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Employment Outcomes among Deaf and Hearing-Impaired Graduates in Malaysian Polytechnics: Key Issues and Challenges

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ABSTRACT

This study examines the employment outcomes of deaf and hearing-impaired graduates from Malaysian polytechnics, focusing on the relationship between employability and employment quality. Using secondary data from the Graduate Tracer Study by the Ministry of Higher Education Malaysia, the study analyses Graduate Employability (GE), Graduate Marketability (GM), salary, job–education alignment, waiting period to employment, workplace barriers, and socioeconomic background. The findings show that employability has improved significantly, with GE increasing from 93.3% in 2022 to 100% in 2024, and GM rising from 90.8% to 97.9%. However, high employability does not necessarily lead to quality employment. A large proportion of graduates earn low wages, with 89.5% earning RM2,000 or below, alongside persistent job mismatch and workplace challenges. The results further indicate that employment outcomes are influenced by structural barriers and socioeconomic disadvantage. By integrating Human Capital Theory and the Social Model of Disability, the study highlights that employability is context-dependent. It concludes that improving employment outcomes requires not only skills development but also more inclusive labour market practices.. Implications are discussed for learning-oriented assessment practices and ethical AI integration in Malaysian higher education.

1. Introduction

Graduate employability has become a key indicator of success in higher education, reflecting not only how well institutions prepare students for work but also their broader contribution to economic and social development [1]. In the context of Technical and Vocational Education and Training (TVET), employability is closely associated with practical skills, hands-on learning, and strong industry

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linkages [2]. In Malaysia, employability outcomes are commonly assessed using national indicators developed by the Ministry of Higher Education (MOHE), particularly Graduate Employability (GE) and Graduate Marketability (GM) [3].

Graduate Employability (GE) refers to the proportion of graduates who are employed, pursuing further studies, or engaged in skills development within a specified period after graduation. It reflects graduates' ability to transition into the labour market within a relatively short time frame. Graduate Marketability (GM), on the other hand, measures the extent to which graduates are employed in jobs that are relevant to their field of study, indicating the alignment between education and employment [3]. While these indicators are useful for assessing employment access and job relevance, they do not fully capture employment quality, particularly in terms of salary levels, job stability, and career progression [4-5].

This limitation is especially important for graduates with disabilities, who may face additional challenges even after securing employment. Evidence shows that employment access alone does not guarantee equitable outcomes, as structural barriers such as workplace accessibility, communication constraints, and employer attitudes continue to influence employment experiences [6]. As a result, high employability rates may mask underlying issues such as underemployment and income inequality.

In Malaysia, polytechnics under the Department of Polytechnic and Community College Education play a significant role in promoting inclusive TVET by offering specialised programmes for persons with disabilities (Orang Kurang Upaya, OKU). These initiatives aim to provide equitable access to technical education while equipping students with industry-relevant skills. Such efforts are aligned with national commitments under the Persons with Disabilities Act 2008 and broader higher education policies that promote inclusive and lifelong learning [3].

To support students with hearing impairments, polytechnic OKU programmes incorporate adapted teaching approaches, including visual-based instructional materials, smaller class sizes, and the use of sign language or alternative communication methods. In addition, targeted support services such as career guidance, internship placement, and industry collaboration are provided to facilitate graduates' transition into employment. These initiatives reflect a growing emphasis on inclusive education practices within the Malaysian TVET system.

A notable example is the Special Skills Certificate Programme (Sijil Kemahiran Khas), which focuses on practical areas such as graphic design, computer maintenance, and hospitality services tailored for deaf and hearing-impaired students. These programmes emphasise workplace readiness and industry exposure through structured internships, and in some cases enable direct transition into employment, particularly in sectors that prioritise technical competencies.

Despite these initiatives, an important question remains as to whether improved access to education translates into equitable employment outcomes. While graduates may possess relevant skills, their employment experiences are often shaped by external factors such as workplace accessibility, job education mismatch, and wage disparities. This suggests that improvements in GE and GM may not necessarily reflect improvements in employment quality, highlighting a gap between employment access and employment outcomes [5].

To address this gap, this study draws on Human Capital Theory and the Social Model of Disability to examine the employment outcomes of deaf and hearing-impaired graduates from Malaysian polytechnics. It focuses on key issues such as job–education alignment, salary levels, and workplace barriers, while also considering the influence of socioeconomic background. By integrating individual and structural perspectives, this study aims to provide a more comprehensive understanding of employability and to highlight the importance of inclusive labour market practices in ensuring equitable and sustainable employment outcomes

2. Literature Review

Graduate employability is now widely understood as more than simply securing employment after graduation. It increasingly encompasses broader dimensions such as job quality, income adequacy, and long-term career sustainability [1]. Within the Technical and Vocational Education and Training (TVET) context, employability is closely associated with practical skill acquisition, work-integrated learning, and strong industry engagement, all of which facilitate graduates' transition into the labour market [2].

