



Article

# Bridging Higher Education Outcomes and Labour Market Needs: A Study of Jouf University Graduates in the Context of Vision 2030

Adel Saber Alanazi <sup>1</sup> and Houcine Benlaria <sup>2,\*</sup><sup>1</sup> College of Education, Jouf University, Sakaka 72388, Saudi Arabia; asalanazi@ju.edu.sa<sup>2</sup> College of Business, Jouf University, Sakaka 72388, Saudi Arabia

\* Correspondence: hbenlarir@ju.edu.sa

**Abstract:** This study aimed to investigate the relationship between various factors that contribute to employability outcomes among graduates of Jouf University, in line with the vision of the Kingdom of Saudi Arabia to bridge the gap between higher education outcomes and labour market needs by the year 2030. This study employed a questionnaire as the research tool, which was distributed to a sample of 220 graduates of Jouf University. Structural equation modelling (SEM) was used to analyze the data obtained from the questionnaire. The results of this study showed that career services and counselling, skills and competencies, and curriculum design were positively related to employability outcomes, whereas industry partnerships and work-integrated learning were found to have no significant relationship with employability outcomes. This study's findings suggest that enhancing career services, counselling, skills, competencies, and curriculum design can improve graduates' employability. These results could help bridge the gap between higher education outcomes and the labour market needs, by the Kingdom's Vision 2030. Future research can build on this study to identify specific strategies that can be implemented to enhance these factors, and improve the employability outcomes of graduates.

**Keywords:** higher education; employability; graduate outcomes; labour market; skills; SEM model; Jouf University; Kingdom's Vision 2030; bridging the gap



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## 1. Introduction

The Kingdom of Saudi Arabia is undergoing a period of rapid economic and social transformation under the banner of Vision 2030. This ambitious plan, launched in 2016, seeks to diversify the country's economy, create job opportunities for citizens, and develop the skills and capabilities of the workforce to meet the demands of a changing global landscape. Higher education institutions are a key component of this transformation, tasked with preparing students for a range of careers in sectors such as healthcare, finance, education, and technology. However, there is growing concern that the skills and competencies of graduates are not aligned with the needs of the labour market, leading to high levels of youth unemployment and underemployment (Khashan 2017).

The gap between higher education outcomes and the needs of the labourer market is not unique to Saudi Arabia. In many countries, employers have reported difficulty finding workers with the necessary skills and competencies to fill available positions (Al-Azzam 2022; Houcine and Sofiane 2018a, 2018b). This has led to a growing interest in the concept of "workforce development"—the process of building and maintaining a skilled workforce that can meet the needs of employers and drive economic growth (World Bank Group 2021). In this context, higher education institutions have a critical role to play in ensuring that their graduates have the skills and competencies that are in demand by employers.

In recent years, there has been a growing emphasis on the need to align higher education outcomes with the needs of the labour market. This has led to a range of

policy initiatives and programmatic interventions aimed at improving the relevance of higher education to the world of work. One approach that has gained traction in many countries is work-integrated learning (WIL), which involves combining academic study with practical work experience (Cooper et al. 2010; Jackson 2017; El-Tahan et al. 2021; Bringle et al. 2017). WIL has been shown to have a range of benefits for both students and employers, including improved employability, higher rates of job satisfaction, and increased productivity (CEDEFOP 2021).

In addition to WIL, there are several other strategies that higher education institutions can use to promote greater alignment between their programs and the needs of the labour market. These include designing curricula that are responsive to changing industry trends and technological advancements (Mason et al. 2009; Kuo et al. 2022; Muñoz et al. 2022; Clarke 2008), establishing partnerships with employers and industry associations, and providing career services and counselling to help students make informed decisions about their future careers. By adopting a holistic approach that encompasses these various strategies, higher education institutions can ensure that their graduates are well-prepared to enter the workforce and contribute to the economic development of their countries. (Maree et al. 2022; Quinlan and Renninger 2022; Ferns et al. 2023)

In the context of Saudi Arabia, there is a pressing need to bridge the gap between higher education outcomes and the needs of the labour market. Despite efforts to increase the number of university graduates in the country, youth unemployment remains a major challenge, with rates exceeding 30% in some regions (World Bank Group 2021). This is partly due to a mismatch between the skills and competencies of graduates and the needs of employers, particularly in emerging sectors such as renewable energy, information technology, and tourism. To address this challenge, it is essential to understand the specific skills and competencies that are in demand by employers in these sectors, and to assess the extent to which higher education programs are meeting these needs.

Against the backdrop of the Kingdom of Saudi Arabia's Vision 2030, which aims to transform the country into a knowledge-based economy, the alignment between higher education outcomes and the needs of the labour market has become an increasingly pressing issue. Vision 2030 emphasizes the importance of developing a highly skilled and educated workforce that is equipped to meet the demands of the 21st-century economy. However, there are concerns that the current higher education system in the Kingdom is not adequately preparing graduates for the workforce.

One of the key challenges facing the higher education sector in the Kingdom is the mismatch between the skills and competencies that graduates possess and the needs of employers. Several studies have highlighted the need for higher education institutions to work closely with employers and industry partners to develop curricula that are better aligned with the needs of the labour market. Work-integrated learning, which involves the integration of classroom learning with on-the-job training and experience, has emerged as a promising approach to bridging the gap between higher education and the labour market.

In addition to curriculum design and work-integrated learning, career services and counselling also play an important role in ensuring that graduates are well-prepared for the workforce. This includes providing students with guidance on career options, job search strategies, and professional development opportunities.

To address these challenges, this research proposal aims to investigate the alignment between higher education outcomes and the needs of the labour market in the Kingdom of Saudi Arabia. Specifically, this study will focus on a sample of Jouf University graduates and will examine the extent to which their skills and competencies align with the needs of employers. This study will also explore the role of work-integrated learning, industry partnerships, and career services in enhancing the employability of graduates.

The theoretical framework of this study has centered on human capital, overlooking other crucial characteristics of employability. In the literature, social capital, career management skills, human traits, and labour market variables are critical to labour market insertion and employability. This study gives useful insights into the relationship between

higher education outcomes and labour market needs, but a comprehensive analysis should address these additional dimensions. To further understand employability and higher education–labour market alignment, future research should include these factors.

Overall, this research proposal seeks to contribute to the ongoing efforts to enhance the quality and relevance of higher education in the Kingdom of Saudi Arabia, and to support the achievement of the Vision 2030 goals. By identifying the key factors that contribute to successful transitions from higher education to the workforce, this study aims to provide insights and recommendations that can inform policy and practice in the higher education sector.

