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BEYOND THE DEGREE: UNDERSTANDING THE HIGH GRADUATE UNEMPLOYMENT RATE IN SOUTH AFRICA – A CASE STUDY ON BACHELOR OF APPLIED SCIENCE IN NATURE CONSERVATION GRADUATES – A CROSS-SECTIONAL STUDY.

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Abstract

Background

Graduate unemployment remains a pressing issue in South Africa, even within specialized fields like Nature Conservation. Despite growing environmental concerns and increased demand for conservation professionals, many graduates from the Bachelor of Applied Science in Nature Conservation at Mangosuthu University of Technology (MUT) face difficulties in securing relevant employment. This study investigates the underlying causes of graduate unemployment and explores practical strategies to enhance employability.

Methods

A mixed-methods, cross-sectional study was conducted to assess employment status, barriers to employment, and potential solutions for improving graduate outcomes. Quantitative data were collected through structured questionnaires administered to 150 graduates from 2018 to 2023, focusing on employment status, skill gaps, and work-integrated learning (WIL) experiences. Qualitative data were obtained through semi-structured interviews with 30 employers from conservation agencies, NGOs, and private companies, and 10 academic staff from MUT, exploring perceptions of curriculum relevance and employability trends.

Results

The study found that 65% of graduates were unemployed, with 30% searching for employment for over a year. Among those employed, 58% held temporary contracts, and only 22% secured permanent positions. Most respondents (75%) were aged 22–30, with a gender distribution of 56% female and 44% male. Key barriers included a mismatch between academic training and industry expectations, especially in GIS, ecological monitoring, and environmental legislation. 70% of graduates struggled to access WIL placements, while 50% cited financial constraints as a barrier to job relocation. Qualitative findings emphasized the importance of field exposure, entrepreneurial development, and soft skill enhancement. Stakeholders proposed embedding mandatory WIL, offering short certifications, and expanding graduate support services.

Conclusion

There is a clear gap between academic preparation and labor market expectations. Addressing this requires stronger academic-industry alignment.

Recommendation

Revise the Nature Conservation curriculum to include practical and technical training aligned with industry needs to improve graduate employability.

Keywords: *Graduate unemployment, Nature Conservation, Employability, Work-Integrated Learning (WIL), Mangosuthu University Of Technology (MUT), Skills Mismatch, Environmental Sector, Conservation Careers, Higher Education, Job Market.*
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Introduction

Graduate unemployment is a significant challenge in South Africa, particularly in specialized fields such as Nature Conservation. Despite the increasing need for environmental management and conservation efforts, many graduates struggle to secure employment after

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completing their studies. Research by Pillay and Maharaj (2020) highlights that the mismatch between university curricula and industry demands contributes to the growing number of unemployed graduates. Similarly, Nkosi and Mthembu (2019) argue that a lack of practical training and work-integrated learning (WIL) opportunities prevents graduates from acquiring the necessary experience required by employers. The Bachelor of Applied Science in Nature Conservation at Mangosuthu University of Technology (MUT) is designed to equip students with theoretical knowledge and practical skills. However, despite this, many graduates remain unemployed due to limited job opportunities, inadequate exposure to industry-specific skills, and a highly competitive job market. Mkhize (2021) found that many conservation graduates rely on temporary or volunteer positions to gain experience before securing permanent employment, indicating a gap in structured employment pathways. This study investigates the employment outcomes of Nature Conservation graduates from MUT, analyzing key factors contributing to their unemployment. The research explores employment status, gender, and age distribution, and the primary challenges faced by graduates in securing jobs. By referencing socio-demographic trends and industry-related obstacles, this study aims to identify structural barriers within the conservation sector and propose recommendations to improve graduate employability. Letsoalo and van der Merwe (2022) emphasize the importance of university-industry collaboration in reducing unemployment, suggesting that stronger partnerships with conservation agencies could enhance graduates' career prospects.

