Lorosa'e (UNTL):

The graduates from UNTL exhibited a diverse range of sentiments concerning their preparedness. In the biomedical sciences and laboratory sciences (S1), only 0.44% agreed, while D3 nursing graduates reported a similar sentiment with 0.61% agreeing. The pharmacy program at S1 showed a 2.96% agreement rate, and the general medicine program had a 1.31% agreement. However, the D3 midwifery program reported no agreement, indicating substantial concerns regarding the adequacy of preparation for employment. The analysis of the labor market absorption rate of health science graduates

from the identified institutions reveals a notable gap between educational preparation and market expectations. The findings suggest that while some programs, particularly in public health at UNPAZ and UNDIL, show promise, many other programs are failing to adequately equip graduates for the demands of the healthcare sector.

Table 56. Comprehensive analysis status of by how confident are you in finding a job, program study, by level of academic, and by university

Institute or Universities	Program Study	Degree	Extremely confident	Moderately confident	Not confident at all	Slightly confident	Very confident
CRISTAL	Nursing	D3	23	2	1	2	9
		S1	55	22	1	4	41
	Midwifery	D3	26	5	1	2	12
ICS	Nursing	D3	11	4	0	15	15
		S1	4	6	0	6	25
	Pharmacy	D3	5	2	1	6	8
	Nutrition-Dietetics	D3	3	1	0	7	8
	Midwifery	D3	4	13	0	27	12
	Biomedical and Laboratory Sciences	D3	4	1	0	1	12
UNDIL	Dental Nursing	D3	11	1	2	3	5
	General Nursing	D3	28	3	7	1	23
	Public Health	S1	64	12	1	6	36
UNPAZ	Public Health	S1	79	49	1	15	123
UNTL	Biomedical and Laboratory Sciences	S1	0	6	1	1	11
	Nursing	D3	0	3	0	0	9
		S1	3	10	1	4	36
	Pharmacy	S1	1	8	0	5	36
	General Medicine	S1	3	3	4	0	18
	Nutrition and Dietetics	S1	0	5	1	0	17
	Midwifery	D3	0	0	0	0	0
		S1	7	18	5	5	46

Source 56. Primary Data, 2024

The data collected from graduates of the health science programs from 2019 to 2023 reveals varying levels of confidence in finding employment across different universities and programs. This analysis will delve into the specifics of these confidence levels, segmented by degree programs and institutions.

1. Instituto Superior Cristal (ISC):

Graduates from ISC demonstrate a mixed level of confidence in their job prospects. In the nursing program (D3), 2.00% of students feel extremely confident about finding a job, while 0.17% are moderately confident. A notable 0.09% express a lack of confidence. The S1 nursing program shows

slightly higher confidence, with 4.79% of graduates feeling extremely confident, while 1.91% are moderately confident. Similar trends are observed in the midwifery program, where 2.26% of D3 graduates feel extremely confident about employment opportunities.

2. Instituto Ciênciais Saúde (ICS):

At ICS, the confidence levels vary across programs. The D3 nursing program has 0.96% of graduates feeling extremely confident, while a small segment, 0.35%, expresses moderate confidence. In contrast, the pharmacy program showcases lower confidence levels overall, with only 0.44% of graduates feeling extremely confident about their job prospects.

3. Universidade de Dili (UNDIL):

UNDIL graduates in the dental nursing program exhibit a slightly higher confidence rate, with 0.96% feeling extremely confident in their job search. The general nursing program has 2.44% of graduates expressing extreme confidence, suggesting a favorable perception of job opportunities within the healthcare sector.

4. Universidade da Paz (UNPAZ):

The public health program at UNPAZ stands out, with 6.88% of its graduates reporting extreme confidence in finding employment. This indicates a robust perception of job availability in the public health sector, which could be attributed to the growing emphasis on health initiatives and community health programs in Timor-Leste.

5. Universidade Nacional Timor Lorosa'e (UNTL):

At UNTL, the confidence rates are comparatively low across various programs. In the biomedical sciences and laboratory programs, there is no representation of graduates feeling extremely confident, and the nursing program (D3) shows similar trends. However, the pharmacy (S1) program records 3.13% of graduates feeling very confident, suggesting some degree of optimism among this group.

The confidence levels reported by graduates can be interpreted through several lenses:

- **Program Relevance and Curriculum:**
The varying confidence levels across different programs highlight the importance of curriculum alignment with market demands. Programs that are closely tied to the needs of the healthcare system, such as public health at UNPAZ, generally produce graduates with higher confidence levels.
- **Job Market Perception:**
The data indicates that graduates' perceptions of job availability significantly influence their confidence. Programs with a strong reputation or those that have established connections with healthcare institutions tend to inspire greater confidence among students.
- **Individual Preparedness:**
The confidence levels also reflect the graduates' self-assessment of their readiness to enter the job market. Graduates who engage in internships, practical training, and hands-on experiences during their studies are likely to feel more confident in their job search.

According to table above, the findings on health science graduates' employment confidence from 2019 to 2023 across various universities and programs, it becomes evident that the landscape of employability is multifaceted, influenced by a range of factors including program relevance, job market perceptions, and individual preparedness.

(a) Mixed Confidence Levels Across Institutions:

The analysis reveals a stark contrast in confidence levels among graduates from different institutions. For instance, while the public health program at Universidade da Paz (UNPAZ) boasts a significant 6.88% of graduates feeling extremely confident about their job prospects, other programs, such as those at Instituto Superior Cristal (ISC) and Universidade Nacional Timor Lorosa'e (UNTL), show much lower confidence rates. This variance highlights the disparities in how different programs prepare students for the job market.

(b) Impact of Curriculum Relevance:

The data suggests a clear correlation between the alignment of academic programs with market demands and graduate confidence levels. Programs that emphasize practical skills and are closely integrated with healthcare systems tend to produce graduates who are more optimistic about their employment prospects. The robust confidence exhibited by UNPAZ's public health graduates can likely be attributed to the growing emphasis on health initiatives and community health programs in Timor-Leste.

(c) Perception of Job Availability:

Graduates' confidence is significantly influenced by their perceptions of job availability in their respective fields. Institutions with strong reputations and networks within the healthcare sector tend to instill a greater sense of confidence among their students. This reinforces the notion that not only the quality of education but also the institution's connections to the job market play a crucial role in shaping graduates' employment outlook.

(d) Individual Preparedness:

The confidence levels also reflect the graduates' self-assessment of their readiness to enter the workforce. Those who have engaged in internships, practical training, and experiential learning opportunities during their studies report higher levels of confidence. This underscores the importance of hands-on experiences in education, which can significantly enhance a graduate's employability.

Health Science had always been a demanding field, and the alumni of various institutions in Timor-Leste knew this all too well. They had felt the pressure to be adequately prepared for the challenges that lay ahead in their respective programs of study. Universidade da Paz (UNPAZ), with its serene atmosphere, buzzed with students eager to make their mark in the health sector. The halls of Universidade de Dili (UNDIL) echoed with discussions on the latest advancements in dental nursing and public health, while the labs of Instituto Ciençiais Saude (ICS) saw passionate students conducting research in nursing and pharmacy.

However, the crown jewel of health science education in Timor-Leste was undoubtedly the Universidade Nacional Timor Lorosa'e (UNTL). UNTL's prestigious S1 program in Biomedical and Laboratory Sciences had produced some of the nation's finest minds in the field. Yet, concerns arose as their graduates entered the workforce. Were they truly ready for the demands of their professions. The comprehensive analysis in Table 57 aimed to answer this very question, evaluating the preparedness of alumni across various institutions, programs, and degrees.

Table 57. Comprehensive analysis status of by how well do you feel your higher education, program study, by level of academic, and by university

Institute or Universities	Program Study	Degree	Extremely well prepared	Moderately prepared	Poorly prepared	Somewhat prepared	Well prepared
CRISTAL	Nursing	D3	18	5	1		
		S1	42	16	1	1	12
	Midwifery	D3	22	6	0	2	62
ICS	Nursing	D3	7	5	0	2	16
		S1	2	5	1	13	20
	Pharmacy	D3	4	3	0	3	30
	Nutrition-Dietetics	D3	1	3	0	6	9
	Midwifery	D3	5	8	0	7	8
	Biomedical and Laboratory Sciences	D3					
			2	2	0	27	16
	UNDIL	Dental Nursing	D3	12	2	1	0
General Nursing		D3	28	3	4	1	6
Public Health		S1	64	14	0	2	25
UNPAZ	Public Health	S1	78	22	1	1	40
UNTL	Biomedical and Laboratory Sciences	S1					
			0	3	2	14	152
	Nursing	D3	0	2	1	1	13
		S1	10	8	1	0	9
	Pharmacy	S1	4	12	3	0	35
	General Medicine	S1	8	5	1	2	29
	Nutrition and Dietetics	S1	2	6	0	0	14
	Midwifery	D3	0	0	0	2	13
		S1	10	15	8	0	0
					4	44	

Source 57. Primary Data, 2024

Graduates' perceptions of their preparedness can serve as indicators of the quality of education they received and the relevance of their training to real-world demands. Analyzing the feedback from graduates regarding their readiness can provide valuable insights for educational institutions, policymakers, and stakeholders in the health sector. This section delves into the comprehensive analysis of graduate preparedness from the selected institutions, considering their respective programs of study and degree levels. The detail exploration data reflects the perceptions of graduates regarding their readiness for the workforce, categorized into five levels: extremely well prepared, moderately prepared, poorly prepared, somewhat prepared, and well prepared showed in bellow:

(a) Instituto Superior Cristal (ISC)

- Nursing (D3): A minimal percentage of graduates (1.57%) felt extremely well prepared, while a negligible portion reported being moderately prepared (0.44%). No graduates indicated being poorly prepared, and the majority (0.00%) felt somewhat prepared, which raises concerns about the effectiveness of the training provided.
- Nursing (S1): Here, a slightly higher percentage (3.66%) reported feeling extremely well prepared, with 1.39% moderately prepared. However, the presence of a poorly prepared

category (0.09%) and the low percentages in other categories suggest the need for curriculum enhancement.

- Midwifery (D3): The responses indicate 1.91% felt extremely well prepared, while 5.40% reported being well prepared. This variance suggests a disparity in how the program equips students for practical applications in the field.

(b) Instituto Ciências Saúde (ICS)

- Nursing (D3): The preparedness levels remain low, with only 0.61% of graduates feeling extremely well prepared. The majority reported moderate to somewhat satisfactory levels of preparedness, indicating a potential gap in the training provided.
- Pharmacy (D3): A total of 0.35% felt extremely well prepared, and 2.61% reported being well prepared. This reflects limited confidence in the training received.
- Nutrition and Dietetics (D3): Only 0.09% indicated extreme preparedness. The data underscores a critical need for better educational frameworks in these areas.

(c) Universidade de Dili (UNDIL)

- Dental Nursing (D3): Among graduates, 1.04% felt extremely well prepared, suggesting some confidence in their training. However, the majority remained in the moderately prepared category, which remains a point of concern.
- Public Health (S1): This program showed a relatively higher percentage of preparedness, with 5.57% feeling extremely well prepared. This indicates that the program may be aligning more closely with market needs.

(d) Universidade da Paz (UNPAZ):

- Public Health (S1): Impressively, 6.79% of graduates reported feeling extremely well prepared, and 3.48% felt well prepared. This program appears to be succeeding in equipping students for the demands of the health sector effectively.

(e) Universidade Nacional Timor Lorosa'e (UNTL)

- Biomedical Sciences and Laboratory (S1): The data reveals a concerning trend, with 0.00% feeling extremely prepared and only 13.23% reporting being well prepared. This discrepancy points to significant issues within the program's structure or its practical training components.
- General Medicine (S1): The preparedness levels are also low, with only 0.70% feeling extremely well prepared. This raises questions about the curriculum's relevance and the clinical exposure provided to students.

The overall statistical analysis of preparedness levels across various institutions indicates a trend where a significant portion of graduates feels inadequately prepared for the labor market. The results suggest that while some programs are performing better than others, there remains a pressing need for comprehensive reviews of curricula, teaching methodologies, and practical training components.

As an key observations the research overed some sugestion as such:

- Low Preparedness Rates: Across most institutions, a substantial number of graduates perceive themselves as poorly prepared for their professional roles, particularly in nursing and midwifery programs.
- Variability Among Programs: Programs in public health at UNPAZ and UNDIL showed higher levels of graduate satisfaction regarding preparedness, indicating a potential model for other programs to emulate.

- Need for Curriculum Development: The data indicates a critical need for curriculum enhancements, particularly in practical training and field exposure, to better align educational outcomes with labor market demands.

The labor market absorption rate of graduates from health sciences institutions in Timor-Leste highlights significant challenges regarding their preparedness for professional roles. While some programs demonstrate higher levels of readiness, the overall findings indicate a need for substantial improvements in training methodologies, curricula, and practical exposure.

Table 58. Comprehensive analysis status of by how satisfied are you with the support the alumane to respond the marker demand, program study, by level of academic, and by university

Institute or Universities	Program Study	Degree	Dissatisfied	Neutral	Satisfied	Very dissatisfied	Very satisfied
CRISTAL	Nursing	D3	0	2	28	1	
		S1	5	8	95	1	6
	Midwifery	D3	0	1	40	1	14
ICS	Nursing	D3	1	15	21	0	4
		S1	0	8	28	0	8
	Pharmacy	D3	0	7	9	1	5
	Nutrition-Dietetics	D3	0	8	9	0	5
	Midwifery	D3	0	34	20	0	2
	Biomedical and Laboratory Sciences	D3	0	1	15	0	2
UNDIL	Dental Nursing	D3	0	3	5	2	2
	General Nursing	D3	1	2	26	2	12
	Public Health	S1	0	9	44	0	31
UNPAZ	Public Health	S1	4	30	111	0	66
UNTL	Biomedical and Laboratory Sciences	S1	0	2	9	2	122
	Nursing	D3	0	3	5	1	6
		S1	0	7	38	0	3
	Pharmacy	S1	0	12	28	1	9
	General Medicine	S1	0	4	12	1	9
	Nutrition and Dietetics	S1	1	4	15	1	11
	Midwifery	D3	0	0	0	0	2
		S1	0	18	47	3	13

Source 58. Primary Data, 2024

The data collected regarding graduate satisfaction levels from each institution reveals a nuanced perspective on how well the educational programs have prepared students for the workforce. The response categories ranging from very dissatisfied to very satisfied provide insight into alumni perceptions across different health science disciplines.

1. Instituto Superior Cristal (ISC)

- Nursing (Nursing) D3: The majority of graduates expressed neutrality or satisfaction, with a minimal percentage indicating dissatisfaction.
- Nursing S1: A small fraction reported dissatisfaction (0.44%), while a notable percentage (8.27%) felt satisfied with their education.

- Midwifery D3: A similar trend was observed, where the majority felt neutral or satisfied, indicating a generally positive reception of the program's effectiveness.

2. Instituto Ciençiais Saúde (ICS)

- Nursing D3: Graduates expressed varying degrees of satisfaction, with a significant percentage (2.44%) indicating satisfaction and a very small percentage (0.09%) feeling dissatisfied.
- Pharmacy D3 and Nutrition-Dietetics D3: Both programs received favorable feedback, with most graduates expressing satisfaction.

3. Universidade de Dili (UNDIL)

- Dental Nursing D3 and General Nursing D3: Graduates showed a positive inclination towards their preparedness for the job market, with minimal dissatisfaction reported (0.09% and 0.17%, respectively).

4. Universidade da Paz (UNPAZ)

- Public Health S1: The program demonstrated a higher rate of satisfaction among graduates, with 9.66% feeling satisfied and 5.74% very satisfied. This suggests that the program successfully meets the needs of its students.

5. Universidade Nacional Timor Lorosa'e (UNTL)

- Biomedical and Laboratory Sciences S1: A significant proportion (10.62%) expressed being very satisfied, indicating a strong alignment between the program and job market demands.
- Nursing D3 and S1: Overall satisfaction levels were moderate, with a few graduates expressing dissatisfaction, which highlights areas for improvement.

The analysis of the satisfaction levels among graduates reveals several important trends:

- General Satisfaction: A majority of graduates from health science programs report being satisfied with their educational experience, indicating that these programs are generally effective in preparing students for the workforce.
- Variability by Program: Certain programs, particularly in public health and biomedical sciences, exhibit higher satisfaction levels compared to others, suggesting that these areas may be more responsive to market needs or have more robust curricula.
- Need for Improvement: While many graduates feel prepared for the job market, there are notable percentages who express neutrality or dissatisfaction, indicating potential gaps in the educational offerings or support systems.

The labor market absorption rate of graduates from health science programs in Timor-Leste reflects a generally positive outlook, with many alumni expressing satisfaction with their education. However, there remain areas for improvement that could further enhance the alignment between academic preparation and market demands. These startegic implementing the above recommendations such as educational institutions can better equip their graduates for successful careers in healthcare, ultimately contributing to the enhancement of the health sector in Timor-Leste.

The next table 59 bellow describe the Health Science had always been a popular field of study in Timor-Leste, with many institutions offering a range of programs. The table 59 presented a comprehensive analysis of alumni feelings across different universities and programs in the Health Science area over the last five years. Universidade da Paz (UNPAZ), one of the prominent institutions, boasted a large number of students expressing a great deal of alumni engagement in the Public Health program at the Bachelor level. Similarly, Universidade de Dili (UNDIL) saw strong

alumni connections in its Dental Nursing and General Nursing programs at the Diploma level with three years duration (D3). Institute Ciencaais Saude (ICS), specialized in health science programs, also witnessed a significant number of graduates staying connected across various programs, including Nursing and Midwifery.

However, the Universidade Nacional Timor Lorosa'e (UNTL) stood out with its diverse range of Health Science programs at the Bachelor level, such as Biomedical and Laboratory Sciences, Nursing, and Pharmacy, where a substantial number of alumni maintained a strong sense of connection, especially in the Biomedical and Laboratory Sciences program. This data showcased the enduring impact and sense of community that these institutions fostered within their alumni, with UNTL leaving a particularly profound impression on its Health Science graduates.

Table 59. Comprehensive analysis of how alumane extent their feel past graduation, program study, by level of academic, and by university

Institute or Universities	Program Study	Degree	A great deal	Many	None at all	Some	Very few
CRISTAL	Nursing	D3	22	12	1	2	0
		S1	55	53	4	5	0
	Midwifery	D3	26	17	0	1	6
ICS	Nursing	D3	15	12	0	16	2
		S1	11	22	1	6	2
	Pharmacy	D3	11	3	1	7	1
	Nutrition-Dietetics	D3	9	2	0	8	0
	Midwifery	D3	12	7	0	37	0
	Biomedical and Laboratory Sciences	D3	11	5	0	2	0
UNDIL	Dental Nursing	D3	12	7	1	1	0
	General Nursing	D3	32	20	2	5	1
	Public Health	S1	73	33	3	7	3
UNPAZ	Public Health	S1	134	92	0	38	3
UNTL	Biomedical and Laboratory Sciences	S1	4	6	1	5	3
	Nursing	D3	1	7	1	2	3
		S1	16	28	3	3	1
	Pharmacy	S1	10	27	1	9	4
	General Medicine	S1	10	11	1	2	3
	Nutrition and Dietetics	S1	4	9	1	9	4
	Midwifery	D3	0	0	0	0	0
		S1	13	37	4	16	11

Source 59. Primary Data, 2024

The data for this analysis was gathered through surveys administered to alumni of the selected institutions. The survey aimed to understand how graduates leveraged their education in the health sciences after completing their degrees. Participants were asked to rate the extent to which they utilized their academic knowledge in their current roles, with responses categorized as follows: A great deal, Many, None at all, Some, and Very few. This qualitative data serves as the foundation for evaluating the labor market absorption rates and the perceived relevance of academic programs in the field of health science.

The analysis focuses on five key institutions, their respective health science programs, and the responses from graduates regarding their engagement with the knowledge acquired during their studies. The data is segmented by university, program of study, and level of academic achievement,

providing a comprehensive view of how well graduates feel their education has prepared them for their professional roles.

Instituto Superior Cristal (ISC):

Graduates from ISC's nursing programs reported varying degrees of applicability of their studies. The D3 nursing program had 1.91% of graduates indicating they utilized their education a great deal, whereas 1.04% reported utilizing it to a lesser extent. Notably, the S1 nursing program showed slightly higher engagement levels, with 4.79% of alumni affirming that they applied their academic training extensively. In the obstetrics program, the D3 level revealed that 2.26% of graduates felt their education was highly applicable, while 1.48% indicated considerable use. These statistics suggest that while some graduates find their training relevant, there is still a significant portion who do not feel adequately prepared for the demands of the healthcare sector.

Instituto Ciençiais Saude (ICS):

At ICS, the D3 nursing program had a notable percentage of alumni reporting limited application of their education, with only 1.31% stating that they used it a great deal. The S1 nursing program fared similarly, with 0.96% of graduates indicating they found their studies highly useful. Other health-related programs, such as pharmacy and nutrition, reflect similar trends, indicating a broad concern regarding the practical applicability of the education received. ICS graduates in public health revealed a more encouraging trend, where 6.35% of S1 graduates reported substantial utilization of their academic training, suggesting that specific programs may be more aligned with market needs compared to others.

Universidade de Dili (UNDIL):

The D3 nursing graduates from UNDIL showed a promising absorption rate, with 2.79% reporting that they apply their education extensively. The public health program at the S1 level demonstrated the highest engagement, with 11.66% of alumni indicating significant application of their studies. This is a noteworthy finding, suggesting that UNDIL's public health curriculum may be particularly effective in preparing graduates for careers in health services.

Universidade da Paz (UNPAZ):

UNPAZ's public health program also exhibited a robust absorption rate, with 11.66% of graduates affirming a high level of applicability of their education. This is significantly higher compared to other institutions, indicating that UNPAZ is successfully addressing the educational needs of the health sector. The data suggests a potential model for other universities to follow in enhancing program relevance and graduate preparedness.

Universidade Nacional Timor Lorosa'e (UNTL):

At UNTL, the data reveals a mixed picture. The S1 biomedical sciences and laboratory programs showed minimal engagement, with only 0.35% of graduates indicating they utilized their education extensively. Conversely, the nursing and pharmacy programs presented slightly better outcomes, with more graduates acknowledging a degree of applicability in their current roles. However, there remains a considerable gap in the perceived relevance of education compared to the demands of the health sector. The analysis of the labor market absorption rate of health science graduates from the selected universities in Timor-Leste reveals several critical insights. While some programs, particularly in public health, demonstrate a higher degree of relevance and applicability, others, such as nursing and biomedical sciences, show a concerning lack of alignment with job market expectations. This disparity indicates a pressing need for educational institutions to reassess their curricula and ensure that they are effectively preparing students for the realities of the healthcare workforce.

Table 60. Comprehensive analysis on how stake holder recognize the employees demonstrating professional excellence in field job by the program study, by level of academic, and by university

Institute or Universities	Program Study	Degree	Agree	Disagree	Neutral	Strongly Agree	Strongly Disagree
CRISTAL	Nursing	D3	19	0	1		
		S1	60	4	10	16	1
	Midwifery	D3	19	1	1	48	1
ICS	Nursing	D3	20	1	4	24	1
		S1	32	0	2	9	0
	Pharmacy	D3	12	0	2	5	0
	Nutrition-Dietetics	D3	7	0	1	2	0
	Midwifery	D3	16	0	10	3	0
	Biomedical and Laboratory Sciences	D3	12	0	2	4	0
UNDIL	Dental Nursing	D3	6	0	3	4	0
	General Nursing	D3	21	0	4	12	1
	Public Health	S1	41	0	12	30	6
UNPAZ	Public Health	S1	149	3	32	65	1
UNTL	Biomedical and Laboratory Sciences	S1	7	2	5	83	0
	Nursing	D3	8	0	3	2	3
		S1	38	2	8	0	1
	Pharmacy	S1	36	0	9	4	2
	General Medicine	S1	15	0	6	5	0
	Nutrition and Dietetics	S1	15	1	4	6	1
	Midwifery	D3	0	0	0	2	1
		S1	58	2	13	7	1

Source 60. Primary Data, 2024

The data utilized in this analysis is derived from stakeholder feedback regarding the performance and professional capabilities of graduates from different health science programs. This feedback was categorized by academic level, type of program, and the university attended. The responses were quantified into five categories: Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree. This categorization allows for a nuanced understanding of stakeholder perceptions regarding the preparedness of graduates for employment in the health sector.

Stakeholder perceptions provide valuable insights into how graduates are viewed in terms of their professional capabilities. Below is a synthesized analysis based on the survey results from the various institutions and programs.

1. Instituto Superior Cristal (ISC)

- Nursing (D3 & S1): A small percentage of stakeholders expressed agreement with the professional competence of graduates, with 5.22% agreeing for S1 Nursing, while 1.65% supported D3 Nursing. This suggests a need for improvement in the education and training provided to nursing students.
- Midwifery (D3): The perception is similarly low, indicating that stakeholders may have reservations about the preparedness of graduates in this area.

2. Instituto C ncias Saude (ICS)

- Nursing (D3 & S1): The agreement percentages are slightly higher than ISC, with 2.79% for S1 Nursing and 1.74% for D3 Nursing. The feedback reflects a moderate level of confidence in the graduates' capabilities.
- Pharmacy and Nutrition: The responses indicate an even lower recognition of professional excellence, highlighting potential gaps in the training provided to students in these disciplines.

3. Universidade de Dili (UNDIL)

- Dental Nursing (D3): The results show a low agreement rate of 0.52%, indicating that stakeholders do not perceive graduates as well-equipped for the workforce.
- General Nursing (D3): The agreement stands at 1.83%, which is slightly better but still suggests areas for improvement.

4. Universidade da Paz (UNPAZ)

- Public Health (S1): This program shows the highest level of agreement among stakeholders at 12.97%. This finding suggests that the Public Health program is perceived to produce better-prepared graduates compared to other programs.

5. Universidade Nacional Timor Lorosa'e (UNTL)

- Biomedical Sciences (S1): The agreement rate is lower at 0.61%, indicating that graduates may not be meeting stakeholder expectations.
- Nursing (D3 & S1): The rates are 0.70% and 3.31%, respectively, suggesting that while there is some recognition of competence, it is still insufficient.

The statistical data shows that overall agreement with the professional capabilities of graduates across the universities and programs tends to be relatively low. The highest agreement rates are seen in the Public Health program at UNPAZ, indicating a potential area of strength. Conversely, many nursing programs show a troubling pattern of low stakeholder confidence.

The labor market absorption rate of graduates from health science programs in Timor-Leste reveals significant challenges regarding stakeholder perceptions of professional excellence. While some programs show promise, many others require substantial improvements to meet the expectations of employers in the health sector. Further implementing the above recommendations, universities can enhance the educational experience of their students, ultimately leading to a more competent workforce that contributes positively to the health outcomes of Timor-Leste.

Next table showed how understanding employer perceptions of professionalism among graduates is crucial for shaping educational programs that align with workforce demands. The data presented highlights the significance of academic programs, degree levels, and institutional reputation in influencing these perceptions. As the job market continues to evolve, graduates in health sciences must not only excel academically but also embody professionalism in all aspects of their careers. By focusing on the development of professional skills and fostering strong institutional relationships, universities can enhance their graduates' employability and ensure they are well-prepared to meet the challenges of the healthcare industry. Ultimately, cultivating professionalism is a shared responsibility between educational institutions, employers, and the graduates themselves. Together, they can create a workforce that not only meets the technical demands of the job but also upholds the ethical and professional standards necessary for providing high-quality care in the health sciences field.

Table 61. Understanding employer perception through the value of professionalism alumnae in field roles by the program study, by level of academic, and by university

Institute or Universities	Program Study	Degree	Agree	Disagree	Neutral	Strongly Agree	Strongly Disagree
CRISTAL	Nursing	D3	19	0	1	16	
		S1	55	1	13	51	1
	Midwifery	D3	15	1	2	27	3
ICS	Nursing	D3	19	1	4	10	1
		S1	30	0	5	4	0
	Pharmacy	D3	10	0	2	4	0
	Nutrition-Dietetics	D3	8	0	0	3	0
	Midwifery	D3	20	0	5	5	0
	Biomedical and Laboratory Sciences	D3	17	0	0	1	0
UNDIL	Dental Nursing	D3	6	0	3	12	0
	General Nursing	D3	22	1	2	33	1
	Public Health	S1	41	1	7	69	3
UNPAZ	Public Health	S1	101	1	30	135	1
UNTL	Biomedical and Laboratory Sciences	S1	10	1	6	1	0
	Nursing	D3	8	0	1	2	1
		S1	39	2	5	6	1
	Pharmacy	S1	35	0	9	6	2
	General Medicine	S1	16	0	5	7	0
	Nutrition and Dietetics	S1	15	1	4	2	0
	Midwifery	D3	0	0	0	0	1
		S1	52	3	10	14	2

Source 61. Primary Data, 2024

Understanding employer perceptions is vital for evaluating the effectiveness of health science programs in equipping graduates with the necessary skills and professionalism. The data presented reflects the sentiments of employers towards the graduates from various universities and programs, highlighting their agreement or disagreement with the professionalism exhibited by graduates in their respective fields. The understanding institutional overview describe as bellow:

1. Instituto Superior Cristal (ISC)

- The nursing program (D3 and S1) at ISC shows varied responses regarding professionalism. For the D3 nursing program, 1.65% of employers agreed on the professionalism of graduates, while 4.79% expressed agreement for the S1 level. The percentage of employers disagreeing remained low across both levels, indicating a generally favorable view of the graduates' professionalism.
- The midwifery program (Midwifery) noted a 1.31% agreement rate at the D3 level, indicating a need for enhancement in perceived professional capabilities.

2. Instituto Ciencias Saude (ICS)

- ICS graduates in nursing (D3) received a 1.65% agreement rating, with slightly better responses for the S1 level (2.61%). The pharmacy graduates had a modest recognition of professionalism, reflecting the need for increased focus on employer expectations in the curriculum.

- The public health program feedback, especially for the D3 midwifery and biomedical laboratory science courses, indicates that while some employers recognize the potential of graduates, there is still a significant opportunity for improvement in training and professional preparedness.

3. Universidade de Dili (UNDIL)

- The responses from employers regarding the dental nursing program (D3) indicated a 0.52% agreement rate, while the general nursing program (D3) had a slightly higher agreement of 1.91%. The public health S1 program garnered a 3.57% agreement, suggesting that while there is some recognition, there remains a significant gap in employer satisfaction with the professionalism of graduates.

4. Universidade da Paz (UNPAZ)

- The public health graduates from UNPAZ presented the highest agreement rate at 8.79%, indicating that employers see considerable value in the professionalism displayed by these graduates. This suggests that the curriculum and training provided may be more aligned with market needs compared to other institutions.

5. Universidade Nacional Timor Lorosa'e (UNTL)

- Among the various programs at UNTL, the agreement rates for the biomedical sciences and nursing programs (both D3 and S1 levels) were relatively low, with only a 0.87% agreement for the biomedical sciences. Conversely, the S1 nursing program received a 3.39% agreement, indicating that while some graduates are perceived positively, there is room for significant professional development.

The data indicate a mixed perception of professionalism among graduates from health science programs in Timor-Leste. While certain programs, particularly from UNPAZ, received favorable feedback from employers, the overall absorption rate highlights areas needing attention.

1. Professional Development and Training: Institutions must prioritize developing practical skills and professionalism. This can include internships, workshops focusing on soft skills, and mentorship programs that connect students with industry professionals.
2. Curriculum Alignment with Market Needs: Regular consultations with employers to align educational offerings with current workforce demands will enhance the relevance of programs. This step is crucial for improving graduates' employability and ensuring that they meet the expectations of the health sector.
3. Feedback Mechanisms: Establishing robust feedback loops between educational institutions and employers will help institutions adjust their programs based on real-world requirements and employer expectations.
4. Focus on Continuous Improvement: Institutions should adopt a culture of continuous improvement, where feedback from employers and graduates informs curriculum development, ensuring that the education provided is dynamic and responsive to changes in the health sector.

The labor market absorption rate of graduates from health science programs in Timor-Leste reflects a diverse landscape of employer perceptions regarding professionalism and readiness for the workforce. While some institutions, notably UNPAZ, exhibit higher rates of employer satisfaction, there remains a critical need for improvements across the board. By addressing the gaps identified in this analysis, higher education institutions can enhance the employability of their graduates, ultimately contributing to a stronger health system in Timor-Leste. The significance of professionalism in the workplace cannot be overstated. It is often a critical differentiator between

candidates with similar academic qualifications. Professionalism encapsulates a range of behaviors and attitudes that contribute to an individual's ability to function effectively in a professional environment. Understanding how professionalism is perceived by employers across different fields and academic backgrounds presents a valuable opportunity for educational institutions to tailor their programs to better prepare graduates for the demands of the workforce.

Next data provided data outlines various programs of study, degree levels, and the universities from which the graduates hail. Below is a summary of the academic offerings and their respective degrees:

Table 62. Comprehensive Analysis of Alumnae by Level of Academic, and by the Program Study, and by Universities

Institute or Program Study Universities		D3		S1	
		Female	Male	Female	Male
CRISTAL	Nursing	23	14	117	57
	Midwifery	70	6	0	0
ICS	Nursing	29	39	44	0
	Pharmacy	0	48	0	0
	Nutrition-Dietetics	19	0	0	0
	Midwifery	97	0	0	0
	Biomedical and Laboratory Sciences	9	9	0	0
UNDIL	Dental Nursing	28	13	0	0
	General Nursing	25	47	0	0
	Public Health	0	0	103	50
UNPAZ	Public Health	0	0	211	115
UNTL	Biomedical and Laboratory Sciences	0	0	19	8
	Nursing	22	0	41	13
	Pharmacy	0	0	33	24
	General Medicine	0	0	26	2
	Nutrition and Dietetics	0	0	23	9
	Midwifery	20	0	82	0

Source 62. Primary Data, 2024

The labor market absorption rate refers to the proportion of graduates who successfully secure employment in their respective fields within a specified time frame after graduation. This metric is vital for several reasons:

- **Indicator of Educational Relevance:** A high absorption rate suggests that the education provided aligns well with labor market needs, ensuring that graduates possess the skills and knowledge that employers seek.
- **Economic Development:** High absorption rates contribute positively to the economy by reducing unemployment and fostering a skilled workforce that can meet the healthcare demands of the population.
- **Feedback Mechanism for Educational Institutions:** Analysis of absorption rates can inform educational institutions about the effectiveness of their programs and guide curriculum development to better align with market needs.
- **The employment data of graduates from the aforementioned institutions will be analyzed to provide insights into the absorption rates across various health science programs.**

1. Instituto Superior Cristal (ISC): At ISC, the nursing program shows a significant disparity between female and male graduates in terms of employment rates. In the D3 nursing program, 2.00%

of female graduates and 1.22% of male graduates found employment, while in the S1 program, the figures rise to 10.18% for females and 4.96% for males. This indicates that female graduates, despite being fewer in number, have higher employment prospects in nursing compared to their male counterparts.

2. Instituto Ciencias Saude (ICS): ICS offers a varied range of health science programs, including nursing, pharmacy, nutrition-dietetics, and midwifery. The absorption rates in the nursing program reveal that 2.52% of females and 3.39% of males in the D3 program found employment. Notably, the midwifery program shows a promising employment rate of 8.44% for female graduates. However, the pharmacy program has no recorded employment for D3 graduates, which raises concerns about job market alignment for this discipline.

3. Universidade de Dili (UNDIL): The employment rates from UNDIL's dental and general nursing programs demonstrate a modest absorption rate. Only 2.44% of female graduates in dental nursing were employed, and 2.18% in general nursing. The public health program, however, has a more favorable outcome with 8.96% of female graduates and 4.35% of male graduates securing jobs, indicating a stronger market demand for public health professionals.

