



## **The Impact of University-Industry Collaboration on Graduate Employability After COVID-19: A Literature Review**

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**Abstract:** University-industry solid collaboration in the modern world emphasizes its potential to enhance graduate employability in a post-COVID-19 era. Strengthened collaboration between universities and industries promote the integration of real-world concepts into academic discourse to improve student readiness for the job market while allowing students to engage in applied learning during their tertiary studies. The methodology employed for this study primarily involves the systematic review and synthesis of related literature highlighting the importance of robust collaborations between universities and industries to enhance graduate employability. The study further probes the alignment of educational programs with national development goals and job market demands. The authors of this literature review support their arguments concerning various studies and research findings, highlighting the significance of industry connections, collaborations, and benefits to enhance graduate employability. They stress the need for further research to consider contextual factors and develop specific competencies for employability, particularly after COVID-19.

**Keywords:** University-Industry collaboration, Graduate employability, COVID-19

### **1. Introduction**

The knowledge-based economy requires university-industry collaboration to provide platforms for graduates to successfully navigate the information and communication eras (Pitan, 2015; Prelovský, n.d.). This change suggests that graduates need to develop a variety of general employability and flexibility skills to adapt to new organizational modes of employability that are a direct result of the globalization of the economy (Fallows and Steven, 2000; Guichard, 2001). Having a university degree is no longer sufficient. Employability skills, industry knowledge, real-world expertise, competency attributes, and attitudes will enable graduates to obtain, maintain, and change jobs - or generate self-employment - to feel fulfilled and successful (Dacre et al., 2007; Pitan, 2016b). There is an expectation for universities to prepare graduates for the successful transition to the job market by implementing systems that will improve their employability and flexibility in the workplace (Finch et al., 2013) as a primary goal (Harvey and Contributors, 2003; Pitan, 2016a). Bridgstock (2009) confirms that universities are increasingly pressured to produce graduates with the required skills and qualifications to meet job requirements and industry demands, especially in a post-COVID-19 era. In a culture that relies heavily on knowledge and information, employability extends beyond simply possessing the primary abilities that companies look for in graduates. The COVID-19 pandemic significantly altered industry expectations, requirements, and employment processes (Howe et al., 2021). Therefore, the primary purpose of this article is to review the impact of University-Industry Collaboration (UIC) on graduate employability after COVID-19.

### **The main objective and sub-objectives**

The main objective of this paper is to review the impact of UIC on graduate employability after COVID-19. The sub-objectives are to:

- Analyze the role of UIC in promoting graduate employability.
- Evaluate the effects of UIC on the employability of Namibia University of Science and Technology graduates.
- Propose strategies to strengthen UIC to enhance the employability of graduates from the Namibia University of Science and Technology.

### **Hypothesis**

In line with the above objectives, the three hypotheses are as follows:

H0: There is no relationship between UIC's and the promotion of graduate employability.

HA1: There is a relationship between UIC's and the promotion of graduate employability.

H0: There is no relationship between the impact of UIC and the employability of Namibia University of Science and Technology graduates.

HA2: There is a relationship between the impact of UIC and the employability of Namibia University of Science and Technology graduates.

H0: There is no relationship between UIC enhancement strategies and the employability of Namibia University of Science and Technology graduates.

HA3: There is a relationship between UIC enhancement strategies and the employability of Namibia University of Science and Technology graduates.

## **2. Literature Review**

### **2.1 The Role of UIC in Promoting Graduate Employability**

Bridgstock (2009) highlights the need for educational institutions to develop graduates and equip them with the necessary skills and certifications to meet work requirements. Recent shifts in education trends and job market policies indicate that approaches to graduate employability must evolve as more will be required than general abilities, especially in prevailing economic climates. For graduates to navigate the professional arena successfully, they must manage their career development with the necessary skills, knowledge, and maturity to favourably impact the economy and society. Tran (2016) agrees and emphasizes the need for higher education to align with economic and societal needs, focusing on enhancing graduates' employability. Collaboration between universities and businesses has integrated the job market's needs into education, allowing universities to adapt to economic demands and incorporate real-world market principles into their curricula. It is acknowledged that stakeholders must be supported to achieve shared objectives.

The study by Ma'dan et al. (2020) explores Malaysia's public institutions' strategies to enhance graduate competencies and tackle unemployment. It emphasizes the need for pedagogical practices, educational growth, and collaboration with industry stakeholders. The study identifies administrative limitations and proposes continual improvements in education practices and increased efforts to strengthen UIC to advance research outputs, boost economic prosperity, and enhance workforce capabilities and impact. In addition, Abelha et al. (2020) highlight the challenges concerning the un- or underemployment of Spanish graduates in Australian higher education institutions brought about by struggles to develop the expectant graduate attributes and language skills in Asia. However, research on contextual influences is in the developing stages while educational institutions worldwide attempt to address the aftereffects of COVID-19 on graduate employability. The necessary soft skills for graduates are crucial for industry adaptation and professional practices beyond technical vocations. Abelha et al. (2020) additionally identify cross-discipline competencies for graduate employability, while Obioha and Sotshangane (2022) underscore the uncertainties

surrounding high school learners, postsecondary students, undergraduates, and university graduates. Obioha and Sotshangane (2022) further suggest collaborative collaboration between industry and higher education institutions to enhance graduates' employability in the Republic of South Africa. According to Mgaiwa (2021), globalization is transforming economic trends, company models, and skillsets required from graduates and workers. Universities worldwide must integrate traditional strategic directives and goals with real-world demands, needs and solutions to improve graduate employability. Possible solutions include work-integrated learning approaches, dynamic internships, and collaborative curriculum development initiatives. Educational institutions should prepare a practical analysis of market demands, enhanced quality assurance methods, and robust alliances with industry, which must be prioritized in academic settings to prepare graduates for the knowledge economy.