However, relying solely on employment rates as a measure of success can be misleading. Research shows that high employment rates may conceal underlying issues such as job–education mismatch, underemployment, and limited career progression [4][8]. More recent studies further emphasise that employability should be understood as a dynamic and context-dependent process shaped by labour market conditions and institutional factors [9-10]. Although TVET graduates often transition more quickly into employment, this does not necessarily mean that their skills are fully utilised or that they experience sustainable career growth [11=12]. These findings highlight the importance of evaluating employability in terms of both access and quality of employment outcomes.

These concerns are particularly evident among graduates with disabilities, who continue to face structural disadvantages in the labour market despite possessing relevant qualifications. Empirical evidence indicates that disability significantly affects employment outcomes, including access to jobs, wage levels, and job stability [14-15]. Recent research further shows that disabled graduates experience persistent wage penalties and limited upward mobility, even when controlling for education level [15-16]. Barriers such as discrimination, lack of workplace accommodations, and negative employer perceptions often limit opportunities for meaningful employment [7] [17]. As a result, individuals with disabilities are more likely to be concentrated in low-paying and less secure jobs, reflecting persistent labour market inequalities [18]. This suggests that employability outcomes cannot be explained solely by individual capabilities, but must also account for structural conditions.

For deaf and hearing-impaired graduates, these challenges are further intensified by communication-related barriers. Effective communication is essential in most workplaces, and limitations in interaction can reduce productivity, hinder collaboration, and restrict opportunities for career advancement [19]. Emerging studies highlight that workplace inclusion for deaf individuals depends significantly on organisational communication practices and technological support systems [20-21]. Although inclusive teaching strategies such as visual learning, assistive technologies, and adapted instructional approaches have improved educational outcomes, these gains are not always reflected in employment outcomes [22]. This highlights a persistent disconnect between inclusive education and inclusive employment.

Inclusive TVET is widely recognised as an important pathway for promoting social equity and economic inclusion, particularly by enabling marginalised groups to acquire relevant skills and participate in the labour market [12]. However, inclusion in education does not automatically translate into inclusion in employment. Structural barriers, including inaccessible workplaces and limited organisational readiness, continue to constrain employment opportunities for persons with disabilities [7][23]. Recent studies also emphasise the importance of employer engagement and inclusive workplace policies in improving employment outcomes for disadvantaged groups [6].

Job education mismatch remains another key concern in employability research. Graduates frequently enter jobs that do not align with their qualifications, leading to underemployment, reduced job satisfaction, and slower career progression [5]. Recent evidence suggests that mismatch is not only an economic issue but also a structural one, reflecting labour market segmentation and inequality [24-25]. For graduates with disabilities, this issue is often compounded by limited job

opportunities and employer bias, which may lead them to accept positions below their qualification level [14]. Consequently, job mismatch contributes to broader inequalities in employment outcomes.

Socioeconomic background further shapes employability outcomes. Graduates from low-income families often face additional barriers, including limited access to professional networks, financial constraints, and fewer career opportunities [26]. Recent research highlights that social capital plays a critical role in securing high-quality employment, and its absence can significantly disadvantage graduates from marginalised groups [27-28]. When combined with disability, these disadvantages intersect, creating compounded inequality in employment outcomes [7]. Addressing these intersecting challenges is essential for achieving more inclusive labour market participation.

From a theoretical perspective, employability has traditionally been explained through Human Capital Theory, which emphasises the role of education and skills in improving productivity and labour market outcomes [29]. However, recent critiques argue that this perspective underestimates the role of structural inequality and labour market segmentation [9]. The Social Model of Disability provides an alternative lens by focusing on how environmental and institutional barriers restrict opportunities for individuals with disabilities [30]. Integrating these perspectives allows for a more comprehensive understanding of employability as both an individual and structural phenomenon.

Despite the growing body of literature, limited research focuses specifically on deaf and hearing-impaired graduates within the Malaysian polytechnic context. In addition, few studies examine employability using national indicators such as Graduate Employability (GE) and Graduate Marketability (GM) alongside key issues such as job mismatch, low wages, workplace barriers, and socioeconomic disadvantage. This gap highlights the need to move beyond employment rates and examine employability in terms of employment quality, equity, and structural inclusion. Accordingly, this study addresses these gaps by providing empirical evidence and adopting an integrated theoretical perspective to better understand the key issues and challenges shaping employment outcomes.

3. Conceptual Framework and Hypotheses Development

Figure 1 illustrates the conceptual framework guiding this study, which brings together Human Capital Theory and the Social Model of Disability to better understand employment outcomes among deaf and hearing-impaired graduates in Malaysian polytechnics. Rather than viewing employability purely in terms of skills, this framework recognises that outcomes are shaped by a combination of individual capabilities, workplace conditions, and broader socioeconomic realities.