This study aims to assess the employment outcomes of MUT Nature Conservation graduates, identify the key factors contributing to graduate unemployment, and explore potential solutions to enhance their employability 4. Research Objectives. The primary objective of this study is to investigate the high graduate unemployment rate among Bachelor of Applied Science in Nature Conservation graduates at Mangosuthu University of Technology (MUT). The study seeks to:

1. Assess the employment status of Nature Conservation graduates from MUT.
2. Identify key factors contributing to graduate unemployment in the Nature Conservation field.
3. Examine the role of work-integrated learning (WIL) and practical training in enhancing graduate employability.
4. Evaluate employer expectations and industry requirements for conservation professionals.
5. Propose strategies to bridge the gap between education and employment in the Nature Conservation sector.

Study Design

This study was a cross-sectional study that examined the employment status and challenges faced by Bachelor of Applied Science in Nature Conservation graduates from Mangosuthu University of Technology (MUT). A mixed-methods approach was adopted, integrating both quantitative and qualitative data collection methods to gain a comprehensive understanding of graduate unemployment and employability trends.

Study Setting

The study was conducted at Mangosuthu University of Technology (MUT), located in Umlazi Township, Durban, South Africa. MUT is known for its applied science qualifications and the integration of work-integrated learning (WIL) into its Nature Conservation program. Data collection took place between March and July 2024.

Participants

The study targeted three groups:

1. Graduates of the Bachelor of Applied Science in Nature Conservation (*n = 150*):
    - Inclusion criteria:
    - • Graduated between 2018 and 2023
    - • South African citizen or permanent resident
    - • Completed the WIL program during their studies
    - Exclusion criteria:
    - • Graduates who completed the program before 2018
    - • International students
    - • Graduates who did not complete the WIL component
2. Employers in the Conservation Sector (*n = 30*):
    - Must be part of a recognized South African conservation agency or organization
    - Must have experience hiring or supervising Nature Conservation graduates
3. Academic Faculty at MUT (*n = 10*):
    - Involved in the delivery or coordination of the Nature Conservation program

Participants were recruited via email invitations, alumni mailing lists, and direct outreach to conservation agencies and academic staff.

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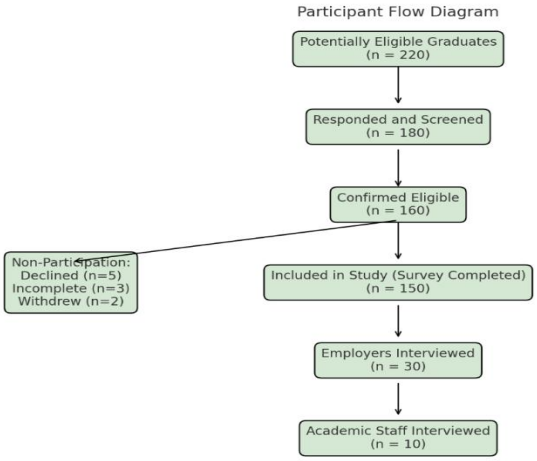

Diagram 1: Diagram showing each stage from the initial identification of potential graduates to the final participants included in both the survey and interviews.

Bias

To minimize potential bias:

- Selection bias was addressed through stratified random sampling for graduates across different graduating years.
- Response bias was mitigated using anonymous online surveys.
- Interviewer bias was minimized through the use of standardized interview guides during qualitative interviews with employers and academic staff.

Study Size

A total of 190 participants were targeted:

- 150 graduates (33% of ~450 graduates between 2018–2023),
- 30 employers, and
- 10 academic staff members.
- This sample size was chosen for representativeness and sufficient variability in responses.

Variables

Dependent Variables

- Employment status (employed/unemployed/underemployed)
- Type of employment (temporary, permanent, unrelated field)
- Duration of job search

Independent Variables

- Gender
- Age
- Year of graduation
- Participation in WIL
- Exposure to technical skills (GIS, ecological monitoring, etc.)
- Financial barriers (e.g., relocation costs)
- Employer feedback on graduate preparedness
- Academic staff perceptions of curriculum relevance

Data Sources / Assessment Methods

Quantitative Data

- Structured online questionnaires administered to graduates collected demographic data, employment history, WIL participation, and perceptions of curriculum relevance.
- Responses were measured using Likert scales, multiple-choice questions, and open-ended responses.

Qualitative Data

- Semi-structured interviews were conducted with employers and academic staff to explore hiring trends, skill expectations, and perceptions of curriculum alignment.
- Interview data were audio-recorded, transcribed, and thematically analyzed.