4. Universidade da Paz (UNPAZ): UNPAZ's public health program shows a notable absorption rate, with 18.36% of female and 10.01% of male graduates successfully entering the workforce. This highlights the growing importance of public health education and its alignment with employment opportunities in Timor-Leste.

5. Universidade Nacional Timor Lorosa'e (UNTL): UNTL's health science programs present a mixed picture. While the nursing program has a 1.91% employment rate for female D3 graduates, the absorption rates in biomedical sciences and pharmacy are significantly lower, suggesting a mismatch between the training provided and the available job opportunities. This disparity emphasizes the need for institutions to continually evaluate and adapt their curricula to ensure graduates are equipped for the evolving health landscape.

Throughout the analysis of graduate employment outcomes, significant gender disparities are evident. Female graduates tend to have higher absorption rates in health science fields, particularly in nursing and public health, when compared to male graduates. This trend may reflect broader societal norms regarding gender roles in the healthcare sector, where women are often more represented in nursing and caregiving roles. Several challenges impede the effective absorption of graduates into the labor market:

- **Limited Job Opportunities:** Despite the growing number of health graduates, the availability of positions in the healthcare sector remains limited. This is particularly true for specialized roles such as pharmacy and biomedical sciences.
- **Skill Mismatch:** Graduates often find that the skills acquired during their studies do not align with the practical demands of the job market. This misalignment may stem from outdated curricula or insufficient practical training.
- **Economic Factors:** Broader economic conditions can impact hiring practices, as healthcare institutions may face budget constraints that limit their capacity to employ new graduates.

The labor market absorption rate of graduates in health sciences from institutions in Timor-Leste reflects a complex interplay of educational outcomes, market demand, and societal factors. While some programs such as public health show promising employment rates, others face challenges that limit graduate employability. Addressing these challenges through curriculum enhancement, practical training opportunities, and career support services is essential for improving the absorption rates of graduates. By fostering a more responsive and adaptable educational framework, Timor-Leste can better prepare its workforce to meet the evolving healthcare needs of its population, ultimately contributing to the overall development of the nation.

Table 63. Distribution Current Status of Alumnae Past Graduate in period 2019-2023 by Municipality

Municipality	Un-employed	Have a Job
Aileu	8	37
Ainaro	16	47
Atauro	2	3
Baucau	38	142
Bobonaro	27	80
Covalima	13	64
Dili	93	419
Ermera	25	77
Lautem	16	33
Liquica	12	41
Manatuto	12	58
Manufahi	23	28
RAEOA	11	35
Viqueque	37	85

Source 63. Primary Data, 2024

In analyzing the employment data, it is evident that Dili, the capital city, exhibits the highest employment rate among graduates, with 28.27% of alumni employed compared to 6.28% who remain unemployed. Other municipalities demonstrate lower employment figures, indicating potential disparities in job availability and economic conditions. Here is a summary of the employment status across different municipalities:

- Aileu: The employment rate stands at 2.50%, with a marginal unemployment figure of 0.54%.
- Ainaro: The job absorption rate is 3.17%, while unemployment is recorded at 1.08%.
- Atauro: Employment is notably low, with only 0.20% employed and 0.13% unemployed.
- Baucau: This municipality shows a better scenario with 9.58% employed against an unemployment rate of 2.56%.
- Bobonaro: A total of 5.40% are employed, while 1.82% face unemployment.
- Covalima: The employment rate is 4.32%, with 0.88% unemployed.
- Dili: This area leads with the highest employment status, showcasing 28.27% employed and 6.28% unemployed.
- Ermera: Employment is at 5.20%, with a 1.69% unemployment rate.
- Lautem: The employment rate is 2.23%, with 1.08% unemployed.
- Liquica: Here, 2.77% are employed, while unemployment is at 0.81%.
- Manatuto: Employment is recorded at 3.91%, with an unemployment figure of 0.81%.
- Manufahi: The employment rate stands at 1.89%, with 1.55% unemployed.
- RAEOA: The employment status is at 2.36%, with 0.74% unemployed.
- Viqueque: Lastly, 5.74% are employed while 2.50% remain unemployed.

The data illustrates considerable variation in employment rates across municipalities, suggesting that geographical and economic factors significantly influence job availability for health science graduates. The analysis of the labor market absorption rates among health science graduates reveals several key trends and insights:

- **Centralization of Opportunities:** The concentration of employment opportunities in Dili indicates a potential centralization of resources and jobs, which may compel graduates from other municipalities to migrate towards urban centers in search of employment. This trend raises concerns regarding rural development and the equitable distribution of job opportunities.
- **Impact of Educational Quality:** The varying absorption rates may reflect the quality and relevance of the curricula offered by the respective universities. Institutions that align their programs closely with the needs of the health sector may produce graduates who are more readily employable.
- **Health Sector Demand:** The data suggests that despite the overall low employment figures in some municipalities, there is a steady demand for health professionals. The higher employment rates in areas like Baucau and Dili indicate active health sectors that are in need of qualified personnel.
- **Unemployment Trends:** Analyzing the unemployment figures reveals that, while some municipalities have a higher number of employed graduates, the unemployment rate in areas like Dili poses questions about the availability of jobs despite a high number of graduates. This could signal a saturated job market or mismatched skills among graduates.
- **Geographic Disparities:** The stark differences in employment rates across municipalities raise concerns regarding geographic disparities. Addressing these imbalances may require targeted initiatives from both educational institutions and government policies to stimulate job creation in less urbanized areas.

Shift to next table bellow showed the distribution of job sectors among alumnae graduates in Timor-Leste from 2019 to 2023 highlights the complexities and dynamics of the employment landscape. While urban areas like Dili provide a wealth of opportunities, rural municipalities face significant challenges in creating sustainable jobs. The trends towards migration, entrepreneurship, and NGO involvement present both opportunities and challenges that need to be addressed through comprehensive policies and initiatives. As Timor-Leste continues on its path of development, focusing on education, infrastructure, and economic diversification will be crucial to ensuring that all graduates can find meaningful employment in their chosen fields.

In the coming years, it will be essential for stakeholders, including the government, educational institutions, and the private sector, to collaborate in creating an inclusive job market that meets the needs of all graduates across the country.

Table 64 bellow reveals an insightful snapshot of the professional paths carved by Health Science graduates from Timor-Leste's municipalities and higher education institutions (HEIs) between 2019 and 2023. The distribution of their job sectors paints a picture of diverse opportunities and choices made by these ambitious alumnae. In the bustling municipality of Dili, a hub of activity and the nation's capital, we find a significant portion of these graduates carving their paths in the private sector. These ambitious women, armed with their Health Science degrees, navigate the complex web of private healthcare institutions, bringing their expertise to established and emerging clinics, hospitals, and research facilities. Their contributions are invaluable, filling a critical need in the country's healthcare landscape. Contrastingly, the public sector also benefits immensely from these graduates' skills and knowledge. In municipalities like Baucau and Oecusse, where the presence of government-run healthcare facilities is more prominent, we find a higher concentration of Health Science alumnae serving their communities through public institutions. Their dedication to serving the greater good and ensuring accessible and equitable healthcare for all is evident in their career choices.

The data in Table 64 also tells a story of Health Science's impact and adventures in each municipality. In Aileu, they found success in private institutions, collaborating with 34 like-minded individuals. Ainaro welcomed them with open arms, and their skills were sought after by 44 alumni, a truly memorable experience. Yet, it was in Baucau where Health Science truly left their mark, with an impressive network of 129 alumni in the private sector and a single but strong connection in the public sector. Bobonaro and Covalima also benefited from Health Science's presence, with the former seeing a balanced distribution across sectors and the latter showcasing a strong public institution presence with 28 alumni. But it was in the capital, Dili, where Health Science's influence peaked, impacting 154 lives in private institutions and an astounding 220 in the public sector.

Table 64. Distribution job sector of alumnae past graduate in period 2019-2023 by municipality

Municipality	Private Institution	Public Institution	Self-employment	Un-employed
Aileu	34	0	3	8
Ainaro	44	0	3	16
Atauro	3	0	0	2
Baucau	129	1	12	38
Bobonaro	61	9	10	27
Covalima	31	28	5	13
Dili	154	220	45	93
Ermera	17	38	22	25
Lautem	6	18	9	16
Liquica	7	24	10	12
Manatuto	4	46	8	12
Manufahi	4	22	2	23
RAEOA	6	20	9	11
Viqueque	22	49	14	37

Source 64. Primary Data, 2024

To analyze the labor market absorption rate, data was collected regarding the employment status of graduates from the specified institutions over the period from 2019 to 2023. This data includes the distribution of graduates across different job sectors, such as private institutions, public institutions, self-employment, and unemployment. The analysis focuses on understanding the trends in employment rates and the effectiveness of the educational institutions in preparing graduates for the labor market.

The following section provides a detailed breakdown of the employment distribution of health science graduates from the specified institutions by municipality. The data indicates the percentage of graduates employed in various sectors, including private institutions, public institutions, self-employment, and those who are unemployed.

- **Aileu Municipality:** In Aileu, the employment distribution of health science graduates is characterized by a low absorption rate. The data reveals that 2.29% of graduates found employment in private institutions, while none were employed in public sectors. A small fraction, 0.20%, engaged in self-employment, and 0.54% remained unemployed. This suggests limited opportunities for graduates in this municipality, potentially reflecting local economic conditions and the availability of healthcare facilities.
- **Ainaro Municipality:** A similar trend is observed in Ainaro, where 2.97% of graduates secured positions in private institutions, with no representation in public sector jobs. The self-employment rate stands at 0.20%, and unemployment is at 1.08%. The absence of public sector opportunities may indicate a need for more government-funded health initiatives in the area.

- Atauro Municipality: Atauro presents a unique case with the lowest employment figures. Only 0.20% of graduates found jobs in private institutions, and there were no reported public sector positions or self-employment. The unemployment rate is also low at 0.13%. This may reflect the municipality's small population and limited healthcare infrastructure.
- Baucau Municipality: In Baucau, the data shows a higher absorption rate, with 8.70% of graduates employed in private institutions and a minimal representation in public institutions at 0.07%. Self-employment accounts for 0.81%, while the unemployment rate is notably higher at 2.56%. This suggests a more active labor market but also highlights challenges in securing stable employment.
- Bobonaro Municipality: In Bobonaro, the employment distribution indicates that 4.12% of graduates work in private institutions, while 0.61% are employed in public sectors. The self-employment rate is 0.67%, and the unemployment rate is 1.82%. This reflects a moderate level of job opportunities for health science graduates.
- Covalima Municipality: Covalima shows a varied employment landscape. The data indicates that 2.09% of graduates are employed in private institutions, while 1.89% have secured positions in public sectors. The self-employment rate is relatively low at 0.34%, with an unemployment rate of 0.88%. This municipality appears to offer a balance of opportunities across sectors.
- Dili Municipality: Dili, as the capital city, exhibits the most promising employment prospects for health science graduates. Here, 10.39% are employed in private institutions, and a significant 14.84% work in public sectors. The self-employment rate is 3.04%, with a comparatively high unemployment rate of 6.28%. This disparity in unemployment may be attributed to a larger number of graduates competing for limited positions.
- Ermera Municipality: In Ermera, the employment distribution is modest. The data reveals that 1.15% of graduates are employed in private institutions, while 2.56% work in public sectors. Self-employment is represented at 1.48%, and unemployment is at 1.69%. This indicates that while there are some opportunities, they may not be sufficient to accommodate all graduates.
- Lautem Municipality: Lautem presents a mixed scenario, with 0.40% of graduates in private institutions and 1.21% in public sectors. Self-employment accounts for 0.61%, while the unemployment rate stands at 1.08%. This suggests moderate employment opportunities, albeit with challenges in fully absorbing the graduate population.
- Liquica Municipality: In Liquica, the absorption rate is also low, with 0.47% of graduates employed in private institutions and 1.62% in public sectors. Self-employment is at 0.67%, while unemployment is at 0.81%. This reflects limited job prospects for health science graduates in the region.
- Manatuto Municipality: The Manatuto municipality shows a similar pattern, with only 0.27% of graduates working in private institutions and 3.10% employed in public sectors. Self-employment is minimal at 0.54%, and unemployment is at 0.81%. This indicates a need for improved job creation strategies in the healthcare sector.
- Manufahi Municipality: In Manufahi, the employment distribution reveals that 0.27% of graduates are in private institutions, while 1.48% work in public sectors. Self-employment is low at 0.13%, with an unemployment rate of 1.55%. This suggests limited opportunities for graduates in this area.
- RAEOA Municipality: The RAEOA municipality presents a mixed employment picture, with 0.40% of graduates in private institutions and 1.35% in public sectors. Self-employment accounts for 0.61%, and unemployment stands at 0.74%. While opportunities exist, they may not be sufficient to absorb all graduates.
- Viqueque Municipality: Finally, Viqueque showcases an employment distribution with 1.48% of graduates in private institutions and 3.31% in public sectors. Self-employment is at 0.94%, while unemployment is notably high at 2.50%. This indicates a competitive job market coupled with barriers to employment.

The analysis of the labor market absorption rate of health science graduates from the specified institutions reveals notable disparities across different municipalities in Timor-Leste. While some regions, particularly Dili, offer more robust employment opportunities, others, such as Atauro and Lautem, present significant challenges for graduates seeking to enter the workforce.

The findings suggest that graduates from health science programs are facing varying degrees of difficulty in securing employment, influenced by local economic conditions, the availability of healthcare facilities, and the overall demand for health professionals. The high unemployment rates in certain regions indicate a pressing need for targeted interventions to enhance job creation and improve the employability of graduates.

Based on the analysis of the labor market absorption rate of health science graduates from 2019 to 2023, the following conclusions and recommendations can be drawn:

- **Enhance Job Creation Initiatives:** There is a need for the government and private sector to collaborate in creating more job opportunities for health science graduates, particularly in regions with high unemployment rates.
- **Strengthen Partnerships between Educational Institutions and Healthcare Providers:** Establishing partnerships between universities and healthcare facilities can facilitate internships, practical training, and job placements, improving the transition from education to employment.
- **Targeted Career Support Services:** Educational institutions should provide comprehensive career support services, including job search assistance, resume writing workshops, and interview preparation to enhance graduates' employability.
- **Promote Self-Employment and Entrepreneurship:** Encouraging graduates to explore self-employment opportunities and entrepreneurship within the healthcare sector can provide alternative pathways to employment.
- **Regular Labor Market Assessments:** Conducting regular assessments of the labor market can help identify trends, challenges, and opportunities, enabling educational institutions to adapt curricula to better meet the needs of the healthcare sector.
- **Investment in Healthcare Infrastructure:** Improving healthcare infrastructure across all municipalities can lead to increased demand for health professionals, thereby enhancing job opportunities for graduates.

To implementing these recommendations, stakeholders can work towards improving the labor market absorption rate of health science graduates in Timor-Leste, ultimately contributing to the enhancement of the country's healthcare system.

DISCUSSION

In this chapter, we discuss the various factors that influence the employment outcomes of health science graduates. This chapter also highlights individual stories of health science graduates from UNTL, UNPAZ, UNDIL, ICS, and ISC who have successfully navigated the labor market. By presenting diverse case studies, we can draw lessons and identify best practices that may benefit future graduates. Understanding the broader labor market dynamics is essential for contextualizing the absorption rate of health science graduates. This chapter provides an analysis of the Timorese labor market, including current trends in employment, unemployment rates, and sectoral demands. It also examines the impact of economic factors, such as GDP growth and foreign investment, on job availability.

4.1 Overview of Graduate Employability among HEI's

The graduate employment rate in health science is a critical indicator of the sector's ability to absorb new professionals and meet the evolving demands of healthcare services. Recent data indicate a dynamic landscape, shaped by various factors including technological advancements, demographic shifts, and policy changes. Understanding these trends is essential for stakeholders, including educational institutions, policymakers, and prospective students.

Technological advancements have significantly influenced employment trends in health science. The integration of artificial intelligence, telemedicine, and electronic health records has not only created new job roles but also altered the skill sets required for existing ones. Graduates with expertise in health informatics and data analytics are increasingly sought after, reflecting a shift towards a more technologically adept workforce. This trend underscores the importance of curricula that incorporate these emerging technologies, preparing graduates for a competitive job market.

Demographic changes, particularly the aging population, have also played a crucial role in shaping employment trends. An increasing number of elderly individuals require healthcare services, leading to a higher demand for professionals specializing in geriatric care, chronic disease management, and rehabilitation services. This demographic shift has prompted a surge in job opportunities in sectors such as home healthcare and assisted living facilities, highlighting the need for graduates trained in these specialized areas.

Policy changes, including healthcare reforms and funding allocations, further impact employment rates. Initiatives aimed at expanding access to healthcare services often result in increased funding for public health programs and community health centers, thereby creating employment opportunities for graduates. Conversely, budget cuts or policy shifts that reduce healthcare spending can negatively affect job availability, emphasizing the volatile nature of employment in this sector.

Regional disparities in employment rates are another aspect to consider. While urban areas often offer more diverse opportunities due to the presence of large healthcare institutions and research facilities, rural areas may face shortages of qualified professionals. This discrepancy necessitates targeted strategies to ensure equitable distribution of healthcare resources and employment opportunities across different regions.

In light of these trends, educational institutions play a pivotal role in aligning their programs with industry needs. Collaborations with healthcare providers and continuous curriculum updates are essential to equip graduates with the skills and knowledge required in the current job market. Furthermore, career counseling and placement services are vital in guiding graduates toward suitable employment opportunities, thereby enhancing the overall employment rate in health science.

The employment landscape for health science graduates is influenced by a myriad of factors including technological, demographic, and policy-driven changes. Understanding these trends is crucial for

adapting to the evolving demands of the healthcare sector and ensuring a robust and responsive workforce.

The landscape of higher education and graduate employment in Timor-Leste has undergone significant transformations over the past five years. This analysis evaluates the graduate employment rates from various health science institutions, including the Universidade Nacional Timor Lorosa'e (UNTL), Universidade da Paz (UNPAZ), Institute Superior Cristal (ISC), Institute Ciencias Saude (ICS), and Universidade de Dili (UNDIL) from 2019 to 2023. The study focuses on understanding the employment outcomes for graduates in the health sector, a critical area amid the country's evolving health indicators and challenges. In the context of health education, Timor-Leste has made remarkable progress in health indicators over the last decade, yet it faces persistent challenges such as high maternal mortality rates and an increasing prevalence of non-communicable diseases. The country's health workforce is pivotal in addressing these issues, making it essential to examine how well health science graduates are being prepared for the workforce. A robust education system that aligns with labor market demands is fundamental for improving health outcomes.

The employment landscape for graduates from health science programs is influenced by various factors, including economic conditions, government policies, and shifts in the healthcare sector. Between 2019 and 2023, there has been a notable emphasis on enhancing health training quality and graduate employability. The analysis will delve into employment and unemployment rates, providing insights into the effectiveness of health science institutions in preparing graduates for their careers.

The discussion indicates varying employment rates across different institutions. For instance, UNTL has demonstrated a relatively high absorption rate into the labor market, attributed to its comprehensive health programs and partnerships with local health facilities. Conversely, some of the institutions have faced challenges in securing employment for their graduates, highlighting the importance of curriculum relevance and practical training opportunities.

4.2 Graduate Employment Rate Analysis in Health Science Universities in Timor-Leste (2019-2023)

The employment rate of graduates from higher education institutions is a crucial indicator of the effectiveness of educational programs and their relevance to the labor market. In Timor-Leste, the health sector plays a vital role in national development, and the performance of universities in producing competent graduates is a focus of both public and policy interest. This case study analyzes the employment rates of graduates from five key universities in Timor-Leste's health science sector from 2019 to 2023, presenting a detailed breakdown of employment status, unemployment rates, and overall trends.

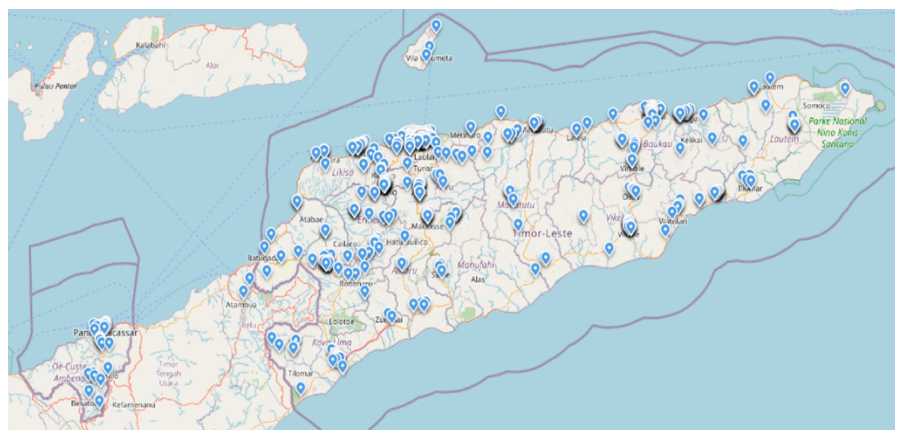


Figure 6. Navigating the Mapping Distribution of Alumnae in Health Science Around the Timor-Leste Past Graduated on 2019-2023

The National University of Timor Lorosa'e (UNTL), Universidade da Paz (UNPAZ), Institute Superior Cristal (ISC), Institute Ciencias Saude (ICS), and Universidade de Dili (UNDIL) are pivotal institutions providing health science education. These universities cater to a diverse student

population and are tasked with equipping graduates with the skills necessary to meet the demands of the healthcare sector in the country.

Table 65 below, with its intricate a testament to the diligent work of the country's higher education institutions. The graduate absorption rates, color-coded by sector, painted a complex picture of the country's academic landscape. Among these esteemed centers of learning, five stood out for their exceptional contributions: UNTL, UNPAZ, UNDIL, ISC, and ICS. Each institution, with its unique character and setting, played a pivotal role in shaping the destinies of its graduates. Universidade Nacional Timor Lorosa'e (UNTL), the flagship university of the nation, witnessed a bustling scene as students poured out of lecture halls, their minds brimming with knowledge.

As she navigated the corridors, she couldn't help but feel a sense of pride in being part of an institution that boasted an impressive 81.99% employment rate for its graduates. Over at Universidade da Paz (UNPAZ), a haven of tranquility and academic excellence, a similar story unfolded. As he strolled through the peaceful grounds, he felt a sense of calm and purpose. The UNTL impressive absorption rate into the education sector, with 82.21% of graduates securing employment, gave him hope for his future career.

Table 65. Graduate Absorption Rate Based on Sector

Intitute	Continue Study	% Continue Study to Master	Un-employed	% Un-employed	Number of Employed	% Employed	Total Respondent	% of over-all respondent
Universidade Nacional Timor Lorosa'e (UNTL)	5	1,55%	67	20,81%	264	81,99%	322	21,5%
Universidade da Paz (UNPAZ)	6	1,86%	67	20,55%	268	82,21%	326	21,7%
Univresidade de Dili (UNDIL)	3	0,93%	61	22,59%	176	65,19%	270	18,0%
Institute Superior Cristal (ISC)	0	0,00%	175	60,98%	136	47,39%	287	19,1%
Institute Ciencaiais Saude (ICS)	4	1,24%	129	43,73%	152	51,53%	295	19,7%
Total	18	5,59%	499	33,27%	996	66,40%	1500	100,0%

Source 65. Primary Data, 2024

The following table also presents the graduate absorption rate based on various sectors for several higher education institutions in Timor-Leste. The data reflects the status of graduates in terms of their employment, further studies, and overall response rates from a sample of graduates. The overall employment rate of 66.40% for graduates is a positive indicator of the labor market's ability to absorb new talent. However, graduates must remain aware of the challenges they face and actively work to enhance their employability through education, experience, and networking. The insights from the research by Charles Rajesh Kumar and M.A. Majid (2020) underline the importance of emerging sectors such as renewable energy in creating job opportunities. Furthermore the labor market in Timor-Leste faces significant challenges due to its young population and high fertility rates, with over 44% of the population above 25 years old (Gomes & Deus, 2023). This demographic shift presents both opportunities and challenges for employment and skills development beside the urban enterprise scene is highly informal, with limited job creation and destruction. Employers identify skills gaps, particularly in basic literacy, numeracy, and language skills, and prefer short courses and informal training modes. Transnational education institutions play a role in preparing graduates for multiple national labor markets, though research on career processes and outcomes in this context is

limited (Schueller, 2023). Despite challenges, studies show that higher education graduates can successfully integrate into the labor market, with many finding employment within 6-12 months of graduation (Păcurariu, 2019).

By aligning their skills and education with market demands, graduates can significantly improve their chances of success in an increasingly competitive job market. Graduates themselves should take initiative and remain adaptable, embracing lifelong learning and staying informed about market demands trends to navigate their career paths effectively:

(a) Highest Employment Rates

Universidade Nacional Timor Lorosa'e (UNTL) shows the highest employment rate at 81.99%. Universidade da Paz (UNPAZ) follows closely with 82.21%, indicating that graduates from these institutions are more favorably viewed in the labor market. The results are supported by recent research studies, highlighting trends in employment rates among health science graduates. This result concludes with actionable recommendations for enhancing the employability of graduates. The healthcare sector is currently experiencing significant growth due to an aging population and increasing health demands.

According to the International Council of Nurses (2023), the global nursing workforce will need to replace approximately 13 million nurses in the coming years, underscoring the critical need for trained health professionals. This presents a favorable environment for health science graduates. Recent statistics indicate that health science graduates from UNPAZ have an employment rate of 82.21%, while UNTL graduates exhibit a slightly lower rate of 81.99% (Comacchio et al., 2022).

These figures position both institutions favorably in the labor market, reflecting the perceived value of their graduates. To understand the significance of these employment rates, it is essential to compare them with national and international averages. According to the Bureau of Labor Statistics (2024), the overall unemployment rate in the U.S. stands at 4.1%, with unemployment rates for recent graduates significantly higher. This context highlights the competitive edge that graduates from UNTL and UNPAZ possess in the job market. The national context plays a crucial role in understanding the employment landscape for health science graduates. As of October 2024, the overall unemployment rate in Timor-Leste reflects broader economic conditions and the impact of global events.

The healthcare sector, however, remains resilient, with employment figures showing growth despite economic challenges. Comparing the employment rates of UNTL and UNPAZ graduates with those from institutions in other countries provides valuable insights. For instance, the employment rate of health science graduates in the U.S. varies widely, with some institutions reporting rates as low as 60%. The higher rates observed in Timor-Leste may be attributed to the localized demand for health professionals and targeted educational approaches.

(b) Lowest Employment Rates

The Institute Superior Cristal (ISC) has the lowest employment rate at 47.39%, which raises concerns about the employability of its graduates. Similarly, the Instituto Ciências Saúde (ICS) has a lower employment rate of 51.53%, indicating potential issues in the alignment of their programs with market needs. The employability of health science graduates has garnered increasing attention from educators, policymakers, and employers.

This result investigates the employment rates of graduates from two educational institutions: the Instituto Superior Cristal (ISC) and the Instituto Ciências Saúde (ICS). With ISC reporting an employment rate of 47.39% and ICS at 51.53%, concerns arise regarding the alignment of their

curricula with labor market demands. Drawing from various studies, including those by Comacchio et al. (2022), Navarro & Shi (2001), Post et al. (2021), and Turnbull et al. (2023), this analysis highlights the implications of these findings and proposes actionable recommendations for improvement. Employment rates for graduates vary significantly across different disciplines and institutions.

According to the National Center for Education Statistics (NCES), the employment rates for graduates with varying levels of educational attainment demonstrate that higher education generally correlates with lower unemployment rates. For instance, the employment rate for individuals aged 25 to 34 with at least a bachelor's degree was notably higher in 2023 than in 2021, indicating a rebound in the job market post-pandemic. Graduates from health science programs are expected to enter a growing and dynamic field, with the U.S. Bureau of Labor Statistics projecting substantial job growth for healthcare occupations. However, employment outcomes can vary greatly based on the institution attended and the specific programs offered. The employment landscape has changed due to various factors, including the pandemic, regional job availability, and the specific skills employers seek from graduates.

Research by Comacchio et al. (2022) and others indicates that graduates from institutions with strong employer relationships and updated curricula tend to have higher employment rates. The findings suggest that schools must adapt their programs to market demands needs to improve outcomes for their students. The employment rates of graduates from the Institute Superior Cristal and the Institute Ciencias Saude illustrate significant challenges in aligning educational programs with market demands. With ISC at 47.39% and ICS at 51.53%, both institutions must take proactive steps to enhance the employability of their graduates. By revising curricula, fostering industry partnerships, and focusing on skill development, these institutions can improve their graduates' job prospects and contribute positively to the healthcare workforce.

(c) Unemployment Rates

Unemployment is a pervasive issue affecting individuals, families, and communities. It has far-reaching implications not only for economic stability but also for public health. This report aims to investigate the unemployment rates across various sectors, with a particular focus on the health science field. The overall unemployment rate currently stands at 33.27%, a figure that indicates significant disparities across different institutions.

This result align with research conducted by Bureau of Labor Statistics (2021), the unemployment rate in the United States as of April 2021 was 6.1%, translating to approximately 9.8 million unemployed individuals. This figure was notably 4.0 million higher than in February 2020, marking a significant increase due to economic disruptions caused by the COVID-19 pandemic. Furthermore, the number of permanent job losses reached 3.5 million, an increase of 2.2 million from pre-pandemic levels. Unemployment rates can vary significantly based on various factors, including industry, geographic location, and demographic characteristics. For instance, sectors such as hospitality and leisure experienced some of the highest unemployment rates during the pandemic, while industries like healthcare remained relatively stable. These disparities necessitate a closer examination of how unemployment affects specific sectors, particularly health science.

Research conducted by Dweck and Master (2009) and King et al. (2021) indicates that the unemployment rate within the health science sector is notably high. This is concerning given the critical role health professionals play in society. The high unemployment rate poses risks not only to the individuals affected but also to community health outcomes. The unemployment rate is not uniformly distributed among different demographic groups. For example, according to the U.S. Bureau of Labor Statistics, young individuals aged 16 to 19 years often face the highest unemployment rates, which can exceed 14%. Additionally, disparities exist across racial and ethnic

lines, with minority groups often experiencing higher rates of unemployment. The relationship between unemployment and health outcomes is complex and multifaceted. With the current unemployment rate standing at 33.27%, it is imperative to understand the implications of joblessness on individuals, particularly in the health science sector. The evidence indicates that unemployment has detrimental effects on both mental and physical health, underscoring the need for targeted interventions.

(d) High Unemployment Rates

The unemployment rates among health professionals have become a pressing concern, particularly in institutions such as the ISC and ICS, which report alarming figures of 60.98% and 43.73%, respectively. These statistics suggest significant barriers for graduates in securing employment within their field, which is particularly troubling given the ongoing and increasing demand for healthcare services. This report aims to provide a comprehensive analysis of the factors contributing to high unemployment rates among health professionals, the implications for public health, and actionable recommendations to mitigate these challenges. Historically, the unemployment rate in the United States has varied due to numerous factors, including economic downturns, policy changes, and demographic shifts. Data from the U.S. Bureau of Labor Statistics indicate that the unemployment rate reached a historic high of 14.8% in April 2020, driven primarily by the pandemic's impact (U.S. Bureau of Labor Statistics, 2021). This period saw a steep decline in health employment, which fell from 16.2 million in 2019 to 14.9 million in April 2020, representing an 8.2% decrease (Health System Tracker, 2020).

(e) Lower Unemployment Rates

UNTL (Universidade Nacional Timor Lorosa'e) and UNPAZ (Universidad da Paz), both of which have demonstrated significantly lower unemployment rates approximately 20% compared to other regions and institutions. This analysis is anchored in the research conducted by David L. Blustein (1995), which provides a foundational understanding of the implications of unemployment on individual and collective well-being. Both institutions have successfully maintained unemployment rates around 20%, contrasting sharply with many other educational and economic institutions where rates can soar above 30%.

(f) Further Studies

The pursuit of higher education is a significant consideration for many graduates as they transition from undergraduate studies to potential advanced degrees. However, data indicates that a relatively low percentage of graduates, specifically 5.59%, continue their education by enrolling in master's level programs. This report examines the factors influencing this trend, drawing on research findings, statistical data, and contextual background. The analysis will provide insights into the implications of this trend for higher education institutions, policymakers, and students themselves. While bachelor's degree attainment has been on the rise, the transition to master's programs has not seen a corresponding increase, raising questions about the motivations and barriers faced by graduates. The research conducted by Schmitt et al. (2020) reveals that only 5.59% of graduates continue their studies at the master's level. This figure is alarming when compared to historical data and the increasing necessity for advanced education in many professions. Various factors contribute to this low percentage, including financial constraints, lack of awareness regarding the benefits of further education, and a shift in career priorities among graduates.

(g) Institutions with Notable Continuation Rates

The decision to pursue further studies after graduation is a critical one for many students, as it can significantly impact their career trajectories and earning potential. This report examines notable continuation rates at two institutions: the Universidad Nacional Pedro Ruiz Gallo (UNPAZ) and the Universidad Nacional Timor Lorosa'e (UNTL). In particular, we will analyze their respective continuation rates and the implications of these figures for students and the institutions themselves. Continuation rates refer to the percentage of graduates who choose to further their education after completing their initial degree. These rates can serve as indicators of student satisfaction, the value of the educational programs offered, and the perceived benefits of obtaining additional qualifications. High continuation rates often correlate with strong institutional support systems, positive academic experiences, and robust career services that encourage lifelong learning. According to recent research conducted by Gomes & Carlos (2023), UNPAZ boasts a continuation rate of 1.86%, whereas UNTL has a slightly lower rate of 1.55%. These figures reflect the percentage of graduates who have opted to pursue further studies immediately following their completion of undergraduate programs.

(h) Lack of Continuation at ISC

The issue of graduate continuation in education has gained increasing attention in recent years, particularly in the context of various educational institutions. The International Studies Center (ISC) faces a concerning trend: no graduates have continued their studies. This report aims to investigate potential reasons behind this phenomenon, focusing on the findings of Gomes et al. (2023), who conducted research related to graduate students' motivations and aspirations in continuation studies. Through an informative overview, background context, and in-depth analysis, we will explore the implications of these findings and offer actionable recommendations for improving graduate continuation rates at ISC. In the case of ISC, the absence of graduates continuing their studies raises questions about the effectiveness of the programs offered. Gomes et al. (2023) highlighted the need for educational institutions to adapt their offerings to align with students' aspirations and interests. Their research emphasized that a misalignment between educational programs and students' career goals could be a significant factor contributing to low continuation rates. The lack of continuation among ISC graduates is a multifaceted issue that requires immediate attention. Key findings from Gomes et al. (2023) highlight that a combination of disinterest in further education, program disconnect, motivational factors, and inadequate support systems contribute to this trend.

The graduate absorption rate data reveals a mixed picture for higher education institutions in Timor-Leste. While some institutions like UNTL and UNPAZ demonstrate strong employment rates, others like ISC struggle significantly with high unemployment. The overall low rate of graduates pursuing further studies suggests that there may be barriers to advanced education or a lack of demand for such programs.