From a Human Capital perspective, education and training play a central role in developing knowledge, skills, and competencies that enhance individuals' chances in the labour market [29]. In the context of Technical and Vocational Education and Training (TVET), polytechnic programmes are designed to provide hands-on experience, technical expertise, and industry exposure. These elements help prepare graduates to enter the workforce and are expected to strengthen two key indicators: Graduate Employability (GE) and Graduate Marketability (GM). In simple terms, GE reflects how quickly graduates are able to transition into employment or further productive activities, while GM reflects how well their jobs align with what they studied.

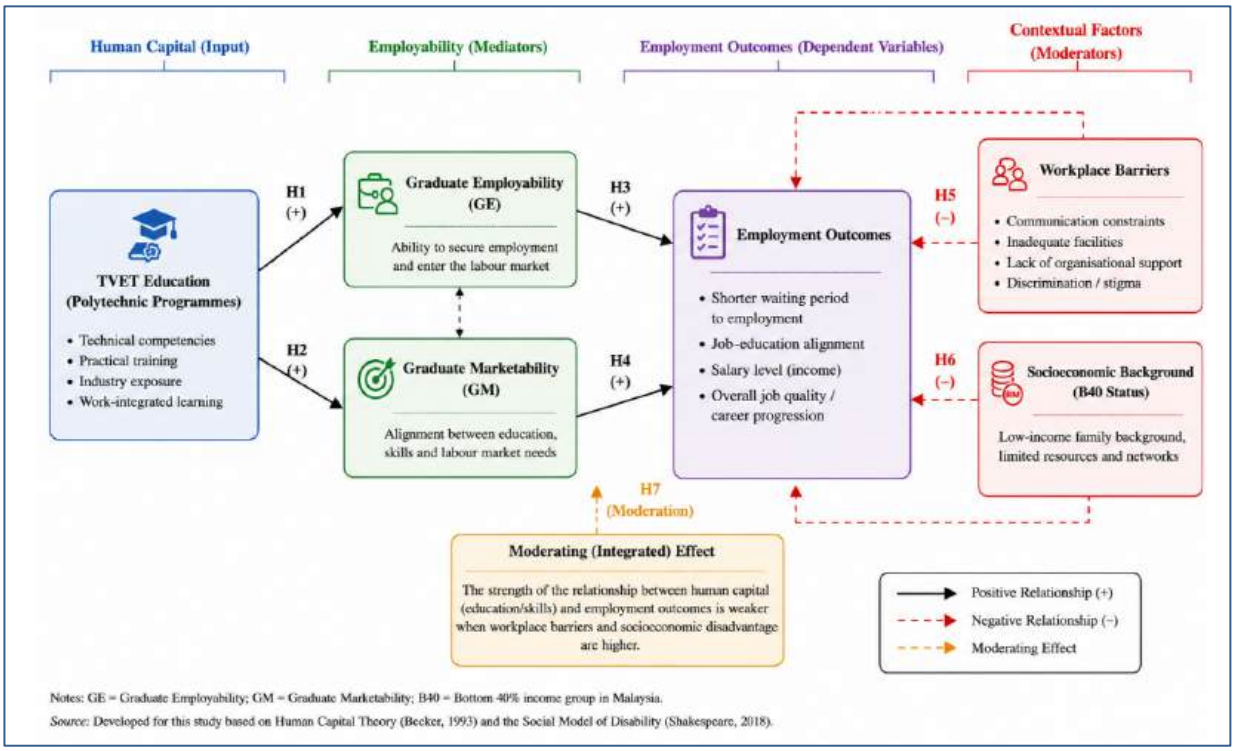

Fig. 1. Conceptual Framework of Employment Outcomes among Deaf and Hearing-Impaired Graduates in Malaysian Polytechnics

Based on this, it is expected that the skills developed through TVET will positively influence both employability and marketability:

H1: Polytechnic TVET education positively influences Graduate Employability (GE).
H2: Polytechnic TVET education positively influences Graduate Marketability (GM).

The framework further suggests that these employability indicators play an important role in shaping actual employment outcomes. Graduates with higher employability are generally more likely to secure jobs within a shorter time after graduation, while those with higher marketability are more likely to obtain positions that match their qualifications and potentially offer better pay. In this study, employment outcomes are considered in terms of how quickly graduates find jobs, whether those jobs match their field of study, and the level of income they receive. Accordingly, the following hypotheses are proposed:

H3: Graduate Employability (GE) is positively associated with shorter waiting periods to employment.
H4: Graduate Marketability (GM) is positively associated with employment outcomes, particularly Job education alignment and salary levels.

However, focusing on skills alone does not fully explain why some graduates experience less favourable outcomes. The Social Model of Disability offers an important additional perspective by highlighting how external factors rather than individual limitations can shape employment experiences. For deaf and hearing-impaired graduates, workplace environments may present challenges such as communication barriers, limited accessibility, and insufficient organisational

support. These factors can affect not only job performance but also opportunities for career growth. As such, it is expected that:

H5: Workplace barriers (e.g., communication constraints and inadequate facilities) negatively affect employment outcomes among deaf and hearing-impaired graduates.