The relevant literature review and hypothesis generation are presented in the next section of this study (Section 2), while the technique and data collection are explained in the following section. Section 4 summarizes the findings, while Section 5 discusses the debate, research implications, limits, and future study recommendations.

## 2. Literature Review and Hypothesis

### 2.1. Employability Outcomes

Within the context of this study, the term “Employability Outcomes” refers to the combination of employer expectations and graduate outcomes as factors that contribute to successful employment. This conceptualization offers one approach to understanding the multifaceted nature of employability outcomes. The notion of “employer expectations” pertains to the specific proficiencies, cognitions, and capabilities that employers anticipate prospective employees to possess to thrive in a particular industry or field. Such expectations may be predicated upon criteria such as job descriptions, prevailing trends in the sector, or evaluations from existing staff. In contrast, “graduate outcomes” encompass the competencies, knowledge, and background that graduates bring to the labour market. Various factors such as the calibre of their education, the character of the learning experiences they have undergone (e.g., internships or work-based learning), as well as their attributes, may contribute to the nature of these outcomes.

#### 2.1.1. Employer Expectations

Higher education institutions must understand employer expectations to prepare graduates for the workforce. Baird and Parayitam (2019) remark, “Employer expectations have become increasingly important in today’s rapidly changing job market.” Graduate employers may require adaptability and flexibility. Tomlinson (2023) remarks, “Employers are looking for graduates who can adapt to changing circumstances and work effectively in diverse teams.” Cross-cultural communication and teamwork in higher education can prepare graduates for this expectation. Employers also want good communicators. Armstrong and Landers (2018) remark, “Employers consistently rank communication skills as one of the most important skills for job candidates.” Graduates can prepare for this expectation by developing their written and vocal communication abilities in college. Employers may also value technical expertise. McMurray et al. (2016) remark, “Employers are increasingly looking for graduates with technical skills and relevant work experience.” Work-integrated learning and business partnerships can assist colleges prepare graduates for these demands.

Finally, colleges must grasp employer expectations to prepare graduates for the workforce. Graduates may be expected to have technical expertise, great communication abilities, and adaptability. Colleges can prepare graduates for these expectations by offering cross-cultural communication and teamwork, writing and speaking skills, work-integrated learning, and industry partnerships. Helyer and Lee (2014) remark, “Higher education institutions must keep up with the evolving expectations of employers to best serve their graduates and the wider community.”

### 2.1.2. Graduate Outcomes

Graduate results determine higher education performance. [Qenani et al. \(2014\)](#) state, “The goal of higher education is to produce graduates who are well-prepared for their chosen career paths and who can make valuable contributions to society.”

Employment outcomes assess graduate success. [Belchior-Rocha et al. \(2022\)](#) remark, “The ultimate goal of higher education is to prepare graduates for the workforce.” Graduates who find work in their field are successful. Higher education institutions must link their courses with labour market needs to guarantee graduates have the skills and competencies employers want. Social impact is another metric of graduation achievement. [Mtawa et al. \(2019\)](#) remark, “Higher education institutions have a responsibility to produce graduates who are well-rounded and able to make meaningful contributions to their communities.” Higher education graduates who improve society are successful. Higher education institutions should encourage community service and civic participation. Graduate outcomes include employment, society contributions, and additional study or training. [Lee et al. \(2019\)](#) remark, “Graduates who continue their education or training after completing their degree are demonstrating a commitment to lifelong learning and a desire for professional growth.” Research and scholarship opportunities in higher education can help.

In conclusion, higher education success is measured by graduate outcomes. Graduate success depends on employment, social contributions, and additional education. Higher education institutions must provide students with employer-required skills, civic participation, and lifelong learning. By focusing on the outcomes of their graduates, higher education institutions can ensure that they are fulfilling their mission to serve society.

### 2.2. Career Services, Counselling, and Employability Outcome

Universities need career services and counselling to prepare students for the workforce. [Maree et al. \(2022\)](#) state, “Career services and counselling provide students with the knowledge, skills, and support necessary to make informed career decisions and navigate the job market.” Career services and counselling boost student employability. According to [Quinlan and Renninger \(2022\)](#), “Career services and counselling can help students identify their skills and competencies, explore career options, and develop job search strategies.” This can assist students in becoming job-ready. Career services and counselling can also improve employer–university relations. [Ferns et al. \(2023\)](#) remark, “Career services and counselling can provide higher education institutions with opportunities to engage with employers, which can lead to internships, job shadowing, and employment opportunities for students.” These connections can help students get jobs. Career services and counselling can also prepare students for the workforce. [Schaub \(2012\)](#) notes, “Career services and counselling can provide students with access to career-related resources, such as job listings, resume writing tips, and interview coaching.” This can help students get a job by preparing them for the job search. Finally, career services and counselling are essential to higher education’s workforce preparation. Career services and counselling can improve student employability, strengthen employer–university partnerships, and prepare them for the labour market. As a result, the following hypothesis has been proposed:

**Hypothesis H1.** *Career services and counselling positively affect employability outcomes.*

### 2.3. Curriculum Design and Employability Outcome

Curriculum design affects students’ abilities and knowledge in higher education. [Mason et al. \(2009\)](#) said, “The design of a curriculum has a profound impact on the quality of graduates and their readiness to meet the needs of the labour market.” Thus, higher education institutions must create curricula that meet labour market needs and Vision 2030 aspirations. Outcome-based education (OBE) is a curriculum design trend. [Basilaia and Kvavadze \(2020\)](#) define OBE as a student-centred curriculum design that prioritizes learning outcomes over content and procedures. This guarantees that the curriculum meets

labour market needs and that graduates have the right skills and competencies. Technology is also crucial in curriculum design. [Kuo et al. \(2022\)](#) suggest using technology to create and deliver a creative, engaging curriculum that satisfies student and labour market needs. Virtual reality and simulation in engineering and healthcare curricula improve student learning ([Muñoz et al. 2022](#)). Industry and businesses can help create the curriculum to meet labour market needs. [Smaldone et al. \(2022\)](#) say “Employers are best positioned to provide insights into the skills and competencies that are required in the workforce.” Thus, business and higher education can collaborate to create a curriculum that satisfies labour market needs and prepares graduates for careers.

Finally, curriculum design bridges the gap between higher education outcomes and labour market needs. Outcome-based education, technology, and industry partnerships can help match the curriculum with labour market needs and equip graduates with the right skills. [Clarke \(2008\)](#) says “The curriculum should be seen as a living document that is continuously updated to meet the changing needs of the labour market.”