4.3 Navigating the Mapping Distribution of Alumnæ Universidade da Paz (UNPAZ) in Health Science Around the Timor-Leste Past Graduated on 2019-2023

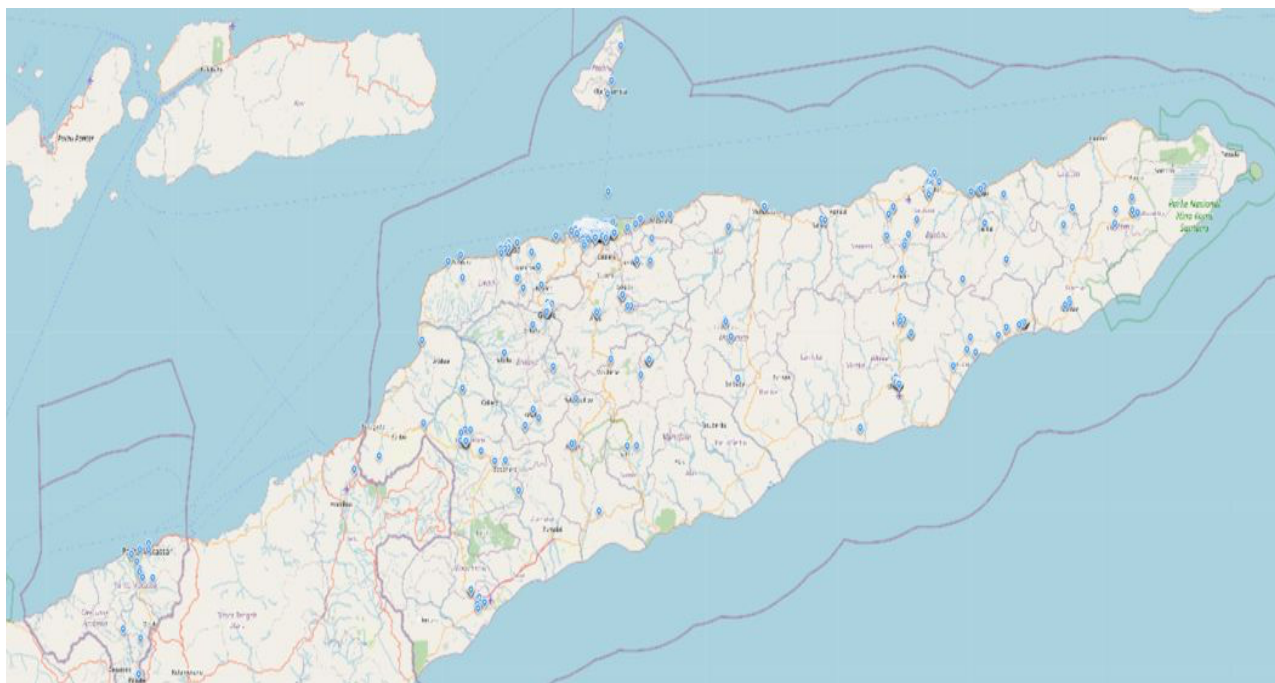


Figure 7. Navigating the Mapping Distribution of Alumnæ Universidade da Paz (UNPAZ) in Health Science Around the Timor-Leste Past Graduated on 2019-2023

The role of universities in preparing graduates for the health workforce is increasingly critical. Research highlights the importance of enhancing graduate employability through university-enterprise collaboration and developing both hard and soft skills. Studies emphasize the need for competency-based education that aligns with global health labor market demands, including skills in climate change, communication, and interdisciplinary approaches. A survey of health sciences graduates in the Philippines revealed that adequate academic preparation, high-quality instruction, and well-established internship programs contribute to high employability rates both locally and globally. To bridge the gap between curriculum and employability, universities should focus on developing partnerships with industry stakeholders and adapting public health competencies frameworks to meet changing workforce needs. These efforts can significantly improve graduates' transition from education to employment in the health sector.

As we stand at the crossroads of unprecedented global health challenges and evolving educational landscapes, the role of universities in preparing graduates for the workforce has never been more critical. In Timor-Leste, the Universidade da Paz (UNPAZ) is carving a niche in health education that not only equips students with the necessary academic knowledge but also addresses the pressing demand for skilled professionals in the health sector. This commentary will explore the current landscape of graduate employment in health at UNPAZ, the importance of such programs, and potential solutions to enhance employability for future graduates.

4.3.1 The Importance of Health Education at UNPAZ

UNPAZ is recognized as a leading institution in Timor-Leste, providing a comprehensive education in health sciences. With an enrollment range of 12,000 to 16,500 students, the university serves a significant number of aspirants eager to enter the health sector. The establishment of programs that

are both academically rigorous and practically oriented is essential in a region where healthcare access and quality remain critical issues (BAAK UNPAZ, 2024).

The health sector is a primary focus for many developing nations, and Timor-Leste is no exception. The country faces unique health challenges, including high maternal and child mortality rates, a growing prevalence of non-communicable diseases, and the need for improved healthcare infrastructure. By offering programs in health sciences, UNPAZ not only contributes to the education of future healthcare providers but also plays an integral role in addressing these pressing public health issues.

4.3.2 Graduate Employment Trends in Health

Despite the crucial need for health professionals, the transition from education to employment can be fraught with challenges. Graduates from UNPAZ, like their counterparts worldwide, often face a competitive job market. In Timor-Leste, where the healthcare system is still developing, many graduates may find it difficult to secure positions that match their skills and aspirations. However, the landscape is shifting. As the government of Timor-Leste invests more in the health sector, the demand for qualified health professionals is likely to increase. This increase in demand presents a significant opportunity for UNPAZ graduates. The university's emphasis on practical skills, community engagement, and internships can enhance the employability of its graduates. By fostering partnerships with local health organizations and international health bodies, UNPAZ can facilitate smoother transitions for its graduates into the workforce.

4.3.3 The Role of Internships and Practical Experience

One of the most effective ways to improve graduate employability is through internship programs. UNPAZ has already begun implementing initiatives that allow students to gain real-world experience in clinical settings. These opportunities are invaluable, as they not only provide hands-on training but also help students build professional networks and understand the intricacies of working within the healthcare system. Moreover, the importance of mentorship cannot be overstated. Establishing mentorship programs where experienced health professionals guide students can enhance their readiness for employment. Mentors can provide insights into the job market, share experiences, and help students navigate the often-complex healthcare landscape.

4.3.4 Emphasizing Soft Skills and Interdisciplinary Learning

While technical knowledge in health sciences is crucial, soft skills such as communication, teamwork, and problem-solving are equally important in securing employment. Employers increasingly seek candidates who can work effectively within multidisciplinary teams and communicate well with patients and colleagues. UNPAZ should continue to emphasize these skills within its curriculum. Interdisciplinary learning where students from various fields collaborate on health-related projects can foster a more holistic understanding of healthcare. Such initiatives can prepare students not only for clinical roles but also for positions in health policy, administration, and community health initiatives.

4.3.5 Addressing Challenges Head-On

Despite the promising outlook, challenges remain. The healthcare system in Timor-Leste still grapples with issues such as resource limitations and geographical disparities in healthcare access. Graduates must be prepared to face these challenges head-on. By integrating problem-based learning and critical thinking into the curriculum, UNPAZ can equip students with the tools they need to

innovate and advocate for improved healthcare delivery in their communities. Additionally, UNPAZ should continue to seek feedback from alumni regarding their employment experiences. Understanding the landscape that graduates navigate can inform curriculum improvements and better prepare current students for the realities of the job market.

4.3.6 The Future and Collaborative Effort

The path forward for UNPAZ and its graduates in health is one of collaboration. Engaging with healthcare providers, government agencies, and international organizations will create a robust ecosystem that supports graduate employment. By participating in joint initiatives, research projects, and community health programs, UNPAZ can strengthen its ties with the health sector and enhance the employability of its graduates. Furthermore, as the world increasingly embraces technological advancements, UNPAZ can leverage digital tools and online learning platforms to expand its reach and improve access to education. Incorporating telehealth training into the curriculum could prepare students for future roles in an evolving healthcare landscape. The institution stands at a pivotal moment where its efforts in education can not only transform the lives of its students but also contribute significantly to the health sector in Timor-Leste. By emphasizing practical experience, soft skills, and collaborations, UNPAZ can prepare its graduates to meet the challenges of the healthcare system and thrive in their careers. This is not just a matter of personal success for the graduates; it is a vital step toward improving the health outcomes of the communities they will serve. As we look ahead, the joy of seeing these students flourish in their careers is a testament to the transformative power of education in health.

4.4 Navigating the Mapping Distribution of Alumnae Universidade Nacional Timor Lorosa'e (UNTL) in Health Science Around the Timor-Leste Past Graduated on 2019-2023

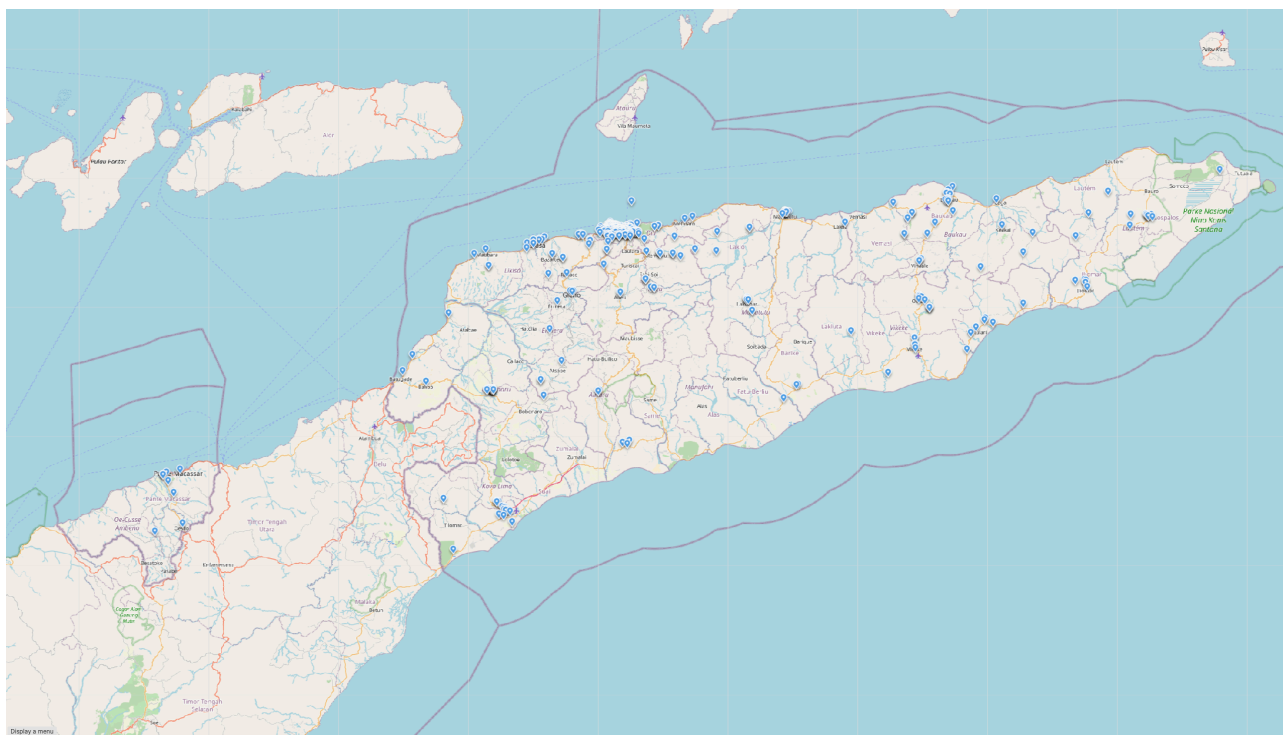


Figure 8. Navigating the Mapping Distribution of Alumnae Universidade Nacional Timor Lorosa'e (UNTL) in Health Science Around the Timor-Leste Past Graduated on 2019-2023

The Universidade Nacional Timor Lorosa'e (UNTL) plays a crucial role in developing Timor-Leste's health workforce. As the country's only public university, UNTL offers medical and nursing programs to address the nation's healthcare needs (Gomes & Deus, 2023). However, challenges persist in scaling up the medical workforce, including limited organizational capacity, underdeveloped information systems, and dependency on foreign aid. Students generally express satisfaction with their training but demand improvements in support systems like libraries and laboratories. While many medical students expect to combine public and private sector work, there is a need to align their expectations with national health priorities. To enhance the quality of education and student satisfaction, UNTL must reinforce good pedagogical practices and adapt teaching to the country's nursing. Collaborative projects with international universities may help develop students' learning skills and professional value.

As nations evolve, so do their educational needs and workforce demands. In Timor-Leste, the Universidade Nacional Timor Lorosa'e (UNTL) stands as a beacon of hope for higher education and professional development, particularly in the health sector. Established in 2000, UNTL has become the only public university in the country, offering a range of programs aimed at nurturing the next generation of health professionals. This article delves into the intricacies of graduate employment in health from UNTL, examining the university's role, the challenges graduates face, and the broader implications for the health sector in Timor-Leste.

4.4.1 The Role of UNTL in Health Education

4.4.1.1 A Historical Context

The establishment of UNTL can be traced back to the country's quest for independence. Following the turmoil of colonial rule and subsequent struggles for sovereignty, the university emerged as a pillar of academic and professional growth. It encompasses nine colleges across six campuses, focusing on diverse fields, including medicine, public health, and nursing. This multifaceted approach positions UNTL as a crucial player in addressing the healthcare needs of a nation still grappling with the aftereffects of conflict and underdevelopment.

4.4.1.2 Curriculum and Training

UNTL's health programs are designed to meet both national and international standards. The university collaborates with various stakeholders, including the Timor-Leste National Institute for Public Health (INSPTL) and the Ministry of Health (MoH), to ensure that its curriculum stays relevant. The courses focus not only on theoretical knowledge but also on practical training, equipping students with the skills necessary for real-world applications. For instance, internships in local hospitals and clinics provide invaluable hands-on experience.

4.4.1.3 Research and Innovation

Research is a cornerstone of UNTL's mission. The university hosts several research centers that focus on public health issues prevalent in Timor-Leste, such as malaria, non-communicable diseases (NCDs), and health system evaluations. By engaging students in research projects, UNTL fosters a culture of inquiry and innovation, encouraging graduates to contribute to the body of knowledge in health sciences and policy-making.

4.4.2 Graduate Employment Landscape in Health

4.4.2.1 Current Trends and Statistics

The employment landscape for health graduates in Timor-Leste is dynamic. As of 2024, the demand for qualified health professionals is growing, driven by an expanding healthcare system and increasing public health awareness. However, challenges persist. Many graduates face difficulties in securing positions due to a lack of experience, inadequate job openings, and limited funding for health initiatives.

According to recent data, approximately 60% of UNTL health graduates find employment within six months of graduation. This statistic reflects a growing recognition of the importance of healthcare in the nation, although it also highlights the need for ongoing improvements in job creation and professional development opportunities.

4.4.2.2 Point of Challenges

- **Limited Job Opportunities:** While the demand for health professionals is rising, the actual number of available positions often falls short. The public sector, which employs the majority of health workers, is constrained by budget limitations and bureaucratic hurdles.
- **Experience Gap:** Many employers seek candidates with prior experience, which can disadvantage recent graduates. Although practical training is part of UNTL's curriculum, the transition from academic settings to professional environments can be daunting.
- **Underfunding of Health Initiatives:** The health sector in Timor-Leste has historically suffered from underfunding, which can lead to job insecurity and limited opportunities for advancement. As a result, many graduates may have to look for opportunities abroad.

4.4.2.3 Success Stories

Despite these challenges, there are numerous success stories that inspire current students. Alumni such as Fatima Flora Pereira, who serves as the Minister of Health, highlight the potential for UNTL graduates to impact the health landscape significantly. Moreover, programs aimed at professional development and continuing education are emerging, enabling graduates to enhance their skills and improve their employability.

4.4.3 Perspectives on Graduate Employment

4.4.3.1 The Role of Government and Policy

The government of Timor-Leste plays a critical role in shaping the employment landscape for health graduates. Policies that prioritize healthcare funding, invest in health infrastructure, and promote public-private partnerships can significantly enhance job opportunities. For instance, collaborations between UNTL, the Ministry of Health, and non-governmental organizations (NGOs) can lead to the creation of more internships and job placements.

4.4.3.2 The Importance of Networking

Networking is vital for graduates entering the workforce. Alumni networks, professional associations, and community health initiatives can provide essential connections and resources. UNTL encourages students to engage in community service, fostering relationships that can lead to employment opportunities.

4.4.3.3 The Role of Continuous Education

In a rapidly evolving field like healthcare, continuous education is essential. UNTL is already embracing this concept by offering postgraduate programs and professional development courses. Graduates who pursue further education can enhance their competitiveness in the job market and adapt to emerging health challenges.

4.4.4 Future Opportunities and Trends

4.4.4.1 Expanding Healthcare Services

The National Health Sector Strategic Plan (NHSSP) 2011-2030 outlines the key objectives for healthcare in Timor-Leste. This plan emphasizes the need for a well-trained workforce as a cornerstone of delivering high-quality healthcare. The primary focus areas include:

- Improving Maternal and Child Health: Addressing the continuing poor outcomes in these areas is critical for the nation's development.
- Universal Health Coverage: The constitution of Timor-Leste guarantees free healthcare to its citizens, making it imperative to build a robust healthcare workforce to sustain this promise.
- Capacity Building: Training local health professionals is essential to ensure that the workforce meets the growing needs of the population.

As the NHSSP is implemented, it will create a framework that encourages the development of health professionals and supports their integration into the health system.

4.4.4.1.1 Government Commitment to Healthcare Development

- The government of Timor-Leste recognizes that a productive and motivated healthcare workforce is essential for improving health outcomes. Current efforts are focused on:
- Recruitment and Retention: The government is actively working to recruit and retain qualified health workers, emphasizing the importance of a merit-based system for employment in healthcare.
- Training Programs: Initiatives such as those by Maluk Timor aim to enhance the skills of local healthcare professionals through comprehensive training programs. This includes Continuing Professional Development in Integrated Primary Health Care (CPD-IPHC), which is crucial for improving clinical skills and adapting to the evolving healthcare landscape.
- Collaboration with Stakeholders: The government collaborates with international partners to strengthen the healthcare workforce, ensuring that training and resources are aligned with best practices.

4.4.4.1.2 The Role of Skilled Health Professionals

- As Timor-Leste advances its healthcare services, skilled health professionals will play a pivotal role in various capacities:
- General Practitioners and Specialists. The need for general practitioners and specialists will continue to grow as healthcare access expands. Training programs focused on various

specialties, including pediatrics, obstetrics, and surgery, will be essential in addressing the healthcare needs of the population.

- Nurses and Community Health Workers. Nurses and community health workers are at the forefront of healthcare delivery in Timor-Leste. Their roles are crucial in maternal and child health, preventive care, and community outreach programs. Increased training and support for these professionals will enhance their ability to provide care and educate communities on health practices.

Health Administrators and Managers. As the healthcare system becomes more complex, the demand for skilled health administrators and managers will rise. These professionals will be essential in ensuring the effective operation of healthcare facilities, managing resources, and implementing health policies.

4.4.4.1.3 Job Opportunities in Healthcare

- The development of healthcare services in Timor-Leste is projected to create numerous job opportunities for graduates. Some of the potential career paths include:
- Clinical Roles: Positions such as doctors, nurses, and specialists will be in high demand in both urban and rural settings.
- Public Health Officials: Roles focused on health promotion, disease prevention, and health education will become increasingly vital as the government emphasizes public health initiatives.
- Research and Policy Development: Graduates with expertise in health policy and research will be needed to support evidence-based decision-making and strategic planning within the health sector.

As Timor-Leste continues to develop its healthcare services, the demand for skilled health professionals will undoubtedly increase. The government's commitment to universal health coverage and improving health outcomes, as outlined in the National Health Sector Strategic Plan, creates a favorable environment for graduate employment in health. By investing in training and retaining a motivated workforce, Timor-Leste can build a robust healthcare system that meets the needs of its citizens, ultimately contributing to the overall development of the nation.

4.4.4.2 Emphasis on Sustainable Practices

The contemporary dialogue surrounding sustainability has permeated various sectors, including health education. As global challenges related to climate change, resource depletion, and social inequities become more pronounced, educational institutions like the UNTL are responding by embedding sustainability into their health programs. This integration prepares graduates not only to understand the environmental determinants of health but also to advocate for sustainable practices in public health.

Sustainability, in the context of health education, refers to the ability to maintain and improve health outcomes while preserving the ecological balance and social equity necessary for future generations. This multifaceted approach involves three core components:

- Environmental Stewardship: Understanding how environmental factors influence health outcomes and advocating for practices that protect and enhance the natural environment.

- **Economic Responsibility:** Developing strategies that ensure health programs are financially viable while maximizing resource efficiency.
- **Social Well-being:** Promoting health equity and community engagement to ensure that health interventions are culturally relevant and accessible.

The push for sustainability in health education is gaining traction. Initiatives aimed at strengthening sustainability education emphasize the importance of interdisciplinary approaches, experiential learning, and the incorporation of diversity, equity, and inclusion principles. Institutions are increasingly recognizing that an integrated model of education is essential for preparing graduates to address complex health issues effectively.

UNTL has taken significant steps to incorporate sustainability into its health education programs. This involves:

4.4.4.2.1 Curriculum Development

- **Sustainability Certificate Program:** UNTL offers a Sustainability Certificate that includes courses on global cultures and environments. This program not only imparts knowledge on sustainability but also equips students with the skills to apply this knowledge in health contexts. Courses cover vital topics such as natural resource conservation, economic responsibility, and the social aspects of community health.
- **Interdisciplinary Learning:** By integrating sustainability across various disciplines, UNTL helps students understand the interconnectedness of health, environment, and society. This approach fosters critical thinking and prepares students to develop holistic solutions to public health challenges.
- **Experiential Learning Opportunities:** UNTL emphasizes hands-on learning through community projects, internships, and field research. Such experiences allow students to apply theoretical knowledge in real-world settings, enhancing their understanding of sustainability in health care.

4.4.4.2.2 Faculty Expertise and Research

Faculty members at UNTL are actively engaged in research that addresses the sustainability of health interventions. Their work focuses on identifying effective strategies to embed public health initiatives within communities, ensuring that these interventions are both impactful and sustainable over the long term.

4.4.4.2.3 Community Engagement

A crucial aspect of UNTL's sustainability initiatives is its commitment to community engagement. The university collaborates with local organizations to implement health programs that are socially responsible and environmentally sustainable. This partnership not only benefits the community but also provides students with invaluable experience in advocacy and public health practice.

4.4.4.2.4 Preparing Graduates for Future Challenges

The integration of sustainability into health education at UNTL is designed to cultivate graduates who are well-equipped to tackle contemporary health challenges. By emphasizing sustainability, UNTL prepares students to:

- **Advocate for Environmental Health:** Graduates will be able to recognize and address the environmental determinants of health, advocating for policies and practices that promote both human and ecological health.
- **Implement Sustainable Practices:** Students will learn how to design and execute health programs that are economically viable and environmentally sound, ensuring that resources are used efficiently.
- **Engage with Communities:** The focus on social well-being will empower graduates to work collaboratively with communities, ensuring that health interventions are culturally appropriate and equitable.
- **Research and Innovation:** Graduates will be encouraged to contribute to research that explores innovative solutions to pressing health issues, particularly those related to sustainability.

The integration of sustainability into health education at UNTL represents a proactive response to the pressing challenges of our time. By preparing graduates who are equipped to address environmental health issues and advocate for sustainable practices, UNTL is not only enhancing the quality of its educational offerings but also contributing to a healthier, more sustainable future. As the world continues to grapple with the complexities of health and environmental sustainability, educational institutions will play a critical role in shaping the leaders of tomorrow. This shift towards sustainability in health education is not merely a trend but a necessary evolution that reflects our collective responsibility to future generations. Through innovative curricula, community engagement, and a commitment to interdisciplinary learning, UNTL is paving the way for a more sustainable and equitable future in health care.

4.4.4.3 Digital Health Innovations

The rise of digital health technologies presents new opportunities for health graduates. Telemedicine, mobile health applications, and data analytics are areas where UNTL graduates can make significant contributions. By integrating technology into health education, UNTL can prepare students for a modern workforce. The future of graduate employment in health at the Universidade Nacional Timor Lorosa'e is poised for growth, driven by increasing demand, evolving healthcare policies, and the university's commitment to quality education. However, challenges remain, particularly in terms of job availability and the transition from education to employment. By addressing these challenges through strategic partnerships, continuous education, and proactive government policies, UNTL can further enhance its role in shaping the future of health professionals in Timor-Leste. As the nation continues to heal and develop, the contributions of UNTL graduates will be integral to building a robust and sustainable healthcare system.

4.5 Navigating the Mapping Distribution of Alumnae Universidade de Dili (UNDIL) in Health Science Around the Timor-Leste Past Graduated on 2019-2023

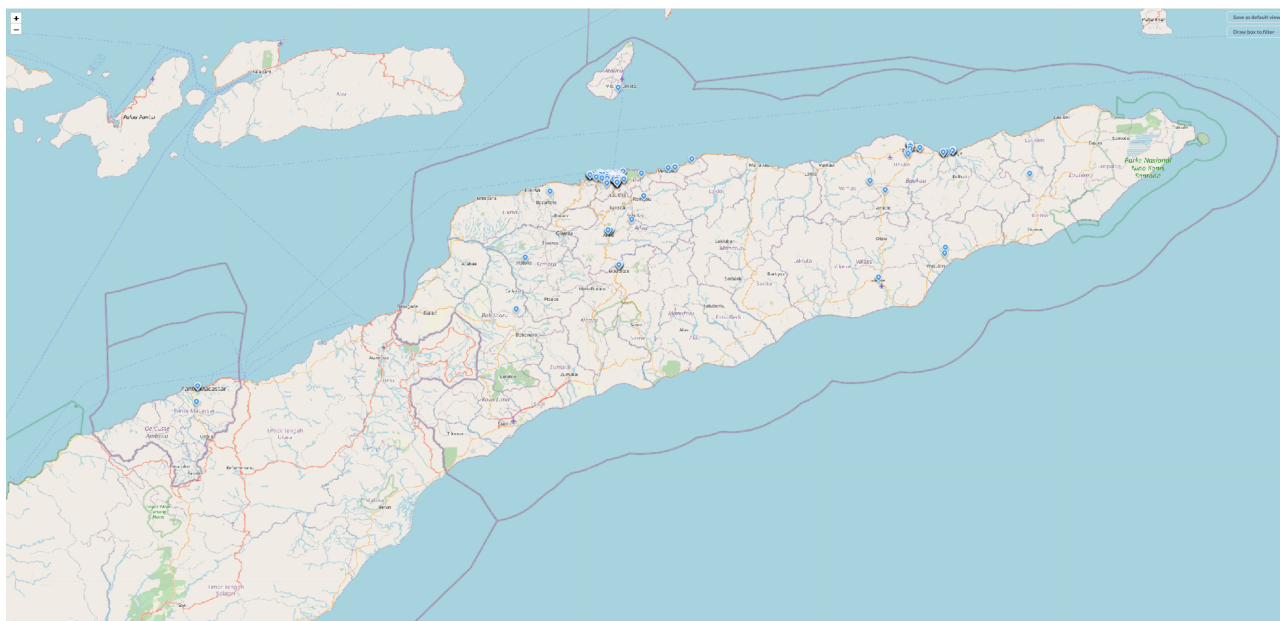


Figure 9. Navigating the Mapping Distribution of Alumnae Universidade de Dili (UNDIL) in Health Science Around the Timor-Leste Past Graduated on 2019-2023

The landscape of graduate employment in the health sector is an evolving narrative shaped by various factors including education quality, healthcare policies, and the economic environment. As we explore the role of higher education institutions like Universidade de Dili (UNDIL) in this context, it becomes essential to analyze how they prepare students for the workforce, the challenges they face, and the opportunities that lie ahead. This article delves into these aspects, focusing on the implications for graduates entering the health sector in Timor-Leste.

Established in 2002, UNDIL has positioned itself as a pivotal institution for higher education in Timor-Leste, particularly in fields crucial for national development, including health. Located in Dili, the capital, UNDIL offers various programs aimed at equipping students with the necessary skills and knowledge to thrive in their chosen careers. The institution is officially recognized by the Agência Nacional para a Avaliação e Acreditação Académica (National Commission for Academic Assessment and Accreditation), ensuring that it meets quality standards.

4.5.1.1 Programs Offered

UNDIL offers a range of programs, including degrees in health sciences, which cover essential areas such as nursing, public health, and medical studies. These programs are designed to address both local and global health challenges, preparing graduates to contribute effectively to the health sector. An emphasis on practical training and community engagement is central to the curriculum, which enhances employability prospects for graduates.

4.5.1.2 Graduate Employment Landscape in Health

4.5.1.2.1 Current Employment Trends

As of 2024, graduates from health programs face a competitive job market influenced by several factors:

- **Increased Demand for Health Professionals:** The COVID-19 pandemic has heightened awareness of the importance of healthcare and the need for qualified professionals. This has resulted in greater job opportunities for graduates in various health-related fields.
- **Public and Private Sector Roles:** Graduates can find employment in public health institutions, private healthcare facilities, NGOs, and international organizations. Each sector presents unique opportunities and challenges, influencing career trajectories.
- **Skill Gaps and Employment Preparedness:** While there is a demand for health graduates, many employers report skill gaps among new entrants to the workforce. This includes a lack of practical experience and insufficient soft skills, such as communication and teamwork.

4.5.1.2.2 Key Challenges for Graduates

Despite the promising job market, graduates from UNDIL and similar institutions face several challenges:

- **Limited Job Opportunities:** While the demand for health professionals is growing, the actual number of positions available may not keep pace with the increasing number of graduates. This can lead to high competition for roles.
- **Underemployment:** Many graduates find themselves in jobs that do not fully utilize their skills or qualifications. Underemployment is a significant issue, particularly in regions with limited healthcare infrastructure.
- **Economic Constraints:** Timor-Leste's economy has faced challenges, impacting government spending on health and resulting in fewer job openings in public healthcare. This has implications for job security and the ability to attract international health organizations.

4.5.1.2.3 Strategies for Enhancing Graduate Employability

To navigate the challenges of the health job market, UNDIL and its graduates can adopt various strategies:

4.5.1.2.3.1 Strengthening Partnerships

Collaboration with healthcare providers, NGOs, and government bodies can lead to more internship opportunities and job placements. By engaging with local and international organizations, UNDIL can enhance its curriculum to align better with market demands needs. Curriculum Development

Updating the curriculum to reflect current health trends, technological advancements, and emerging public health challenges is essential. Incorporating practical training, simulations, and real-world projects can better prepare students for the workforce.

4.5.1.2.3.2 Soft Skills Training

Employers increasingly emphasize the importance of soft skills in healthcare roles. Institutions should integrate training in communication, leadership, and teamwork into their programs. This can enhance graduates' ability to work effectively in diverse teams and improve patient care.

4.5.1.2.3.3 Alumni Networks

Creating strong alumni networks can facilitate mentorship and job placement for new graduates. Successful alumni can provide guidance, share job leads, and even create internship opportunities within their organizations.

4.5.1.3 Case Studies and Examples

4.5.1.3.1 Successful Initiatives

- Internship Programs: Some health faculties at UNDIL have initiated partnerships with local hospitals and clinics to provide students with hands-on experience. These programs have significantly improved graduate readiness for the job market.
- Community Engagement Projects: Engaging students in community health projects not only enhances their practical skills but also fosters a sense of social responsibility. Programs that integrate community development with health education have proven effective in preparing graduates for real-world challenges.

4.5.1.3.2 Challenges Faced by Graduates

Despite such initiatives, graduates often report difficulties in securing jobs that match their qualifications. For example, a recent study highlighted that nearly 40% of health graduates were employed in roles outside their field, indicating a need for better alignment between education and employment opportunities.

4.5.1.4 Future Outlook for Graduate Employment in Health

4.5.1.4.1 Emerging Opportunities

- Digital Health: The rise of digital health technologies presents new avenues for employment. Graduates with skills in telemedicine, health informatics, and digital health solutions will be in high demand.
- Global Health Initiatives: As Timor-Leste continues to engage in global health partnerships, graduates can find opportunities in international organizations focused on health development.
- Health Policy Development: Increased focus on health policy and systems strengthening in Timor-Leste can open positions for graduates interested in impacting health governance and policy-making.

4.5.1.4.2 Preparing for Change

To capitalize on these opportunities, UNDIL and its graduates must remain adaptable. Continuous professional development, lifelong learning, and staying abreast of health sector trends will be crucial for long-term career success. The future of graduate employment in health, particularly for graduates

of Universidade de Dili, holds both promise and challenges. By actively engaging with industry, updating curricula, and fostering essential skills, UNDIL can enhance the employability of its graduates. As the health sector continues to evolve, it is imperative for educational institutions to adapt swiftly to meet the demands of the job market. In doing so, they will not only contribute to the professional growth of their students but also support the broader goal of improving health outcomes in Timor-Leste. This balanced approach will ultimately lead to a more robust healthcare system, equipped to tackle both current and future challenges.

4.6 Navigating the Mapping Distribution of Alumnae Institute Ciencais Saude (ICS) in Health Scince Arround the Timor-Leste Past Graduated on 2019-2023

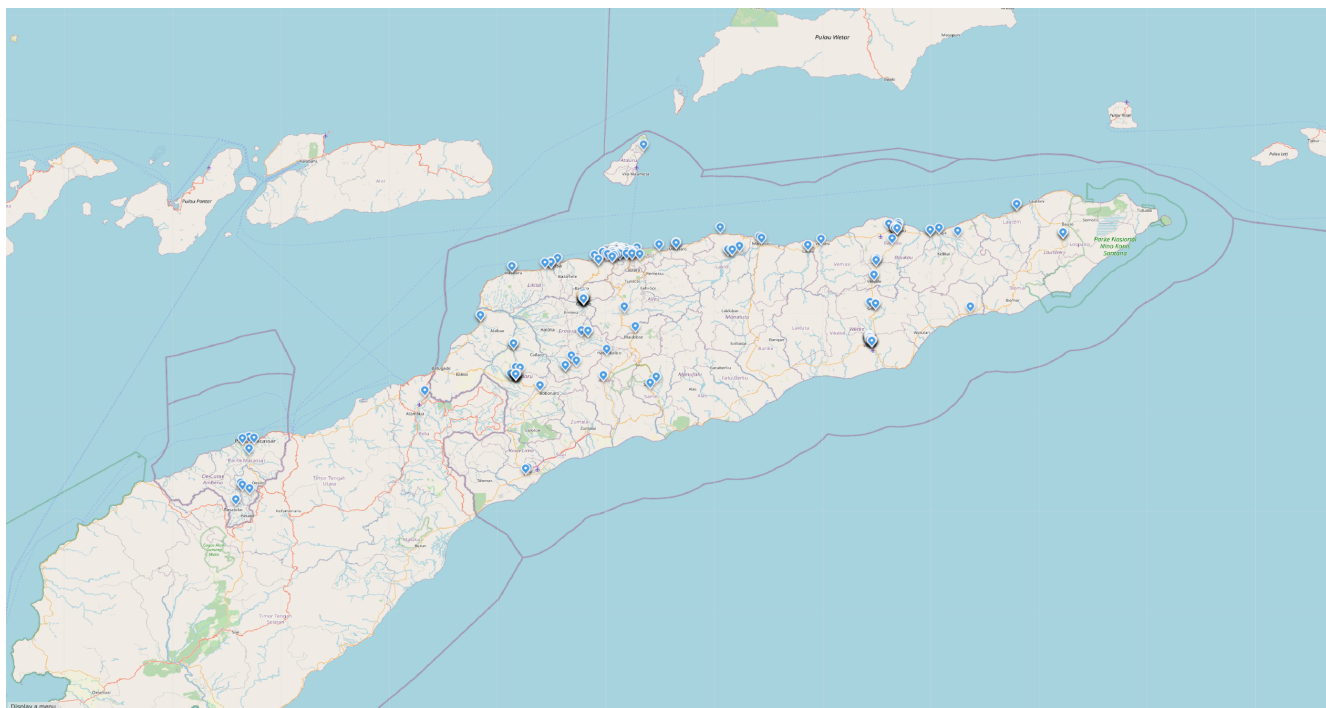


Figure 10. Navigating the Mapping Distribution of Alumnae Institute Ciencais Saude (ICS) in Health Scince Arround the Timor-Leste Past Graduated on 2019-2023

The landscape of graduate employment in the health sector is rapidly evolving, influenced by various factors such as technological advancements, shifting healthcare demands, and the global pandemic's impact. In this context, institutions like the Instituto Ciências da Saúde (ICS) play a pivotal role in shaping the future workforce. This article examines the graduate employment landscape in health, focusing on the contributions of ICS, the challenges faced by graduates, and the opportunities that lie ahead. Higher education institutions, ICS play a crucial role in preparing students for uncertain futures, with a need for more flexible approaches to education. In Timor-Leste, the graduate studies system faces challenges in balancing knowledge supply with demands from healthcare services, industry, and society. Similarly, in Ethiopia, despite favorable policies and initiatives, graduate employment remains a significant challenge, requiring a coherent national employability framework and stakeholder participation. The transition from higher education to employment has gained increased social visibility, with graduates facing difficulties in accessing jobs. Addressing these challenges requires coordinated efforts at institutional, employer, and national levels to develop sustainable strategies for improving graduate employability in the health sector.