In addition to workplace conditions, socioeconomic background also plays a meaningful role. Graduates from low-income (B40) families may have fewer resources, weaker professional networks, and limited access to higher-quality job opportunities. When combined with disability-related challenges, these constraints can further influence employment outcomes. Therefore:

H6: Socioeconomic disadvantage (low-income/B40 background) negatively influences employment outcomes, particularly salary levels and job quality.

An important feature of this framework is the recognition that the relationship between skills and employment outcomes is not always straightforward. The benefits of education do not occur in isolation—they depend on the environment in which graduates seek employment. In workplaces that are inclusive and supportive, graduates are more likely to fully utilise their skills. In contrast, where barriers are present or opportunities are limited, the impact of those skills may be reduced. This leads to the final hypothesis:

H7: Workplace barriers and socioeconomic background moderate the relationship between human capital (skills) and employment outcomes, such that the positive effect of skills on employment outcomes is weaker under higher levels of barriers and socioeconomic disadvantage.

Overall, Figure 1 highlights that employability is not simply about having the right skills. Instead, it is shaped by how those skills interact with workplace realities and social conditions. By combining Human Capital Theory with the Social Model of Disability, this study provides a more balanced and realistic understanding of employment outcomes, particularly for graduates with disabilities.

4. Methodology

This study adopts a quantitative cross-sectional design to examine the employment outcomes of deaf and hearing-impaired graduates from Malaysian polytechnics. A quantitative approach is appropriate because the study focuses on measurable indicators such as Graduate Employability (GE), Graduate Marketability (GM), salary levels, job–education alignment, waiting period to employment, and workplace barriers. These types of data allow for clear identification of patterns, trends, and differences across groups, which is a common approach in employability and labour market research [31].

The cross-sectional design enables the study to capture graduate outcomes at specific points in time, while also allowing comparisons across different cohorts between 2022 and 2024. This is particularly useful for understanding how graduates transition from education into employment and for observing changes in employability indicators over time [32].

The study uses secondary data from the Graduate Tracer Study conducted by the Ministry of Higher Education Malaysia. The Graduate Tracer Study is a national survey administered within six months of graduation and collects detailed information on graduates' employment status, income, job relevance, and further study. Graduate tracer studies are widely recognised as reliable tools for evaluating employability outcomes due to their standardised data collection methods and large

sample sizes [33]. Using national-level data strengthens the reliability and generalisability of the findings. This study focuses specifically on deaf and hearing-impaired graduates from Malaysian polytechnics, while drawing limited comparisons, where relevant, to better understand differences in employment outcomes.

The variables used in this study are closely aligned with the conceptual framework and hypotheses. Human capital is represented through participation in polytechnic TVET education and the development of technical skills, which are reflected in Graduate Employability (GE) and Graduate Marketability (GM). GE refers to the proportion of graduates who are employed, pursuing further studies, or engaged in skills development within a certain period after graduation, while GM measures the proportion of graduates working in jobs that match their field of study.

Employment outcomes are assessed using three main indicators: monthly salary, job–education alignment, and waiting period to employment. Salary is categorised into income bands to better understand wage distribution, while job alignment indicates how closely graduates' jobs match their qualifications. The waiting period measures how quickly graduates secure employment after completing their studies.

In addition, the study considers structural and contextual factors. Workplace barriers are captured through self-reported challenges such as communication difficulties and lack of workplace accessibility. Socioeconomic background is represented by low-income (B40) status, which serves as an indicator of potential disadvantage. Together, these variables allow the study to examine both direct relationships (e.g., skills and employability) and moderating effects (e.g., the influence of barriers and socioeconomic background), in line with hypotheses H1–H7.

Data analysis was carried out in two main stages. First, descriptive statistics including frequencies, percentages, and trend analysis were used to summarise employment outcomes and identify overall patterns. Trend analysis was applied to examine changes in GE and GM between 2022 and 2024, providing insight into improvements in employability over time.

Second, comparative analysis was conducted to explore differences in employment outcomes, particularly in relation to salary levels, job alignment, and workplace barriers. This helps to highlight inequalities and better understand the challenges faced by graduates.

To ensure alignment with the study's hypotheses, the analysis is interpreted in a structured way. GE and GM are examined in relation to employment outcomes such as waiting period, salary, and job alignment (H3 and H4). Workplace barriers and socioeconomic background are analysed as factors influencing employment outcomes (H5 and H6). In addition, the study considers whether the relationship between skills and employment outcomes is influenced by these contextual factors (H7). Although the analysis is mainly descriptive, this structured approach allows for meaningful, theory-informed interpretation.

The methodology is guided by two key theoretical perspectives. Human Capital Theory supports the use of GE and GM as indicators of how education and skills contribute to employability. At the same time, the Social Model of Disability highlights the importance of structural and environmental factors, which are captured through workplace barriers and socioeconomic conditions. Combining these perspectives allows for a more balanced understanding of employment outcomes, beyond skills alone.