As a result, the following hypothesis has been proposed:

**Hypothesis H2.** *Curriculum design positively affects employability outcomes.*

#### 2.4. Skills, Competencies, and Employability Outcomes

The attainment of successful employment for graduates is contingent upon the acquisition of relevant skills and competencies. As defined by [Qenani et al. \(2014\)](#), skills and competencies encompass the qualities and attributes necessary for thriving in the workforce. Higher education institutions emphasize the significance of both technical and transversal competencies, which include communication, problem-solving, and teamwork. It is noteworthy that the literature consistently highlights the growing importance of transversal competencies over technical competencies. Notably, [Kassem et al. \(2021\)](#) emphasize the increasing demand among Saudi firms for graduates who possess a combination of technical and transversal capabilities. Similarly, [Mezhoudi et al. \(2021\)](#) indicate that companies expect graduates to demonstrate proficiency in both technical and transversal skills, such as critical thinking, communication, and teamwork. Therefore, higher education must reassess its teaching and learning methodologies to effectively develop these transversal competencies. [Watkins and Beckem \(2012\)](#) propose interactive and immersive approaches as effective means of cultivating these skills. Collaborative, problem-based, and project-based learning, as identified by [Anazifa and Djukri \(2017\)](#), have been shown to enhance students’ critical thinking and problem-solving abilities. Additionally, work-integrated learning (WIL), defined by [Jackson \(2015\)](#) as the integration of academic learning with real-life workplace experience, enables students to apply their knowledge in practical contexts, and foster the development of both technical and transversal competencies through hands-on experiences. Consequently, based on these considerations, the following hypothesis is proposed:

**Hypothesis H3.** *Skills and competencies positively affect employability outcomes.*

#### 2.5. Industry Partnerships and Employability Outcome

Higher education institutions need industry partnerships to close the gap between education and the labour market. [Patacsil and Tablatin \(2017\)](#) remark, “Industry partnerships have the potential to provide students with valuable work experience, enhance the relevance of the curriculum, and facilitate the development of skills and competencies required by employers.” Industry partnerships offer students work-integrated learning. [Marinho et al. \(2020\)](#) state, “Industry partnerships can provide students with access to real-world work experience and enable them to apply theoretical knowledge in practical settings.” This can help students improve their skills and become more marketable. Industry partnerships can also ensure the curriculum meets labour market needs. [Mishra et al. \(2022\)](#) remark, “Industry partnerships can provide higher education institutions with insights into the needs of employers and help ensure that the curriculum is relevant and up-to-date.” This

can prepare graduates with employer-required skills and competencies, enhancing their employability. Industry alliances can also help universities and industry personnel connect.

In conclusion, industrial partnerships help higher education institutions bridge the gap between academic outcomes and labour market needs. Industry partnerships can help students gain work experience, improve the curriculum, and build employer-required skills. Thus, the hypothesis:

**Hypothesis H4.** *Industry partnerships positively affect employability outcomes.*

#### 2.6. Work-Integrated Learning and Employability Outcome

The inclusion of work-integrated learning (WIL) in analyzing its influence on employability is of interest. To clarify, WIL refers to an educational approach that integrates theoretical knowledge acquired in educational institutions with practical learning experiences gained in workplace settings (Cooper et al. 2010). Through WIL, students have the opportunity to apply theoretical concepts in real-world contexts, thereby deepening their understanding (Takase et al. 2020). This hands-on learning experience not only enhances students' skills, but also makes them more attractive to potential employers. Furthermore, WIL facilitates the development of professional networks as students interact with industry professionals, paving the way for future employment prospects (Jackson 2017). By aligning the curriculum with labour market needs and equipping graduates with the necessary skills and competencies, WIL contributes to bridging the gap between higher education outputs and job market demands, as suggested by Vision 2030. The integration of WIL into the curriculum not only enhances students learning and employability, but also ensures the relevance of higher education in meeting labour market requirements (Martone and Sireci 2009; Billett 2019). Therefore, based on these considerations, the following hypothesis is proposed:

**Hypothesis H5.** *Work-integrated learning has a positive impact on employability outcomes.*

#### 2.7. Alignment with Vision 2030 Goals

Saudi Arabia's Vision 2030 emphasizes economic diversification and human capital development. Higher education institutions have a vital role to play in achieving the goals of Vision 2030, as they are responsible for producing the next generation of leaders and professionals (Nurunnabi 2017).

Ensuring that higher education programs meet labour market needs is crucial to Vision 2030 goals. Al-Awad et al. (2020) remark, "Higher education institutions must ensure that their programs are designed to meet the needs of the labour market, both now and in the future." To guarantee graduates have the skills employers want, courses are constantly updated and revised.

Promoting entrepreneurship and innovation aligns higher education with Vision 2030. Herrera et al. (2018) remark, "Entrepreneurship and innovation are key drivers of economic growth and diversification, and higher education institutions can play a crucial role in fostering these skills among their students." Entrepreneurship centres and incubators help students launch firms. Higher education institutions must fit with Vision 2030's sustainability and social development goals, as well as labour market needs and entrepreneurship. Bataeineh and Aga (2022) remark, "Higher education institutions must contribute to the development of a sustainable and inclusive society, in line with Vision 2030." Sustainability, social development, community service, and civic participation are incorporated into the curriculum.

In conclusion, higher education institutions are essential to Vision 2030. This alignment promotes entrepreneurship, innovation, sustainability, and social development by aligning courses with labour market needs. By working towards the goals of Vision 2030, higher education institutions can contribute to the development of a prosperous and sustainable future for the Kingdom of Saudi Arabia (El-Tahan et al. 2021). From the previous arguments, we propose the following hypotheses:

**Hypothesis H6.** *Alignment with Vision 2030 goals mediates the relationship between career services, counselling, and employability outcomes.*

**Hypothesis H7.** *Alignment with Vision 2030 goals mediates the relationship between curriculum design and employability outcomes.*

**Hypothesis H8.** *Alignment with Vision 2030 goals mediates the relationship between skills, competencies, and employability outcomes.*

**Hypothesis H9.** *Alignment with Vision 2030 goals mediates the relationship between industry partnerships and employability outcomes.*

**Hypothesis H10.** *Alignment with Vision 2030 goals mediates the relationship between work-integrated learning and employability outcomes.*

### 3. Methodology

In this study, the authors utilized a questionnaire to collect data from a sample of graduates from Jouf University in the Kingdom of Saudi Arabia. To ensure the accuracy and quality of the data collected, the authors conducted a pretest experiment by conducting various in-person interviews with methodology experts regarding the debriefing technique. The experts provided recommendations that helped the authors remove all gaps and errors from the questionnaire, and finalize it according to the recommended standards for content, construction, and validity related to the standard. The data collection process took about three months in 2022, during which the authors distributed the self-administered questionnaire to the sample of 202 graduates. The questionnaire featured a 5-point Likert scale, which allowed for consistent and accurate responses from the participants. Although the sample size was limited to graduates from a single university, the questionnaire's rigorous construction and data collection process ensured the validity and reliability of the findings.