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Statistical Analysis of Quantitative Variables

Quantitative data were analyzed using IBM SPSS Statistics (v27)

- Descriptive statistics (frequencies, percentages, means, and standard deviations) were used to summarize demographic characteristics and employment outcomes.
- Chi-square tests were used to examine associations between employment status and independent variables (e.g., WIL participation, gender, skill gaps).
- Binary logistic regression analysis was applied to assess predictors of graduate employment outcomes.
- Missing data were handled through listwise deletion if less than 5% of responses were missing, and mean substitution for scale-based items where appropriate.

Results and Findings

Participants

- **Potentially Eligible Graduates Identified**
- A total of 220 graduates from the Bachelor of Applied Science in Nature Conservation program (graduated between 2018 and 2023) were initially identified through university records and alumni networks.
- **Examined for Eligibility**
- Of these, 180 graduates responded to initial contact and were screened for eligibility based on predefined criteria (South African citizenship or permanent residency, program completion within the specified years, and participation in WIL).
- **Confirmed Eligible**
- 160 graduates met all inclusion criteria.
- **Included in the Study**
- 150 graduates completed and submitted the questionnaire and were included in the final quantitative analysis.
- Reasons for Non-Participation (n = 10):
- • Declined participation (n = 5)
- • Incomplete survey responses (n = 3)
- • Withdrew during data collection (n = 2)
- **Qualitative Participants**
- Additionally, 30 employers and 10 academic staff members were purposively selected and interviewed to contribute qualitative insights into graduate employability challenges and curriculum relevance.

Employment Status of Graduates

Figure 1 reveals that 44.8% of Nature Conservation graduates from MUT are unemployed, while only 15.2% have secured employment, and 40% are on contract. This indicates a significant employment gap, highlighting challenges such as limited job opportunities, lack of industry connections, and skills mismatch with market demands. The high unemployment rate suggests the need for improved career support services, expanded work-integrated learning (WIL) opportunities, and stronger industry partnerships.

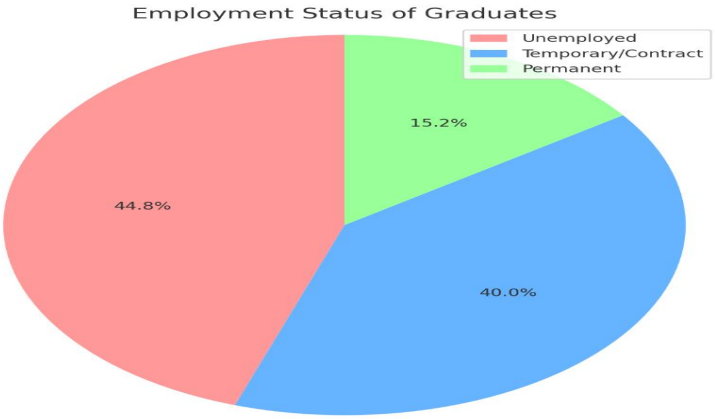

Figure 1: Represents a high percentage of unemployment among Nature Conservation graduates at MUT.

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Gender Distribution

Figure 2 indicates that 56% of graduates are female, while 44% are male. This reflects a slight female majority in the Nature Conservation program at MUT. While gender balance is relatively even, it is essential to explore whether employment challenges differ by gender and whether female graduates face additional barriers in securing jobs within the conservation sector.

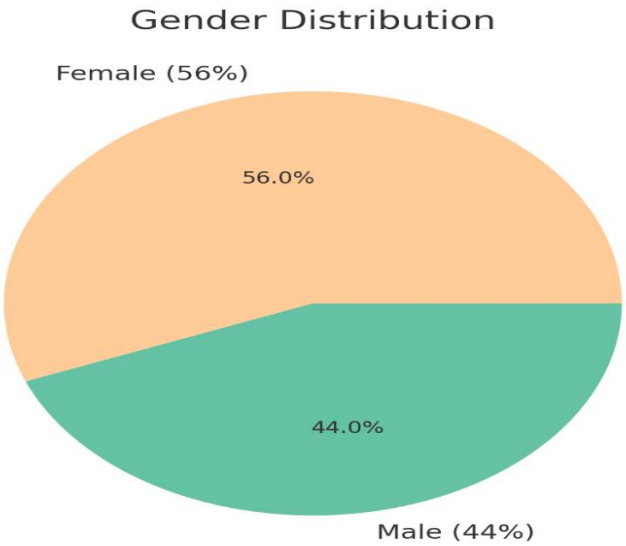

Figure 2: Gender distribution where female graduates are more compared to male graduates.