The use of national tracer study data enhances the reliability of the findings due to its standardised methodology and large sample size. However, some limitations should be acknowledged. The data are self-reported, which may introduce response bias, and the cross-sectional design does not allow for causal conclusions. Despite these limitations, the dataset provides valuable and policy-relevant insights into employment outcomes and the challenges faced by deaf and hearing-impaired graduates.

All data were analysed in aggregated form, and no personal identifiers were used. The study follows ethical standards for secondary data analysis, ensuring confidentiality and responsible use of information.

5. Results

5.1 Overview of Findings

The findings provide a comprehensive profile of employment outcomes among deaf and hearing-impaired graduates from Malaysian polytechnics. Overall, the results indicate consistently high levels of Graduate Employability (GE) and Graduate Marketability (GM**)**, reflecting strong labour market entry and improved job alignment. However, these positive indicators are accompanied by persistent concerns related to salary levels, job education mismatch, and workplace barriers, suggesting that employment access does not necessarily translate into equitable or high-quality employment outcomes.

This pattern highlights a critical distinction between employability (access to employment) and employment outcomes (quality of employment)**.** While the former appears to have improved significantly over time, the latter remains constrained by structural and socioeconomic factors. The findings therefore provide empirical support for the study's central argument that employability alone is insufficient to capture the complexity of labour market integration for graduates with disabilities.

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5.2 Graduate Employability and Marketability Trends (H1 and H2)

As shown in Table 1, both Graduate Employability (GE) and Graduate Marketability (GM) improved steadily over the three-year period. GE increased from 93.3% in 2022 to full employment (100%) in 2024, while GM rose from 90.8% to 97.9%, indicating a stronger alignment between graduates' qualifications and their jobs.

Table 1
Graduate Employability (GE) and Marketability (GM) Trends (2022–2024)

Year	Graduate Employability (GE)	Graduate Marketability (GM)
2022	93.3%	90.8%
2023	95.9%	91.7%
2024	100 %	97.9%

These trends suggest that polytechnic TVET programmes are increasingly effective in preparing graduates for the labour market. The consistently high GE indicates that most graduates are able to secure employment, continue their studies, or engage in skills development within a short period after graduation. At the same time, the improvement in GM points to better matching between training and job roles, which may reflect ongoing efforts to strengthen curriculum relevance and industry collaboration. Similar outcomes have been observed in other TVET systems, where practical training and workplace exposure support smoother transitions into employment [2] [12].

However, while the upward trend in GE and GM reflects positive progress, these indicators mainly capture access to employment rather than the quality of employment. Achieving near-universal employability does not necessarily mean that all graduates are in well-paid, stable, or appropriately matched jobs. There may still be differences in salary levels, job conditions, and career prospects that are not reflected in these indicators alone.

Therefore, although the findings support H1 and H2 by confirming the positive role of TVET education in enhancing employability and marketability, they also highlight the need to examine employment outcomes more closely. A more complete understanding requires looking beyond GE and GM to include factors such as income, job alignment, and workplace experiences.

5.3 Waiting Period to Employment (H3)

Table 2 shows that most graduates were able to secure employment within a relatively short period after completing their studies. In particular, 80.2% obtained employment within six months, indicating a generally smooth transition from education to the labour market. Notably, a large proportion of graduates (38.6%) were employed within the first month, suggesting that that some secured employment immediately after completing their industrial training. This indicates that industrial training undertaken in the final semester provides a clear advantage to graduates, as it facilitates early job placement and strengthens their transition into the workforce.

This finding reflects the strong role of TVET in preparing graduates for work, particularly through practical training and industry exposure. It is also consistent with evidence that many graduates are offered employment at their internship placements, as indicated by the comparable proportion (36.8%) who secured jobs with their training organisations. Together, these patterns suggest that workplace-based learning plays an important role in facilitating faster school-to-work transitions [2].

Table 2
Waiting Period to Employment

Duration	Percentage (%)
Less than 1 month	38.6
1 to 3 months	28.7
4 to 6 months	12.9
7 to 9 months	5.3
10 to 12 months	5.8
More than 12 months	8.8

At the same time, the data also highlight that not all graduates experience the same outcomes. A smaller group (8.8%) took more than one year to secure employment, indicating that some graduates face additional challenges in entering the labour market. These delays may be linked to structural barriers such as communication difficulties, limited workplace accessibility, or fewer inclusive employment opportunities.

While shorter waiting periods are generally seen as a positive outcome, they should be interpreted with caution. Securing a job quickly does not necessarily mean that the job is well-matched, adequately paid, or sustainable in the long term. As highlighted in previous research, early employment entry may still be associated with underemployment or limited career progression [1].

Overall, these findings support H3 by demonstrating that higher employability is associated with faster entry into employment. However, they also suggest that waiting time alone is not sufficient to assess employment outcomes and should be considered alongside other indicators such as salary levels and job–education alignment.