In Figure 1, the study model developed by the authors is depicted. The development of the questionnaire utilized in this study was based on the identified variables and relevant literature review. The variables were selected with the research problem in mind, which aimed to investigate the relationship among various contributing factors to employment outcomes of graduates from Jouf University. This study was aligned with the vision of the Kingdom of Saudi Arabia to narrow the gap between higher education outputs and the labor market needs by 2030.

The questionnaire was designed to collect the respondents' demographic information and their perceptions of the variables examined in this study. The questionnaire items pertaining to these variables were grounded in the literature review, which emphasized the fundamental dimensions of bridging the gap between higher education outputs and the labor market needs, in accordance with the Kingdom's Vision 2030.

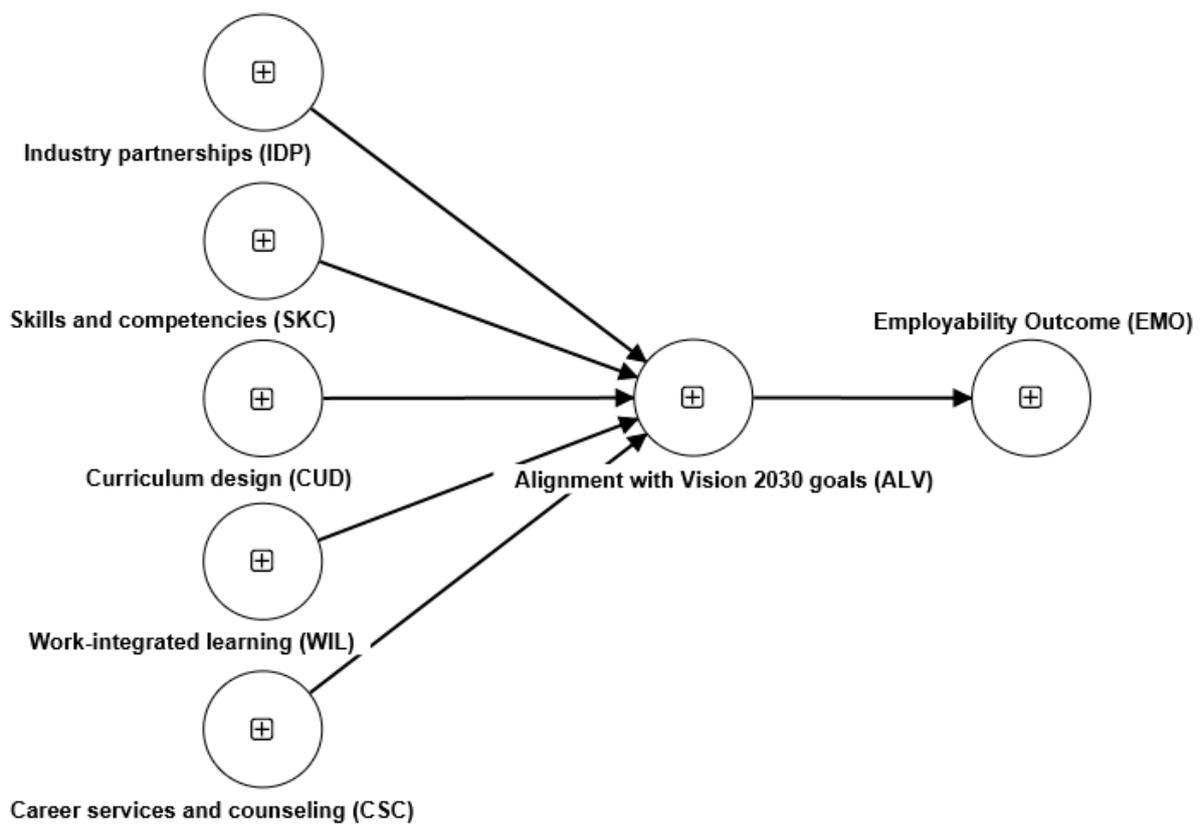
Table 1 provides an overview of the items and variables included in the questionnaire development process. The sources cited for each item indicate the scholarly works that have influenced the selection of these variables. The inclusion of these sources ensures that the questionnaire is grounded in relevant research and established theories.

**Table 1.** Questionnaire development.

Variables	Items	Source
Alignment with Vision 2030 goals	ALV1	(El-Tahan et al. 2021)
	ALV2	
	ALV3	
	ALV4	
	ALV5	
	ALV6	

**Table 1.** *Cont.*

Variables	Items	Source
Career services and counselling	CSC1 CSC2 CSC3 CSC4	(Maree et al. 2022; Quinlan and Renninger 2022; Ferns et al. 2023)
Curriculum design	CUD1 CUD2 CUD3 CUD4	(Mason et al. 2009; Kuo et al. 2022; Smaldone et al. 2022)
Employer expectations	EEX1 EEX2 EEX3 EEX4	(Baird and Parayitam 2019; Tomlinson 2023; Armstrong and Landers 2018; Helyer and Lee 2014)
Graduate outcomes	GOUT1 GOUT2 GOUT3 GOUT4	(Qenani et al. 2014; Belchior-Rocha et al. 2022; Lee et al. 2019)
Industry partnerships	IDP1 IDP2 IDP3 IDP4	(Patacsil and Tablatin 2017; Marinho et al. 2020; Bringle et al. 2017)
Skills and competencies	SKC1 SKC2 SKC3 SKC4	(Kassem et al. 2021; Mezhoudi et al. 2021; Anazifa and Djukri 2017)
Work-integrated learning	WIL1 WIL2 WIL3 WIL4	(Martone and Sireci 2009; Billett 2019; Cooper et al. 2010)



**Figure 1.** Study model. Source: Developed by authors.

The questionnaire items cover various dimensions related to higher education outcomes and their alignment with the labour market needs, as well as the implementation of career services, curriculum design, industry partnerships, and work-integrated learning strategies. These dimensions are crucial for understanding the factors that contribute to graduates' employability and success in their chosen careers.