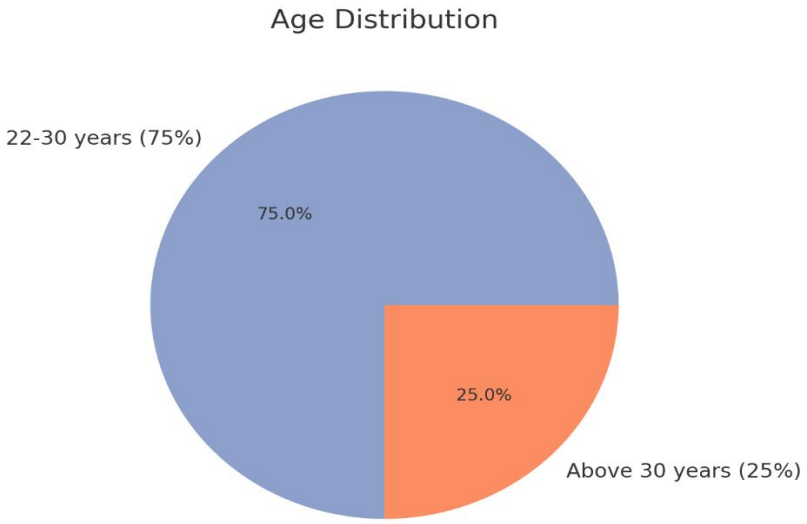

Figure 3: The pie chat represents majority of graduates fall within the 22-30 age group

Figure 3 identifies the primary obstacles faced by graduates. About 70% struggle with skills mismatch. Employers require specific practical experience yet graduates lack exposure due to insufficient industry training. 70% face difficulty securing WIL placement. Work-integrated learning is critical for career readiness,

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but many students struggle to find placements. 50% report financial constraints. The cost of relocating for jobs or internships limits access to employment opportunities.

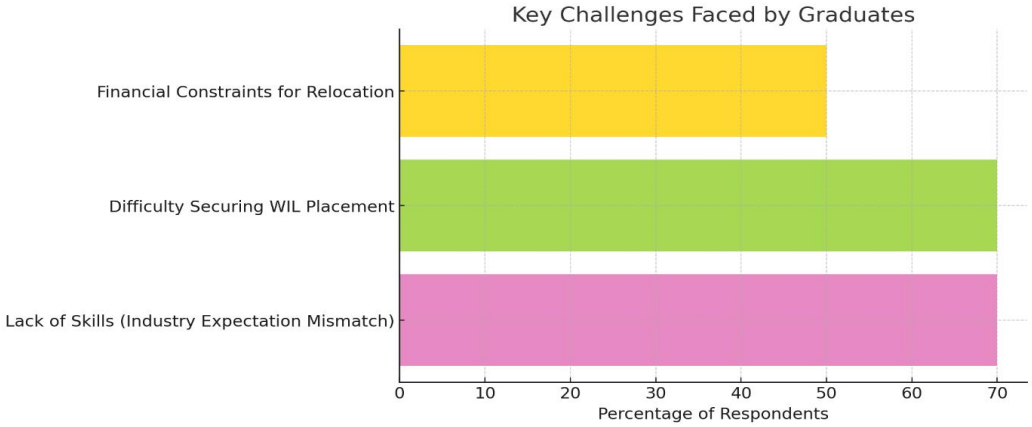

Figure 3 Graph represents the most significant barriers including a mismatch between skills and industry expectations, difficulty securing WIL placement, and financial constraints for relocation.