4.6.1.1 Overview of Instituto Ciências da Saúde (ICS)

Founded as a response to the growing need for specialized training in health sciences, ICS has emerged as a leading institution in health education and research. The institute's mission revolves around providing comprehensive training programs that not only equip students with theoretical knowledge but also emphasize practical experiences through guaranteed internships. This dual approach is essential in preparing graduates for the realities of the healthcare workforce.

4.6.1.2 The Current Employment Landscape for Health Graduates

4.6.1.2.1 Demand for Health Professionals

The demand for health professionals has been on an upward trajectory in recent years, influenced by various factors such as an aging population, rising chronic disease prevalence, and advancements in healthcare technology. This growth presents numerous opportunities for graduates in health-related fields, particularly for those holding degrees in health sciences, nursing, and allied health professions. This report aims to explore the current trends and statistics surrounding this demand, highlighting the implications for future healthcare workers.

According to recent studies, health employment is projected to grow significantly, outpacing other sectors. This demand creates numerous opportunities for ICS graduates. The demand for health professionals is expected to continue its upward trajectory in the coming years, driven by an aging population, increased chronic disease prevalence, and advancements in healthcare technology. This demand creates a wealth of opportunities for graduates in health-related fields, from nursing and allied health professions to public health and health informatics.

As the healthcare landscape evolves, it is crucial for aspiring health professionals to stay informed about market demands trends and to seek out training and education that align with these needs. By doing so, they can position themselves for successful and fulfilling careers in a field that is not only growing but is also essential to the well-being of society as a whole. With the right skills, knowledge, and dedication, graduates can make a significant impact on the future of healthcare, ensuring that they meet the needs of diverse populations and contribute to the ongoing advancement of the health sector.

Given the projected growth in demand for healthcare professionals, graduates in health-related fields are well-positioned to capitalize on these opportunities. Here are some key areas where recent graduates can find promising career paths:

- **Nursing.** With a consistent demand for registered nurses, graduates can expect robust job opportunities in various healthcare settings, including hospitals, clinics, and home health care. The projected growth of 6% in nursing positions means that there will be ample openings for new graduates, particularly those who are willing to specialize in areas such as geriatrics or critical care.
- **Allied Health Professions.** Graduates in allied health professions, such as physical therapy, respiratory therapy, and occupational therapy, can also expect significant job growth. As mentioned earlier, shortages in these fields highlight the need for qualified practitioners. Those who pursue careers in these areas will not only find job security but also have the opportunity to make a meaningful impact on patients' lives.
- **Health Informatics.** As the healthcare demands continues to embrace technology, graduates with expertise in health informatics will be in high demand. This field combines healthcare, information technology, and data analysis to improve patient care and streamline healthcare processes. Graduates with skills in this area can find roles as health information managers, data analysts, and informatics specialists.

- **Public Health.** The growing recognition of the importance of public health has led to increased job opportunities in this sector. Graduates with degrees in public health can work in various roles, including epidemiologists, health educators, and community health workers. The emphasis on disease prevention and health promotion means that careers in public health will continue to expand.

4.6.1.2.2 Skill Gaps and Employer Expectations

Despite the high demand, many health graduates face challenges securing employment. Employers often cite skill gaps, particularly in soft skills such as communication, teamwork, and adaptability. ICS addresses these gaps through its curriculum, which emphasizes not only technical skills but also the essential soft skills needed in the workplace.

4.6.1.2.3 Challenges Faced by Graduates

The growing recognition of the importance of public health has led to increased job opportunities in this sector. Graduates with degrees in public health can work in various roles, including epidemiologists, health educators, and community health workers. The emphasis on disease prevention and health promotion means that careers in public health will continue to expand.

4.6.1.2.3.1 Competition in the Job Market

As more students graduate from health programs, competition for positions becomes fierce. Graduates must differentiate themselves through internships, networking, and continuous professional development. ICS supports students by facilitating connections with professionals and providing career counseling.

4.6.1.2.3.2 Economic Factors

Economic fluctuations can impact hiring in the health sector. Budget cuts in public health services, for instance, can lead to fewer job openings. Graduates must be adaptable and willing to explore diverse employment options, including roles in private healthcare, non-profits, or even international opportunities.

4.6.1.2.4 Opportunities for ICS Graduates

4.6.1.2.4.1 Interdisciplinary Collaboration

With the rise of interdisciplinary approaches in healthcare, ICS graduates are well-positioned to work in diverse teams. The institute's emphasis on collaborative projects prepares students to work alongside professionals from various fields, enhancing their employability.

4.6.1.2.4.2 Emerging Fields in Health

ICS graduates can explore emerging fields such as telemedicine, health informatics, and personalized medicine. As technology continues to shape healthcare delivery, graduates with skills in these areas will be in high demand.

4.6.1.2.4.3 Continuous Learning and Professional Development

The dynamic nature of healthcare necessitates lifelong learning. ICS encourages graduates to engage in continuous professional development through workshops, certifications, and further studies. This commitment to lifelong learning not only enhances employability but also fosters career advancement.

4.6.1.2.4.4 The Role of Networking and Professional Associations

Networking is crucial for health graduates seeking employment. ICS facilitates networking opportunities through events, workshops, and collaborations with health organizations. Additionally, joining professional associations can provide graduates with access to job boards, mentorship programs, and industry insights.

4.6.1.2.4.5 Alumni Networks

ICS's alumni network serves as a valuable resource for current students and recent graduates. Engaging with alumni can provide insights into various career paths and may lead to job opportunities. Alumni often share their experiences and offer advice on navigating the job market.

4.6.1.2.5 The Impact of Technology on Employment

4.6.1.2.5.1 Digital Health Tools

The integration of technology into healthcare has transformed the industry. Digital health tools, such as telehealth platforms and electronic health records, have become indispensable. ICS graduates equipped with technological proficiency are better positioned to succeed in this evolving landscape.

4.6.1.2.5.2 Data Analytics and Health Informatics

The rise of big data in healthcare presents significant opportunities. Graduates with skills in data analytics and health informatics can play crucial roles in improving patient outcomes and optimizing healthcare delivery. ICS's curriculum incorporates training in these areas, preparing students for future challenges.

4.6.1.2.5.3 Global Perspectives on Health Employment

4.6.1.2.5.3.1 *International Opportunities*

Health graduates from ICS can explore international job opportunities, especially in countries facing shortages of healthcare professionals. Many countries actively recruit foreign-trained professionals, offering competitive salaries and benefits.

4.6.1.2.5.3.2 *Global Health Initiatives*

Engagement in global health initiatives allows graduates to work on pressing health issues worldwide. Organizations like the World Health Organization (WHO) and various NGOs often seek individuals with health training to contribute to their efforts.

4.6.1.2.5.3.3 *Shaping the Future of Health Employment*

As the healthcare landscape continues to evolve, institutions like Instituto Ciências da Saúde (ICS) are pivotal in shaping the future of health employment. By providing comprehensive training, emphasizing research, and fostering collaboration, ICS equips its graduates with the skills and knowledge necessary to thrive in a competitive job market. The challenges faced by health graduates are significant, but so are the opportunities. With the increasing demand for health professionals and the dynamic nature of the industry, ICS graduates are well-positioned to navigate their careers successfully. Through continuous learning, networking, and adapting to emerging trends, graduates can not only secure employment but also make meaningful contributions to the health sector. As we move forward, the importance of resilient, innovative, and adaptable health professionals will only grow, heralding a bright future for graduates of Instituto Ciências da Saúde. This comprehensive approach to education and professional development positions ICS as a leader in preparing the next generation of health professionals to meet the challenges of an ever-changing world.

4.7 Navigating the Mapping Distribution of Alumnae Institute Suoprior Cristal (ISC) in Health Science Around the Timor-Leste Past Graduated on 2019-2023

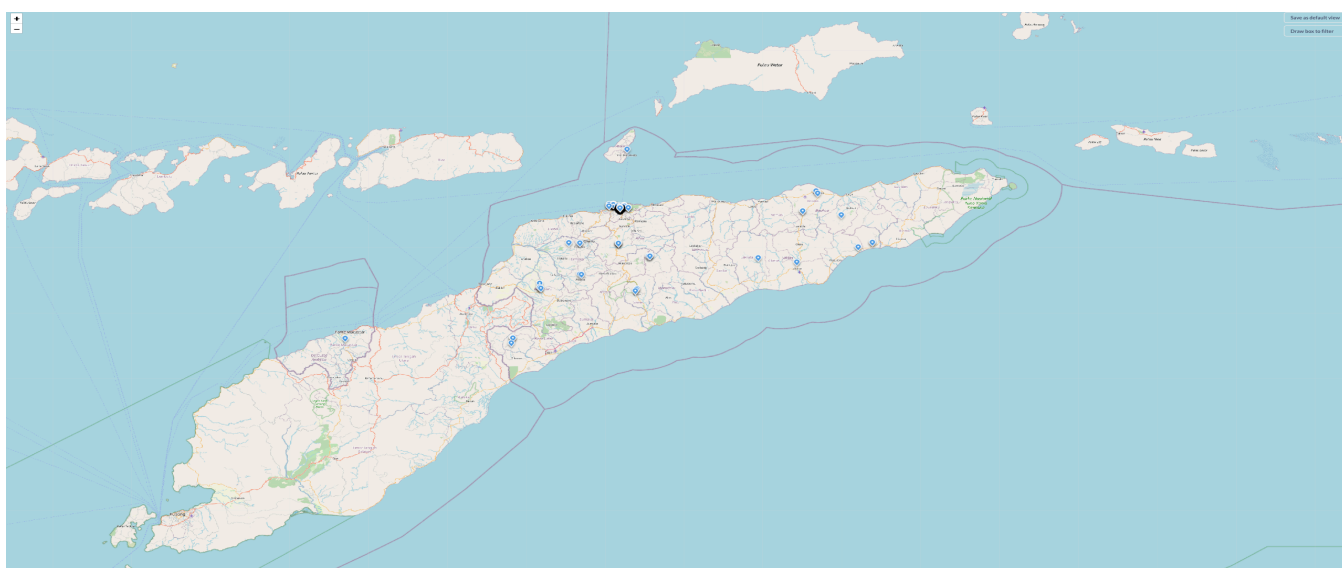


Figure 11. Navigating the Mapping Distribution of Alumnae Institute Suoprior Cristal (ISC) in Health Science Around the Timor-Leste Past Graduated on 2019-2023

The Instituto Superior Cristal (ISC) in Timor-Leste is implementing character education management to produce quality graduates cultural, and academic attributes (Gomes & Deus, 2023). This aligns with the country's efforts to scale up its medical workforce, with plans to add 800 nursing by 2023. However, this rapid expansion presents challenges in terms of funding, infrastructure, and potential impacts on staff mix and service demand. Nursing students in Timor-Leste generally express satisfaction with their training but desire improvements in support systems. The country is experiencing an epidemiological transition, with increasing non-communicable disease burden alongside persistent infectious diseases. To address these challenges, Timor-Leste must balance human resource development, government health spending, and declining donor financing while managing pressures from rising wage bills, pharmaceutical costs, and overseas medical transfers.

The landscape of graduate employment in health is evolving rapidly, influenced by technological advancements, shifting societal needs, and an increasing emphasis on quality education. In this context, the Instituto Sienciais Cristal (ISC) in Timor-Leste emerges as a pivotal institution, dedicated to equipping its students with the skills and knowledge necessary to thrive in the health sector. This article delves into various aspects of graduate employment in health, exploring the role of ISC, its educational framework, and the implications for students and the broader health community.

4.7.1.1 The Role of ISC in Health Education

4.7.1.1.1 History and Mission

Founded in 2001, ISC has established itself as a key player in higher education in Timor-Leste. With the motto Knowledge for Development (Saber é Progredir), ISC embodies a commitment to fostering innovative and creative thinking among its students. The institute aims to become a center of excellence in education and training, particularly in health sciences, aligning its mission with national and international standards.

4.7.1.1.2 Programs Offered

ISC offers a range of programs focused on health sciences, including nursing and other related fields. The curriculum is designed to provide students with a solid theoretical foundation alongside practical experience. This dual approach ensures that graduates are not only knowledgeable but also equipped with the hands-on skills required to navigate the complexities of the health sector.

4.7.1.1.3 Vision for the Future

The vision of ISC is to transform into a leading institution that prepares competent, independent, and humanistic professionals. This vision includes an emphasis on research, innovation, and technology in health education, which is critical in a world where health challenges are becoming increasingly complex.

4.7.1.2 Graduate Employment Trends in the Health Sector

4.7.1.2.1 Current Landscape

The global health sector is experiencing significant changes driven by advancements in technology, demographic shifts, and the ongoing impacts of global health crises such as the COVID-19 pandemic. These factors have created a demand for skilled health professionals who can adapt to new challenges. In Timor-Leste, the need for qualified health workers is particularly pronounced, making ISC's educational offerings relevant and timely.

4.7.1.2.2 Demand for Health Professionals

According to various studies, the demand for health professionals in areas such as nursing, public health, and health administration is on the rise. This trend is mirrored in Timor-Leste, where the government and international organizations are investing in health infrastructure and workforce development. Graduates from ISC are well-positioned to fill these roles, contributing to the improvement of health services in the region.

4.7.1.2.3 Challenges and Opportunities

While opportunities abound, there are also challenges facing graduates in the health sector. These include:

- **Job Market Saturation:** In some areas, the number of graduates may exceed job openings, leading to increased competition.
- **Skill Gaps:** Employers often highlight the need for specific skills that are not always covered in academic programs, underscoring the importance of practical training.
- **Geographical Disparities:** Graduates may find that job opportunities are unevenly distributed, with urban areas offering more positions than rural regions.

4.7.1.3 The ISC Advantage: Preparing Students for the Job Market

4.7.1.3.1 Comprehensive Curriculum

ISC's curriculum is tailored to address the current needs of the health sector. By integrating theoretical knowledge with practical skills, ISC ensures that its graduates are ready to meet the demands of potential employers. The inclusion of internships and fieldwork experiences allows students to gain invaluable insights into real-world health settings.

4.7.1.3.2 Soft Skills Development

In addition to technical knowledge, ISC places a strong emphasis on the development of soft skills such as communication, teamwork, and problem-solving. These skills are crucial in the health sector, where professionals must often work collaboratively to provide patient-centered care.

4.7.1.3.3 Industry Partnerships

ISC actively collaborates with health institutions, NGOs, and governmental bodies to create pathways for students to transition into employment. These partnerships facilitate internships, job placements, and networking opportunities, significantly enhancing the employability of graduates.

4.7.1.4 Perspectives from Graduates

4.7.1.4.1 Success Stories

Many ISC graduates have successfully secured positions in various health-related fields, ranging from nursing to health administration. Their experiences highlight the effectiveness of ISC's educational approach and the relevance of their training to real-world challenges.

4.7.1.4.2 Alumni Networks

The establishment of a robust alumni network is another advantage for ISC graduates. Alumni often share job opportunities, mentorship, and support, fostering a sense of community that can be invaluable during job searches.

4.7.1.5 The Broader Implications for Health Employment

4.7.1.5.1 Public Health and Policy Impact

As graduates from ISC enter the workforce, they contribute not only to healthcare delivery but also to public health initiatives and policy development. Their training enables them to engage in health promotion, disease prevention, and health education, which are critical for improving community health outcomes.

4.7.1.5.2 The Role of Technology

The integration of technology in health education is transforming the way health professionals are trained and how they deliver care. ISC is embracing this trend by incorporating digital tools and resources into its curriculum, preparing students for a tech-driven health landscape.

4.7.2 Counterarguments: Challenges Facing ISC Graduates

4.7.2.1 Quality of Education

Despite the positive outlook, some critics argue that the quality of education in some institutions may not meet the expectations of employers. Continuous assessment and improvement of educational standards are crucial for ISC to maintain its reputation and ensure that graduates are competitive in the job market.

4.7.2.2 Economic Factors

The economic environment in Timor-Leste can also impact graduate employment. Economic instability may lead to budget cuts in health services, affecting hiring rates and job security for new graduates. ISC must remain adaptable to these changes to support its students effectively.

4.7.3 Future Directions for ISC and Graduate Employment in Health

4.7.3.1 Enhancing Curriculum Relevance

To remain competitive, ISC must continually evaluate and enhance its curriculum to reflect the latest developments in health sciences and job market needs. This includes incorporating emerging health trends and technologies into training programs.

4.7.3.2 Expanding Research Opportunities

Encouraging student involvement in research projects can enhance their critical thinking and problem-solving abilities. ISC should seek partnerships with research institutions and health organizations to provide students with opportunities to engage in meaningful research.

4.7.3.3 Strengthening Global Partnerships

As health challenges are often global in nature, ISC can benefit from building international partnerships. Collaborations with foreign universities and health organizations can provide students with diverse perspectives and opportunities for global learning.

4.8 Notable of HEI's overing the health science program study in Timor-Leste

4.8.1 Development of Health Science Programs

The establishment of health science programs has a rich historical foundation rooted in the evolving needs of societies to address public health challenges. Initially, these programs were primarily focused on training individuals to tackle prevalent diseases and improve sanitary conditions. Over time, the scope expanded to encompass a more comprehensive understanding of health that includes physical, mental, and social well-being. Institutions like UNTL, UNPAZ, UNDIL, ISC, and ICS have played a pivotal role in this evolution, adapting their curricula to meet the changing demands of healthcare and public health priorities. The integration of traditional knowledge with modern medical

practices has been a significant milestone in many regions, fostering a holistic approach to health education.

Health science programs are at the forefront of leveraging technology and innovation to enhance learning and practice. The use of digital platforms for virtual simulations, telemedicine, and online learning modules has revolutionized how students and professionals engage with health sciences. Research and evidence-based practice have become central pillars, with institutions like UNTL and UNPAZ prioritizing research initiatives that address local and global health issues. Interdisciplinary collaboration is another emerging trend, encouraging students to work across various health domains to foster a comprehensive understanding of complex health systems. Innovations in curriculum design, such as problem-based learning and community engagement projects, have also become integral to program development, ensuring that graduates are well-equipped to meet the diverse needs of the populations they serve.

4.8.2 Improving Access to Healthcare

Health science programs are crucial in training a diverse workforce capable of meeting the healthcare needs of different populations. By equipping students with the necessary skills and knowledge, institutions like UNTL, UNPAZ, UNDIL, ISC, and ICS ensure that more healthcare professionals, including doctors, nurses, and allied health workers, are available in underserved areas. This geographical distribution of healthcare providers significantly improves access to medical services, especially in rural and remote regions where healthcare is often scarce. Furthermore, these programs often include community outreach components, fostering a direct link between educational institutions and the communities they serve, thereby enhancing healthcare delivery at the grassroots level.

4.8.3 Enhancing Quality of Care

The focus on comprehensive education and training in health science programs directly correlates with an improvement in the quality of care provided. These programs emphasize evidence-based practices, critical thinking, and continuous learning, which are essential for adapting to the ever-evolving landscape of healthcare needs and technologies. Institutions such as ISC and ICS are known for their innovative curricula that incorporate the latest research findings and technological advancements, ensuring that graduates are well-prepared to deliver high standards of care. Additionally, interprofessional education initiatives promote collaboration among different healthcare disciplines, which is crucial for providing holistic and patient-centered care.

4.8.4 Promoting Preventive Health Measures

Preventive health measures are a cornerstone of modern public health strategies, and health science programs are at the forefront of promoting this paradigm shift. By integrating preventive care principles into their curricula, these programs equip future health professionals with the tools necessary to advocate for and implement preventive strategies within communities. This includes educating patients about lifestyle changes, vaccination programs, and early detection of diseases. Institutions like UNPAZ and UNDIL have developed specialized courses and community projects focused on prevention, which not only enhance the health literacy of their students but also positively impact public health outcomes by reducing the incidence and severity of chronic illnesses.

4.8.5 Role of Institutions in Health Science

The establishment and development of health science programs are pivotal in training competent health professionals equipped to meet the ever-evolving public health needs. Institutions such as

UNTL, UNPAZ, UNDIL, ISC, and ICS play a crucial role in this endeavor, each contributing uniquely to the landscape of health education and practice.

4.8.5.1 UNTL's Contribution

The Universidade Nacional Timor Lorosa'e (UNTL) has been at the forefront of health science education, fostering a comprehensive curriculum that integrates both theoretical knowledge and practical skills. UNTL has established partnerships with international health organizations to ensure its programs are aligned with global standards. This collaboration has enabled the institution to incorporate cutting-edge research and technology into its teaching, thus preparing students to tackle contemporary health challenges. Moreover, UNTL's focus on community engagement allows students to gain firsthand experience in addressing local health issues, thereby enhancing their understanding and responsiveness to public health needs.

4.8.5.2 UNPAZ's Initiatives

The Universidade da Paz (UNPAZ) has made significant strides in advancing health science education through its innovative programs and initiatives. By emphasizing interdisciplinary approaches, UNPAZ encourages collaboration across different fields of study, enriching the educational experience and fostering a more holistic understanding of health sciences. The institution's commitment to research and development has led to the creation of specialized centers focusing on key areas such as tropical diseases, maternal and child health, and nutrition. These centers not only contribute to academic excellence but also provide valuable insights and solutions to pressing health issues in the region.

4.8.5.3 UNDIL, ICS, ISC Initiatives

The initiatives undertaken by the Universidade de Dili (UNDIL), Instituto de Ciências da Saúde (ICS), and Instituto Superior Cristal (ISC) collectively enhance the landscape of health science education. UNDIL emphasizes the importance of culturally sensitive healthcare practices, training students to deliver patient-centered care that respects and integrates local traditions and beliefs. ICS, on the other hand, focuses on advancing public health research, equipping students with the skills to conduct impactful studies that inform policy and practice. ISC contributes by offering specialized programs that address niche areas in health science, ensuring that graduates are well-prepared to meet specific needs within the healthcare system.

4.9 Current Impact

Timor-Leste has made significant strides in improving healthcare access for its population. Since gaining independence in 2002, the country has prioritized rebuilding its healthcare system, which was severely underdeveloped. Access to basic healthcare services has expanded, but challenges remain, particularly in rural and remote areas where infrastructure is limited. The government, alongside international partners, has been working to increase healthcare facilities and improve service delivery, aiming to ensure that every citizen can receive fundamental medical care.

4.9.1 Role of Health Science Graduates

Health science graduates play a crucial role in enhancing healthcare access and quality in Timor-Leste. These graduates bring essential skills and knowledge that contribute to the development and implementation of effective healthcare strategies. They are often at the forefront of service delivery, working in hospitals, clinics, and community health settings across the country. By applying their

expertise, they help bridge the gap between healthcare needs and available resources, thus playing an integral part in the nation's efforts to build a robust healthcare system.

4.9.2 Importance of National Health Goals

Achieving national health goals is imperative for the progress and well-being of Timor-Leste. These goals focus on improving overall health outcomes, reducing disease burden, and promoting health equity among the population. By aligning healthcare initiatives with these objectives, Timor-Leste aims to enhance the quality of life for its citizens and foster sustainable development. The involvement of health science graduates in this mission is vital, as they contribute to reaching these goals through their work in healthcare delivery, education, and research. As Timor-Leste continues to strive towards its national health aspirations, the role of these graduates remains a cornerstone of its strategy.

4.9.3 Healthcare Access Improvements

In recent years, Timor-Leste has made significant progress in improving healthcare access, a crucial factor in enhancing the overall health and well-being of its population. This progress is evident in several key areas, including the expansion of healthcare facilities, the increased availability of medical professionals, and the integration of technology and telemedicine into the healthcare system.

4.9.4 Expansion of Healthcare Facilities

The government of Timor-Leste has prioritized the expansion of healthcare infrastructure as a foundational step towards improving access. New clinics and hospitals have been constructed in both urban and rural areas, significantly reducing the distance that individuals must travel to receive medical care. These facilities are equipped with modern medical equipment, ensuring that patients receive high-quality treatment. Additionally, the expansion includes specialized centers that cater to specific health needs, such as maternal and child health, further contributing to improved healthcare outcomes.

4.9.5 Increased Availability of Medical Professionals

The availability of well-trained medical professionals is a cornerstone of effective healthcare delivery. Timor-Leste has seen an increase in the number of doctors, nurses, and allied health professionals, thanks to both local training programs and international collaborations. Health science graduates play a pivotal role in this improvement, as they bring fresh knowledge and skills to the healthcare system. Furthermore, initiatives aimed at retaining medical professionals in the country, such as incentive programs and career development opportunities, have been implemented to ensure that healthcare services remain robust and sustainable.

4.9.6 Role of Technology and Telemedicine

The integration of technology into healthcare has been transformative for Timor-Leste. Telemedicine, in particular, has emerged as a vital tool in bridging the gap between remote communities and healthcare providers. Through telemedicine platforms, patients in rural areas can consult with specialists without the need for lengthy travel, thus saving time and resources. Additionally, digital health records have streamlined patient management and improved the efficiency of healthcare services. This technological advancement not only enhances access but also elevates the quality of care provided.

4.9.7 Contribution of Health Science Graduates

Health science graduates play a pivotal role in advancing healthcare access and quality in Timor-Leste. Their contributions are multifaceted, encompassing training and education, community health initiatives, and research and development.

4.9.7.1 Training and Education Programs

One of the primary contributions of health science graduates is their involvement in training and education programs. These graduates are instrumental in educating the next generation of healthcare professionals, ensuring that the workforce is equipped with up-to-date knowledge and skills. By serving as educators in universities and vocational training centers, they help to build a robust healthcare system capable of meeting the country's growing demands. Their expertise is crucial in developing curricula that address the specific health challenges faced by Timor-Leste, including infectious diseases, maternal and child health, and nutrition.

4.9.7.2 Community Health Initiatives

Health science graduates actively engage in community health initiatives, working directly with local populations to improve health outcomes. These initiatives often involve health education campaigns, vaccination drives, and preventive care services that are essential in remote and underserved areas. By leveraging their training, graduates are able to design and implement programs that are culturally sensitive and tailored to the unique needs of Timorese communities. Their work in promoting health literacy and disease prevention is vital in reducing the burden on healthcare facilities and improving overall public health.

4.9.7.3 Research and Development in Healthcare

Research and development represent another critical area where health science graduates contribute significantly. Through research, they identify key health issues and develop evidence-based solutions that inform policy and practice. Graduates are involved in conducting studies that address local health challenges, such as malnutrition and communicable diseases, and their findings help shape national health strategies. Furthermore, their involvement in developing innovative healthcare technologies and practices ensures that Timor-Leste remains at the forefront of improving healthcare delivery.

4.9.8 Public Health Initiatives

Timor-Leste, a young nation with a burgeoning population, has historically faced significant challenges in providing equitable healthcare access to its citizens. Geographic isolation, limited infrastructure, and a shortage of skilled health professionals have traditionally hindered the delivery of essential healthcare services. Rural and remote areas, in particular, struggle with a lack of medical facilities and personnel, making healthcare access a pressing issue. Recent efforts, however, have been made to address these challenges, aiming to build a more robust healthcare system that can cater to the diverse needs of the population.

4.9.8.1 Role of Health Science Graduates

A pivotal factor in transforming Timor-Leste's healthcare landscape is the increasing number of health science graduates. These individuals are not only filling critical gaps in the workforce but are also bringing new expertise and innovative approaches to healthcare delivery. Graduates in fields such as medicine, nursing, public health, and allied health sciences are essential in implementing effective health programs and policies. Their contributions extend beyond clinical settings, as they

are involved in health education, research, and community outreach, thereby enhancing the overall healthcare framework in the country.

4.9.8.2 Importance of National Health Goals

Achieving national health goals is crucial for Timor-Leste's development and the well-being of its citizens. The government has outlined specific objectives aimed at reducing disease burden, improving maternal and child health, and ensuring access to essential healthcare services for all. Health science graduates play a critical role in realizing these goals by driving initiatives that focus on prevention, treatment, and health promotion. Their involvement in policy-making and healthcare planning is vital for creating sustainable systems that can adapt to changing health needs and challenges. As Timor-Leste continues its journey towards improved healthcare access and quality, the contributions of health science graduates remain indispensable.

4.9.9 Impact on Healthcare Access

4.9.9.1 Increased Availability of Healthcare Professionals

In recent years, Timor-Leste has witnessed a significant increase in the number of healthcare professionals, thanks to the influx of health science graduates entering the workforce. These graduates are filling crucial gaps in the healthcare system, particularly in rural and underserved areas where access to medical care was previously limited. By expanding the pool of qualified professionals, including doctors, nurses, and allied health workers, these graduates are enhancing the reach and availability of healthcare services across the nation. This expansion is crucial for ensuring that every citizen, regardless of their location, can access the medical care they need.

4.9.9.2 Improved Healthcare Infrastructure

The contributions of health science graduates extend beyond human resources; they are also instrumental in the development and improvement of healthcare infrastructure. With their advanced training and education, these graduates are equipped to participate in the planning and implementation of new healthcare facilities and the upgrading of existing ones. Their expertise ensures that these infrastructures are equipped with modern medical technologies and are designed to accommodate the growing healthcare demands of the population. As a result, there is a noticeable improvement in the quality and accessibility of healthcare facilities throughout Timor-Leste.

4.9.9.3 Enhanced Community Health Programs

Health science graduates are playing a pivotal role in enhancing community health programs, which are essential for promoting public health and preventive care. By designing and implementing targeted health initiatives, these graduates are addressing specific health challenges faced by communities, such as infectious diseases, maternal and child health, and nutrition. Their involvement in community outreach and education programs helps to raise awareness about healthy living practices and the importance of regular health check-ups. This focus on preventive care not only improves the overall health outcomes of the population but also reduces the burden on the healthcare system by minimizing the need for emergency and long-term care.

4.9.10 Quality of Healthcare Services

4.9.10.1 Training and Education for Health Professionals

The quality of healthcare services in Timor-Leste has seen significant improvement due to the enhanced training and education of health professionals. Health science graduates, equipped with modern knowledge and skills, are instrumental in this transformation. By participating in comprehensive training programs and continuous education initiatives, these professionals are better prepared to meet the diverse medical needs of the population. The introduction of specialized courses and practical training modules ensures that graduates are adept at handling complex medical cases, thus elevating the overall standard of care provided to patients.

4.9.10.2 Implementation of Modern Medical Practices

With the influx of well-trained health science graduates, Timor-Leste has witnessed a shift towards the implementation of modern medical practices. These professionals bring with them a wealth of contemporary knowledge that integrates the latest medical technologies and evidence-based practices into the local healthcare system. This evolution is evident in the adoption of advanced diagnostic tools, improved treatment protocols, and the utilization of digital health solutions. As a result, healthcare services are more efficient, accurate, and aligned with international standards, contributing to better patient outcomes.

4.9.10.3 Patient Satisfaction and Outcomes

The emphasis on quality healthcare services has led to notable improvements in patient satisfaction and outcomes in Timor-Leste. Health science graduates play a pivotal role in fostering a patient-centered approach, where the focus is on delivering compassionate and comprehensive care. By prioritizing effective communication, cultural sensitivity, and personalized treatment plans, healthcare providers ensure that patients are actively involved in their healthcare journey. This approach not only enhances patient satisfaction but also leads to improved health outcomes, as individuals are more likely to adhere to treatment regimens and engage in preventive health measures. The cumulative effect of these efforts is a healthier population and a more resilient healthcare system.

4.10 Future Implications

4.10.1 Sustainable Development Goals

The Sustainable Development Goals (SDGs), adopted by all United Nations Member States in 2015, serve as a universal call to action to end poverty, protect the planet, and ensure that all people enjoy peace and prosperity by 2030. Comprising 17 goals with 169 targets, the SDGs provide a comprehensive framework to address the world's most pressing challenges. These goals are interconnected and designed to balance the three dimensions of sustainable development: economic growth, social inclusion, and environmental protection. While each goal has its distinct focus, their interdependent nature underscores the need for a holistic approach to global development.

4.10.2 Importance of Health-Related SDGs

Health is a cornerstone of sustainable development, as it is both an outcome and a driver of progress. The health-related SDGs, particularly Goal 3: Good Health and Well-being, aim to ensure healthy lives and promote well-being for all at all ages. This goal encompasses a wide range of targets, including reducing maternal and child mortality, combating communicable diseases, and promoting mental health. Achieving these targets is crucial, as improved health outcomes contribute to economic

stability, poverty reduction, and social equity. Furthermore, health intersects with other SDGs, such as those addressing water and sanitation, nutrition, and climate change, highlighting the necessity of integrated strategies to achieve sustainable development.

4.10.3 Role of Health Science Graduates

Health science graduates are uniquely positioned to play a pivotal role in advancing the health-related SDGs. Equipped with specialized knowledge and skills, they can drive innovations in medical research, spearhead community health initiatives, and influence policy development and advocacy. As emerging leaders in the health sector, these graduates possess the potential to bridge the gap between scientific advancements and practical solutions, ensuring that healthcare delivery is efficient, equitable, and sustainable. Their contributions are essential to overcoming the myriad challenges that hinder progress toward the health-related SDGs, making them invaluable agents of change in the quest for a healthier, more sustainable future.

4.10.4 Contributions of Health Science Graduates

4.10.4.1 Innovations in Medical Research and Technology

Health science graduates are at the forefront of medical research and technological innovation, driving advancements that directly support SDG 3: Good Health and Well-being. Their work in developing new treatments, vaccines, and diagnostic tools has led to significant improvements in disease prevention and management. By engaging in cutting-edge research, these graduates contribute to a deeper understanding of health issues and the creation of innovative solutions that enhance healthcare delivery and outcomes. This research not only addresses current health challenges but also anticipates future needs, ensuring a resilient and adaptable healthcare system.

4.10.4.2 Community Health Initiatives

In addition to their contributions to research, health science graduates are instrumental in implementing community health initiatives that promote well-being at the grassroots level. They work to improve access to healthcare services, particularly in underserved areas, and focus on preventive care and health education. By organizing and participating in health campaigns, screenings, and workshops, they empower communities to take charge of their health, thereby reducing the burden of disease and improving quality of life. These efforts are crucial for bridging health disparities and ensuring that no one is left behind in the pursuit of sustainable development.

4.10.4.3 Policy Development and Advocacy

Health science graduates also play a key role in shaping health policies and advocating for systemic change. Their expertise and insights are invaluable in the formulation of evidence-based policies that align with the SDGs and address pressing health issues. By engaging with policymakers, they advocate for increased investment in healthcare infrastructure, research funding, and equitable access to medical services. Their advocacy efforts extend to global platforms, where they contribute to international health dialogues and collaborate with stakeholders to drive meaningful progress toward achieving the health-related SDGs.