5.4 Employment Outcomes: Job Alignment, Sector Distribution and Salary (H4)

The findings show a clear improvement in job–education alignment over time. As presented in Table 3, the proportion of graduates working in jobs related to their field of study increased from 41.8% in 2022 to 69.2% in 2024. This indicates that more graduates are securing roles that better match their qualifications, suggesting stronger alignment between training and labour market needs.

In terms of employment distribution (Table 4), most graduates are absorbed into the private sector (62.36%), followed by those engaged in entrepreneurship (17.42%) and family-based employment (11.71%). Only a small proportion enter the public sector (8.11%). This pattern reflects the industry-oriented nature of polytechnic programmes, where graduates are more likely to enter private and skills-based sectors.

Table 3
Job Matching

Year	Percentage (%)
2022	41.8
2023	59.2
2024	69.2

Table 4
Employment Sector

Employment Sector	Percentage (%)
Private sector	62.36
Government sector	8.11
Work with Family	11.71
Entrepreneur	17.42

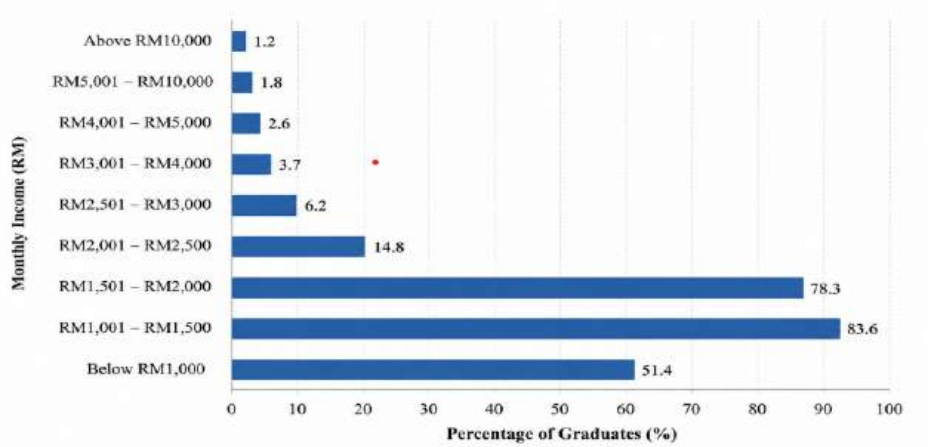

Fig. 2. Monthly Income of Deaf and Hearing Impaired Polytechnic Graduates

Despite these positive developments, the results reveal a different picture when income levels are considered. As illustrated in Figure 2, a large majority of graduates (89.5%) earn RM2,000 or below, with more than half (56.3%) earning RM1,500 or less. This suggests that many graduates are concentrated in low-paying jobs, even when they are employed and, in some cases, working in fields related to their studies.

This gap between improved job alignment and low salary levels points to a situation of underemployment, where graduates are employed but not adequately rewarded for their qualifications and skills. The concentration of graduates in the private sector may partly explain this trend, as entry-level roles in these industries often offer lower starting salaries.

These findings indicate that being employed in a relevant field does not automatically lead to better income or improved job quality. Instead, broader labour market factors—such as wage structures, industry practices, and limited upward mobility—continue to influence earnings. This supports the view that employment outcomes are shaped not only by education and skills but also by structural conditions within the labour market [5][26].

Overall, while the results provide partial support for H4, they also highlight an important limitation: improvements in job matching do not necessarily translate into better economic outcomes. This reinforces the need to assess employability beyond job placement and to consider income adequacy and job quality as key components of graduate success.

5.5 Workplace Barriers (H5)

Table 6 shows that workplace barriers remain an important issue for many graduates, with communication-related challenges being the most frequently reported. In particular, difficulties in interpersonal communication (21.5%) and limitations in communication skills (11.8%) together account for a large share of the challenges faced. This highlights how essential effective communication is in the workplace, especially for deaf and hearing-impaired graduates.

Table 6
Workplace Barriers Experienced by Graduates

Barrier Type	Percentage (%)
Communication (interpersonal)	21.5
Workplace facilities	19.9
Communication skills	11.8
Salary inequality	5.3
Discrimination	4.9
Transportation	3.7
Relationship issues	2.4
Emotional disturbance	2.0
Work-life imbalance	1.6
None	19.5

In addition to communication issues, nearly one-fifth of respondents (19.9%) reported challenges related to workplace facilities. This suggests that many work environments may not yet be fully equipped to support inclusive practices, particularly in terms of accessibility and accommodation. Other barriers, although less frequently reported, include salary inequality (5.3%), discrimination (4.9%), and transportation difficulties (3.7%), indicating that both structural and social factors continue to influence workplace experiences.

At the same time, 19.5% of graduates indicated that they did not experience any workplace barriers. This shows that workplace experiences can vary, with some organisations providing more supportive and inclusive environments than others. However, the overall pattern suggests that a considerable proportion of graduates still face challenges that may affect their job performance, workplace integration, and opportunities for career advancement.