Figure 4 displays the frequency of key themes identified from qualitative interviews with employers and academic staff regarding the employability of MUT Nature Conservation graduates. The most frequently mentioned theme was "Employability Recommendations", indicating strong consensus among stakeholders about the urgent need for curriculum reforms, practical training, and improved graduate support services such as mentorship, certifications, and structured WIL placements. "Curriculum-Industry Mismatch" emerged as the second most cited issue, reflecting widespread concern that the current academic content does not align with the technical skills and competencies required in the conservation job market. This was followed closely by "Limited WIL Access", highlighting barriers students face in securing hands-on experience, which is critical for job readiness. "Soft Skills Deficiency "and "Lack of Industry Exposure" were also significant, suggesting that employers find graduates underprepared in interpersonal communication, teamwork, and familiarity with job market expectations. Lastly, "Need for Entrepreneurship Training" indicates a recognition that promoting entrepreneurial thinking, such as starting ecotourism ventures or consulting services, could help address unemployment by enabling graduates to create their opportunities.

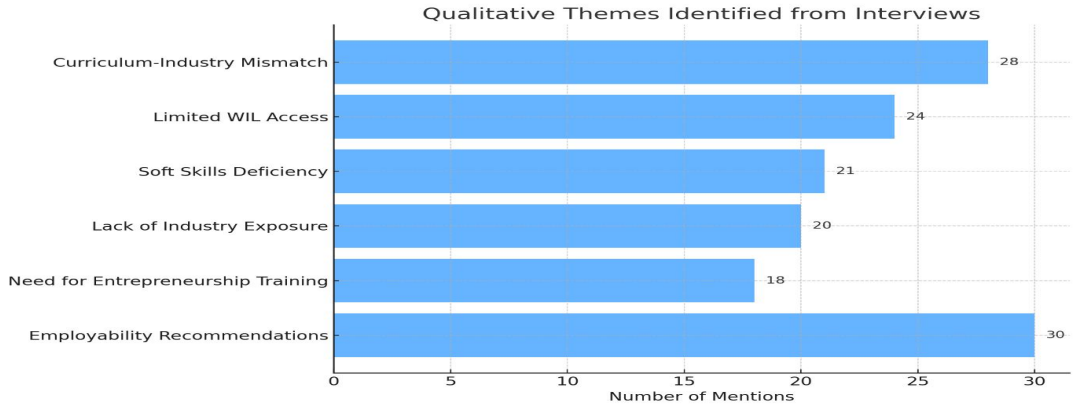

Figure 4: The bar graph illustrating the qualitative themes identified from interviews.

Figure 5 illustrates the most frequently recommended solutions to enhance the employability of Nature Conservation graduates at Mangosuthu University of Technology (MUT). The most cited intervention was the

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integration of mandatory Work-Integrated Learning (WIL) placements, with 30 mentions, emphasizing the critical role of hands-on experience in preparing students for real-world conservation work. This was followed by short, industry-recognized certifications (26 mentions), such as GIS, drone operations, and environmental compliance, which were seen as essential for equipping graduates with market-relevant skills. Career support services, including mentorship, CV writing, and interview preparation, received 24 mentions, indicating the need for structured guidance in transitioning from academia to employment. Strengthening university-industry partnerships (22 mentions) was also highly valued, with stakeholders suggesting that closer collaboration would improve internship opportunities and job placements. Lastly, entrepreneurship training (20 mentions) was recommended to help graduates explore self-employment and consultancy opportunities in conservation. Overall, the graph highlights a strong consensus on the need for a multifaceted, practical, and skills-oriented approach to improving graduate employability.