## **2.2 The Impact of UIC on the Employability of Graduates**

Yasin et al. (2023) found that students in their first year of college must improve their academic reading abilities, especially in university-level comprehension. The sudden transition from high school to university is criticized for disparities in instructional approaches. Students must be engaged in comprehensive learning processes incorporating industry expertise to develop practical competencies. The valuable industry and professional knowledge of university faculty further influences the quality and employability of graduates in the modern business world. The collaboration between formal tertiary education and industry can help to reconcile theoretical knowledge and practical application. Developing graduates with the required attributes cultivates a competent, relevant workforce with pertinent skills, impactful research capabilities, and dynamic workplace cultures. However, this necessitates ongoing support, development, and opportunities from institutions of higher learning and industry stakeholders. Bernhard and Olsson (2023) underscore the importance of revisiting educational policies and societal frameworks to foster a cohort of impactful future leaders.

Lubbe et al. (2021) argue that graduate competencies, employability, and workforce readiness stem from students' educational environments and collaborations. However, given that student participation is low, especially in South Africa, Lubbe et al. (2021) propose capacity-building training programs integrating technology to enhance experiential learning and engagement with industry partners. Technology integration, digitalization, and customization in education will assist graduates in acquiring technical competencies, possessing diverse employability skills, and demonstrating adaptability in finding solutions to challenges in the workplace and society (Lubbe, 2021).

Murire et al. (2023) further propose the transformative impact of social media on the collaboration between individuals and work organizations, necessitating graduates to acquire the relevant skills for employment and personal growth. These social media platforms allow graduates to demonstrate and showcase their knowledge, skills, and expertise. However, graduates must be cautious when using social media because their digital persona can be altered. Human resources departments use social media to conduct background checks on potential employees and identify individuals with exceptional skills. Additionally, inappropriate language on social media can hinder employment prospects. Social media further enables sharing shared interests to seek opportunities and build interpersonal connections and professional networks. Murire et al. (2023) additionally propose that graduates should leverage their available resources to foster the necessary professional relationships with potential career opportunities. Social media platforms thus facilitate social group forming among graduates, enabling discussions regarding career and other personal development opportunities.

## **2.3 Strategies to Enhance UIC to Improve Graduate Employability**

Impactful collaboration between academia, its graduates and industry is widely acknowledged, with higher education institutions renewing their focus on improving graduate employability through revised and transformative curriculum design. Additionally, realigned government regulations promote effective collaboration between universities and industrial sectors by influencing universities' economic and social trajectories. Employers seek institutions that equip graduates with skills for specific professional environments. These skills for the working environment have increased scholarly attention towards collaboration between higher education institutions and industry. Knowledge dissemination involves student internships, academic involvement, research collaboration, and commercial prospects, including product development and promotion— which are motivational factors in sectors and academia that impact branding, credibility, funding, and employment. Establishing a collaborative relationship between universities and industries is crucial due to resource limitations. (Littleton et al.,2023)

Goteng et al. (2022) argue that rising tuition costs in many countries require universities to justify the benefits students receive in exchange for high-quality educational experiences, including practical industrial training. Graduates need more than just subject expertise for career opportunities; they need skills for work after graduation. Skills are especially relevant in technologically challenging fields like cloud computing, where curriculum updates and new teaching materials are crucial. Collaborating with the industry improves learning experiences, increases abilities, and boosts confidence.

Another study by Aloysius et al. (2018) emphasizes that enhancing graduate employability capacity and self-esteem in industries is essential to achieving competitive advantage. They suggest universities analyze knowledge and skills alignment with industry expectations to improve graduate employability. This pedagogical approach gravitates towards the impact of theoretical instruction on knowledge dissemination within the workforce. Skills gaps emerge due to the lack of relevance between graduate knowledge and industry demands. Aloysius et al. (2018) recommend that universities continuously engage in employability enhancement activities or seek to establish employment relationships with industry management. A university in Nigeria has opted to incorporate employability skills into its programs despite its theoretical nature. Implementation measures include enhanced skills acquisition measures, improved computing centres, and specialized training programs to equip graduates with the required skills for the workforce. Regular reviews and updates on curricula by universities, and in collaboration with industry, are of utmost importance to meet the evolving needs of industry, industry partners and employers. Graduates continuously need assistance to apply their acquired knowledge, skills, and expertise in the workplace and to align their educational experience with growing industry demands. UIC has great potential but is not optimally pursued. The increasing need for assistance with technical and digital skills limits the successful integration of graduates into the industrial arena. The study by Aloysius et al (2018) further highlights the necessity for improved relations between universities and employability centers in Nigeria. Another scholar, Gomwe (2019), points out that universities in the Southern African Development Community (SADC) region generate and share knowledge but are hampered by challenges to foster effective collaboration and collaborations with industry.