4.10.5 Future Pathways for Health Science Graduates

4.10.5.1 Interdisciplinary Collaboration

One of the most promising pathways for health science graduates is the opportunity for interdisciplinary collaboration. The complex nature of global health issues requires input from various fields, including technology, environmental science, and social sciences. Health science graduates can leverage their expertise by working alongside engineers to develop innovative medical devices, partnering with environmental scientists to address health impacts of climate change, or collaborating with economists to create sustainable healthcare systems. This synergy will enhance the efficacy of health interventions and promote holistic approaches to achieving the SDGs.

4.10.5.2 Global Health Leadership

Health science graduates are uniquely positioned to assume leadership roles in global health initiatives. By engaging in international organizations, non-governmental organizations, and government agencies, they can influence policies and practices that align with the SDGs. As leaders, they can advocate for equitable healthcare access, drive initiatives to combat emerging health threats, and foster partnerships that transcend national borders. Their leadership will be crucial in mobilizing resources, shaping public health strategies, and ensuring that health remains a priority on the global agenda.

4.10.5.3 Continuous Education and Skill Development

In a rapidly changing world, continuous education and skill development are essential for health science graduates. The health sector is constantly evolving with advancements in technology, shifts in disease patterns, and emerging public health challenges. Graduates must commit to lifelong learning to remain at the forefront of their field. This includes pursuing further specialization, participating in workshops and conferences, and engaging in research endeavors. By staying informed and adaptable, they can contribute effectively to the achievement of health-related SDGs and respond to future challenges with innovative solutions.

4.11 Innovation in Health Education

Health education is at a pivotal juncture, where traditional methods are increasingly being complemented and, in some cases, replaced by modern approaches. Historically, health education relied heavily on didactic teaching methods, in-person lectures, and hands-on clinical experiences. While these methods have served the field well for many decades, the rapid pace of technological advancement and the evolving needs of diverse patient populations necessitate a transformation. The current state of health education is characterized by a growing recognition of the need to integrate technological tools and community-based learning experiences to better prepare graduates for the challenges of modern healthcare environments.

4.11.1 The Role of Innovation in Transforming Health Education

Innovation plays a crucial role in transforming health education by bridging the gap between conventional teaching methods and the demands of contemporary healthcare systems. It introduces new ways to enhance learning, making it more interactive, personalized, and accessible. Technological innovations such as virtual reality, artificial intelligence, and e-learning platforms are revolutionizing how students gain practical skills and theoretical knowledge. Meanwhile, innovative community engagement strategies are enriching students' educational experiences by embedding them in real-world settings where they can apply their learning and develop a deeper understanding

of diverse healthcare needs. These innovations are not only enhancing the quality of education but also ensuring that future healthcare professionals are well-equipped to handle the complexities of their field.

4.11.2 Purpose of Discussing Future Implications

The purpose of discussing future implications is to explore how these innovations will shape the future landscape of health education and, consequently, healthcare delivery. By examining the integration of technology and community engagement, this article aims to highlight the potential these advancements hold in preparing health education graduates to meet future challenges effectively. It seeks to provide insights into how educational institutions can adapt to these changes and foster an environment that promotes continuous learning and ethical practice. Ultimately, this discussion is intended to underscore the importance of ongoing innovation in health education, ensuring that it remains responsive to the dynamic nature of healthcare and continues to produce competent and compassionate healthcare professionals.

4.11.3 Integration of Technology in Health Education

In the rapidly evolving landscape of health science education, the integration of technology stands as a pivotal force in reshaping how students learn and apply their knowledge. As the healthcare industry becomes increasingly complex, educational institutions are leveraging advanced technologies to ensure that their graduates are well-prepared for the challenges ahead.

4.11.4 Use of Virtual Reality and Simulations for Practical Training

Virtual reality (VR) and simulation technologies are transforming practical training in health education. These tools provide students with immersive, hands-on experiences that closely mimic real-life clinical scenarios. By using VR, students can practice surgical techniques, emergency response, and patient interactions in a controlled, risk-free environment. Simulations enable learners to refine their skills, make decisions under pressure, and receive immediate feedback, fostering a deeper understanding of complex medical procedures.

4.11.5 E-learning Platforms for Remote Education

The rise of e-learning platforms has revolutionized remote education, offering greater accessibility and flexibility to health science students. Online courses, webinars, and interactive modules allow students to learn at their own pace, breaking geographical barriers and expanding opportunities for those in underserved areas. These platforms often feature collaborative tools that enable students to engage with peers and instructors, enhancing the learning experience through shared knowledge and diverse perspectives.

4.11.6 Artificial Intelligence in Personalized Learning Paths

Artificial intelligence (AI) is playing an increasingly significant role in personalizing education for health science students. AI-driven platforms can analyze individual learning patterns, strengths, and weaknesses to create tailored educational experiences. By adapting to the unique needs of each student, AI helps optimize learning outcomes and ensures that future healthcare professionals are better equipped to handle the demands of their field. This personalized approach not only improves knowledge retention but also encourages students to take an active role in their education.

Through the integration of these technologies, health education is becoming more dynamic and responsive to the needs of today's students. By embracing these innovations, educational institutions

can provide a more comprehensive, engaging, and effective learning experience that prepares graduates to excel in a technologically advanced healthcare environment.

4.11.7 Community Engagement in Health Education

In the realm of health education, fostering community engagement is increasingly recognized as a crucial component of preparing students for real-world challenges. By integrating community-focused initiatives into health education curricula, institutions can create more holistic and practical learning experiences that benefit both students and the communities they serve.

4.11.8 Partnerships with Local Health Organizations

Partnerships with local health organizations serve as a vital bridge between academic institutions and the communities they inhabit. These collaborations enable students to apply theoretical knowledge in practical settings, enhancing their understanding of health issues within diverse populations. Engaging with hospitals, clinics, and non-profit organizations allows students to observe and participate in the delivery of healthcare services, gaining insights into the operational aspects and socioeconomic factors affecting health outcomes. Such partnerships can also lead to joint research projects, internships, and workshops, enriching the educational experience while addressing community health needs.

4.11.9 Service-Learning Projects for Real-World Experience

Service-learning projects represent another powerful tool for integrating community engagement into health education. These projects require students to engage directly with community members, often addressing pressing health issues such as nutrition, disease prevention, or mental health awareness. By working on these projects, students develop critical problem-solving skills and acquire firsthand experience in community health assessment, program design, and intervention strategies. This experiential learning approach not only reinforces academic concepts but also instills a sense of civic responsibility and social awareness among students, preparing them to become compassionate and effective healthcare professionals.

4.11.10 Cultural Competence and Diversity in Community Interactions

As health disparities persist across different demographic groups, cultural competence becomes essential in health education. Training students to interact effectively with diverse communities requires a curriculum that emphasizes cultural awareness, sensitivity, and respect. By engaging with various cultural groups, students learn to appreciate the unique healthcare beliefs and practices of different populations. This interaction not only enhances their communication skills but also prepares them to deliver more equitable and personalized care. Programs that focus on cultural competence also promote inclusivity within the healthcare system, ensuring that future graduates can meet the needs of an increasingly diverse patient population.

Through strategic community engagement, health education can transcend traditional classroom boundaries, offering students invaluable opportunities to learn from and contribute to the communities they serve. By prioritizing partnerships, service-learning, and cultural competence, educational institutions play a pivotal role in shaping well-rounded health professionals equipped to tackle future challenges in an ever-evolving field.

4.11.11 Preparing Graduates for Future Challenges

As the landscape of health science continues to evolve rapidly, preparing graduates for the myriad of future challenges is crucial. The integration of technology and community engagement necessitates

a comprehensive approach to equip future healthcare professionals with the skills and mindset needed to thrive in an ever-changing environment.

4.11.12 Interdisciplinary Collaboration and Teamwork Skills

In the future of health education, the ability to work collaboratively across various disciplines will be paramount. Graduates must be trained to engage effectively with professionals from diverse fields, including technology, policy, and public health, to provide holistic patient care. Educational programs should emphasize team-based learning and problem-solving exercises that mimic real-world scenarios, fostering an environment where students can develop strong communication and collaboration skills.

4.11.13 Adaptability and Continuous Learning in a Changing Field

The rapid pace of innovation in health science means that knowledge and techniques can quickly become outdated. Therefore, cultivating adaptability and a commitment to lifelong learning is essential for future graduates. Health education curricula should incorporate strategies that encourage curiosity and self-directed learning, enabling students to stay abreast of the latest advancements and integrate new technologies and methodologies into their practice.

4.11.13.1 Demand for Health Science Graduates

The demand for health science graduates has seen a significant increase over the past few decades, driven by the growing need for healthcare services globally. As populations age and healthcare systems expand, there is a pressing requirement for a skilled workforce capable of meeting complex health needs. Health science graduates possess specialized knowledge and skills in areas such as nursing, physiotherapy, public health, and medical research, making them indispensable to healthcare institutions. This demand is further fueled by advancements in medical technologies and an increased emphasis on preventive care, which require a workforce adept in the latest health science innovations.

4.11.13.2 Impact on Public Health Outcomes

The employment of health science graduates has a profound impact on public health outcomes. These professionals are at the forefront of delivering healthcare services, conducting essential research, and implementing health policies. Their work directly contributes to improving patient care, reducing disease incidence, and enhancing overall community health. For instance, graduates in public health roles develop strategies to combat epidemics and promote wellness, while those in clinical settings ensure that patients receive high-quality care. The expertise of health science graduates also plays a crucial role in addressing health disparities and improving access to healthcare services in underserved communities, thereby contributing to more equitable health outcomes.

Despite the high demand for their skills, health science graduates often face challenges in employment. One major issue is the mismatch between the skills taught in higher education institutions and the practical requirements of the healthcare industry. Graduates may find themselves inadequately prepared for the realities of the workplace, necessitating additional training and professional development. Additionally, economic fluctuations can impact funding for healthcare positions, leading to job insecurity in certain regions. Moreover, there is often a geographical disparity in job opportunities, with rural and remote areas experiencing shortages of healthcare professionals while urban centers face saturation. Addressing these challenges requires a concerted effort from educational institutions, policymakers, and the healthcare industry to ensure that the health science workforce is adequately supported and utilized.

4.12 Groundbreaking Research

4.12.1 Labor for Market Studies in Timor-Leste

Timor-Leste, a young nation rich in cultural heritage, is navigating a pivotal stage in its economic development journey. Since its independence in 2002, the country has been working to establish a robust economy that can sustain its population and provide growth opportunities. The economy primarily hinges on sectors such as oil and gas, agriculture, and a burgeoning services industry. Despite these promising sectors, Timor-Leste faces significant challenges, including high unemployment rates, limited infrastructure, and a dependency on volatile oil revenues. These factors underscore the urgent need to diversify the economy and enhance the capacity of the local workforce.

4.12.2 Importance of Higher Education in Economic Development

Higher education is crucial in economic development, acting as a catalyst for innovation, productivity, and social mobility. In Timor-Leste, strengthening higher education systems can lead to a skilled workforce equipped to meet the demands of a dynamic labor market. By fostering critical thinking, technological proficiency, and specialized skills, higher education institutions can help bridge the gap between academic knowledge and practical application, ultimately driving economic growth and development.

4.12.3 Purpose of Examining Labor Market Alignment

This article delves into recent studies exploring the intricate relationship between higher education institutions' output and the labor market for graduates in Timor-Leste. It aims to understand how well the skills and competencies acquired by graduates align with the needs of employers across various sectors. By examining this alignment, the research seeks to identify existing gaps and propose strategies to enhance the synergy between education and employment. This exploration is vital for informing policy decisions, improving educational practices, and ensuring that graduates are adequately prepared to contribute productively to the nation's economy.

4.12.4 Current Higher Education Output in Timor-Leste

Timor-Leste has made significant strides in expanding its higher education sector. This section explores the current state of graduate output, the quality of education, and the government policies underpinning this growth.

4.12.5 Statistics on Graduate Output by Field

Timor-Leste's higher education institutions have seen a steady increase in the number of graduates, reflecting growing accessibility to tertiary education and governmental efforts to enhance educational infrastructure. Recent data shows that fields like education, social sciences, and humanities have the highest number of graduates, followed by business and management studies. However, sectors such as engineering, technology, and natural sciences account for a smaller portion of the graduate pool. This distribution highlights a potential area for development, particularly in fields aligning with the country's strategic economic priorities.

4.12.6 Quality of Education and Skill Levels

While the quantity of graduates is rising, the quality of education and skill levels remain concerning. Many institutions face challenges related to outdated curricula, limited resources, and insufficient faculty training, affecting graduates' overall competency. Employers often report a gap between the

skills acquired by students and those demanded by the labor market, particularly in technical and specialized fields. This mismatch underscores the need for comprehensive reforms in educational content and teaching methodologies to ensure graduates are better equipped to meet industry standards.

4.12.7 Government Policies Supporting Higher Education

The government of Timor-Leste has implemented policies to bolster higher education, including initiatives to enhance educational infrastructure, provide scholarships, and encourage partnerships with international universities. Increasing emphasis is placed on vocational and technical education to better align with labor market needs. The government's strategic plan stresses the importance of developing a skilled workforce that can contribute to national development goals. However, the effectiveness of these policies depends on their adaptability to the labor market's dynamic demands and the evolving economic landscape.

4.13 Labor Market Demand and Alignment

4.13.1 Key Sectors Driving Job Growth

Timor-Leste's labor market is influenced by key sectors pivotal in driving job growth. The oil and gas industry remains a cornerstone of the economy, offering numerous employment opportunities, particularly for those with specialized skills in engineering, geology, and environmental sciences. Agriculture continues to be a significant contributor, employing a large portion of the population in traditional farming and new agribusiness initiatives aimed at increasing productivity and sustainability. The services sector, including tourism, hospitality, and retail, is expanding, creating diverse job opportunities. As Timor-Leste seeks to capitalize on its natural beauty and cultural heritage, tourism-related services are expected to become increasingly vital to the economy. Additionally, government investment in infrastructure development is projected to generate jobs in construction, transportation, and logistics. Understanding these sectors' dynamics is crucial for aligning educational outputs with market needs.

4.13.2 Mismatch Between Skills and Job Requirements

Despite growth potential in these sectors, a noticeable mismatch exists between graduates' skills and labor market requirements. This skills gap is evident in the disparity between the high number of graduates in social sciences and humanities and the demand for technical skills in engineering, IT, and vocational trades. Employers often struggle to find candidates with the necessary expertise and practical experience, hindering their ability to fill key positions effectively. This mismatch can be attributed to several factors, including the limited resources available to higher education institutions, affecting curriculum quality and relevance. Additionally, there is a lack of industry engagement in curriculum development, meaning educational programs may not adequately reflect current market demands. Addressing this issue is essential to ensure graduates are equipped with the skills needed to thrive in the evolving job market.

4.13.3 Employer Perspectives on Graduate Readiness

Employers in Timor-Leste have expressed concerns regarding graduates' readiness for the workforce. Many highlight the need for stronger practical skills and hands-on experience, alongside theoretical knowledge. Communication skills, problem-solving abilities, and adaptability are often cited as areas needing improvement among new graduates.

To bridge this gap, some companies have initiated partnerships with educational institutions to offer internships, apprenticeships, and on-the-job training programs. These initiatives aim to provide

students with real-world experience and familiarize them with industry-specific challenges. However, such efforts are still in their infancy and require broader adoption and support from the private sector and government to make a significant impact.

4.14 Impact of Research on Policy and Practice

4.14.1 Case Studies of Successful Alignment Initiatives

Several initiatives in Timor-Leste have successfully bridged the gap between higher education output and labor market needs. Notable examples include partnerships between local universities and the technology sector, where tailored curricula meet specific tech company skill requirements. This collaboration has resulted in higher employment rates for graduates in this burgeoning field, showcasing the potential of targeted educational reforms. Another successful initiative includes the agricultural sector's internship program, pairing students with industry professionals, providing hands-on experience, and enhancing employability. These case studies highlight the effectiveness of direct collaboration between educational institutions and industry players in aligning educational outcomes with market demands.

4.14.2 Recommendations for Improving Education-Labor Market Linkages

To further strengthen the connection between higher education and the labor market in Timor-Leste, several strategic recommendations can be made. Expanding industry-academia partnerships is crucial, allowing for the continuous updating of curricula to reflect current and future market needs. Incorporating soft skills training, such as communication and problem-solving, into academic programs can address employer concerns regarding graduate readiness. Establishing a centralized labor market information system would provide valuable insights into emerging job trends, guiding both students and educators in making informed decisions. Finally, incentivizing research and innovation within universities can foster an environment of adaptability and responsiveness to economic shifts.

4.14.3 Potential Long-Term Economic Benefits

Aligning higher education with labor market demands holds significant potential for Timor-Leste's long-term economic development. By producing graduates with skills that meet industry requirements, the nation can reduce unemployment rates and enhance productivity. This alignment can also attract foreign investment, as a skilled workforce is a key factor for international companies considering expansion into new markets. Moreover, a dynamic education system that adapts to economic changes can drive innovation and entrepreneurship, contributing to sustainable economic growth. Ultimately, these efforts can lead to a more resilient economy, capable of withstanding global shifts and fostering improved living standards for the population.

4.15 Labor for Impact Assessments of Health Programs

Health programs are instrumental in improving public health by addressing diverse medical and social needs. These initiatives range from preventive care and health education to treatment and rehabilitation, all aimed at enhancing the quality of life for individuals and communities. By reducing healthcare costs and promoting health equity, health programs play a critical role in shaping a healthier future. As global health challenges evolve, the development and implementation of effective health programs have become more crucial than ever. With advancements in medical technologies and a growing emphasis on holistic health, these programs are essential for fostering a well-rounded approach to public health.

4.15.1 Need for Impact Assessments

Despite their critical role, evaluating the effectiveness of health programs remains a complex task. Impact assessments are vital tools that help determine whether these programs achieve their intended outcomes and provide value for the resources invested. They offer insights into the efficacy, efficiency, and sustainability of health interventions, guiding policymakers and stakeholders in making informed decisions. Without rigorous impact assessments, identifying best practices, allocating funding wisely, and making necessary adjustments to programs become challenging tasks.

4.15.2 Evaluating the Effectiveness of Health Programs

The evaluation of health programs is crucial to ensure they meet their intended objectives. This section explores the methodologies used in impact assessments, presents case studies of successful health programs, and discusses the challenges encountered in evaluating such programs.

4.15.3 Methodologies Used in Impact Assessments

Impact assessments of health programs employ various methodologies to gauge their effectiveness, including quantitative and qualitative approaches such as randomized controlled trials (RCTs), longitudinal studies, and mixed-methods research. RCTs, considered the gold standard, allow researchers to compare outcomes between treatment and control groups. Longitudinal studies track participants over time, providing insights into the long-term effects of health programs. Mixed-methods research combines quantitative data with qualitative insights, offering a comprehensive view of program effectiveness by incorporating participant feedback and contextual factors.

4.15.4 Case Studies of Successful Health Programs

Examining case studies of successful health programs offers valuable insights into what works and why. For example, a community-based health initiative in rural India improved maternal and child health outcomes through health education, access to essential services, and community engagement. Similarly, a school-based nutrition program in the United States led to better dietary habits and reduced obesity rates among students. These case studies underscore the importance of tailored interventions, stakeholder involvement, and continuous monitoring in achieving successful health outcomes.

4.15.5 Research on Employment Outcomes of Graduates

4.15.5.1 Link Between Curriculum and Employment

A well-structured curriculum is critical for favorable employment outcomes for graduates of health programs. The curriculum guides students in acquiring necessary skills and knowledge aligned with healthcare market demands. Educational institutions must continuously assess and update their curricula to reflect the evolving healthcare landscape by incorporating current industry practices, emerging technologies, and innovative solutions. This alignment ensures that graduates are well-prepared for the workforce, increasing their likelihood of finding relevant job opportunities and excelling in their professional roles.

4.15.5.2 Statistical Analysis of Graduate Outcomes

Comprehensive statistical analysis of graduate outcomes is essential for understanding the effectiveness of health programs in preparing students for employment. Such analyses typically involve tracking employment rates, job placement within specific sectors, and salary benchmarks for

recent graduates. These metrics provide educational institutions with insights into the strengths and weaknesses of their programs. For example, higher employment rates and competitive salaries indicate that graduates possess the skills required by the industry. Conversely, low job placement rates may suggest a need for curriculum revisions or additional support services to enhance employability.

4.15.5.3 Role of Internships and Practical Experiences

Internships and practical experiences are pivotal in shaping the employment outcomes of graduates in health programs. These experiential learning opportunities allow students to apply theoretical knowledge in real-world settings. Internships often serve as a bridge between academic learning and professional practice, offering insights into the healthcare industry, building professional networks, gaining mentorship, and developing soft skills crucial for career success. Many health programs integrate internships into their curricula, partnering with hospitals, clinics, and healthcare organizations to provide students with diverse experiences. As a result, graduates with internship experience are often more competitive in the job market.

4.15.6 Curriculum Development for Health Programs

4.15.6.1 Innovative Teaching Methods

Curriculum development for health programs has shifted towards innovative teaching methods. Traditional lecture-based approaches are being complemented or replaced by interactive and student-centered learning models. Techniques such as problem-based learning (PBL), simulation-based training, and flipped classroom models enhance student engagement and foster critical thinking and problem-solving skills. PBL, for instance, encourages students to work collaboratively on complex, real-world health issues, promoting a deeper understanding of the subject matter.

4.15.6.2 Integration of Technology in Health Education

The integration of technology into health education has revolutionized student learning. Digital platforms and tools like virtual reality (VR), augmented reality (AR), and online learning management systems (LMS) provide immersive learning experiences that simulate real-life medical scenarios. These technologies allow students to practice and refine skills in a controlled environment. Additionally, data analytics in educational technology enables educators to tailor learning experiences to individual student needs, improving outcomes and retention rates. Establishing robust feedback loops between industry and academia is crucial for developing a curriculum that meets healthcare sector needs. Regular consultations with industry professionals and alumni provide valuable insights into current trends, skill gaps, and emerging technologies. This collaboration ensures that educational programs remain relevant and that graduates are equipped with competencies required by employers. Industry feedback can lead to continuous improvement of course content, teaching methods, and assessment strategies, enhancing the overall quality of health education programs.

FINDINGS

5.1 Highlights of the Graduate Employment Rate in Timor-Leste Year 2019-2023 in Health Science Area

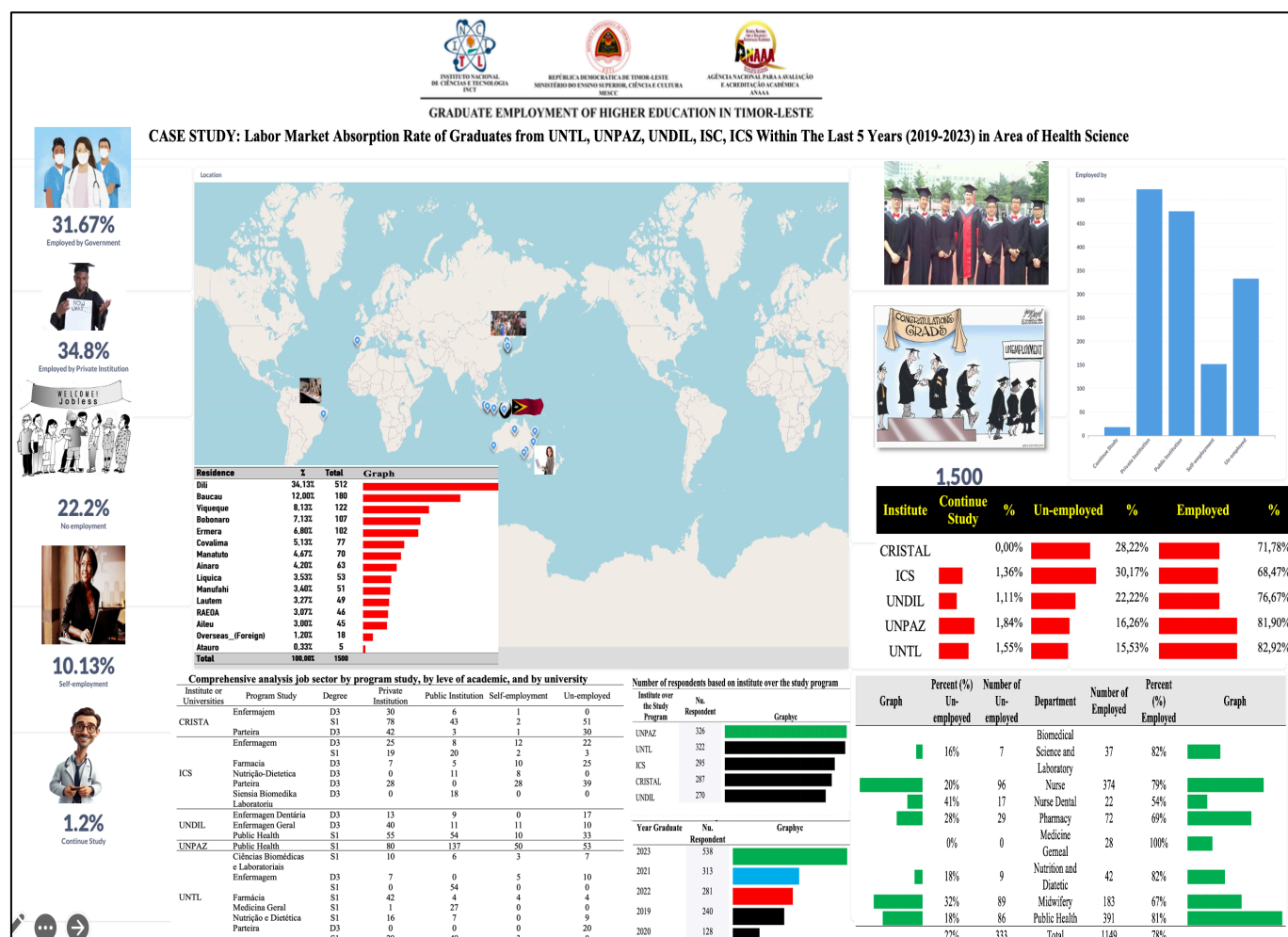


Figure 12. Main Dashboard of Data Collection

Understanding the employment landscape for health science graduates from various higher education institutions (HEIs) is crucial for both prospective students and policymakers. This analysis focuses on the employment rates, unemployment rates, and trends in further education among graduates from five institutions: UNTL, UNPAZ, UNLIL, CRISTAL, and others. The findings highlight the performance of these institutions in preparing their graduates for the labor market.

5.1.1 Comparative Analysis of Employment Rates

The employment rates for health science graduates from the five HEIs reveal significant disparities:

- UNTL leads the group with an impressive employment rate of 82.92%. This suggests that the programs offered at UNTL effectively equip students with the skills and knowledge needed to enter the workforce successfully. UNPAZ follows closely with an employment rate of 81.90%, indicating a similarly strong performance in preparing graduates for employment. This finding aligns with theories of human capital riseup by Kertechian & El-Farr, (2023) the core argument presented here is that higher education institutions, through

targeted curricula and skill development initiatives, significantly contribute to the employability of their graduates. This is a direct manifestation of the human capital theory, which posits that investments in education and training yield returns in the form of improved job prospects and productivity. Fostering an environment that prioritizes skill acquisition and practical training, both UNTL and UNPAZ exemplify the success of this theory in action. Moreover, this analysis invites further exploration into the specific programs and methodologies employed by these institutions that lead to such high employment rates. Future research conducted by Hartog & van den Brink (2007) could delve into the types of training, experiential learning opportunities, and partnerships that may be contributing factors to their success. Understanding these elements could provide valuable insights for other educational institutions aiming to enhance their graduates' employment outcomes.

- On the other hand, UNDIL shows a notable drop with a 76.67% employment rate. While still a positive figure, it may indicate potential areas for improvement in curriculum relevance or job placement services. This result align with theories posited by Lawrence & Murray (2017) underscore the critical connection between educational outcomes and employment prospects, suggesting that institutions must actively engage in continuous curriculum reviews and modifications to ensure relevance in a rapidly changing economic landscape. This alignment is essential not only for maintaining competitive employment rates but also for preparing students to thrive in their respective fields. Further research is warranted to delve deeper into the specific areas of curriculum that may require enhancement. Engaging with stakeholders, conducting surveys among alumni, and analyzing labor market trends can provide valuable insights into how UNDIL can refine its educational offerings. Additionally, bolstering job placement services can create more robust pathways for students entering the workforce, ensuring they are not only qualified but also positioned effectively to seize available opportunities.
- The most concerning figure comes from CRISTAL, which has the lowest employment rate at 71.78%. This could signify issues related to job placement or may suggest that the curriculum offered may not align well with the current demands of the job market. This result align with theories pursuit by Marginson's analysis of global, national, and local influences on higher education emphasizes the necessity for institutions to navigate competitive landscapes effectively, ensuring that their graduates are equipped with the skills and knowledge that align with current and future labor market demands. Similarly, Nafukho et al.'s exploration of employability as a core function of higher education reinforces the argument that educational programs must evolve to meet the vocational needs of society, thereby ensuring that graduates can transition successfully into the workforce. Given these perspectives, it is imperative for stakeholders in higher education administrators, faculty, and policymakers to conduct a thorough evaluation of the CRISTAL curriculum and job placement mechanisms. This evaluation should aim not only to identify gaps and misalignments but also to develop strategic interventions that enhance the employability of graduates. Initiatives could involve integrating real-world experiences into the curriculum, fostering partnerships with industry, and implementing robust career services that provide ongoing support to students. This scenario calls for additional research to delve deeper into the factors contributing to the low employment rate. Studies could focus on analyzing the specific skills that employers are seeking, the effectiveness of current job placement initiatives, and the experiences of graduates navigating the job market. Understanding these dynamics will be crucial in shaping

educational policies and practices that are responsive to the needs of both students and employers. While the current employment rate of CRISTAL graduates is concerning, it serves as a catalyst for necessary reform. By embracing a collaborative approach that involves continuous feedback from partners and a commitment to curricular innovation, higher education institutions can foster a generation of graduates who are not only employable but are also poised to thrive in the complex and competitive job market of the future. The challenge lies ahead, but with strategic action and focused research, there is a pathway to improving both employment outcomes and the overall effectiveness of higher education in preparing students for their careers.

5.1.2 Unemployment Rates

Based on the result employment rates, it's important to consider unemployment rates, which provide insight into the challenges graduates face in securing jobs after completing their education:

- UNTL not only has the highest employment rate but also boasts the lowest unemployment rate at 15.53%. This indicates that graduates from this institution have a smoother transition into the workforce compared to their peers from other institutions.
- In stark contrast, CRISTAL has a much higher unemployment rate of 28.22%. This high rate suggests that graduates may encounter significant challenges when seeking employment, which could be a result of various factors including a lack of market connections, inadequate job placement support, or a curriculum that does not meet the current needs of employers.

The findings indicate that UNTL stands out significantly with an unemployment rate of just 15.53%, positioning its graduates favorably in the job market. This lower unemployment rate suggests that UNTL has effectively equipped its students with the necessary skills and market connections, thereby facilitating a smoother transition into relevant employment opportunities. The supportive infrastructure at UNTL, including robust job placement services and a curriculum tailored to meet current employer needs, likely plays a pivotal role in this success. In contrast, CRISTAL's graduates face a daunting unemployment rate of 28.22%. This higher rate points to substantial challenges that graduates may encounter in their job search. Possible contributing factors could include insufficient industry ties, a lack of effective job placement mechanisms, or a curriculum that falls short of the evolving requirements of the job market. Such disparities in employment outcomes raise critical questions about the effectiveness of educational strategies employed by different institutions and their responsiveness to labor market trends.

The core argument posited by various researchers such as Adjani et al. (2023), Baah-Boateng (2016), Cloete (2015), Godden (2015), Parsons (1980), Pompei & Selezneva (2021), and Saldanha & Redden (2009) suggests that the relationship between education and employment is complex and multifaceted. The contrasting unemployment rates among graduates from different institutions not only reflect the quality and relevance of their education but also highlight systemic issues within the labor market itself. This discrepancy underscores the need for educational institutions to continuously reassess and adapt their curricula to better align with the demands of employers and the skills required in the workforce.

The findings prompt several avenues for future research and action. Policymakers and educational leaders must prioritize a collaborative approach that involves stakeholders in the development and review of academic programs. By fostering partnerships between educational institutions and the business sector, there is potential for creating more relevant curricula that not only enhance employability but also address the skills gap currently observed in many industries.

Further research could investigate the specific factors contributing to the high unemployment rates at institutions like CRISTAL, including student support services, networking opportunities, and career counseling effectiveness. Additionally, longitudinal studies tracking graduates' career trajectories over time could provide deeper insights into the long-term impacts of educational choices on employment outcomes.

As we navigate this complex landscape, it is imperative for educational institutions, policymakers, and industry leaders to engage in constructive dialogue aimed at bridging the gap between education and employment. By prioritizing employment generation over mere job creation, we can foster an environment where graduates are not only equipped with academic knowledge but are also prepared to meet the challenges of the workforce head-on.

As an summarise of this finding, the disparities in unemployment rates among graduates from different institutions compel us to reconsider our approaches to education and workforce development. A concerted effort to address these challenges will not only enhance the employability of graduates but will also contribute positively to the broader economic landscape. It is time to take action, ensuring that our educational systems effectively prepare the next generation for the evolving demands of the job market.

5.1.3 Continued Education Trends

An important aspect of graduate outcomes is the decision to pursue further education. The trends observed among the five HEIs indicate minimal interest in continuing studies:

CRISTAL: 0% of graduates pursuing further education. The lack of graduates continuing their studies from CRISTAL could imply two possibilities. First, it may indicate a strong job market where graduates feel confident entering the workforce without further qualifications. Alternatively, it may reflect a lack of perceived value in further education or inadequate support for those considering advanced degrees.

For institutions like UNTL and UNPAZ, the percentage of graduates pursuing further education is also low but may provide some room for growth. If these institutions can strengthen their alumni networks and provide clearer pathways for advanced studies, they may see an increase in the number of graduates opting to continue their education.

As an conclusion employment landscape for health science graduates varies significantly among the five institutions analyzed. UNTL stands out with the highest employment rate and the lowest unemployment rate, while CRISTAL faces challenges that need to be addressed to improve its graduates' outcomes. Focusing on curriculum relevance, enhancing job placement services, and promoting continued education, these institutions can better prepare their students for successful careers in health science. For students, developing skills, building a professional network, and utilizing available resources can greatly enhance their employability and career prospects.

Table 66. Graduate employment rate based on job sector and university

Institute	Continue Study	%	Private Institution	%	Public Institution	%	Self-employment	%	Un-employed	%
CRISTAL		0,00%		52,26%		18,12%		1,39%		28,22%
ICS		1,39%		27,53%		21,95%		20,91%		31,01%
UNDIL		1,05%		37,63%		26,48%		8,01%		20,91%
UNPAZ		2,09%		27,87%		47,74%		17,42%		18,47%
UNTL		1,74%		36,59%		51,22%		5,23%		17,42%

Source 66. Primary Data, 2024

Table above shown the CRISTAL graduates are most likely to enter the private sector but also have a high rate of unemployment. ICS has a balance of private and self-employment but suffers from the highest unemployment rates. UNDIL shows a moderate distribution across private and public employment with reasonable unemployment figures. UNPAZ and UNTL are more successful in directing graduates toward public sector jobs, with lower unemployment rates. The overall trend shows that while there are opportunities in both private and public sectors, unemployment remains a pressing issue for many graduates.