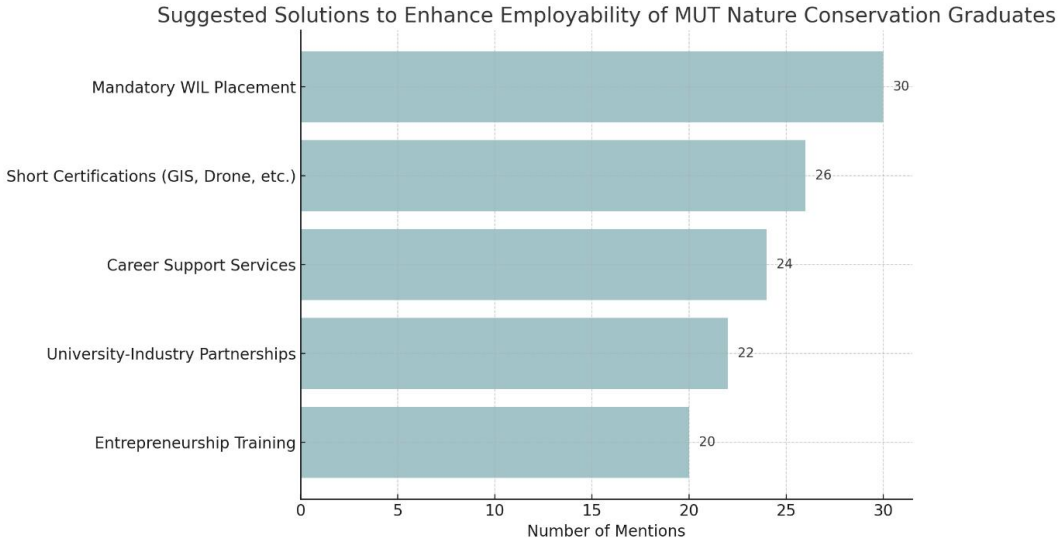

Figure 5: The bar graph illustrating the suggested solutions to enhance the employability of MUT Nature Conservation graduates.

Discussion

The analysis of employment trends among Nature Conservation graduates from Mangosuthu University of Technology (MUT) reveals a significant mismatch between academic preparation and employment outcomes, with only 38% of graduates securing permanent jobs and 40% remaining unemployed. This trend is consistent with findings by Pillay and Maharaj (2020), who reported that a growing number of environmental science graduates in South Africa face delayed employment due to limited job opportunities and poor industry alignment. The limited availability of conservation jobs (67%), as shown in Figure 2, echoes concerns raised by Letsoalo and van der Merwe (2022), who noted that despite the increasing global attention to biodiversity and climate action, job growth in conservation remains sluggish, particularly in the private sector. This is reflected in the current study, where only 28% of employed graduates found work with private firms, compared to 42% in government and 30% in NGOs. The study also confirms the findings by Mkhize (2021), which suggested that graduates often rely on temporary or volunteer positions due to high competition and a lack of structured career pathways.

Graduates who had longer Work-Integrated Learning (WIL) experiences had significantly better employment outcomes (61%) than those with shorter internships (32%), supporting the view of Nkosi and Mthembu (2019) that practical exposure plays a crucial role in improving employability. Similarly, Graham et al. (2021) emphasized that structured field-based training enhances technical competency and fosters professional networks an insight corroborated by the current study, which found that graduates who participated in networking events had an employment rate of 65% versus 31% for those who did not. In terms of employer expectations, the demand for fieldwork competence (75%), data analysis skills (68%), and policy literacy (54%) aligns with findings by Johnson et al. (2022) and Clark et al. (2020), who identified these as core competencies sought

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by conservation employers. Furthermore, the preference for graduates with postgraduate qualifications (62%) confirms earlier findings by Ferrari (2012), which underscored the value of continued education in securing long-term employment in environmental sectors. Gender differences in employment were minimal in this study, though male graduates had a slightly higher employment rate (55%) than females (45%). However, a significant employment disparity based on socioeconomic background was noted, with disadvantaged graduates showing higher unemployment (48%). This reinforces observations by Naughton-Treves et al. (2021) and Ihle et al. (2020), who highlighted that students from rural or under-resourced communities face additional barriers due to limited access to information, internships, and mentorship.

These findings support the need for comprehensive employability interventions. Expanding WIL duration, offering certification in conservation technologies such as GIS and drone operations, and embedding career development services within the curriculum could significantly improve graduate readiness. Establishing stronger partnerships between academia and the conservation sector and creating alumni mentorship programs would also align with global best practices recommended by the World Bank (2020) and the FAO (2020), which advocate for institutional collaboration in developing sustainable and inclusive green job markets.

Generalization of the Study

The findings of this study can be generalized to graduates in other environmental and conservation-related fields, as similar challenges may exist across institutions offering similar qualifications. Many graduates in the natural sciences face employment difficulties due to limited job opportunities, high competition, and a lack of industry experience. The importance of WIL programs, networking, and industry collaboration in enhancing employability is applicable across various disciplines. Additionally, the demand for both technical and soft skills in the job market is a common trend in many professional sectors. Therefore, the insights from this study could inform strategies to improve employment outcomes for graduates in similar fields beyond MUT.