By incorporating items related to alignment with Vision 2030 goals, employer expectations, graduate outcomes, skills and competencies, and other relevant factors, the questionnaire aims to comprehensively assess the relationship between higher education and the labour market. This approach allows for a more holistic understanding of the topic under investigation.

The present study's methodology was informed by a review of the relevant literature, which led to an evaluation of three techniques to assess this study's model: (i) multiple linear regression (MLR), (ii) system dynamics (SD), and (iii) structural equation modelling (SEM). Upon evaluation, it was determined that MLR was not applicable due to its inability to account for the interdependence of variables, which was a fundamental limitation of this study. SD, on the other hand, could not be utilized due to the nature of the data, which was not time-dependent. Finally, SEM was deemed the most suitable approach, as it enabled the examination of the relationships between various observable and unobservable factors. Specifically, partial least squares-structural equation modelling (PLS-SEM) was considered a useful tool for identifying and dealing with variable faults.

## 4. Results

### 4.1. Assessing the Measurement Model

To ensure a robust and suitable model for research purposes, it is essential to establish high levels of reliability and validity. The present study utilized the Smart PLS program to examine the relationships between the constructs by estimating trajectory models through latent variables. Moreover, the measurement and structural models of the data were estimated using [Tenenhaus's \(2004\)](#) approach. This study model's reliability and validity were evaluated based on several indices, including Cronbach's alpha, composite reliability, and average variance extracted, which were calculated to assess the stability of the factors and their saturations with their underlying constructs. These measures were employed to ensure that the factors in the model were accurately captured, and that the observed variables were reliable and valid indicators of their underlying constructs.

This study's data and model underwent a convergent validity test using Smart PLS 4, and the statistical analysis results are presented in [Table 2](#) and [Figure 2](#).

**Table 2.** Internal reliability and convergent validity.

Variables	Items	Loadings	Alpha Cronbach CA	Composite Reliability CR	Average Variance Values AVE
Alignment with Vision 2030 goals	ALV1	0.880	0.928	0.926	0.730
	ALV2	0.862			
	ALV3	0.850			
	ALV4	0.808			
	ALV5	0.838			
	ALV6	0.884			
Career services and counselling	CSC1	0.764	0.877	0.870	0.722
	CSC2	0.871			
	CSC3	0.895			
	CSC4	0.863			
Curriculum design	CUD1	0.921	0.912	0.878	0.736
	CUD2	0.915			
	CUD3	0.893			
	CUD4	0.681			

Table 2. Cont.

Variables	Items	Loadings	Alpha Cronbach CA	Composite Reliability CR	Average Variance Values AVE
Employer expectations	EEX1	0.882	0.928	0.920	0.806
	EEX2	0.921			
	EEX3	0.893			
	EEX4	0.895			
Graduate outcomes	GOUT1	0.792	0.849	0.849	0.689
	GOUT2	0.845			
	GOUT3	0.863			
	GOUT4	0.818			
Industry partnerships	IDP1	0.850	0.892	0.882	0.738
	IDP2	0.908			
	IDP3	0.873			
	IDP4	0.802			
Skills and competencies	SKC1	0.811	0.831	0.821	0.651
	SKC2	0.843			
	SKC3	0.852			
	SKC4	0.713			
Work-integrated learning	WIL1	0.865	0.889	0.884	0.740
	WIL2	0.857			
	WIL3	0.876			
	WIL4	0.843			

Source: Prepared by researchers based on Smart PLS 4 outputs.

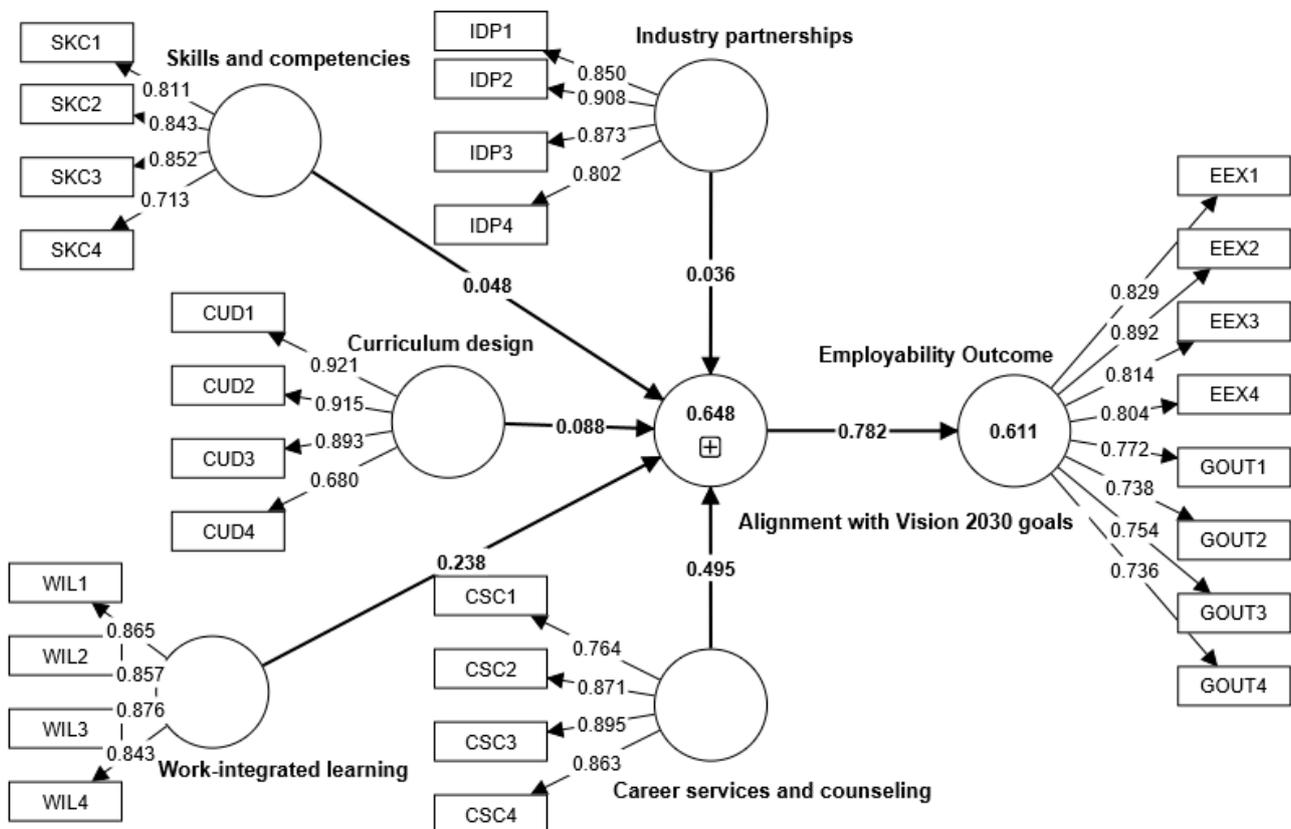


Figure 2. Output loading of factors.