These findings support H5 by confirming that workplace barriers play a significant role in shaping employment outcomes. Communication challenges, in particular, can directly affect daily work

interactions and limit participation in organisational activities. This is consistent with previous studies that emphasise the importance of inclusive workplace practices and accessible communication systems in supporting employees with disabilities [7] [19].

5.6 Socioeconomic Background (H6)

The findings indicate that more than 80% of graduates come from low-income (B40) families, showing that socioeconomic disadvantage is a key characteristic of the group studied. This highlights that employment outcomes are shaped not only by skills and qualifications, but also by the broader social and economic context in which graduates are situated.

Graduates from lower-income backgrounds often face additional challenges when entering the labour market. These may include limited access to professional networks, fewer job opportunities, and constraints related to mobility or financial resources. Such factors can reduce their chances of securing higher-quality employment, even when they possess relevant skills.

When these socioeconomic constraints are combined with disability-related barriers, the challenges become more pronounced. This creates a form of compounded disadvantage, where multiple factors interact to influence employment outcomes. As noted in previous research, both socioeconomic background and structural barriers play an important role in shaping access to opportunities and career progression [7][26].

Overall, the findings support H6 and emphasise that improving employment outcomes requires attention not only to education and skills development but also to the wider socioeconomic conditions affecting graduates.

5.7 Integrated Effects (H7)

Overall, the findings show that while TVET education plays an important role in improving employability, employment outcomes are shaped by a combination of individual capabilities, structural conditions, and socioeconomic factors. In other words, the link between skills and employment outcomes is not direct, but depends on the context in which graduates enter the labour market.

Table 7
Summary of Hypotheses Testing

Hypothesis	Result
H1:Polytechnic TVET education positively influences Graduate Employability (GE)	Supported
H2:Polytechnic TVET education positively influences Graduate Marketability (GM).	Supported
H3:Graduate Employability (GE) is positively associated with shorter waiting periods to employment.	Supported
H4:Graduate Marketability (GM) is positively associated with employment outcomes, particularly job education alignment and salary levels.	Partially Supported
H5:Workplace barriers (e.g., communication constraints and inadequate facilities) negatively affect employment outcomes among deaf and hearing-impaired graduates.	Supported
H6:Socioeconomic disadvantage (low-income/B40 background) negatively influences employment outcomes, particularly salary levels and job quality.	Supported
H7:Workplace barriers and socioeconomic background moderate the relationship between human capital (skills) and employment outcomes	Supported

Although many graduates demonstrate high levels of employability, this does not always translate into positive or meaningful employment outcomes. As observed in the earlier results, strong

employability can coexist with low wages, job–education mismatch, and various workplace challenges. This indicates that having the right skills alone is not enough to ensure sustainable or rewarding employment.

The findings provide strong support for H7, showing that workplace barriers and socioeconomic background influence how effectively skills are translated into employment outcomes. When barriers are more pronounced or resources are limited, the benefits of education may be reduced. In contrast, more inclusive and supportive environments allow graduates to better utilise their skills and achieve improved outcomes.

Overall, these results highlight the need to move beyond employment rates when evaluating graduate success. A more holistic approach is required—one that considers job quality, income levels, and workplace inclusivity—to ensure that employability leads to fair, meaningful, and sustainable employment outcomes.

4. Conclusions

This study evaluates the relationship between employability and the quality of employment outcomes among deaf and hearing-impaired graduates. The findings show that while polytechnic TVET education successfully enhances Graduate Employability (GE) and Graduate Marketability (GM), these gains do not always lead to high-quality employment. Many graduates remain in low-paying jobs, experience job–education mismatch, and face workplace barriers, indicating a clear gap between employment access and employment quality.

The study highlights that employment outcomes are shaped not only by skills, but also by structural and socioeconomic factors. Workplace accessibility, communication barriers, and low-income background all influence how effectively graduates are able to translate their skills into sustainable employment. This confirms that employability is not a direct outcome of education alone, but a context-dependent process.

A key contribution of this study is the demonstration that high employability can coexist with underemployment and inequality. This challenges the common reliance on GE and GM as sole indicators of graduate success and underscores the need to include broader measures such as income, job quality, and workplace inclusion.

From a policy and practice perspective, the findings suggest that improving graduate outcomes requires a more integrated approach. In addition to strengthening TVET programmes, there is a need to enhance inclusive workplace practices, improve accessibility, and provide targeted support for graduates from disadvantaged backgrounds.

In conclusion, ensuring meaningful and sustainable employment for graduates with disabilities requires moving beyond a skills-focused approach towards a more inclusive and equitable labour market system, where both opportunity and outcomes are addressed.

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References

[1] Tomlinson M. Graduate employability and labour market transitions. *Higher Education Policy*. 2021;34(3):389–405.https://doi.org/10.1057/s41307-020-00185-8

[2] Jackson D. Developing graduate employability through work-integrated learning. *Studies in Higher Education*. 2021;46(4):679–692. https://doi.org/10.1080/03075079.2019.1637847

[3] Ministry of Higher Education Malaysia. *Graduate Tracer Study Report*. Putrajaya: MOHE; 2023.