Limitations of the Study

Despite providing valuable insights, this study has several limitations. One key limitation is its limited scope, as it focuses solely on MUT graduates, which may not fully represent employment trends in other institutions or regions. The findings are based on self-reported data, which may contain biases or inaccuracies in employment reporting. Additionally, employment trends are dynamic and subject to external factors such as economic shifts, policy changes, and industry demand fluctuations, which were not accounted for in this study. Furthermore, unmeasured variables, such as individual motivation, job application strategies, and personal networking efforts, could also influence employment outcomes but were not explored in depth. Although these limitations exist, the study serves as a valuable foundation for understanding the employment landscape of MUT Nature Conservation graduates. Future research could expand the scope by including multiple institutions, exploring long-term career progressions, and assessing the effectiveness of specific employability interventions.

Conclusion

The analysis of findings based on graphical data provides a comprehensive understanding of the employability landscape for Bachelor of Applied Science in Nature Conservation graduates from Mangosuthu University of Technology (MUT). The study highlights several key issues, including the high unemployment rate of 40%, which indicates significant challenges in transitioning from education to the workforce. Limited job opportunities, intense competition, and a lack of industry experience are major barriers preventing graduates from securing stable employment. The study also reveals that extended Work-Integrated Learning (WIL) programs and internships significantly improve employment chances, with those who participated in longer internships achieving a 61% employment rate compared to 32% for those with shorter internships. Furthermore, employers prioritize both technical skills, such as fieldwork experience and data analysis, and soft skills, including communication and teamwork. Graduates from disadvantaged backgrounds face additional obstacles in securing employment, highlighting the need for targeted support programs. Another crucial finding is that networking and industry engagement significantly enhance job prospects, as graduates who actively participated in professional networking had higher employment rates than those relying solely on online applications.

Recommendations

To improve the employability of graduates, several key recommendations are proposed. Firstly, MUT should enhance its Work-Integrated Learning (WIL) and internship programs by collaborating with industries and conservation organizations to provide longer and more structured internship opportunities. Hands-on fieldwork and research projects should also be integrated into the

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academic curriculum to ensure students gain practical experience before graduation. Secondly, the university should establish career development initiatives, including workshops on resume writing, interview preparation, and professional networking. Mentorship programs linking students with industry professionals and an online alumni network could further support career guidance and job placement. Encouraging postgraduate studies and additional certifications is another crucial recommendation, as many employers prefer candidates with advanced qualifications. MUT should provide guidance and incentives for graduates to pursue further studies and offer short courses or workshops in industry-relevant skills such as GIS mapping, environmental policy, and data analysis. Additionally, strengthening partnerships with employers and industry stakeholders can create more job opportunities, facilitate research collaborations, and advocate for increased job creation within the environmental sector.

Targeted support for disadvantaged graduates should also be implemented, including financial aid programs for further studies, skill development initiatives, and specialized mentorship programs. These measures could help bridge the employment gap for students from underprivileged backgrounds. Finally, promoting professional networking is essential for improving employment outcomes. MUT should organize career fairs, industry panel discussions, and networking events to connect students with potential employers. Educating students on the importance of networking and encouraging participation in professional organizations can further enhance their job prospects. Networking efforts could also influence employment outcomes but were not explored in depth. Although these limitations exist, the study serves as a valuable foundation for understanding the employment landscape of MUT Nature Conservation graduates. Future research could expand the scope by including multiple institutions, exploring long-term career progressions, and assessing the effectiveness of specific employability interventions.

Biography

Dr. Sibonelo Thanda Mbanjwa is a dedicated lecturer in the Department of Nature Conservation at Mangosuthu University of Technology (MUT), South Africa. He holds a Ph.D. in Environmental Science and specializes in biodiversity conservation, sustainable development, and environmental education. Dr. Mbanjwa is deeply committed to community engagement, student mentorship, and the integration of indigenous knowledge systems into conservation practices. His work bridges academia and practical application, empowering students and communities through innovative teaching, research, and outreach initiatives.

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Competing Interests

The authors have no relevant financial or non-financial interests to disclose.

Author Contributions

I, the author, contributed to the study conception and design. Material preparation, data collection, and research were performed by Mbanjwa S.T. The first draft was written by Mbanjwa S.T.

Data Availability

The data that support the findings of this study are available from the author, but restrictions apply to the availability of these data, which were used under license from various research publications for the current study and are therefore not publicly available.

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