Table 2 presents the internal reliability and convergent validity of the variables included in this study. The results show that all variables have composite reliability and Cronbach’s alpha values well above the recommended thresholds of 0.70 and 0.60, respec-

tively (Hair et al. 2017). This indicates that the measures used to assess each variable are reliable and consistent, with a high degree of internal consistency.

Additionally, the average variance extracted (AVE) values for each variable are also above the recommended threshold of 0.50, indicating that the measures exhibit good convergent validity (Fornell and Larcker 1981; Fahad S. Almawishir and Benlaria 2023). This means that the measures are measuring the same underlying construct or concept and that they are related predictably, as expected in the theoretical model.

These outcomes ensure that the analysis uses this study's measurements. This study's conclusions are more credible if the measures have strong internal reliability and convergent validity.

#### 4.2. Discriminant Validity

PLS-SEM requires construct validity (Hair et al. 2017). Discriminant validity—the extent to which a measurement is distinguished from other metrics that should not be related—is a key component of construct validity. The Fornell–Larcker or Heterotrait–Monotrait ratio of correlations (HTMT) criteria are used to test discriminant validity (Henseler et al. 2015). The Fornell–Larcker criterion compares the square root of the average variance extracted (AVE) of each construct to the correlations across constructs, while the HTMT criterion compares the correlations between items that measure each construct. Discriminant validity is essential for successful data analysis (Hair et al. 2017).

The results of the discriminant validity analysis, as shown in Table 3, indicate that the items have good discriminant validity, as per the Fornell–Larcker criterion (Fornell and Larcker 1981). The diagonal values represent the square root of the average variance extracted (AVE), which should be higher than the intercorrelations between constructs to support discriminant validity. The off-diagonal values represent the correlations between constructs, and they are all lower than the square roots of AVEs, indicating that each construct shares more variance with its items than with other constructs' items. Therefore, the results suggest that the measurement model has good discriminant validity, and that the constructs are distinct from each other (Hair et al. 2019). For example, the AVE of ALV (alignment with Vision 2030 goals) is 0.854, and its correlation with other constructs ranges from 0.513 to 0.77, indicating that it has good discriminant validity. The same pattern can be observed for the other constructs, indicating that the measures used in this study are distinct, and that they measure different aspects of the research model.

**Table 3.** The results of the discriminant validity of the items (Fornell–Larcker criterion).

	ALV	CSC	CUD1	EEX1	GOUT	IDP	SKC	WIL
ALV	0.854							
CSC	0.770	0.850						
CUD	0.631	0.663	0.858					
EEX	0.723	0.811	0.622	0.898				
GOUT	0.714	0.745	0.570	0.689	0.830			
IDP	0.513	0.541	0.495	0.592	0.449	0.859		
SKC	0.550	0.574	0.704	0.562	0.522	0.550	0.807	
WIL	0.698	0.711	0.686	0.651	0.570	0.587	0.570	0.860

Source: Prepared by researchers based on Smart PLS 4 outputs.

Table 4 shows the results of the HTMT discriminant validity test, which provides a more conservative approach to assess discriminant validity. In this test, the HTMT value should be less than 0.9 for discriminant validity to be established. As shown in the table, all HTMT values are below the threshold, indicating that the measures have acceptable discriminant validity (Henseler et al. 2015). This suggests that each construct in this study measures a unique aspect of the overall construct, and there is no significant overlap between them.

**Table 4.** HTMT discriminant validity test.

	ALV	CSC	CUD1	EEX1	GOUT	IDP	SKC	WIL
ALV								
CSC	0.854							
CUD	0.687	0.752						
EEX	0.771	0.898	0.677					
GOUT	0.804	0.866	0.645	0.772				
IDP	0.560	0.623	0.568	0.666	0.516			
SKC	0.614	0.674	0.822	0.643	0.612	0.670		
WIL	0.764	0.809	0.763	0.716	0.649	0.657	0.662	

Source: Prepared by researchers based on Smart PLS outputs.

**4.3. Assessing the Structural Model**

The structural model’s predictive usefulness can be examined using R2 and f2. These measurements quantify the exogenous construct’s variation in the endogenous construct, and the model’s effect size.

One structural model parameter was used to construct R2, which assesses the effect of independent factors on latent dependent variables. According to Hair et al. (2017), R2 values of 0.19, 0.33, or 0.67 indicate minimal, moderate, or high impact, respectively. Adjusted R2 values can also be used to compare model quality or circumstances. This study found that exogenous factors vary more than endogenous variables. The structural model and its variables’ effects on the dependent and independent constructs were rigorously evaluated using these statistical techniques.

As per the insights from Dijkstra and Henseler’s (2015) research, the explanatory power of exogenous variables can be evaluated using the effect size f2. The magnitude of influence is determined based on the f2 values, where a construct is considered to have a negligible impact if its f2 value ranges between 0.02 and 0.14, a moderate effect if between 0.15 and 0.34, and a substantial effect if it exceeds 0.35. When the f2 value is less than 0.02, the construct does not exert any effect on the endogenous construct.

The results presented in Table 5 demonstrate the explanatory power of the independent variables on the dependent variable, “Employability Outcome.” The R-square and R-square adjusted values indicate that the model explains a significant portion of the variance in the dependent variable. Specifically, the model explains 64.8% of the variance in the employability outcome, which is a high degree of variance. Additionally, the f2 values show that the independent variables, “Alignment with Vision 2030 Goals,” “Career Self-Management,” “Career Understanding and Decision-Making,” “Industry Demand and Professionalism,” “Skill and Knowledge Competence,” and “Work-Integrated Learning” have a moderate to high explanatory power over the dependent variable. Overall, these results suggest that the independent variables have a strong impact on the employability outcome of graduates, highlighting the importance of these variables in improving graduates’ employability.