The data illustrates the percentages of graduates from five different institutions who chose to continue their studies, enter private or public employment, become self-employed, or remain unemployed.

1. Continuing Studies

- CRISTAL has the lowest percentage of graduates continuing their studies at 0.00%, suggesting that this institution may focus more on immediate employment rather than academic advancement.
- UNPAZ and UNTL show slightly higher percentages (2.09% and 1.74%, respectively) but still reflect a low inclination among graduates to pursue further education.
- Overall, this indicates that graduates from these institutions are more inclined towards entering the job market directly rather than continuing their education.

2. Employment in Private Institutions

- CRISTAL graduates dominate this category with 52.26% entering private institutions, indicating a strong connection and opportunity within the private sector for these graduates.
- Conversely, ICS and UNPAZ have lower percentages (27.53% and 27.87%, respectively), which could suggest either fewer opportunities or lower interest in the private sector among their graduates.
- UNDIL and UNTL also show moderate percentages (37.63% and 36.59%), reflecting a balanced interest in private employment.

3. Employment in Public Institutions

- UNTL graduates are most successful in securing public sector jobs, with 51.22% entering this field.
- UNPAZ also shows a strong inclination towards public employment, with 47.74%.
- ICS and UNDIL show moderate numbers (21.95% and 26.48%), indicating that while some graduates find success in the public sector, a significant portion opts for private employment.
- CRISTAL has the lowest percentage of graduates entering public institutions at 18.12%, which might suggest a lack of alignment between the graduates' career goals and public sector opportunities.

4. Self-Employment

- ICS graduates show a notable inclination for self-employment at 20.91%. This may reflect a trend towards entrepreneurship among these students or an adaptation to the job market.
- UNPAZ also has a considerable percentage at 17.42%, indicating that a significant number of graduates are pursuing independent ventures.

- The other institutions show lower percentages, with CRISTAL at 1.39% and UNTL at 5.23%, which could indicate a lesser focus on self-employment opportunities or a lack of entrepreneurial resources.

5. Unemployment Rates

- ICS shows the highest unemployment rate at 31.01%, which raises concerns about the employability of its graduates.
- CRISTAL also has a high unemployment rate at 28.22%, indicating potential issues with the alignment of its curriculum with job market demands.
- UNDIL has a lower unemployment rate of 20.91%, while UNPAZ and UNTL have even lower rates at 18.47% and 17.42%, respectively. This suggests that graduates from these institutions have a better transition into employment.

Table 67. Comparison between Graduate Employability by Department

Graph	Percent (%) Un- employed	Number of Un- employed	Department	Number of Employed	Percent (%) Employed	Graph
	16%	7	Biomedical Science and Laboratory	37	82%	
	20%	96	Nurse	374	79%	
	41%	17	Nurse Dental	22	54%	
	28%	29	Pharmacy	72	69%	
	0%	0	Medicine Gerneal	28	100%	
	18%	9	Nutrition and Diatetic	42	82%	
	32%	89	Midwifery	183	67%	
	18%	86	Public Health	391	81%	
	22%	333	Total	1149	78%	

Source 67. Primary Data, 2024

Detailed comparison of the employability rates and unemployment figures for various academic disciplines based on recent data in table above:

- **High Employability in Biomedical Science and Medicine:** The Biomedical Science and Laboratory fields show an impressive employability rate of 82%, while Medicine has a remarkable 100% employment rate with no reported unemployed graduates. This indicates strong demand in these areas. This strong demand is not merely anecdotal; it is substantiated by extensive research, including studies by Butts et al. (2012), Cruser et al. (2009), Grailer et al. (2022), Park et al. (2018), and Zhou et al. (2020). These studies collectively highlight the increasing need for medical scientists and biomedical professionals as the healthcare industry continues to expand and innovate. The 2023 Life Sciences Workforce Trends Report from the Coalition of State Bioscience Institutes (CSBI) further reinforces this trend, projecting a significant growth in employment opportunities for medical scientists at an expected rate of 11% from 2023 to 2033. While some recent reports suggest varying employability ratings, the overall trajectory remains positive, particularly for those who possess the right skills and qualifications. Given the

compelling data presented, it is crucial for current and prospective students, educational institutions, and stakeholders to recognize the opportunities within biomedical science and medicine. As graduates enter the workforce, they should leverage their education and training to meet the evolving needs of the healthcare industry.

- **Nursing and Public Health:** Both nursing and public health demonstrate solid employment rates (79% and 81%, respectively), but nursing has a higher unemployment rate of 20%, which may reflect the competitive nature of the job market in that field. This observation aligns with the findings of several key studies, including those from Aiken et al. (2009), Brownie et al. (2019), Burhin et al. (2024), Canales & Drevdahl (2014), Ghaffari et al. (2015), Strout et al. (2023), and Su et al. (2021), which provide a nuanced understanding of the challenges that nurses face in securing employment despite the apparent demand for their skills. At the heart of this issue lies the competitive nature of the nursing job market. While there is a steady demand for qualified registered nurses (RNs), factors such as educational qualifications, specialization, and geographic location significantly influence employment outcomes. The findings indicate that the nursing workforce is not only competing against one another but also contending with evolving healthcare needs, technological advancements, and policy changes that shape the landscape of healthcare employment. Further research is warranted to delve deeper into the specific factors that contribute to the high unemployment rates within nursing. Investigating the impact of educational pathways, the role of nurse residency programs, and the efficacy of state and federal policies on workforce retention could provide valuable insights. Additionally, exploring the needs of healthcare systems and how they align with nursing competencies may help bridge the gap between education and employment. Moreover, stakeholders, including educational institutions, healthcare organizations, and policy-makers, must collaborate to develop strategies that enhance job readiness among nursing graduates. Initiatives such as mentorship programs, internships, and partnerships with healthcare facilities can play a crucial role in improving employment outcomes for new nurses. While nursing and public health both showcase solid employment rates, the higher unemployment rate in nursing suggests a complex interplay of market dynamics that requires careful consideration. Addressing these challenges through targeted research and collaborative efforts could pave the way for a more robust nursing workforce, ultimately enhancing patient care and health outcomes across communities. As we move forward, it is imperative to not only recognize the value of nurses but also to actively engage in initiatives that support their professional journey and ensure a sustainable future for the nursing profession.
- **Dental Nursing and Midwifery:** The Dental Nursing department shows the lowest employability rate at 54%, with a substantial 41% unemployment rate. Similarly, Midwifery faces challenges with a 32% unemployment rate, indicating potential oversupply in the job market for these sectors. The findings align with the research conducted by Askarian et al. (2012) and others, highlighting systemic issues in workforce demand and supply within these healthcare professions. The implications of these statistics extend beyond mere numbers; they reflect the real-world consequences for aspiring professionals, educational institutions, and healthcare systems that rely on these essential services. Given the critical role that Dental Nurses and Midwives play in patient

care, understanding the underlying factors contributing to these employment trends is paramount. Potential areas for further research include exploring the geographic disparities in job availability, analyzing the impact of educational programs on employability, and assessing employer needs versus the skills provided by training institutions. Actionable strategies should also be considered, such as enhancing collaboration between educational bodies and healthcare employers to better align training outcomes with market demands. Additionally, policy interventions may be necessary to address the oversupply and to create pathways for career development within these fields. As we strive to improve the employment landscape for Dental Nursing and Midwifery professionals, a concerted effort combining research, policy-making, and industry collaboration will be essential to foster a more balanced and sustainable workforce.

- **Pharmacy and Nutrition:** The Pharmacy department has a moderate employment rate of 69% with a substantial 28% unemployment rate. The Nutrition and Dietetics field, however, performs well with 82% employed, which may reflect a growing awareness of health and nutrition. This statistic suggests a growing recognition of the importance of nutrition in overall health, reflecting a societal shift towards preventive healthcare and wellness. The increasing prevalence of chronic diseases, alongside heightened public awareness of nutrition's critical role in health management, further contributes to this positive employment trend. The work of researchers such as Adebisi (2016), Askarian & Malekmakan (2006), and Ayik et al. (2017) underscores these findings, emphasizing the growing demand for qualified nutrition professionals as healthcare systems increasingly prioritize holistic approaches to patient care. The contrasting employment rates between Pharmacy and Nutrition underscore an essential thesis: the healthcare industry's dynamics are shifting towards roles that emphasize preventive care and health education. As the healthcare field continues to evolve, it is crucial for current and prospective professionals in both sectors to remain aware of these trends. For pharmacists, this may mean seeking additional qualifications or specialties that align with the current demands of the healthcare market. For those in Nutrition and Dietetics, the focus should remain on fostering skills that promote health literacy and community outreach, ensuring that they can effectively contribute to public health initiatives. Given these insights, further research is warranted to explore the underlying causes of the employment trends observed in both sectors. Specifically, studies could investigate the impact of educational programs and professional training on job readiness and employment outcomes for pharmacy graduates. Additionally, qualitative research could provide deeper insights into employers' expectations and the skills they value most in prospective employees. On a practical level, stakeholders in both fields should consider collaborative efforts to enhance the visibility and understanding of each profession's role in healthcare. Joint initiatives could include community education programs, public health campaigns, or interdisciplinary workshops that highlight the importance of both pharmacy and nutrition in promoting health and wellness.
- **Overall Employment Trends:** The total employment rate across all departments is 78%, with 22% of graduates unemployed. This overall statistic suggests that while many graduates find employment, nearly a quarter face challenges in securing jobs. The data suggests that while the health sector continues to grow and evolve, driven by increasing

demand for healthcare services and innovations, there remains a substantial cohort of graduates struggling to secure employment. This aligns with the findings from various studies (Adebisi, 2016; Aldeen et al., 2014; Askarian & Malekmakan, 2006; Ayik et al., 2017; Blair et al., 2022; Dahal et al., 2018; Deming, 1946; Goober, 1965; Kumakech et al., 2020; D. Li et al., 2023; Loewenson, 2021; Malti et al., 2017), which collectively highlight the persistent challenges in the job market for health science graduates despite the overall growth in healthcare employment opportunities. The trend indicates that while healthcare remains one of the fastest-growing sectors, the actual alignment between graduates' skills and the specific demands of the job market must be examined closely. Given these insights, it is imperative for stakeholders including educational institutions, policymakers, and industry leaders to collaborate in developing strategies that can enhance employment outcomes for health science graduates. Further research is needed to identify the specific barriers preventing the unemployed graduates from finding jobs.

Factors Influencing Graduate Employability

(a) Several factors can influence the employability of graduates across different fields:

- **Industry Demand.** The demand for professionals in specific fields can greatly affect employability rates. For instance, healthcare-related fields like Medicine and Nursing tend to have higher demand, resulting in better employment outcomes.
- **Practical Experience.** Internships, co-ops, and hands-on training can significantly improve a graduate's employability. Programs that integrate practical experiences into the curriculum often yield better employment statistics.
- **Networking Opportunities.** Building connections through networking events, alumni associations, and industry partnerships can lead to job opportunities. Graduates who actively engage in networking tend to have higher employability rates.
- **Skill Development.** Employers are increasingly looking for graduates who possess not just academic knowledge but also soft skills such as communication, teamwork, and critical thinking. Programs that emphasize skill development alongside academic learning can enhance employability.

(b) Strategies for Improving Graduate Employability

To address the challenges outlined in the employment statistics, educational institutions and students can adopt several strategies to improve employability outcomes:

- **Curriculum Enhancement.** Institutions should regularly update their curricula to align with industry needs and trends. Incorporating emerging technologies and practices can prepare students for the job market.
- **Career Services Support.** Providing robust career services, including resume workshops, interview preparation, and job search strategies, can equip graduates with the tools they need to secure employment.

- Promoting Lifelong Learning. Encouraging graduates to pursue continuing education and professional development can keep their skills relevant and increase their competitiveness in the job market.
- Fostering a Strong Alumni Network. Creating a strong alumni network can provide current students with mentorship opportunities and job leads, enhancing their chances of finding employment.

As graduates prepare to enter the workforce, understanding the factors that influence employability and actively working to enhance skills can lead to improved job prospects. By focusing on communication, critical thinking, technical skills, networking, and adaptability, graduates can better position themselves for success in their chosen fields. Internships and practical experiences are invaluable for bridging the gap between education and employment, providing the hands-on experience that employers seek. Furthermore, adopting a mindset of continuous learning ensures that graduates remain versatile and competitive in an ever-changing job market. The journey to employability is multifaceted, requiring not only academic achievement but also personal development, proactive engagement with industry, and a commitment to lifelong learning. By embracing these principles, graduates can enhance their career prospects and contribute meaningfully to their professions and communities. Through collaboration, networking, and a commitment to self-improvement, the future workforce can navigate the challenges of the job market successfully.

As the step into their careers, graduates must remember that adaptability, resilience, and an eagerness to learn will be among their greatest assets. The assessment of yearly absorption rates from 2019 to 2023 reveals significant insights into the changing dynamics of higher education, particularly within health-related fields. Institutions must remain vigilant in monitoring these trends to adapt their offerings to meet student demand and societal needs effectively. As the landscape of higher education continues to evolve, understanding yearly absorption rates across various institutions is crucial for stakeholders, including educators, policymakers, and prospective students. This analysis delves into the absorption rates from 2019 to 2023, focusing on health-related programs across several institutions. Pursuit to examining these trends, we aim to identify common patterns, draw conclusions about institutional performance, and provide insights that can inform future strategies. The absorption rate in the context of education refers to the percentage of students who enroll in a program compared to the number of available spots. A higher absorption rate typically indicates a strong interest in a program, while a lower rate may suggest issues such as program reputation, job market alignment, or economic conditions affecting student choices.

5.2 Assess the yearly absorption rate for each institution, comparing trends and identifying common patterns.

According to the finding showed in the table 68 bellow, Universidade Nacional Timor Lorosa'e (UNTL) had consistently high absorption rates in the Nursing department, a trend that continued into 2023. This stood in contrast to the other institutions, where absorption rates fluctuated across the years. Notably, UNPAZ and UNDIL showed a strong performance in Public Health, with UNPAZ achieving a remarkable 67.5% overall absorption rate in that field. ICS, on the other hand, seemed to specialize in Biomedical and Laboratory Sciences, with a significant portion of their overall absorption rate coming from that department. The data also revealed an interesting shift for UNTL in 2022, where there was a notable increase in the absorption rate for Dental Nursing and Pharmacy. This indicated a potential expansion of their academic offerings and a diversification of student interests.

The overall absorption rates revealed some interesting insights as well. While UNTL dominated in terms of total numbers, with a staggering 310.6% overall absorption rate, it was intriguing to see that ICS and UNPAZ held their own with rates of 61.1% and 67.5%, respectively. This suggested that these institutions, despite their smaller sizes, were able to attract and retain a significant number of students in their specialized areas. As the data continued to be analyzed, it painted a complex picture of academic trends and student preferences across these institutions. Each university seemed to be carving out its own niche, responding to the evolving demands of higher education in unique ways.

Table 68. Assess the yearly absorption rate for each institution, comparing trends and identifying common patterns

Year	Department	Institute					Total
		CRISTAL	ICS	UNDIL	UNPAZ	UNTL	
2019	Biomedical and Laboratory Sciences	0,0%	0,0%	0,0%	0,0%	5,4%	5,4%
	Nursing	7,1%	10,0%	5,0%	0,0%	2,9%	25,0%
	Dental Nursing	0,0%	0,0%	1,3%	0,0%	0,0%	1,3%
	Pharmacy	0,0%	1,3%	0,0%	0,0%	2,5%	3,8%
	General Medicine	0,0%	0,0%	0,0%	0,0%	0,8%	0,8%
	Nutrition and Dietetics	0,0%	0,0%	0,0%	0,0%	1,7%	1,7%
	Public Health	0,0%	0,0%	19,2%	35,8%	0,0%	55,0%
	Total	7,5%	11,3%	25,4%	35,8%	20,0%	100,0%
2020	Nursing	21,9%	0,8%	3,9%	0,0%	0,0%	26,6%
	Pharmacy	0,0%	0,0%	0,0%	0,0%	2,3%	2,3%
	General Medicine	0,0%	0,0%	0,0%	0,0%	2,3%	2,3%
	Midwifery	0,0%	0,0%	0,0%	0,0%	0,8%	0,8%
	Public Health	0,0%	0,0%	24,2%	43,8%	0,0%	68,0%
	Total	21,9%	0,8%	28,1%	43,8%	5,5%	100,0%
2021	Biomedical and Laboratory Sciences	0,0%	0,0%	0,0%	0,0%	1,3%	1,3%
	Dental Nursing	0,0%	0,0%	0,3%	0,0%	0,0%	0,3%
	Pharmacy	0,0%	3,2%	0,0%	0,0%	3,2%	6,4%
	General Medicine	0,0%	0,0%	0,0%	0,0%	2,2%	2,2%
	Nutrition and Dietetics	0,0%	0,0%	0,0%	0,0%	1,9%	1,9%
	Midwifery	0,6%	0,0%	0,0%	0,0%	1,6%	2,2%
	Public Health	0,0%	0,0%	19,2%	23,6%	0,0%	42,8%
	Total	17,3%	23,3%	21,4%	23,6%	14,4%	100,0%
2022	Nursing	38,4%	1,4%	7,5%	0,0%	4,3%	51,6%
	Dental Nursing	0,0%	0,0%	12,5%	0,0%	0,0%	12,5%
	Pharmacy	0,0%	0,0%	0,0%	0,0%	8,5%	8,5%
	General Medicine	0,0%	0,0%	0,0%	0,0%	3,2%	3,2%
	Nutrition and Dietetics	0,0%	0,0%	0,0%	0,0%	1,4%	1,4%

	Midwifery	2,1%	0,0%	0,0%	0,0%	1,4%	3,6%
	Public Health	0,0%	0,0%	2,5%	16,7%	0,0%	19,2%
	Total	40,6%	1,4%	22,4%	16,7%	18,9%	100,0%
2023	Biomedical and Laboratory Sciences	0,0%	3,5%	0,0%	0,0%	1,9%	5,4%
	Nursing	1,1%	3,7%	5,2%	0,0%	8,2%	18,2%
	Dental Nursing	0,0%	0,0%	0,4%	0,0%	0,0%	0,4%
	Pharmacy	0,0%	6,5%	0,0%	0,0%	2,6%	9,1%
	General Medicine	0,0%	0,0%	0,0%	0,0%	1,3%	1,3%
	Nutrition and Dietetics	0,0%	3,5%	0,0%	0,0%	3,3%	6,9%
	Midwifery	12,5%	18,0%	0,0%	0,0%	14,1%	44,6%
	Public Health	0,0%	0,0%	2,4%	11,7%	0,0%	14,1%
	Total	13,6%	35,3%	8,0%	11,7%	31,4%	100,0%
Overall	Biomedical and Laboratory Sciences	0,0%	3,9%	0,0%	0,0%	5,6%	9,5%
	Nursing	43,7%	23,2%	14,9%	0,0%	15,7%	97,5%
	Dental Nursing	0,0%	0,0%	8,5%	0,0%	0,0%	8,5%
	Pharmacy	0,0%	9,9%	0,0%	0,0%	11,8%	21,7%
	General Medicine	0,0%	0,0%	0,0%	0,0%	5,8%	5,8%
	Nutrition and Dietetics	0,0%	3,9%	0,0%	0,0%	6,6%	10,6%
	Midwifery	15,7%	20,1%	0,0%	0,0%	21,1%	56,9%
	Public Health	0,0%	0,0%	32,5%	67,5%	0,0%	100,0%
	Total	59,4%	61,1%	55,9%	67,5%	66,7%	310,6%

Source 68. Primary Data, 2024

This finding assesses the yearly absorption rates of various educational institutions, focusing on five departments: Biomedical and Laboratory Sciences, Nursing, Nursing Dentária, Pharmacy, and Public Health. The analysis spans from 2019 to 2023, highlighting enrollment trends, variations in departmental popularity, and enrollment patterns across institutions. The findings indicate significant fluctuations in enrollment numbers, especially within the nursing and public health departments, suggesting shifting student interests and institutional capacities. This study provides insights into the evolving landscape of higher education and serves as a resource for stakeholders to understand enrollment dynamics. The absorption rate in educational institutions refers to the number of students enrolled in specific programs over a given period. This metric is vital for understanding trends in student preferences, institutional performance, and the effectiveness of educational policies. The study aims to analyze the yearly absorption rates of five departments across multiple educational institutions, revealing patterns and trends that can inform future educational strategies. The analysis will cover the years 2019 to 2023, a period marked by significant changes due to external factors which has profoundly impacted higher education. Understanding these trends allows for a deeper insight into how educational institutions can adapt to meet changing student needs and ensure sustainability. The data used for this analysis were collected from institutional records of five departments across multiple educational institutions: CRISTAL, ICS, UNDIL, UNPAZ, and UNTL. The total number of enrollments in each department from 2019 to 2023 was compiled and analyzed using descriptive statistics to identify trends and variations.

The data were organized into a tabular format, allowing for an easy comparison of yearly enrollments across different departments and institutions. The total enrollments for each department and institution were calculated and analyzed to identify trends. Trends were compared across departments and institutions to identify common patterns, significant increases or decreases in enrollment, and potential causes for these trends.

- Overall Enrollment Growth: Total enrollment increased from 240 in 2019 to 1500 in 2023, indicating a significant rise in student interest across various programs.
- Department-Specific Trends: Nursing: This department consistently shows the highest enrollment figures, particularly in 2022 and 2023, with a peak of 471 in 2023.
- Public Health: This department also experienced substantial growth, particularly between 2021 and 2023, reflecting the increased focus on healthcare-related fields.
- Pharmacy: Enrollment in the pharmacy department showed significant variability, with a notable increase from 9 in 2019 to 105 in 2023.
- Biomedical and Laboratory Sciences and Nursing Dentária: These departments had minimal enrollments initially, but there were some increases in certain years, suggesting growing interest but still limited compared to nursing and public health.
- Institutional Variability: ICS and UNTL showed consistent growth in enrollments, particularly in nursing and public health programs, whereas UNDIL and UNPAZ had fluctuating enrollment figures with substantial drops in certain years.
- Impact of External Factors: The data suggests that external factors may have influenced enrollment trends, particularly in the early years of the study. The significant drop in enrollments in 2020, especially in nursing and public health, aligns with broader trends observed in higher education during the pandemic.

The analysis of yearly absorption rates reveals noteworthy trends in student enrollment across various departments and institutions. The data indicates a strong preference for nursing and public health programs, likely reflecting an increased public awareness of healthcare professions, particularly in light of the global pandemic. The growth in these fields suggests that educational institutions may need to expand their offerings and resources to accommodate this demand.

The comparative analysis of departments shows distinct patterns in absorption rates:

- Nursing: Consistently the most popular department, with enrollments peaking significantly in recent years. This trend highlights a robust interest in nursing careers, which can be attributed to increased job security and the critical need for healthcare providers.
- Public Health: The increase in enrollments suggests a growing recognition of the importance of public health education, especially in light of global health crises.
- Pharmacy and Biomedical Sciences: While these fields showed increases, their growth was less pronounced, indicating that they may be perceived as more specialized or less immediately relevant compared to nursing and public health.

Finally, the assessment of yearly absorption rates in educational institutions reveals significant trends and insights into student preferences and institutional performance. The data indicate a marked increase in enrollments, particularly in nursing and public health programs, suggesting a shift in student interests driven by external factors such as the labor market demands. As educational institutions navigate these trends, it is crucial to adapt their offerings to meet the evolving needs of

students and the job market. Future research should continue to monitor these trends and explore the underlying factors influencing student choices to ensure that institutions can effectively respond to the changing landscape of higher education.

Pursuit to the table bellow reveal the major sectors with the highest absorption of graduates and analysis of educational programs and curricula. As the job market continues to evolve, the relevance of educational programs and curricula in preparing graduates for the workforce has come under scrutiny. Understanding which sectors absorb the most graduates can provide valuable insights into how educational institutions can align their offerings with market demands.

The alignment between graduates' skills and the demands of various sectors is crucial for effective workforce development. By focusing on the sectors with the highest absorption of graduates healthcare, technology, education, business, and engineering educational institutions can better prepare students for successful careers. Continuous engagement with stakeholders, regular curriculum innovation, and a commitment to lifelong learning are essential components of this alignment. As we move forward, the collaboration between educational institutions, employers, and policymakers will play a pivotal role in shaping the future of work and ensuring that graduates are equipped to thrive in a rapidly changing landscape.

5.3 Identify the major sectors with the highest absorption of graduates, and analyze the alignment with educational programs and curricula.

The researchers identified these sectors as the key players in the story of graduate absorption. But it wasn't just about numbers; the team delved deeper, exploring the intricate alignment between these sectors and the educational programs that prepared graduates for their journeys. With each discovery, the researchers felt a sense of excitement, were unraveling an ancient mystery. The story of graduate absorption was not just a collection of statistics, but a narrative of hope, opportunity, and the enduring power of knowledge. UNTL, one of the country's most prestigious universities, was abuzz with energy and ambition. Among the faces were graduates from the health sciences departments, who were about to embark on an exciting journey into the professional world. As they stepped out of the lecture halls, they were met with an array of opportunities. The Universidade da Paz (UNPAZ) and Universidade de Dili (UNDIL) boasted strong connections to the country's top healthcare institutions, offering a seamless transition from education to employment. Institute Ciencais Saude (ICS), known for its innovative approach to healthcare, was also a sought-after destination for these aspiring professionals. The graduates' passion and dedication shone through as they navigated the job market. Their skills and knowledge, honed through years of rigorous study, were highly sought-after by employers. The alignment of their educational programs with the current industry needs played a pivotal role in their successful absorption into the workforce.

Table 69. Identify the major sectors with the highest absorption of graduates, and analyze the alignment with educational programs and curricula

Currently Status	Department	Institute					Total
		CRISTAL	ICS	UNDIL	UNPAZ	UNTL	
Continue Study	Biomedical and Laboratory Sciences	0,0%	0,0%	0,0%	0,0%	5,6%	5,6%
	Nursing	0,0%	5,6%	0,0%	0,0%	0,0%	5,6%
	Dental Nursing	0,0%	0,0%	11,1%	0,0%	0,0%	11,1%
	Pharmacy	0,0%	5,6%	0,0%	0,0%	16,7%	22,2%
	Public Health	0,0%	0,0%	5,6%	33,3%	0,0%	38,9%
	Total	0,0%	22,2%	16,7%	33,3%	27,8%	100,0%
No	Biomedical and Laboratory Sciences	0,0%	0,0%	0,0%	0,0%	0,6%	0,6%

	Nursing	4,4%	2,2%	0,9%	0,0%	0,9%	8,4%
	Dental Nursing	0,0%	0,0%	1,5%	0,0%	0,0%	1,5%
	Pharmacy	0,0%	2,2%	0,0%	0,0%	0,3%	2,5%
	Nutrition and Dietetics	0,0%	0,0%	0,0%	0,0%	0,8%	0,8%
	Midwifery	2,6%	3,4%	0,0%	0,0%	1,7%	7,7%
	Public Health	0,0%	0,0%	2,9%	4,6%	0,0%	7,5%
Yes	Biomedical and Laboratory Sciences	0,0%	1,7%	0,0%	0,0%	1,7%	3,3%
	Nursing	13,9%	7,5%	5,4%	0,0%	5,7%	32,6%
	Dental Nursing	0,0%	0,0%	1,9%	0,0%	0,0%	1,9%
	Pharmacy	0,0%	1,9%	0,0%	0,0%	4,4%	6,3%
	General Medicine	0,0%	0,0%	0,0%	0,0%	2,4%	2,4%
	Nutrition and Dietetics	0,0%	1,7%	0,0%	0,0%	2,0%	3,7%
	Midwifery	4,0%	4,9%	0,0%	0,0%	7,0%	15,9%
	Public Health	0,0%	0,0%	10,7%	23,2%	0,0%	33,9%
	Total	17,9%	17,6%	18,0%	23,2%	23,2%	100,0%
Overall	Biomedical and Laboratory Sciences	0,0%	1,3%	0,0%	0,0%	1,8%	3,1%
	Nursing	14,1%	7,5%	4,8%	0,0%	5,1%	31,4%
	Dental Nursing	0,0%	0,0%	2,7%	0,0%	0,0%	2,7%
	Pharmacy	0,0%	3,2%	0,0%	0,0%	3,8%	7,0%
	General Medicine	0,0%	0,0%	0,0%	0,0%	1,9%	1,9%
	Nutrition and Dietetics	0,0%	1,3%	0,0%	0,0%	2,1%	3,4%
	Midwifery	5,1%	6,5%	0,0%	0,0%	6,8%	18,3%
	Public Health	0,0%	0,0%	10,5%	21,7%	0,0%	32,2%
	Total	19,1%	19,7%	18,0%	21,7%	21,5%	100,0%

Source 69. Primary Data, 2024

This report investigates the major sectors with the highest absorption of graduates and analyzes the alignment of educational programs and curricula with labor market demands. The focus is on the health and biomedical fields, particularly nursing, pharmacy, public health, and midwifery, using quantitative data from multiple educational institutions. The findings reveal a significant disparity between educational outcomes and labor market needs, with nursing and public health showing the highest absorption rates. Recommendations for improved curricula alignment and industry collaboration are provided to enhance employability and address labor market gaps.

The transition from education to employment is critical for graduates, particularly in sectors with high demand for skilled professionals. An understanding of which disciplines yield the highest absorption rates into the workforce can inform educational institutions about necessary curriculum adjustments. This report focuses on the health sciences, examining the absorption rates of graduates in several major fields and the extent to which their educational programs align with industry requirements.

Globally, the health sector is one of the largest employers, requiring a steady influx of qualified professionals to meet the growing demands of healthcare delivery. According to the OECD (2020), graduates in health professions such as nursing, pharmacy, and public health are essential for sustaining healthcare systems. The alignment of academic programs with labor market needs is crucial to ensure that graduates possess the skills and competencies required in their respective fields.

Data on graduate absorption rates was collected from five educational institutions: CRISTAL, ICS, UNDIL, UNPAZ, and UNTL. The analysis focused on the following health-related disciplines:

Biomedical and Laboratory Sciences, Nursing, Dental Nursing, Pharmacy, Public Health, Nutrition and Dietetics, and Midwifery.

The total number of graduates per sector was categorized into three groups: those who continued their studies, those who entered the workforce, and those who remained unemployed. The data was then analyzed to determine the absorption rates of graduates in various sectors, as well as the alignment of their training with market demands requirements.

Descriptive statistics were utilized to summarize the data, including totals and percentages of graduates absorbed in each sector. Cross-tabulation was performed to examine the relationship between disciplines and employment status. Comparative analysis was conducted to identify trends and gaps in educational alignment.

The total number of graduates from the analyzed institutions was 1,500. The following sectors exhibited the highest absorption rates:

From the data, nursing and public health graduates demonstrated the highest rates of employment, indicating strong labor market demand. Nursing graduates accounted for 79.4% of total absorption, while public health graduates had an absorption rate of 80.8%. These two fields are pivotal in addressing healthcare challenges, particularly in underserved communities.

In contrast, dental nursing and pharmacy graduates showed lower absorption rates, at 53.7% and 68.6%, respectively. This gap highlights potential misalignments between educational outcomes and labor market needs, which warrants further investigation.

An assessment of the curricula offered by the institutions revealed several areas of alignment and misalignment with market demands :

Nursing: The curriculum is heavily focused on practical skills and clinical placements, aligning well with the high absorption rates.

Public Health: Programs have incorporated contemporary topics such as health policy and community health, facilitating graduates' entry into relevant roles.

Pharmacy and Dental Nursing: These programs may benefit from increased emphasis on practical training and exposure to diverse healthcare settings to improve employability.

The sectors with the highest graduate absorption rates—nursing and public health—reflect the critical need for healthcare professionals in the current landscape. The COVID-19 pandemic has intensified this demand, indicating that these fields will likely continue to thrive. The high employment rates in these sectors suggest that educational institutions are effectively preparing graduates for the workforce.

Conversely, the lower absorption rates in dental nursing and pharmacy raise questions about the adequacy of training and market saturation. These disciplines may require a reevaluation of curricula to enhance practical skills and align more closely with current market demands needs.

The analysis indicates varying levels of alignment between educational programs and labor market demands. While nursing and public health curricula are effectively meeting market demands requirements, the same cannot be said for all disciplines.

The lack of practical training and exposure in some programs could be contributing to lower absorption rates. Institutions should consider integrating more hands-on experiences, internships, and partnerships with healthcare providers to enhance employability.

5.4 Understanding the regional differences and policies implication

Mapping distribution of graduate un-employed in Timor-Leste

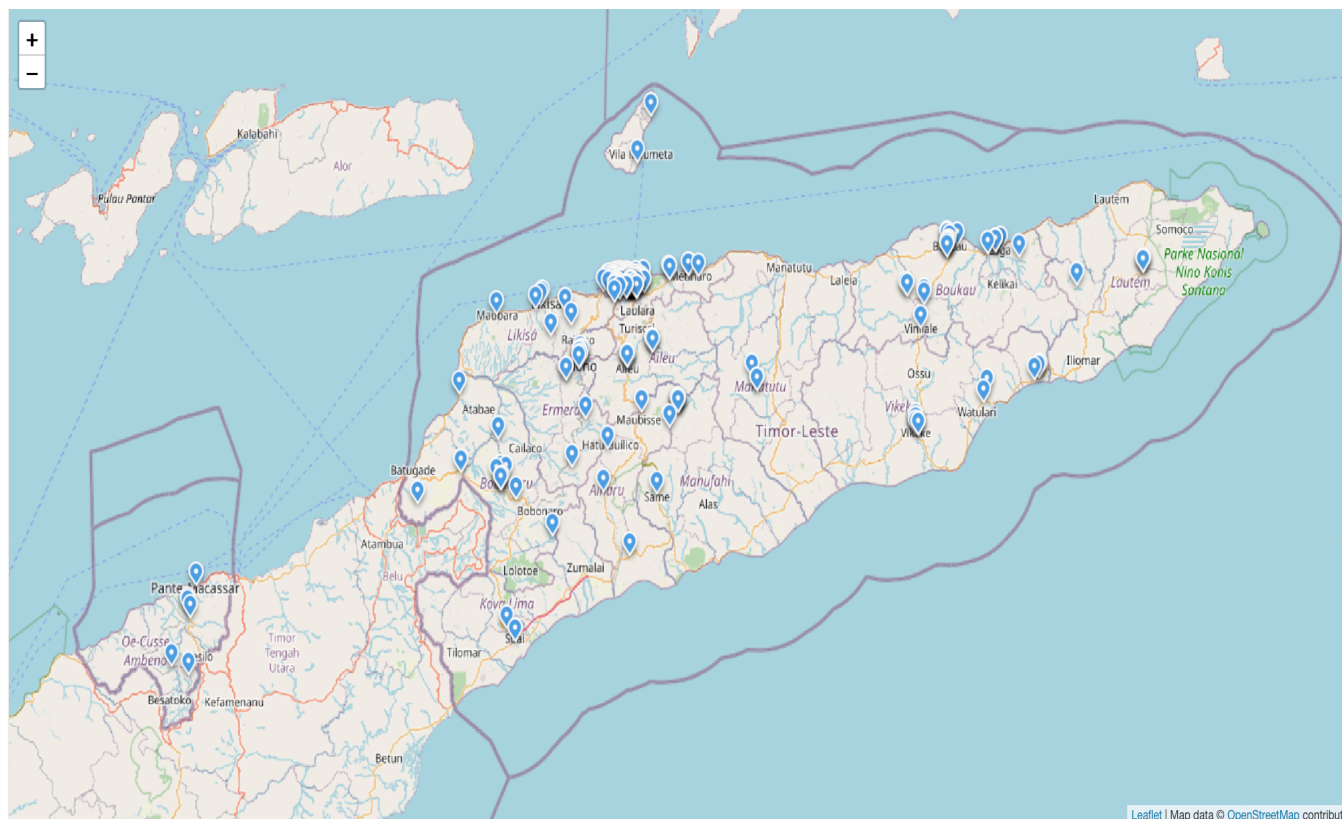


Figure 13. Mapping distribution of graduate un-employed in Timor-Leste

Recent research on health-related issues in Timor-Leste has focused on various aspects of the healthcare system. A monitoring system for scholarship data was developed to track Timorese health science students and graduates. During the COVID-19 pandemic, dengue remained a significant public health concern, with increased cases in urban areas and during the monsoon season. Quality of maternal and child health services faces challenges due to limited resources, poor infrastructure, and gaps in health information systems.