[4] Succi C, Canovi M. Soft skills for employability. *Studies in Higher Education*. 2020;45(9):1834–1847.

https://doi.org/10.1080/03075079.2019.1585420
[5] Green F, Henseke G. Graduate employment and job mismatch. *Oxford Review of Economic Policy*. 2021;37(4):648–667. https://doi.org/10.1093/oxrep/grab031
[6] International Labour Organization. *World Employment and Social Outlook*. Geneva: ILO; 2022.
[7] Lindsay S, et al. Employment barriers for people with disabilities. *Disability and Rehabilitation*. 2021; 43(2):1–10. https://doi.org/10.1080/09638288.2019.1594730
[8] Clarke M. Rethinking graduate employability. *Studies in Higher Education*. 2018; 43(11):1923–1937. https://doi.org/10.1080/03075079.2017.1294159
[9] Holmes L. Graduate employability and the capability approach. *Higher Education Quarterly*. 2021;75(3):385–399. https://doi.org/10.1111/hequ.12291
[10] Sin C, Neave G. Employability in higher education. *European Journal of Education*. 2022;57(2):185–198. https://doi.org/10.1111/ejed.12491
[11] Cedefop. *Vocational education and training in Europe*. Luxembourg; 2020.
[12] McGrath S, et al. Skills for development. *International Journal of Educational Development*. 2020;75:102146. https://doi.org/10.1016/j.ijedudev.2020.102146
[13] Aina C, Casalone G. Disabilities and employment. *Social Indicators Research*. 2020;149(2):513–540. https://doi.org/10.1007/s11205-019-02210-2
[14] Baert S. Hiring discrimination: Correspondence experiments since 2005. *IZA Discussion Paper* No. 10738; 2017.
[15] Burgess S, Li S. Labour market outcomes of disabled graduates. *Labour Economics*. 2021;71:102001. https://doi.org/10.1016/j.labeco.2021.102001
[16] Jones MK. Disability wage gap. *Oxford Economic Papers*. 2022;74(1):1–26. ttps://doi.org/10.1093/oep/gpab023
[17] Nevala N, et al. Workplace accommodation for persons with disabilities. *Journal of Occupational Rehabilitation*. 2019;29(1):1–14. https://doi.org/10.1007/s10926-018-9772-0
[18] Organisation for Economic Co-operation and Development (OECD). *Disability, Work and Inclusion*. Paris: OECD Publishing; 2021.
[19] Punch R, et al. Employment and deaf individuals. *Journal of Deaf Studies and Deaf Education*. 2020;25(4):405–414.https://doi.org/10.1093/deafed/enaa01
[20] Koman ES, et al. Workplace inclusion for deaf employees. *Disability & Society*. 2021;36(5):801–821. https://doi.org/10.1080/09687599.2020.1749563
[21] Foster S, MacLeod J. Deaf people at work. *Journal of Deaf Studies and Deaf Education*. 2020;25(3):237–248. https://doi.org/10.1093/deafed/enaa015
[22] Marschark M, Spencer PE. *The Oxford Handbook of Deaf Studies*. Oxford: Oxford University Press; 2021. https://doi.org/10.1093/oxfordhb/9780197508305.001.0001
[23] World Health Organization. *World Report on Disability*. Geneva: WHO; 2021.
[24] Montt G. Skill mismatch measurement. OECD Working Paper; 2020. https://doi.org/10.1787/5jlvc82x6f4b-en
[25] Quintini G. Skills mismatch and labour markets. OECD; 2021. https://doi.org/10.1787/efc0b3f3-en
[26] Oreopoulos P, Petronijevic U. Making college worth it. *Annual Review of Economics*. 2020;12:171–195. https://doi.org/10.1146/annurev-economics-080218-030436
[27] Tholen G. Graduate employability and social capital. *Work, Employment and Society*. 2020;34(3):1–17. https://doi.org/10.1177/0950017019855227
[28] Bathmaker AM, Ingram N, Waller R. Higher education and social mobility. *British Journal of Sociology of Education*. 2021;42(1):1–17. https://doi.org/10.1080/01425692.2020.1861985
[29] Becker GS. *Human capital*. 3rd ed. Chicago: University of Chicago Press; 1993. https://doi.org/10.7208/chicago/9780226041223.001.0001
[30] Shakespeare T. *Disability: The basics*. London: Routledge; 2018. https://doi.org/10.4324/9781315621364
[31] Creswell JW, Creswell JD. *Research design*. 5th ed. Sage; 2018.
[32] Bryman A. *Social research methods*. 5th ed. Oxford University Press; 2016.
[33] Schomburg H. Carrying out tracer studies. In: *International Handbook of Higher Education*. 2016. https://doi.org/10.1007/978-94-017-9553-1_15