**Table 5.** Criteria for this study’s model structural fit.

Variables	R-Square	R-Square Adjusted	Variance Explained	Explanatory Power f2
ALV	0.611	0.609	High	/
EmO	0.648	0.639	High	1.57
CSC	/	/	/	0.292
CUD	/	/	/	0.171
IDP	/	/	/	0.252
SKC	/	/	/	0.293
WIL	/	/	/	0.061

It seems that the estimated model did not fit as well as the saturated model, based on the results presented in Table 6. The estimated model had a higher SRMR value (0.097)

than the saturated model (0.075), indicating a poorer fit. The  $d_{ULS}$  and  $d_G$  values were also higher for the estimated model, further supporting the idea that the model did not fit the data as well as the saturated model. However, it is important to note that the chi-square value for the estimated model was lower than that of the saturated model, suggesting a better fit. The NFI value for the estimated model was 0.944, which is higher than the suggested cutoff of 0.9, indicating an acceptable fit.

**Table 6.** Results of GOODNESS-OF-FIT.

	Saturated Model	Estimated Model
SRMR	0.075	0.097
$d_{ULS}$	3.354	5.541
$d_G$	1.575	1.722
Chi-square	1682.354	1772.295
NFI	0.901	0.944

Table 7 shows the ability of the predictive relevance analysis to predict dependent variable outcomes. The table shows each variable's sums of squares for outcome (SSO) and error (SSE), and the model's predictive relevance ( $Q^2$ ). The model has moderate to good predictive power for alignment with Vision 2030 goals and employability outcomes, with  $Q^2$  values of 0.465 and 0.377, respectively.

**Table 7.** Predictive relevance.

	SSO	SSE	$Q^2 (=1 - SSE/SSO)$
Alignment with Vision 2030 goals	1212.000	648.755	0.465
Employability outcome	1616.000	1006.268	0.377

#### 4.4. Testing this Study's Hypotheses

The hypotheses were evaluated after confirming that the dimensions of the variables did not overlap and that this study's data followed a normal distribution. A bootstrapped partial least squares (PLS) analysis examined the variables' direct and indirect impacts.

Table 8 presents the results of hypothesis testing for the relationships between each of the five independent variables (career services and counselling, curriculum design, skills and competencies, industry partnerships, and work-integrated learning) and the dependent variable (employability outcome). The beta coefficients,  $t$ -values,  $p$ -values, and decisions regarding the acceptance or rejection of each hypothesis are presented in the table.

**Table 8.** Hypothesis testing.

Relationship	$\beta$	$t$ -Value	$p$ Value	Decision
HP1: Career services and counselling -> Employability outcome	0.387	5.636	0.000 **	Hypothesis Accepted **
HP2: Curriculum design -> Employability outcome	0.069	1.171	0.142	Hypothesis Rejected *
HP3: Skills and competencies -> Employability outcome	0.186	3.204	0.001 **	Hypothesis Accepted **
HP4: Industry partnerships -> Employability outcome	0.028	0.541	0.588	Hypothesis Rejected *
HP5: Work-integrated learning -> Employability outcome	0.037	0.633	0.527	Hypothesis Rejected *

Significant at \*\*  $p < 0.01$ , \*  $p < 0.05$ .

The results indicate that hypotheses HP1 and HP3, which propose a positive relationship between career services and counselling and skills and competencies, respectively, and employability outcome, were both accepted with  $p$ -values less than 0.01. This suggests that career services and counselling and skills and competencies have a significant positive impact on employability outcomes.

On the other hand, hypotheses HP2, HP4, and HP5, which propose a positive relationship between curriculum design, industry partnerships, and work-integrated learning,

respectively, and employability outcome, were all rejected with  $p$ -values greater than 0.05. This suggests that there is not a significant relationship between these variables and employability outcomes.

Overall, the results of Table 8 suggest that career services and counselling and skills and competencies are important factors in enhancing employability outcomes, while curriculum design, industry partnerships, and work-integrated learning may not have a significant impact.

Table 9 provides information on the indirect effects of the relationships between the independent variables (career services and counselling, curriculum design, skills and competencies, industry partnerships, and work-integrated learning) and the dependent variable (employability outcome) through the mediator variable (alignment with Vision 2030 goals). The table shows the indirect effect, bootstrapped confidence interval, and decision for each relationship.

**Table 9.** Indirect effects.

Relationship	Indirect Effect			Bootstrapped Confidence Interval		Decision
	Path Coeff	$t$ -Value	Significance Level $p$	2.5%	97.5%	
HP6: CSC -> ALV -> EMO	0.387	5.636	0.000 **	0.254	0.521	Partial mediation
HP7: CUD -> ALV -> EMO	0.069	1.171	0.042 *	0.049	0.183	Full mediation
HP8: SKC -> ALV -> EMO	0.186	3.204	0.001 **	0.070	0.294	Partial mediation
HP9: IDP -> ALV -> EMO	0.028	0.541	0.588	-0.070	0.134	No mediation
HP10: WIL -> ALV -> EMO	0.037	0.633	0.527	-0.074	0.159	No mediation

Significant at \*\*  $p < 0.01$ , \*  $p < 0.05$ .

For the first hypothesis, which states that career services and counselling have a positive effect on employability outcomes through alignment with Vision 2030 goals, the table shows a significant indirect effect (0.387), a  $t$ -value of 5.636, and a  $p$ -value of 0.000. The bootstrapped confidence interval ranges from 0.254 to 0.521, indicating partial mediation.

For the second hypothesis, which states that curriculum design has a positive effect on employability outcomes through alignment with Vision 2030 goals, the table shows a nonsignificant indirect effect (0.069), a  $t$ -value of 1.171, and a  $p$ -value of 0.042. The bootstrapped confidence interval ranges from 0.049 to 0.183, indicating full mediation.

For the third hypothesis, which states that skills and competencies have a positive effect on employability outcomes through alignment with Vision 2030 goals, the table shows a significant indirect effect (0.186), a  $t$ -value of 3.204, and a  $p$ -value of 0.001. The bootstrapped confidence interval ranges from 0.070 to 0.294, indicating partial mediation.

For the fourth hypothesis, which states that industry partnerships have a positive effect on employability outcomes through alignment with Vision 2030 goals, the table shows a nonsignificant indirect effect (0.028), a  $t$ -value of 0.541, and a  $p$ -value of 0.588. The bootstrapped confidence interval ranges from -0.070 to 0.134, indicating no mediation.

For the fifth hypothesis, which states that work-integrated learning has a positive effect on employability outcomes through alignment with Vision 2030 goals, the table shows a nonsignificant indirect effect (0.037), a  $t$ -value of 0.633, and a  $p$ -value of 0.527. The bootstrapped confidence interval ranges from -0.074 to 0.159, indicating no mediation.

Overall, the results suggest that career services and counselling and skills and competencies have a significant positive indirect effect on employability outcomes through partial mediation of alignment with Vision 2030 goals, while curriculum design has a significant positive indirect effect through full mediation. On the other hand, industry partnerships and work-integrated learning have no significant indirect effect on employability outcomes through alignment with Vision 2030 goals.