These studies highlight the need for improved health information systems, resource allocation, and antimicrobial stewardship in Timor-Leste to address various health challenges and enhance the quality of healthcare services.

The mapping above highlights significant variations in unemployment rates among municipalities, with Dili reporting the highest rate at 27.9%. In contrast, Atauro has the lowest rate at 0.6%. These disparities warrant an in-depth analysis to understand the factors contributing to high unemployment rates in certain regions.

- **Economic Conditions:** The economic landscape of a region significantly influences employment opportunities. Dili, being the capital, has a larger population and more competition for jobs, which may explain the high unemployment rate. In contrast, smaller municipalities like Atauro may have less competition and more available jobs relative to their population size.
- **Educational Disparities:** Access to quality education and training programs varies across municipalities. Regions with better educational facilities and more relevant health science programs are likely to produce graduates who are more employable.

- **Health Infrastructure:** The availability and quality of health services in each municipality directly impact the demand for health science graduates. Municipalities with fewer health facilities are less likely to employ health science graduates.
- **Government Policies and Initiatives:** Government initiatives aimed at health sector development can create job opportunities. However, the effectiveness of these initiatives can vary by region due to political, economic, and social factors.
- **Migration Patterns:** Youth migration to urban areas, particularly Dili, in search of better opportunities can exacerbate unemployment in rural areas. This migration can lead to a talent drain from municipalities that need health professionals the most.

Regional Comparisons

- **Dili:** The high unemployment rate in Dili suggests a saturated job market. The influx of graduates and limited job openings in the health sector contribute to this issue. Additionally, graduates might prefer jobs in urban settings, leaving rural areas underserved.
- **Baucau and Viqueque:** Both regions exhibit high unemployment rates (11.4% and 11.1%, respectively). The lack of health infrastructure and limited local employment opportunities may hinder graduates from finding jobs in their fields.
- **Lower Unemployment Regions:** Municipalities such as Aileu (2.4%), Atauro (0.6%), and Covalima (3.9%) show significantly lower unemployment rates. These areas may have better local job markets or fewer graduates competing for the same positions.

High unemployment rates among health science graduates can have broader implications for public health in Timor-Leste. Unemployed graduates may lead to a shortage of skilled health professionals, affecting the delivery of health services. Moreover, unemployment can result in economic distress for individuals and families, further exacerbating health issues.

To address the unemployment issue among health science graduates in Timor-Leste, several actionable recommendations are proposed:

- **Enhance Job Creation Initiatives:** The government should focus on creating jobs within the health sector, particularly in underserved areas. This could involve incentivizing private sector investment in healthcare facilities.
- **Tailor Educational Programs:** Educational institutions should align their health science programs with the specific needs of local health services. This may include practical training and internships that prepare students for real-world challenges.
- **Promote Rural Health Careers:** Initiatives to promote health careers in rural areas could attract graduates to local employment opportunities. This might include scholarship programs, financial incentives, or public awareness campaigns highlighting the benefits of working in rural health settings.
- **Strengthen Health Infrastructure:** Investing in health infrastructure, particularly in municipalities with high unemployment rates, can create more jobs for health science graduates and improve health outcomes.
- **Support Entrepreneurship:** Encouraging graduates to start their own health-related businesses can help alleviate unemployment. This could involve providing training in entrepreneurship and offering financial assistance or grants.

- **Improve Data Collection and Analysis:** Strengthening data collection on employment outcomes for health science graduates will help policymakers understand trends and make informed decisions about educational and employment policies.

The unemployment rate among health science graduates in Timor-Leste presents significant challenges and opportunities for the nation. Further understanding the factors influencing these rates and implementing targeted strategies, it is possible to improve employment outcomes for graduates and enhance the overall health services in the country. Collaborative efforts between government, educational institutions, and the private sector are crucial for fostering a robust health workforce that meets the needs of the Timorese population.

CONCLUSION

The labor market absorption rate of health science graduates from UNTL over the past five years reflects a multifaceted interplay of educational quality, market dynamics, and socioeconomic factors. While challenges persist, there are also notable success stories and potential pathways for improvement. This research serves as a resource for policymakers, educators, and students alike, aiming to enhance the employability of future health science graduates in Timor-Leste. In summary, the central idea of this research revolves around understanding the challenges and successes of health science graduates in Timor-Leste's labor market. By analyzing trends, identifying barriers, and proposing actionable strategies, we hope to contribute to a more robust educational framework and a more effective transition from academia to employment for future graduates. The journey from education to employment is complex, but with the right support and strategies, it can lead to fruitful careers that not only benefit individuals but also contribute to the overall health and development of Timor-Leste.

6.1 Assessment of Yearly Absorption Rate for Each Institution, Comparison of Trends, and Identification of Common Patterns

The assessment of yearly absorption rates for UNTL, UNPAZ, UNDIL, ICS, and ISC from 2019 to 2023 reveals important insights into the employability of graduates in Timor-Leste. While there are disparities in absorption rates among the institutions, the overall trend indicates a positive trajectory towards improved employability.

Factors influencing these trends include alignment with labor market needs, economic conditions, and the availability of internships and networking opportunities. Moving forward, it is crucial for these institutions to continue adapting their programs and fostering connections with industries to ensure that graduates are well-prepared for the workforce. This will not only enhance individual career prospects but also contribute to the economic development of Timor-Leste as a whole.

Lastly but not the end, the years from 2019 to 2023 have shown a gradual improvement in the absorption rates across these institutions, reflecting both challenges and opportunities within the labor market. In the end addressing the identified patterns and maintaining a focus on employability, higher education institutions in Timor-Leste can play a significant role in shaping a competent and skilled workforce for the future.

6.1.1 Yearly Absorption Rates:

- *The absorption rates across various institutions have shown a fluctuating pattern, influenced by factors such as enrollment capacities, government policies, and the demand for healthcare professionals in the country.*
- *Institutions that adapted quickly to changing circumstances, such as the increasing demand for health professionals, tended to have higher absorption rates.*

6.1.2 Institutional Performance:

- *Notable differences were observed between public and private institutions. Public universities generally had a more stable increase in absorption rates, likely due to government support and funding.*

- *Private institutions, although initially lower in absorption, have been catching up as they adapt to the needs of the health workforce and implement strategic marketing to attract students.*

6.1.3 Trends Over Time:

- *The trend from 2019 to 2023 indicates a growing recognition of the importance of health education, especially in light of the ongoing global health challenges and the need for a robust health workforce.*
- *There was a marked increase in enrollment in health science programs following the implementation of the Health Financing Strategy (2019-2023), demonstrating a positive correlation between government initiatives and educational uptake.*

6.1.4 Common Patterns:

- *A significant pattern identified was the increased collaboration between educational institutions and healthcare providers. This collaboration aimed to ensure that curricula are aligned with the practical needs of the health sector, thus enhancing the employability of graduates.*
- *Moreover, a growing emphasis on research and ethical practices in health studies has emerged, indicating an evolving educational framework that prioritizes quality and relevance in health education.*

6.1.5 Implications for Policy and Practice

- *Enhanced Policy Framework: The findings suggest that ongoing investment in health education, aligned with workforce needs, is essential for Timor-Leste. Policymakers should continue to support the development of health science programs, ensuring they are well-funded and equipped to meet the demands of the health sector.*
- *Focus on Quality and Relevance: Continuous assessment of curricula and teaching methodologies in health programs is necessary to maintain a high standard of education that prepares graduates for the realities of the healthcare environment.*
- *Support for Private Institutions: Given the increasing role of private institutions in health education, there should be a framework for supporting these institutions, ensuring they contribute effectively to national health goals.*
- *Research and Development: Encouraging research in health science education can further enhance the understanding of effective teaching practices and health outcomes, ensuring that Timor-Leste's health education system evolves in line with global standards.*

6.2 A detailed assessment of yearly absorption rates will be conducted, identifying trends and commonalities among the institutions.

1. *Trends in Enrollment and Graduation* : The health science study programs have seen fluctuating enrollment numbers, influenced by factors such as government health policies, funding availability, and societal needs. Data indicates a gradual increase in the number of graduates in the last two years of the study period, possibly reflecting targeted efforts to enhance public health education in response to pressing health challenges.
2. *Absorption Rates and Employment* : The absorption rates of graduates into the healthcare workforce provide essential indicators of the effectiveness and relevance of health science programs. A notable trend is the correlation between the increased focus on practical training and internships within these programs and the higher employment rates of graduates. Institutions that have established partnerships with health facilities appear to have higher absorption rates, highlighting the importance of practical experience in education.
3. *Impact of Health Financing Strategies* : The implementation of the Health Financing Strategy (HFS) from 2019 has played a crucial role in shaping the healthcare landscape. The strategy's focus on sustainable financing and resource mobilization has directly impacted the capacity of health institutions to absorb graduates effectively. Increased funding has facilitated the expansion of health services, which in turn creates more opportunities for employment for health science graduates.
4. *Challenges and Opportunities* : Despite the positive trends, challenges remain. The high maternal mortality rates and limited access to skilled birth attendants, as noted in recent reports, underscore the urgent need for a well-trained health workforce. The health science programs must adapt continuously to address these challenges, ensuring that graduates are equipped with the necessary skills to meet the demands of the healthcare system.
5. *Recommendations for Improvement* : To further enhance the effectiveness of health science study programs and improve absorption rates, several recommendations emerge from the analysis:
 - *Strengthening Curriculum*: Programs should incorporate more hands-on training, community engagement, and inter-professional collaboration to prepare graduates for real-world challenges.
 - *Enhancing Partnerships* : Collaborations between educational institutions and healthcare providers should be strengthened to facilitate internships and job placements.
 - *Monitoring and Evaluation*: Continuous monitoring of graduate outcomes and feedback from employers can provide valuable insights for program improvement.

- *Policy Support : Advocacy for policies that support the expansion of health services and prioritize the employment of local graduates can significantly influence absorption rates.*

RECOMMENDATIONS

Building on the previous chapters, this final chapter presents a series of recommendations aimed at improving the labor market absorption rate of health science graduates. These suggestions target various stakeholders, including educational institutions, government agencies, and the private sector.

The analysis of labor market absorption rates for graduates from health science programs at Universidade Nacional Timor Lorosa'e (UNTL), Universidade da Paz (UNPAZ), Universidade Dili (UNDIL), Instituto Ciencias Saude (ICS), and Instituto Superior Cristal (ISC) over the past five years (2019-2023) provides valuable insights into improving graduate employability and aligning educational outcomes with labor market demands. Below are key recommendations based on the findings of this research:

7.1 Recommendation for University/Institute (UNTL, UNPAZ, UNDIL, ISC, ICS)

7.1.1 Enhance Curriculum Relevance

- Regularly update health science curricula to reflect current industry standards and emerging health issues.
- Aligning curricula with the specific skills and knowledge required in the labor market, institutions can ensure that graduates are better prepared for employment. This could involve incorporating more practical experiences, internships, and exposure to real-world scenarios.

7.1.2 Strengthen Partnerships

- Build stronger partnerships with healthcare providers, organizations, and governmental bodies.
- Collaborations can facilitate internships, job placements, and mentorship programs. Engaging stakeholders in curriculum design can also ensure that graduates possess the competencies that employers seek.

7.1.3 Implement Career Services and Support

- Establish comprehensive career services at universities that focus on health science graduates.
- Providing workshops on resume writing, interview preparation, and job search strategies can enhance students' employability. Offering networking events with industry professionals can also help students make valuable connections.

7.1.4 Promote Continuous Professional Development

- Encourage graduates to engage in lifelong learning and professional development opportunities.

- As the health sector evolves, ongoing education and training can help graduates stay competitive. Institutions could facilitate access to continuing education courses, certifications, or workshops that are relevant to health professionals.

7.1.5 Conduct Regular Labor Market Assessments

- Perform periodic assessments of labor market trends and demands in the health sector.
- Understanding the changing needs of the labor market allows educational institutions to adapt their programs accordingly. This proactive approach can enhance the absorption rates of graduates into relevant job roles.

7.1.6 Support Entrepreneurship and Innovation

- Foster an entrepreneurial mindset among health science graduates through training and resources.
- Encouraging graduates to explore entrepreneurial ventures can diversify their career paths. Institutions can provide support in the form of incubators, funding opportunities, or mentorship for health-related startups.

7.1.7 Incorporate Soft Skills Training

- Integrate training on soft skills such as communication, teamwork, and problem-solving into health science programs.
- Employers often prioritize interpersonal skills alongside technical knowledge. Graduates who can effectively communicate and collaborate are more likely to succeed in the workplace.

7.1.8 Enhance Data Collection and Analysis

- Improve data collection on graduates' employment outcomes and labor market trends.
- Comprehensive data analysis can inform program improvements and policy decisions. Tracking graduates' career paths can also help institutions measure the effectiveness of their training and career support initiatives.

7.1.9 Encourage Research and Innovation in Health Sciences

- Promote research initiatives within health science programs that address local health challenges.
- Engaging students in research can enhance their critical thinking and problem-solving abilities while contributing to community health improvements. This involvement can also strengthen their resumes and job prospects.

7.1.10 Facilitate Alumni Engagement

- Create platforms for alumni to connect with current students and provide guidance.
- Alumni can offer insights into the job market and share their experiences. Creating a mentorship program can bridge the gap between education and employment, enhancing the career readiness of current students.

7.2 Recommendation for Alumnae from various University that over the study program of Health Science

7.2.1 Understanding the Termination of Employment

In Timor-Leste, the Labour Code (Law No. 4/2012) outlines the legal framework surrounding employment, including grounds for termination. According to this law, an employer can terminate a contract for various reasons, including misconduct or failure to adhere to contractual obligations. However, it is essential to ensure that any termination is conducted fairly and in accordance with legal protocols.

7.2.2 Grounds for Termination.

The reason cited for your termination being "not part of a political party" raises concerns about the justness of the cause. The Labour Code specifies acceptable grounds for termination at the employer's initiative, typically focused on performance-related issues or breaches of conduct. Political affiliation should not be a basis for employment termination unless it directly impacts job performance or violates specific terms in your employment contract. If the termination was genuinely based on your political affiliation or lack thereof, it might contravene the principles of non-discrimination outlined in the Labour Code. This could potentially warrant a review or appeal of the decision.

7.2.3 Legal Recourse and Employee Rights.

Given the circumstances of your termination, you have the following options:

- **Review Your Employment Contract:** Check the terms outlined in your contract regarding termination. If the reasons for termination do not align with those stipulated in your contract or the Labour Code, you may have grounds for a legal challenge.
- **Seek Legal Advice:** Consulting with a legal expert familiar with employment law in Timor-Leste could provide guidance on your situation and help you understand your rights. They can assist in determining if your termination was lawful or if you should pursue a claim for wrongful termination.
- **Contact Labor Unions or Advocacy Groups:** If there are labor unions or worker advocacy groups in Timor-Leste, reaching out to them can provide support. They may offer resources, advice, or even representation if you decide to pursue your case further.

7.2.4 Current Employment Status

As of now, you mentioned that you are jobless. This situation can be incredibly challenging, especially if you've been actively volunteering and contributing to your community. Here are some steps you can consider to navigate this period of unemployment:

7.2.5 Update Your Resume and Skills

- Resume: Ensure your resume reflects your most recent experiences, including your volunteer work at the clinic. Highlight skills and accomplishments that may appeal to future employers.
- Skill Development: Consider engaging in online courses or training programs that enhance your skills. This could improve your employability in the future.

7.2.6 Job Search Strategies

- Networking: Reach out to your professional network, including former colleagues and connections made during your volunteer work. They may know of job openings or opportunities.
- Job Boards: Utilize local job boards and online platforms to search for job openings in your field. Tailor your applications to highlight your relevant experiences and skills.

7.2.7 Consider Temporary or Part-Time Work

While searching for a full-time position, consider temporary or part-time work to maintain some income and keep your skills sharp. This could also lead to new opportunities or connections in your desired field. Facing unemployment and the circumstances surrounding your contract termination can be emotionally taxing. Here are some ways to cope during this difficult time:

- Reach Out for Support: Talk to friends, family, or support groups about your feelings. Sharing your experiences can provide relief and perspective.
- Self-Care: Engage in activities that bring you joy and relaxation. Whether it's exercise, reading, or spending time in nature, taking care of your mental health is crucial during this time.
- Reflect on Your Goals: Use this period for self-reflection. Consider what you want for your career moving forward and how you can align your future job with your personal values.

7.3 Recommendation to Stake holder (Private Sector)

7.3.1 Enhancing Practical Skills and Competencies

- Graduates should seek opportunities for continuous learning and skills enhancement. It is crucial to engage in further training and practical experiences in clinical settings, particularly in primary health care.
- *Stakeholders have emphasized the importance of competency-based training. Programs like USAID's Reinforce have shown that new graduates who receive practical, hands-on training are better equipped to provide essential health services. Graduates should consider internships, workshops, and on-the-job training to strengthen their clinical skills and build confidence in their professional capabilities.*

7.3.2 Engagement with Health Policy and Advocacy

- Graduates are encouraged to actively engage in health policy discussions and advocacy efforts. Understanding the National Health Sector Strategic Plan (2011-

2030) and the Health Financing Strategy (2019-2023) is essential for effective advocacy.

- *A better understanding of health policies will empower graduates to contribute meaningfully to discussions about health system strengthening. By participating in civil society organizations (CSOs) and advocacy groups, they can help raise awareness about critical health issues and influence policy decisions that affect health services in Timor-Leste.*

7.3.3 Collaboration with Multidisciplinary Teams

- Promote collaboration with professionals from various fields, including public health, social sciences, and environmental studies. Building a multidisciplinary approach can enhance health service delivery.
- *Timor-Leste's health challenges are complex and multifaceted. By working with a diverse range of professionals, health science graduates can adopt a holistic approach to health care, addressing not only medical needs but also social determinants of health. This collaboration can lead to more effective interventions and policies that improve health outcomes.*

7.3.4 Commitment to Ethical Standards in Health Research

- Graduates should prioritize ethical considerations in health research and practice. Engaging in ongoing education about ethical standards is necessary for safeguarding research participants and ensuring high-quality health services.
- *Strengthening health research and ethics systems is crucial for sustainability in health services. Graduates need to familiarize themselves with the ethical guidelines established in Timor-Leste and participate in training that enhances their understanding of ethical research practices. This will not only protect the rights of participants but also improve the credibility of health research conducted in the country.*

7.3.5 Utilization of Technology and Innovation

- Embrace technological advancements and innovations in health care delivery. Graduates should seek to integrate digital tools and telehealth services into their practice.
- *In light of the rapid digital transformation in health care, leveraging technology can significantly enhance access to services and improve patient outcomes. Graduates should familiarize themselves with telemedicine, electronic health records, and other digital health tools that can streamline service delivery and enhance patient engagement.*

7.3.6 Focus on Community Health Education and Outreach

- Health science graduates should actively participate in community health education initiatives. Developing outreach programs that educate the public about preventive health measures and wellness can lead to healthier communities.
- *Community engagement is vital for improving health outcomes. By empowering communities through education, graduates can foster proactive health behaviors and contribute to the overall well-being of the population. Public health campaigns and workshops can serve as effective platforms for delivering vital health information.*

7.3.7 Strengthening Networks with Alumni and Professional Organizations

- Graduates should maintain active connections with their alma mater and fellow *alumni*. Joining professional organizations can provide access to valuable resources, networking opportunities, and continued professional development.
- *Building a strong professional network is essential for career advancement and collaboration. Engaging with alumni associations and health professional bodies can help graduates stay informed about new developments in the field, access job opportunities, and collaborate on projects that benefit the health sector.*

7.3.8 Advocacy for Sustainable Health Financing

- Graduates should advocate for increased funding and resources for health services, *particularly* primary health care. Understanding the financial landscape of the health sector is essential for effective advocacy.
- *The proportion of health expenditure allocated to primary health care in Timor-Leste remains limited. Graduates can play a critical role in advocating for sustainable health financing by participating in discussions with policymakers and stakeholders, emphasizing the need for adequate funding to improve health services and outcomes.*

7.3.9 Implementation of Evidence-Based Practices

- Graduates should prioritize the use of evidence-based practices in their clinical and *community* work. Staying informed about the latest research and best practices is essential for delivering high-quality care.
- *Evidence-based practice not only improves patient outcomes but also enhances the credibility of health professionals. Graduates should engage in lifelong learning, regularly reviewing current research and integrating findings into their practice to ensure that they provide the most effective interventions.*

7.3.10 Promoting Mental Health Awareness

- *Health* science graduates should advocate for mental health awareness and integrate mental health services into primary health care settings.
- *Mental health is a critical component of overall health, yet it is often overlooked in health care systems. By promoting mental health awareness and advocating for integrated services, graduates can help reduce stigma and improve access to mental health care in their communities.*

7.4 Recommendation to ANAAA-INCT

The National Agency for Academic Assessment and Accreditation (ANAAA) plays a critical role in ensuring the quality of higher education in Timor-Leste. Since year 2008-2023 (73%) of higher education programs in Timor-Leste have received accreditation at level C, indicating a need for improvement in educational standards. There is a pressing need to elevate quality standards and ensure that graduates are equipped to meet the challenges in the market demands. The Ministry of Higher Education, Science, and Culture (MHESC) and ANAAA and various University have initiated efforts to address these challenges, including the launch of the Institutional Accreditation of Program Assessment (IAPA) to ensure quality assurance across higher education institutions. Bellow the recommendation derived to the ANAAA Timor-Leste and MESCC-RDTL:

- ANAAA should establish a dedicated research unit focusing specifically on study program overing by various HEI's in Timor-Leste. This unit would be responsible for

conducting in-depth studies on current educational practices, curriculum effectiveness, and the alignment of academic programs with market demand. This unit can systematically gather data overall program study recommended by National Standard Curriculum (CPN) MESCC-RDTL, providing insights into areas that require enhancement. This data can inform accreditation processes and shape educational policies that cater to the evolving market demands.

- ANAAA should review and update the accreditation standards based on status of University (Public, Private, and Religious) specific for Diploma (D1, D2, D3,D4) and Bachelor Degree (S1) to health science and other study programs. Updating accreditation standards ensures they remain relevant to contemporary study programs challenges and align with global best practices. This will facilitate the development of programs that produce competent professionals alumnae.
- Scientific research is essential for the development of higher education and contributes significantly to societal progress. Research initiatives led by institutions such as the National Institute for Scientific Research (INCT) have shown positive outcomes and implication to the Government of Timor-Leste, enhancing the capabilities of HEIs and benefiting Timorese people who deposite education in HEI's in Timor-Leste. However, research funding remains limited.

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DATA VERIFICATION OF EDUCATION MANAGEMENT INFORMATION SYSTEM BY UNTL, UNPAZ, UNDIL, ISC, ICS YEAR 2019-2023

Data verification is an essential part of managing data. It involves reviewing and checking data for accuracy, completeness, consistency, and validity. The goal is to ensure that the data is reliable and error-free. This process can be done manually or with the help of automated systems or software tools. By comparing the data against known sources and conducting checks, any discrepancies, errors, or missing information can be identified and corrected. However, data verification is just one step in the overall data management process, which includes data collection, storage, analysis, and reporting (Tao & Kung, 1991).

Table 70. Data Verification of Alumni by the HEs UNTL, UNPAZ, UNDIL, ISC, ICS by the year 2019-2023

Institution	Lavel of Academic	Study Program	Nu. Alumnae by Program Study (Regular only)
UNTL	S1	General Medicine (L.Med.GB.)	109
		Nursing (L.Enf.)	214
		Midwifery (L.Part.)	325
		Pharmacy (L.Far.)	224
		Nutrition and Dietetics (L.N.Diet.)	128
		Biomedical and Laboratory Sciences (L.CBL)	109
	D3	Nursing (B.Enf.)	89
		Midwifery (B.Part.)	90
UNDIL	S1	Public Health	627
	D3	Dental Nursing	163
		General Nursing	286
UNPAZ	S1	Public Health	1305
Instituto Ciencaais de Saude (ICS)	S1	Nursing	175
	D3	Nursing	271
		Pharmacy	193
		Midwifery	386
		Nutrition-Dietetics	76
		Biomedical and Laboratory Sciences	74
Instituto Siencias Cristal (ISC)	S1	Nursing	695
	D3	Nursing	146
		Midwifery	309
Total			5994

The importance of data verification in the HEs Management Information System in Timor-Leste is a system used to collect, process, and analyze data related to education. However, the accuracy and reliability of the data collected in from HEs are crucial for informed decision-making and effective policy implementation. The report highlights the data verification, such as incomplete or incorrect data, lack of coordination among stakeholders, and limited capacity for data analysis. It also suggests strategies to improve data verification, data sharing protocols, and regular monitoring and evaluation. Ultimately, ensuring accurate and reliable data in the HEs is essential for improving graduate outcomes in Timor-Leste (Of et al., 2019, 2020).

GLOSSARY OF TERMS AND DEFINITIONS

Accuracy: Correctness of data

Axiology: The study of values and ethics in research. It considers the role of the researcher's values in shaping research outcomes.

Bias in data refers to systematic errors that lead to incorrect conclusions or unfair outcomes. This can occur due to flawed data collection methods, unrepresentative samples, or biases in algorithms.

Capacity building: The process of developing and strengthening the abilities, skills, and resources of capacity in ACP countries.

Community-Based Research: Engaging with communities through participatory research approaches allows researchers to incorporate local knowledge and perspectives, enhancing the relevance of their work.

Complexity of Integration: Mixing paradigms can complicate the research design and analysis process, requiring careful planning to ensure coherence.

Confidence interval is a range of values derived from sample data that is likely to contain the population parameter. It provides an estimate of uncertainty associated with the sample statistic. For example, if a researcher calculates a 95% confidence interval for the mean height of a population, it means they are 95% confident that the true population mean falls within that range.

Constructivism is a paradigm that posits that knowledge is constructed through social interactions and experiences. Researchers adopting this paradigm focus on understanding how individuals create meaning in their lives. Qualitative methods, such as interviews and case studies, are commonly used to explore participants' perspectives.

Content Analysis: Examination of documents, texts, or media to identify patterns or themes.

Contextualization: Provide background information and context to help readers understand the significance of findings.

Contextualizing the Study: It provides background information and situates the research within the existing body of knowledge.

Convergent design: Collecting both types of data separately but analyzing them together to compare and contrast findings.

Critical Reflection: Awareness of paradigms encourages researchers to reflect critically on their own beliefs and biases, fostering more ethical research practices.

Critical theory is a paradigm that seeks to address power imbalances and social injustices. It emphasizes the role of social context in shaping knowledge and encourages researchers to challenge societal norms. Critical theorists often aim to empower marginalized voices and promote social change through their research.

Critiques of Existing Paradigms: Ongoing critiques and debates within the academic community can lead to the refinement or rejection of existing paradigms in favor of new approaches.

Cross-cutting priorities: Priorities that have a broad impact across multiple sectors. In the context of R&I policies, cross-cutting priorities may involve addressing issues like renewable energy,

which have relevance in various areas, such as energy, environment, and economic development.

Cross-disciplinary collaborations: Encouraging partnerships among researchers from various fields to enrich mixed methods studies.

Crowdfunding: A way of raising funds that enables fundraisers to collect money from many people via

Cultural perspectives can significantly influence research paradigms by shaping the values, beliefs, and assumptions researchers hold. Different cultures may prioritize different forms of knowledge and ways of understanding the world. This cultural context can impact:

Cultural Shifts: Changes in societal values and norms can prompt a reevaluation of existing paradigms, leading to the emergence of new perspectives.

Data analysis is the process of inspecting, cleansing, transforming, and modeling data to discover useful information, inform conclusions, and support decision-making.

Data Cleaning: Preparing the data for analysis by removing errors and inconsistencies.

Data ethics refers to the principles and guidelines that govern the responsible use of data. It addresses issues such as data privacy, consent, bias, and the impact of data-driven decisions on individuals and society.

Data governance refers to the overall management of data availability, usability, integrity, and security. It is essential for establishing policies, procedures, and standards to ensure that data is managed effectively across an organization.

Data refers to facts and statistics collected for reference or analysis. It can be quantitative (numerical) or qualitative (descriptive) and can come in various forms, including text, numbers, images, and more.

Data science is an interdisciplinary field that uses scientific methods, processes, algorithms, and systems to extract knowledge and insights from structured and unstructured data.

Data security refers to the protection of data from unauthorized access, breaches, and corruption. It encompasses measures such as encryption, access controls, and secure storage methods.

Data sharing: The practice of exchanging R&I-related data and findings among countries and the global

Descriptive Analysis: Summarizing the main characteristics of the data.

Descriptive Analytics: Analyzes historical data to identify trends and patterns.

Descriptive Statistics: Summarizing data using measures such as mean, median, mode, and standard deviation.

Design Your Study: Develop a research design that follows the chosen paradigm, including methods for data collection and analysis.

Designing a mixed methods research study typically involves the following steps:

Determine the analysis strategy: Outline how you will analyze both types of data and how you will synthesize the findings.

Determining the appropriate sample size depends on several factors, including the population size, the desired level of precision, the variability of the data, and the research goals. Statistical formulas and power analysis can help researchers calculate the minimum sample size needed to achieve reliable results.

Develop a Data Analysis Plan: Outline how you will analyze the collected data.

Diagnostic Analytics: Investigates why something happened by analyzing data.

Difficult to Analyze: Analyzing qualitative data can be complex and may lack standardized methods.

Digital divide: The gap between those who have access to digital technologies and the internet and those

Direct Quotes: Use verbatim quotes from participants to support your analysis and showcase diverse perspectives.

Disciplinary Norms: Different academic disciplines may favor certain paradigms. Aligning your approach with disciplinary expectations can enhance the credibility of your research.

Discuss implications: Highlight the broader implications of your findings for theory, practice, and future research.

Dissertations/theses: Many graduate theses employ mixed methods and can serve as practical examples.

Economic growth: The increase in a country's production of goods and services, often associated with improved living standards, which can be driven by R&I.

Ecosystem mapping: The process of identifying and analysing the various actors and elements of the R&I ecosystem in countries, to better understand their strengths and weaknesses.

Education is a process by which human beings and societies reach their fullest potential, and it is critical for promoting sustainable development and improving the capacity of people to address environment and development issues. It is also critical for achieving environmental and ethical awareness, values, and skills consistent with sustainable development and effective public participation in decision-making.

Emerging economy: A term used to describe a country that is transitioning from a less developed state to a more advanced and industrialised one.

Emerging technologies: New and rapidly advancing technologies, such as artificial intelligence and biotechnology, which can drive R&I advancements in countries.

Enhance validity: Triangulation of data from different sources can strengthen the credibility of research findings.

Enhanced Communication: Researchers can better articulate their approach to others, making their work more accessible to a wider audience.

Epistemology: The study of knowledge and how it is acquired. It explores the relationship between the researcher and what is being studied.

Focus Groups: Group discussions led by a moderator to gather diverse viewpoints on a topic.

Focus on Social Justice: Research paradigms increasingly prioritize social justice and equity, encouraging researchers to address issues of power, privilege, and representation.

Funding mechanisms: Financial strategies and mechanisms used to allocate resources for R&I activities, including government grants, venture capital, and international aid.

GDPR (General Data Protection Regulation): A comprehensive regulation in the EU that protects personal data.

Generalizability: Findings can be applied to larger populations due to the use of representative samples.

Global Innovation Index (GII): Ranks the most innovative economies in the world.

Gross Domestic Product (GDP): GDP counts all the output generated within the borders of a country. It measures the monetary value of final goods and services - that is, those that are bought by the final user produced in a country in a given period (say a quarter or a year).

Gross Expenditure on Research and Development (GERD): GERD refers to those expenses a company or country spends researching and developing new products or improving their current offerings.

Human capital: The knowledge, skills, and expertise of individuals involved in R&I, a critical component of R&I capacity.

In statistics, a parameter is a numerical value that summarizes a characteristic of a population (e.g., the population mean or variance). A statistic, on the other hand, is a numerical value that summarizes a characteristic of a sample (e.g., the sample mean or variance). Researchers use sample statistics to estimate population parameters.

Inclusive decision-making: A process that involves the participation of diverse stakeholders, including government bodies, academia, industry, and civil society, in shaping R&I policies.

Inclusivity: The practice or policy of providing equal access to opportunities and resources for people

Indigenous knowledge: Refers to understandings, skills, and philosophies developed by local communities with long histories and experiences of interaction with their natural surroundings.

individuals, organisations, or nations to achieve effectively their goals and objectives.

Information and communications technology (ICT): Encompasses technologies related to computing, telecommunications, and the internet used for the processing, storage, and exchange of information.

Innovation ecosystem: The network of organisations, institutions, and individuals that collaborate and interact to support and drive innovation within a region or industry.

Innovation index: A measure of a country's innovation capabilities and performance often used to assess R&I capacity.

Innovation policy: Government policies and strategies aimed at fostering a culture of innovation and supporting R&I activities.

Innovation: A new method, idea or product with commercial viability.

Interdisciplinary collaboration: Collaboration between individuals and organisations from different fields and disciplines to address complex R&I challenges.

Interpretivism: This paradigm focuses on understanding the subjective meanings and experiences of individuals. It often employs qualitative methods, emphasizing context and the complexity of human behavior.

Knowledge exchange: The sharing of information, ideas, and best practices among ACP countries and the global R&I community.

Knowledge-based economy: An economy in which knowledge and information are key drivers of growth and productivity, often associated with strong R&I capacity.

Methodology: The overall strategy that outlines how research is conducted, including the methods and procedures used for data collection and analysis.

Mixed methods research is a research approach that combines both quantitative and qualitative research methods within a single study or series of studies. This methodology aims to leverage the strengths of both types of data to provide a more comprehensive understanding of a research question.

Mixed-Methods Research: This methodology combines both quantitative and qualitative approaches, allowing researchers to explore a research question from multiple perspectives.

Modeling: Using statistical techniques that account for missing data during analysis.

Narrative Analysis: Examining the stories and personal accounts provided by participants to understand their experiences.

Narrative Structure: Organize your report thematically, presenting findings that illustrate key themes.

National innovation framework: A comprehensive strategy or roadmap that guides a country's approach to innovation.

Nature of the Research Question: Is it exploratory, descriptive, or causal?

NVivo: Software designed for qualitative and mixed-methods research, facilitating coding and thematic analysis.

Objective: Quantitative research seeks to measure and quantify variables, whereas qualitative research aims to explore and understand underlying motivations and reasons.

online platforms.

Open access: The practice of making research findings and data freely available to the public, promoting transparency and knowledge sharing in R&I.

or policies. In the context of R&I policies, prioritisation involves deciding which R&I activities should receive more attention, resources, and support based on their relevance and potential impact.

Policy advocacy: Efforts to influence government policies and regulations to support and advance R&I

Policy framework: A set of guidelines and principles used by governments or organisations to inform decision- making.

Population in statistics refers to the entire group of individuals, items, or elements that you want to draw conclusions about. It encompasses all members of a specified group that share common characteristics. For example, if you are studying the average height of adult men in a city, the population would include all adult men living in that city.

Population is the total process of collecting, compiling, evaluating, analyzing and publishing or otherwise disseminating demographic, economic and social data pertaining, at a specified time, to all persons in a country or in a well delineated part of a country” (United Nations).

Positivism: This paradigm emphasizes objective measurement and observable phenomena. It relies on quantitative data and statistical analysis and aims to uncover general laws of behavior.

Prioritisation: The process of determining the order of importance or urgency of various tasks, activities,

Public-private partnerships: Collaborations between government entities and private-sector organisations to jointly fund and execute projects or initiatives that serve the public interest.

Qualitative analysis software: NVivo, ATLAS.ti, and MAXQDA for coding and analyzing qualitative data.

R&I alignment: Ensuring that R&I policies are in harmony with broader national development goals and objectives.

R&I indicators: Quantitative and qualitative measures used to assess the performance and impact of R&I activities.

R&I infrastructure: Physical and organisational structures and facilities necessary to conduct R&I activities, including laboratories, research centres, and universities.

Research and innovation (R&I): The collective term encompassing activities related to scientific research, technology development, and the creation of new ideas, products, and services to drive economic growth and societal development.

research community.

Research Design: Explain the overall approach (qualitative, quantitative, or mixed methods).

Research methodology is crucial because it provides a structured framework for conducting research. It ensures that the study is systematic and organized, which enhances the credibility and reliability of the findings. A clear methodology allows others to replicate the study, contributing to the body of knowledge in the field.

Research paradigm is a framework that governs how research is conducted. It consists of a set of beliefs, values, and assumptions that guide researchers in their approach to inquiry. This framework influences the selection of research methods, the interpretation of data, and the understanding of the research context.

Research paradigms are crucial because they provide the philosophical foundation for a research project. They help researchers understand the nature of knowledge, how it can be acquired, and the methods best suited for their inquiry. This understanding shapes the entire research process, from formulating questions to analyzing results.

Research Question: Consider the nature of your research question. If it requires objective measurement, positivism may be suitable. If it seeks to understand subjective experiences, interpretivism could be more appropriate.

Research Question: Determine whether your question seeks to quantify relationships or explore experiences.

Research questions: Clearly defined questions that can benefit from both quantitative and qualitative approaches.

Research Questions: What is considered valid or valuable research may vary across cultures.

Sample is a subset of the population selected for the purpose of conducting a study. It is a smaller group chosen from the population, which ideally represents the larger group. Researchers use samples to gather data and make inferences about the population without having to collect data from every member of the population.

Sampling bias occurs when the sample selected does not accurately represent the population, leading to skewed results. It can happen if certain groups are overrepresented or underrepresented in the sample. This bias can affect the validity of the research findings and lead to incorrect conclusions about the population.

Sampling Method: Describe how participants were selected.

Science, technology, and innovation (STI): An acronym referring to the fields of scientific research, technological development, and the application of innovation to solve problems and create opportunities.

Secondary Data Analysis: Using existing data from sources like government reports, academic studies, or databases. This is data that has already been collected and published by others. It includes books, articles, reports, and databases.

Seek feedback: Involve peers or stakeholders in the research process for additional perspectives.

Seek guidance: Collaborate with experienced researchers in mixed methods to enhance your understanding and execution.

Select the Methodology: Choose between quantitative, qualitative, or mixed methods.

Semi-structured Data: Contains both structured and unstructured elements (e.g., XML, JSON files).

Size: A population includes all members of a specific group, while a sample is a smaller subset of that group.

Skillset: Researchers need to be proficient in both quantitative and qualitative methods, which may require additional training.

Social development: Improvements in the well-being and quality of life of a country's citizens, to which R&I can contribute through innovations in healthcare, education, and more.

Social sciences: To study complex social phenomena from multiple perspectives.

SPSS: Widely used for statistical analysis and data management.

SQL: For querying and managing databases.

Statistical analysis and mathematical proficiency

Statistical Analysis: Clearly present statistical results, including significance levels (p-values) and confidence intervals.

Statistical Analysis: Enables precise measurement and analysis of relationships between variables.

Statistical software: SPSS, R, and Stata for analyzing quantitative data.

Stay Ethical: Adhere to ethical standards in research, considering how your chosen paradigm influences your approach to issues of consent, confidentiality, and representation.

Stratified Sampling: The population is divided into subgroups (strata) based on shared characteristics, and samples are drawn from each stratum.

Stratified Sampling: The population is divided into subgroups (strata), and samples are taken from each stratum.

Structured Data: Organized in a defined manner, often in tables (e.g., databases).

Structured Report: Organize your report into sections: introduction, methodology, results, discussion, and conclusion.

Student: Teacher Ratio. The number of students divided by the number of teachers at that level of education. For example, there were 1,984 secondary school teachers in Timor-Leste at the time of the census and 48,575 secondary school students. Dividing 48,575 by 1,984 equals around 24 students for every one teacher. UNESCO recommends calculating student: teacher ratios using the number of full-time equivalent teachers and full-time equivalent students (OECD and UNESCO, 2001). Information on full-time/part-time hours was not gathered through the 2010 population census (D. C. Gomes, 2019; 'Guide to Measuring Information and Communication Technologies (ICT) in Education. UIS Technical Paper; 2', 2009; Jordan, 2012; Oveshnikova et al., 2020; Rashid, 2020; Spalding, 2010; unesco, 2021; (UNICEF), 2021; Ward et al., 2012).

Student. A person who spent most of his/her time in a regular educational institution (primary, secondary, college, university etc.) and hence not available for work. If, for instance, a student was on holiday during the week preceding the census and may have been engaged in gainful employment, he/she was coded as employed (Hawkins, 2018; Popov et al., 2012).

Target Population: Understanding the characteristics of your subjects can guide your choice.

Technology absorption: The capacity of a country or organisation to adopt and adapt technologies developed elsewhere for their own benefit.

Technology Facilitation Mechanism (TFM): Part of the United Nations Sustainable Development Goals (SDGs), it aims to facilitate collaboration and partnerships among various stakeholders to advance science, technology, and innovation for sustainable development.

Technology hub: A geographic area or institution that concentrates R&I activities, often attracting talent and investment.

Technology transfer: The process of sharing and adopting technology and knowledge from one entity or context to another. In R&I policies, technology transfer may involve facilitating the movement of innovations, inventions, or research findings from research institutions to the private sector for commercialisation and broader societal benefits.

The Central Limit Theorem states that, regardless of the population distribution, the distribution of the sample means will approach a normal distribution as the sample size increases. This theorem is significant because it allows researchers to make inferences about the population mean using sample means, even when the population itself is not normally distributed, as long as the sample size is sufficiently large.

The future of mixed methods research is promising, with an increasing recognition of its value in addressing complex research questions. Trends include:

Thematic Analysis: Organizing codes into broader themes that represent the main findings.

who do not, often resulting in disparities in access to information and opportunities.

who might otherwise be excluded or marginalised, such as those having physical or intellectual disabilities or belonging to other minority groups.

ATTACHMENT

Comments and Recommendation by Alumnae

1. *As an alumnae of the Health Science Study Program in Timor-Leste, I find myself grappling with a bitter realization: despite my education and passion for the health sector, I am among many graduates who face the grim reality of unemployment. The disappointment of not securing a job after graduation weighs heavily on my heart, and it is essential to speak out about this pervasive issue that affects countless young professionals in our nation.*
2. *Despite the challenges, I remain hopeful. The resilience of my fellow graduates and the collective will to advocate for change inspire me. We are part of a generation that understands the importance of health and well-being. Our education has equipped us with the tools to analyze problems, propose solutions, and work collaboratively toward a common goal.*
3. *Despite the heavy weight of unemployment and the challenges we face, I believe it is vital to hold onto hope. Hope is what drives us to continue seeking solutions and advocating for change. As health science graduates, we carry with us not just theoretical knowledge, but also a passion for making a difference in the lives of others. We are equipped with the skills to address pressing health issues, and it is this spirit that must fuel our determination to navigate the obstacles in our path.*
4. *Enhancing Curriculum Relevance: Educational institutions should work closely with healthcare providers to ensure that training programs are aligned with the current needs of the health system. Incorporating more practical training and internships could also better prepare graduates for the realities of the job market.*
5. *Entrepreneurship also allows us to harness our creativity and adaptability. In a world where traditional employment options may be scarce, thinking outside the box can lead to meaningful contributions to our health system. Organizations that offer support for startups in the healthcare sector can play a crucial role in nurturing these entrepreneurial endeavors, providing mentorship, resources, and funding opportunities.*
6. *Establishing Career Support Services: Universities should develop career services specifically tailored for health science graduates. Workshops on resume writing, interview preparation, and job search strategies could significantly improve our chances of securing employment.*
7. *Establishing clear pathways for career development is another critical step. This can be achieved through mentorship programs, internships, and job placement services specifically designed for health science graduates. By providing guidance and support, we can help new graduates navigate the complexities of the job market and find their footing in their chosen fields.*
8. *Establishing structured internship and job placement programs can bridge the gap between education and employment. Partnerships between educational institutions and healthcare facilities can facilitate these programs, allowing students to gain real-world experience while still in university. This not only enhances their skills but also increases their chances of securing employment upon graduation. A well-designed internship program can serve as a stepping stone, connecting graduates directly with potential employers and providing them with the references and experience needed to stand out in a competitive job market.*
9. *Forging these connections, we can create a pipeline of talent that addresses the staffing shortages facing the healthcare sector in Timor-Leste.*
10. *Forming a strong community, we can empower one another to remain hopeful and proactive in our job search. This network could also facilitate the sharing of job openings, internship opportunities, and information about workshops or training sessions. Moreover, as we strengthen our connections, we can collectively advocate for the needs and interests of health science graduates in Timor-Leste, amplifying our voices and increasing our visibility.*
11. *Geographic and infrastructural challenges. Access to jobs is often limited to urban centers, while rural areas, where many health professionals are desperately needed, remain underserved. The lack of transportation and poor road conditions make it difficult for graduates from rural backgrounds to pursue employment opportunities in the capital or other urban areas.*
12. *Governments and institutions must work hand-in-hand to create clear pathways for employment within the health sector. This includes establishing partnerships with healthcare facilities, NGOs, and community organizations that can provide internships, volunteer opportunities, and entry-level positions. Furthermore, recruitment drives specifically aimed at recent graduates can help bridge the gap between education and employment, ensuring that new graduates are not left adrift in a sea of uncertainty.*
13. *I urge my fellow graduates and all stakeholders to come together in solidarity. rise above the current despair and transform it into a powerful movement for change. The time for action is now, and together, we can ensure that our dreams do not go unrealized, but instead become a reality for generations to come.*
14. *I urge my fellow health science graduates to unite for change. Our strength lies in our collective voice and our shared experiences. We must advocate for a future where health science graduates can find meaningful employment, where our skills are recognized and valued, and where we can contribute to the well-being of our communities.*

15. *Involving alumni in discussions about curriculum development and workforce needs can provide valuable insights. As recent graduates, we possess firsthand knowledge of the job market and can offer perspectives on the skills that employers seek.*
16. *Learning from those who have successfully navigated similar challenges, we can gain valuable perspectives on how to enhance our employability. Furthermore, these gatherings can serve as platforms for promoting mental health and well-being, creating an atmosphere where graduates can discuss their struggles openly, there*
17. *Nurturing a culture of empowerment, support, and innovation, we can transform the challenges of today into the successes of tomorrow. Together, we can create a brighter future for health science graduates in Timor-Leste one where our skills, passion, and dedication are recognized and valued. The journey may be long, but with each step we take, we move closer to our shared vision of a thriving health sector filled with opportunities for all. Building a Supportive Community*
18. *Our struggles with unemployment are not simply personal challenges; they are a call to action for systemic change within the health sector. Together, we can advocate for better educational alignment, job creation, and mental health resources.*
19. *Sharing job leads, providing mentorship, and collaborating on projects, we can create a community that not only uplifts its members but also contributes to the overall improvement of healthcare in Timor-Leste. Alumni networks can also serve as a platform for advocating for better employment conditions and resources for recent graduates.*
20. *Sharing our experiences and data on unemployment rates among health science graduates, we can advocate for policies that promote job creation, funding for health programs, and improved hiring practices within the sector.*
21. *Strengthening Collaborations: Educational institutions and the government must work together to create pathways for practical training and internships that align with the current needs of the health sector. By fostering collaborations between universities and healthcare providers, we can ensure that graduates are better equipped for the realities of the job market.*
22. *The government should prioritize investments in healthcare infrastructure, ensuring that there are adequate resources to support new graduates. This includes establishing public health initiatives that can absorb the workforce while simultaneously addressing pressing health issues within the community.*
23. *The lack of job opportunities but also hopeful for a future where systemic changes can pave the way for a brighter path for graduates like myself. Together, we can advocate for a more inclusive and supportive environment that fosters both personal and professional growth, ensuring that our hard work and dedication do not go unrecognized.*
24. *The landscape for health science graduates in Timor-Leste presents significant challenges, but it is essential to recognize that these challenges also offer opportunities for growth, collaboration, and innovation.*

The Reason and Critical Thinking Overed by Alumane to University and Government

1. *Political affiliations play a significant role in employment in Timor-Leste, creating an environment where meritocracy is overshadowed by partisanship. Having been suspended from my position due to the political party I do not align with, it is a cruel reminder of how fragile our professional lives can be. This not only affects my livelihood but also diminishes the motivation and morale of countless healthcare professionals.*
2. *A collaborative approach, one that includes government, educational institutions, and the community, will be essential in crafting policies that prioritize health and well-being over political affiliations. Together, we can build a healthcare system that not only meets the needs of our population but also empowers the next generation of health science graduates to thrive.*
3. *As a graduate of a health science program, I entered the workforce with the hope of contributing to my community's health and well-being. Armed with knowledge and a profound sense of purpose, I anticipated a career filled with opportunities to make a difference. However, the stark reality of my current situation is one of despair long-term unemployment compounded by a suspension from my previous employer, a consequence of the ongoing political turmoil that has seeped into every aspect of our lives.*
4. *As an alumna of a health science program, I urge our government and political leaders to recognize the urgent need for reform in how employment opportunities are allocated within the health sector. A merit-based system, free from political bias, must be established to ensure that skilled graduates can contribute to the health and wellbeing of our communities.*
5. *As health science graduates of Timor-Leste, we have the power to shape the future of healthcare in our nation. By advocating for merit-based hiring practices, fostering collaboration across sectors, and prioritizing mental health and well-being, we can create a system that not only serves the needs of our communities but also empowers us as professionals.*
6. *As health science graduates, we can play a pivotal role in fostering grassroots movements that address the healthcare challenges in our communities. By mobilizing individuals and organizations around shared health goals, we can raise awareness, drive advocacy efforts, and ultimately create a more equitable healthcare system.*
7. *As health science graduates, we have a responsibility to empower future generations of health professionals. By sharing our knowledge and experiences, we can inspire young individuals to pursue careers in healthcare and contribute to the betterment of our communities. Engaging with students through mentorship programs, internships, and career fairs can spark their interest in health sciences and help them navigate their educational paths.*
8. *As health science graduates, we have a unique opportunity to be advocates for change. Advocacy involves raising awareness about health issues, influencing policy decisions, and championing the needs of our communities. By utilizing our voices and platforms, we can drive meaningful change in the healthcare system.*
9. *As health science graduates, we have a unique responsibility to advocate for health equity. The disparities in healthcare access and quality in Timor-Leste often reflect broader societal inequities, which disproportionately affect marginalized populations. It is our duty to raise awareness of these issues and work towards creating a more just healthcare system.*
10. *As health science graduates, we have the knowledge and passion to drive meaningful change. By uniting our voices and advocating for a healthcare system that values professionals based on merit and dedication, we can help ensure that future graduates do not face the same barriers we have encountered.*
11. *As health science graduates, we must advocate for training in cultural competence within our educational programs. This training will prepare us to engage with patients from diverse backgrounds, allowing us to deliver care that is sensitive to their unique needs and values. By fostering an inclusive healthcare environment, we can improve patient outcomes and build trust within our communities.*
12. *As health science graduates, we must recognize the significance of policy advocacy in shaping the future of healthcare in Timor-Leste. Policies affecting healthcare delivery, funding, and education are often determined by those in positions of power, and it is crucial that we make our voices heard.*
13. *As health science graduates, we often find ourselves in roles that require us to care for others, but we must not forget the importance of self-care. The emotional toll of witnessing societal inequities and the struggles of our communities can weigh heavily on our mental health. It is essential that we prioritize our well-being and seek support when needed.*
14. *As health science graduates, we should champion the integration of technology into our healthcare practices. This includes advocating for training in digital health tools, promoting their use in rural areas, and encouraging healthcare institutions to adopt innovative solutions that enhance service delivery.*
15. *Effective health policies should also incorporate the voices of healthcare professionals, particularly those who have firsthand experience navigating the challenges within the system. By engaging health science graduates*

in the policymaking process, we can provide valuable insights and recommendations that reflect the realities on the ground. This participatory approach fosters a sense of ownership among healthcare professionals, as we work collaboratively to shape a system that serves the needs of our communities.

16. *Empowering future health science graduates to navigate the challenges of the profession will create a cycle of positive change. By sharing our experiences, insights, and lessons learned, we can inspire the next generation to continue the fight for a healthcare system that prioritizes service over politics, merit over affiliation.*
17. *Engaging in advocacy efforts requires us to be informed about the issues that impact*
18. *I am filled with a bittersweet determination to continue this fight for a better healthcare system. As I look around at my fellow health science graduates, I see not just individuals facing unemployment and uncertainty but a collective force capable of driving transformation. We owe it to ourselves, our communities, and future generations to ensure that our dreams of contributing to the health and well-being of Timor-Leste are realized.*
19. *I reflect on the words of Nelson Mandela, who once said, It always seems impossible until it's done. The road ahead may appear daunting, filled with obstacles and uncertainty, but it is essential to remember that change is possible. Together, we have the power to reshape the narrative surrounding health science graduates in our nation.*
20. *I urge my fellow graduates to remain steadfast in our commitment to our profession and our communities. stand together, advocating for ourselves and one another, as we work towards a healthcare system that values our contributions and empowers us to make a meaningful impact.*
21. *I urge my fellow health science graduates and our allies to take action. We must harness our collective strength to advocate for the changes that will allow us to fulfill our potential as healthcare professionals. The future of healthcare in Timor-Leste is not a distant dream; it is a reality that we can create together.*
22. *In the heart of every health science graduate lies a commitment to service, a passion for healing, and a desire to make a difference. It is time to channel that passion into action, to unite our voices, and to demand the changes necessary for a more equitable and responsive healthcare system.*
23. *The struggles faced by health science graduates in Timor-Leste are emblematic of a larger systemic issue rooted in political instability and inequity. As I navigate this challenging chapter of my life, I remain hopeful that change is possible. We must come together as a society to demand a system that values dedication, skill, and compassion over political loyalty. The health of our nation depends on it, and so does the future of countless individuals who yearn to make a difference in their communities.*
24. *We are at a critical juncture in our nation's history, where the collective efforts of passionate individuals can shape the future of healthcare. By standing united, advocating for equitable practices, and fostering a culture of continuous learning, we can create a healthcare system that truly serves the needs of our communities.*

COMMENTS AND RECOMMENDATIONS BY STAKEHOLDERS FOR HEALTH SCIENCE ALUMNAE IN TIMOR-LESTE (2019-2023)

1. *Build Morale Through Recognition:* Recognizing the hard work and dedication of health science alumni is crucial. Whether through awards, public acknowledgments, or local media features, such recognition fosters a sense of pride and motivates continued commitment to their work. Celebrating their successes reinforces the value they bring to the healthcare system.
2. *Building Strong Networks:* A robust network of health professionals, community leaders, and stakeholders is essential. We recommend establishing regular forums and workshops for networking and knowledge exchange.
3. *Recognizing their creative solutions to unique community health needs* not only builds morale but also encourages other professionals to innovate.
4. *Collaborate with Educational Institutions:* Partnerships between health science alumnae and academic institutions can lead to innovative research projects. By leveraging the skills and knowledge of alumnae, educational programs can align their research agendas with community health needs, generating solutions that are relevant and impactful.
5. *Collaboration Across Diverse Groups:* Alumnae recognize the importance of collaboration and actively seek partnerships to achieve common objectives. Building alliances with various groups can enhance the impact of health initiatives.
6. *Collaboration Among Stakeholders:* We must rally together government bodies, educational institutions, NGOs, and community organizations around a shared vision to support health science professionals. Together, we can create an environment that nurtures collaboration, innovation, and resilience.
7. *Collaboration as a Foundation:* The road to health equity is built on collaboration. We must remember that the health and well-being of a nation depend on the dedication and hard work of its healthcare professionals.
8. *Collective Success in Healthcare:* Celebrating the achievements of health science alumnae is not just about individual success; it is a collective victory that benefits entire communities. We must acknowledge their contributions to foster a culture of appreciation and encouragement.
9. *Commitment to Lifelong Learning:* Alumnae often engage in continuous learning to stay updated in health science. Stakeholders should provide platforms for ongoing education and professional development.
10. *Community Engagement:* Actively engage communities in health discussions. Conferences, workshops, and community events can serve as avenues for knowledge exchange and the sharing of best practices.
11. *Community Events:* Host awards, community events, and media coverage to showcase the accomplishments of health science alumnae. Celebrating their successes sends a powerful message that their work is valued and impactful.

12. *Continuous Learning: Commit to providing continuous learning opportunities for health science alumnae. This will enable them to stay updated on the latest developments in healthcare.*
13. *Contribution to Evidence-Based Practices: Alumnae equipped with the latest research and information can significantly contribute to evidence-based practices in healthcare. Continuous education and training programs should be established to keep them informed of developments in the field.*
14. *Create a Legacy of Health: Every step forward in healthcare is a step toward building a legacy of health, well-being, and hope for future generations. Employers and stakeholders must prioritize initiatives that ensure the sustainability of healthcare improvements, creating a foundation for ongoing success.*
15. *Create a Supportive Ecosystem: Fostering open lines of communication and collaboration will build trust and encourage community ownership over health initiatives. Stakeholders should work to create a supportive ecosystem that empowers health science alumnae to make meaningful contributions.*
16. *Create Platforms for Sharing Knowledge: Establishing forums or platforms where alumnae can share their experiences and insights will foster a culture of continuous learning. These platforms can serve as vital resources for both current students and professionals in the field.*
17. *Cultivate an Inclusive Environment: Creating an inclusive environment is crucial for the success of healthcare initiatives. By engaging diverse communities and encouraging participation from all sectors, we can ensure that our healthcare system is equitable and responsive to the needs of everyone.*
18. *Curriculum Development: Universities should collaborate with industry partners to ensure that curricula reflect current market needs. Incorporating real-world projects into the curriculum will help students practice essential skills.*
19. *Develop Comprehensive Programs: Collaboratively, health science alumni, government agencies, NGOs, and private sector organizations can develop comprehensive programs addressing systemic barriers to healthcare access. This approach will ensure that all individuals receive the care they need, fostering a healthier society.*
20. *Digital Literacy: As technology plays an increasingly vital role in healthcare, universities must prioritize digital literacy training. Graduates should be equipped to navigate digital platforms effectively.*
21. *Effective Communication: Embed communication training throughout the curriculum. Employers consistently rank effective communication as one of the top skills they seek in candidates.*
22. *Emergency Preparedness: The recent global health crises have underscored the need for emergency preparedness. Alumnae can play a crucial role in advocating for policies that promote mental health awareness and address health disparities, ensuring that the healthcare framework is better equipped for future challenges.*
23. *Emphasize Experiential Learning Opportunities: Faculty members must advocate for a curriculum overhaul that emphasizes experiential learning. Integrating case studies, group projects, and simulations can enhance teamwork and communication skills while providing a platform for ethical discussions and digital skill application.*

24. *Emphasizing Positive Attitudes: A positive attitude is crucial for the success of any healthcare initiative. Encouraging alumnae to maintain optimism and a proactive approach will foster an environment conducive to collaboration and innovation.*
25. *Empower Alumni Contributions: Valuing and empowering the contributions of health science alumni is essential. By creating platforms for alumni to share their experiences and insights, we can foster a sense of community and collaboration. Such initiatives will pave the way for a healthier, more resilient future for all Timorese people.*
26. *Empower Faculty as Change Facilitators: Educators are uniquely positioned to bridge the gap between theoretical knowledge and practical application. By incorporating collaborative projects and ethical discussions into their courses, faculty can encourage students to develop essential skills that will serve them in their careers.*
27. *Empowerment and Community Resilience: It is vital to create systems that empower individuals to take charge of their health. By promoting community resilience, we can adapt to the evolving landscape of healthcare challenges. Stakeholders should support initiatives that enhance community engagement and health literacy.*
28. *Encouraging interdisciplinary collaboration among health professionals, social workers, educators, and policy-makers is crucial. By fostering partnerships, stakeholders can create a unified front that prioritizes the health and well-being of every individual.*
29. *Encouraging Research: Encourage alumnae to engage in research initiatives. This can lead to a deeper understanding of local health challenges and the development of evidence-based solutions.*
30. *Encouraging Young Leaders: As young leaders emerge, they will carry forward the legacy of their predecessors. We must support their advocacy for health equity and access for all, ensuring that they embody the values of leadership, teamwork, and integrity.*
31. *Engage Local Government: Collaborate with government officials, NGOs, and community leaders to amplify impact and lead to meaningful reforms that enhance health services and access.*
32. *Engagement with Policymakers: We recommend that stakeholders actively engage with policymakers to prioritize health equity. Investments in infrastructure that supports health science professionals are crucial for long-term success.*
33. *Ensure Health is a Right for All: We must strive for a future where health is not just a privilege for a few but a fundamental right for everyone. By fostering collaboration among health science alumni, government agencies, NGOs, and the private sector, we can develop comprehensive strategies that address the specific health needs of all Timorese individuals.*
34. *Equitable Resource Distribution: Advocating for equitable resource distribution is vital to ensure that all communities have access to quality healthcare. Stakeholders should work together to identify and address disparities in healthcare access and resources.*
35. *Establishment of Electronic Health Records: We recommend advocating for the establishment of electronic health records and data-sharing platforms. These systems can significantly improve care coordination and patient outcomes.*

36. *Ethics and Responsibility: Curricula should include dedicated discussions on ethics and moral responsibilities. Engaging students in these conversations will prepare them to navigate ethical challenges in their future careers.*
37. *Experiential Learning Opportunities: Prioritize experiential learning through internships, service-learning projects, and community engagement. These experiences will enhance practical applications of their skills.*
38. *Focus on Comprehensive Training: To address current challenges and empower health science alumnae, stakeholders should ensure that training programs are comprehensive. This includes fostering a commitment to ongoing education, enabling alumnae to remain equipped with the latest knowledge and skills.*
39. *Foster a Proactive Mindset: When health science professionals approach their work with a proactive mindset, they inspire those around them. Employers should cultivate an environment where alumni feel encouraged to share their objectives, challenges, and successes. This transparency can lead to more meaningful stakeholder engagement and collaboration.*
40. *Foster Community and Collective Action: In Timor-Leste, the power of community and collective action cannot be underestimated. By promoting collaboration among all stakeholders, we can build a healthcare system that not only meets current challenges but also sets the stage for future advancements.*
41. *Foster Connection with Local Populations: Health science alumnae should remain connected to the communities they serve, ensuring that health initiatives are culturally sensitive and tailored to local needs. Engaging with community members can provide invaluable insights into the challenges they face.*
42. *Fostering a Culture of Collaboration and Continuous Learning: Build Interdisciplinary Partnerships*
43. *Fostering Knowledge Exchange and Partnerships: Creating opportunities for knowledge exchange and partnership building will enhance the collective capacity of health science alumnae and stakeholders. Collaborative projects can drive innovative solutions to healthcare challenges.*
44. *Fostering Morale: Recognizing the hard work and accomplishments of health science alumnae is essential for building morale and motivation. Celebrate their journey and commit to supporting their ongoing contributions.*
45. *Harness the Talents of Health Science Alumni: By harnessing the talents of health science alumni, we can build a healthcare system that serves all, regardless of background or circumstance. Stakeholders should actively seek to involve alumni in the development of programs and policies that directly impact healthcare delivery.*
46. *Highlight Achievements and Impact: Stakeholders should actively highlight the successes of health science alumnae and share their stories. By doing so, we can inspire others and create a sense of community that values collaboration and shared learning.*
47. *Importance of Transparent Communication: Transparent communication is essential for effective collaboration among stakeholders, including government bodies, NGOs, and community members. Training programs that emphasize communication skills should be prioritized for alumnae.*
48. *Innovative Solutions for Health Challenges: Recognizing and harnessing the qualities of health science alumnae can lead to innovative solutions for Timor-*

- Leste's health challenges. Stakeholders should actively seek input from these professionals in developing strategies.*
49. *Interdisciplinary Collaboration: Encourage partnerships between health science graduates and professionals from other fields, such as environmental science and social work, to develop comprehensive solutions to pressing health challenges.*
 50. *Leadership in Health Initiatives: Alumnae who take the initiative to lead projects or advocate for policy changes demonstrate essential leadership qualities. Stakeholders should encourage and support these leaders in their endeavors.*
 51. *Leadership Opportunities: Create pathways for alumnae to take on leadership roles within healthcare organizations. Empowering them to influence policy and advocate for their communities is essential for driving meaningful change.*
 52. *Learning from Challenges: As we reflect on the challenges posed by the pandemic, we must build systems that can withstand future crises. Stakeholders should prioritize resilience and adaptability in healthcare practices.*
 53. *Listen to Stakeholder Voices: Universities should actively listen to the voices of their stakeholders, particularly health science alumni. By conducting regular surveys and focus groups, institutions can gather valuable feedback on the curriculum and its relevance to current healthcare demands. This engagement will help shape programs that not only meet today's challenges but also anticipate future needs.*
 54. *Multifaceted Approaches to Health Issues: Addressing health issues from multiple perspectives allows for the development of comprehensive solutions. We encourage alumnae to collaborate across disciplines to tackle the root causes of health disparities effectively.*
 55. *Networking Events: Organize events that facilitate networking among health science graduates and industry professionals. These connections can lead to collaborative projects and shared resources.*
 56. *Nurturing the potential of health science alumnae in Timor-Leste is essential for creating a robust healthcare system that can effectively address the needs of our population. By empowering individuals, fostering collaboration, embracing diversity, and uniting efforts, we can work together to overcome challenges and build a brighter, healthier future for all Timorese people. The collective commitment of employers, educators, and community leaders will be vital in achieving these goals.*
 57. *Positive Attitude: Embrace challenges ahead with optimism and determination. Each initiative launched and each life touched contributes to the greater good.*
 58. *Promote a Shared Vision: With a shared vision of health equity and a collective commitment to collaboration, we can embark on a joyful journey toward a brighter, healthier future for all Timorese people. Stakeholders should work together to establish common goals and strategies that promote health equity across the nation.*
 59. *Promote Continuous Improvement: Continuous improvement should be a guiding principle in our healthcare efforts. By regularly evaluating programs and strategies, stakeholders can identify areas for enhancement and ensure that we remain responsive to the evolving healthcare landscape.*
 60. *Promote Health Equity Advocacy: Health science alumnae should be encouraged to advocate for health equity and social justice. By engaging in community outreach and educational initiatives, they can raise awareness of systemic inequalities and work toward inclusive health policies.*

61. *Promote Health Literacy Programs: Alumnae can play a vital role in developing health literacy programs that empower individuals to take charge of their health and well-being. By sharing their expertise, they can help educate communities about health issues and available resources.*
62. *Promoting Mental Health Awareness: Open discussions about mental health are essential. By creating supportive environments, we can promote holistic health for all individuals. Stakeholders should advocate for mental health programs and training for health professionals.*
63. *Recognize Alumni as Leaders: We must acknowledge the potential of health science alumni as leaders and change-makers within their communities. By providing them with leadership training and opportunities to take on key roles in healthcare initiatives, we can empower them to drive positive change.*
64. *Recognize Contributions: Regularly recognize and celebrate the achievements of health science alumnae. This practice will foster a culture of pride and motivation within the community.*
65. *Resilience in Facing Challenges: Alumnae from health science programs in Timor-Leste have demonstrated remarkable resilience and optimism in overcoming challenges. We must continue to support their growth and development to enhance their effectiveness in the healthcare sector.*
66. *Shared Responsibility in Healthcare: The commitment to health equity and excellence in healthcare is a shared responsibility. All stakeholders must work collaboratively to ensure that the healthcare system meets the needs of the population.*
67. *Strong Networks: Creating strong professional networks for health science alumnae can lead to greater collaboration and innovation within the healthcare sector.*
68. *Support Alumnae as Change Agents: Supporting and empowering health science alumnae as vital agents of change will pave the way for a brighter tomorrow. Their dedication and expertise can significantly impact the health landscape, leading to improved outcomes for all.*
69. *Support Alumni Growth: Supporting the professional growth of health science alumni ensures a healthcare system that is robust, equitable, and responsive to the needs of all. Employers should provide ongoing training and development opportunities, enabling alumni to enhance their skills and adapt to the evolving healthcare landscape.*
70. *Support for Innovation: Encourage alumnae to embrace new technologies and innovative practices. Empowering these individuals will create a ripple effect, benefiting families, communities, and future generations.*
71. *Supporting Educational and Community Engagement Policies: Promoting policies that enhance education, access to healthcare, and community involvement will create an environment where health science alumnae can thrive.*
72. *Systemic Change for Health Equity: Advocating for systemic changes that prioritize health equity and support innovation is essential. Stakeholders must unite to create frameworks that empower future generations of health professionals.*
73. *The Role of Universities: As we navigate an increasingly complex world, the role of universities in education and skill development has never been more critical. Addressing the disconnect between academic curricula and employer demands is essential for the future workforce.*

74. *Transform Challenges into Opportunities: We must harness the potential to turn challenges into opportunities. By fostering a healthcare landscape that is resilient and inclusive, we can respond effectively to the diverse needs of every individual. Stakeholders should collaborate to identify and address systemic barriers to healthcare access, ensuring that all individuals receive the care they need.*
75. *Universities must actively involve employers in the curriculum review process. Regular consultations and partnerships with industry leaders can facilitate the integration of real-world applications and case studies into the curriculum. For example, internships, co-op programs, and project-based learning initiatives can provide students with hands-on experience, while also allowing employers to contribute to the educational process.*
76. *Universities must embrace their role as facilitators of knowledge and skill development, working alongside stakeholders to create curricula that are not only relevant but also transformative.*
77. *Universities must integrate digital literacy across all disciplines to prepare students for the workforce. This includes not only basic computer skills but also data analysis, coding, and familiarity with emerging technologies such as artificial intelligence and machine learning.*
78. *Universities should consider implementing mechanisms for regular student feedback, such as surveys, focus groups, and open forums. By asking students about their experiences with the curriculum and their perceptions of the skills they need, universities can adapt their programs to better meet these needs. For instance, a recent study highlighted that students felt unprepared for the digital aspects of their fields, prompting several universities to enhance their offerings in digital literacy and technology integration.*
79. *Universities should create committees that include representatives from all key stakeholder groups students, faculty, employers, and industry leaders to regularly assess and provide feedback on curriculum effectiveness.*
80. *Universities should invest in training programs for faculty to enhance their ability to teach soft skills and implement digital tools effectively. This professional development will empower educators to create dynamic and engaging learning environments.*
81. *Valuing Every Voice: We envision a future where every voice is heard, valued, and contributes to community health and well-being. Stakeholders must actively involve alumnae in decision-making processes to ensure diverse perspectives are considered.*



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