## 5. Discussion

The results in Table 8 show that career services and counseling (HP1) and skills and competencies (HP3) have a statistically significant positive relationship with employability outcomes. This finding is consistent with previous studies that have shown the importance of career services and counseling in improving employability outcomes (Maree et al. 2022; Quinlan and Renninger 2022). Moreover, the finding that skills and competencies have a positive relationship with employability outcomes aligns with previous research that has highlighted the importance of generic and transferable skills in enhancing employability (Marinho et al. 2020; Bringle et al. 2017).

On the other hand, the results in Table 8 indicate that the relationship between curriculum design (HP2), industry partnerships (HP4), and work-integrated learning (HP5) and employability outcomes is not statistically significant. This finding is somewhat surprising, as previous studies have suggested that curriculum design, industry partnerships, and work-integrated learning are important factors in enhancing employability. However, it is possible that these factors may not be as important in the context of the specific sample and setting of the present study.

Table 9 shows the results of the indirect effects analysis, which investigates the mediating role of academic learning and values in the relationship between the predictor variables and employability outcomes. The results reveal that career services and counselling (HP6) and skills and competencies (HP8) have partial mediation effects on the relationship between the predictor variables and employability outcomes, while curriculum design (HP7), industry partnerships (HP9), and work-integrated learning (HP10) have no mediation effects.

Overall, the findings in Tables 8 and 9 suggest that career services and counselling and skills and competencies are crucial factors in enhancing employability outcomes. These results are consistent with previous studies that have emphasized the importance of career services and counselling and transferable skills in improving employability outcomes. Moreover, the indirect effects analysis reveals that academic learning and values play a partial mediating role in the relationship between career services and counselling and skills and competencies and employability outcomes. This finding is consistent with previous research that has highlighted the importance of academic learning and values in enhancing employability.

It is worth noting that the findings in Tables 8 and 9 may be limited by the specific sample and setting of the present study. Therefore, further research is needed to investigate the generalizability of these findings in other contexts. Additionally, the present study is limited by the use of self-reported data, which may be subject to social desirability bias. Future research could use more objective measures of employability outcomes to overcome this limitation.

In conclusion, the findings in Tables 8 and 9 suggest that career services and counselling and skills and competencies are important factors in enhancing employability outcomes. These findings have important implications for higher education institutions and policymakers, who should consider investing in career services and counselling and developing students' transferable skills to improve employability outcomes.

Regarding curriculum design, it is possible that the specific curriculum modifications implemented in this study did not significantly impact the graduates' employability outcomes. Factors such as the depth of the curriculum changes, the alignment with industry needs, or the duration of exposure to the modified curriculum could have played a role in the rejection of this hypothesis. Further investigation and analysis of these curriculum design aspects could shed light on the reasons behind this outcome.

Similarly, the rejection of hypotheses related to participation in industry associations may be attributed to several factors. It is possible that the level of engagement or the specific benefits derived from industry association involvement were not substantial enough to significantly impact the graduates' employment ability outcomes. Additionally, the timing and duration of the association's involvement during the student's academic journey

may have influenced the results. A more comprehensive examination of the nature and effectiveness of industry associations and the specific experiences and interactions of the graduates would provide valuable insights into the reasons for this rejection.

## 6. Conclusions

In conclusion, this study aimed to investigate the factors that influence the employability outcomes of graduates at Jouf University, Saudi Arabia. This study's findings showed that career services and counselling, skills and competencies, and curriculum design have a significant direct impact on employability outcomes, while industry partnerships and work-integrated learning have no significant direct impact. The results also revealed that career services and counselling, skills and competencies, and curriculum design have a partial mediation effect on the relationship between the independent variable (higher education factors) and dependent variable (employability outcomes), while industry partnerships and work-integrated learning have no mediation effect.

These findings have significant implications for policymakers and practitioners in the field of higher education. This study suggests that higher education institutions need to focus on providing effective career services and counselling, developing relevant skills and competencies, and designing curricula that are aligned with industry needs to enhance graduates' employability outcomes. This study also highlights the importance of incorporating work-integrated learning programs and establishing partnerships with the industry to better prepare graduates for the job market.

However, this study is not without limitations. First, the sample size was relatively small and limited to one higher education institution at Jouf University, Saudi Arabia, which may limit the generalizability of the findings. Second, this study relied on self-reported data from graduates, which may have introduced biases or measurement errors. Future research could address these limitations by using a larger and more diverse sample, as well as collecting data from multiple sources to ensure data validity and reliability.

Overall, this study provides insights into the factors that influence employability outcomes in the context of higher education at Jouf University, Saudi Arabia, and highlights the need for continuous efforts to enhance the quality of higher education to better prepare graduates for the job market.

### 6.1. Recommendations

This study's recommendations can close the gap between higher education achievements and labour market needs. Career development services, internships, and extracurricular activities improve student employability, according to this study. Thus, universities should incorporate these features into their curriculum design and delivery.

This study also emphasizes the importance of soft skills such as communication, teamwork, and problem solving in student employability. Activities and curricula in higher education should help students develop these skills.

This study also implies that industry partnerships and work-integrated learning programs improve student employability. Thus, higher education institutions should connect with relevant firms and offer students hands-on experience in their specialities.

Finally, this study suggests that higher education institutions examine and assess their programs and activities to improve student employability. This will help institutions identify areas for improvement and make changes to prepare graduates for the labour market.

Higher education institutions can better prepare graduates for careers by implementing these guidelines.

### 6.2. Limitations

This study's approach has limitations. This study used self-reported data from graduates, which may be biased. Second, this study was limited to a specific region and field of graduates, which may limit its applicability. This study also ignored personality qualities and graduation differences, which may affect employability. This study's cross-sectional

design prevented causation and longitudinal tracking of graduates' results. Future studies should use more objective indicators of employability and track graduates' results over time to solve these constraints.

### 6.3. Future Implications

Based on the limitations of this study, several future implications can be considered. First, future research can investigate the relationships between the variables in different contexts and settings to determine whether the findings are consistent across different samples and settings. Second, future research can consider other factors that may affect employability outcomes, such as soft skills, personality traits, and job search strategies, to provide a more comprehensive understanding of employability. Third, future research can employ longitudinal designs to explore the causal relationships between this study's variables over time. Finally, institutions and policymakers can use the findings of this study to develop interventions and policies that promote employability outcomes among graduates, such as offering more work-integrated learning opportunities and fostering industry partnerships.

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