Furthermore, the lack of government support and funding of innovation centres in SADC impedes the progress and advancement of underdeveloped and emerging economies. Their assessment of the impact of universities on the knowledge-based economy highlights a need for more accurate information about efforts in establishing impactful innovation centres within their universities. SADC region universities prioritize knowledge development, but there is a need for adequate integration between universities and industry. Research indicates a significant disparity between industry guiding principles and individual institutions' perspectives. Research suggests that the SADC region's

exploration of KBEs needs to be further developed in a more extended study area. SADC must overcome challenges to transition from a resource-based region to a knowledge-based economy. Inadequate knowledge brings about serious challenges that result in universities struggling in areas of recruiting, teaching and learning of students across various academic disciplines. Societal implications, however, continue to be less evident, particularly given the SADC region's poor developmental progress, surging unemployment rates, and unsustainable manufacturing methods. The scholars recommend that effective and successful collaboration be mutually beneficial and that reciprocity principles be administered to improve the SADC region's potential.

## **2.4 Theoretical Framework**

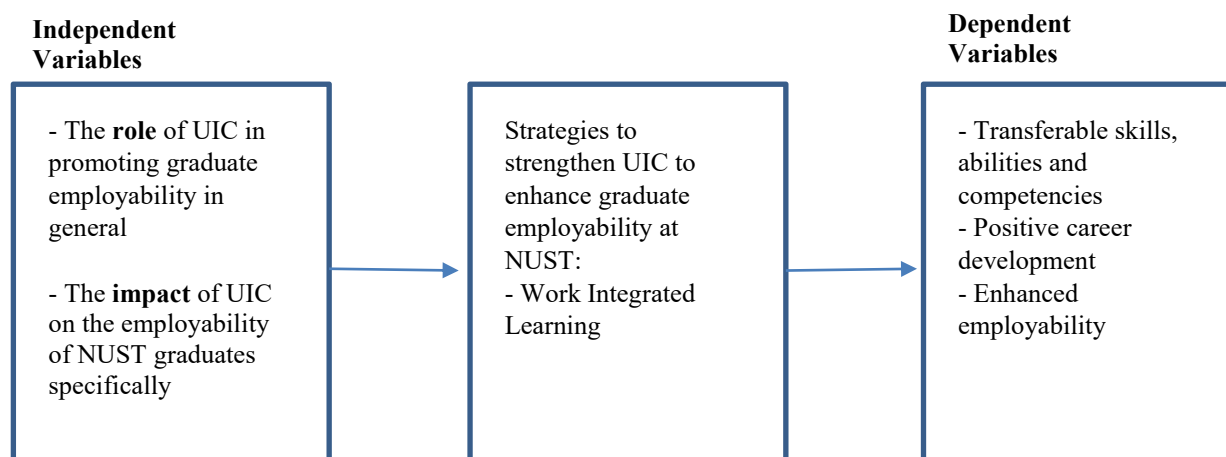
In Geisler's (1995) and Barringer and Harrison's (2000) studies, UIC was analyzed from rational and irrational perspectives. The interdependency and interaction theories, provided by both philosophies, are widely accepted theoretical viewpoints (Aliu and Aigbavboa, 2020). The Determinants of Graduate Employability 1081 interaction theories consider the influence of the internal growth of the connection itself, in contrast to dependence theories, which consider the impact of external circumstances on collaboration. Transaction Costs Economics (TCE), Resource Dependency Theory (RDT), Strategic Choice Theory (SCT), Stakeholder Theory (S.T.), Organizational Learning Theory (OLT), and Institutional Theory are the six interdependency theory viewpoints proposed by Barringer and Harrison in 2000. The social network perspective, which focuses on actor similarity, personality, proximity, organizational structure, and environmental factors, advances the interaction theory (Brass et al., 2004). Since this study focuses on university-industry collaboration employability rather than the influence of variables on collaboration, the dispositional approach to employability proposed by Fugate and Ashforth (2004) is used. They contend that having three-dimensional traits will make it easier for people to integrate into the workforce. These qualities include human capital, adaptability, and career identity. Their definition of employability considers the development of person-centred conceptions to succeed in the workplace. According to their report, employability is a psycho-social construct that includes individual attributes that support adaptive cognition, behavior, and effect, and strengthen the individual-work interface" (Fugate and Ashforth, 2004).

## **2.5 Organisational Learning Theory**

### **2.5.1 Conceptual Framework**

A conceptual framework is a systematic research approach that outlines the relationship between independent and dependent variables, including selecting the topic, identifying the problem, formulating research questions, reviewing the literature, applying theories, determining methodology, specifying methods, analyzing data, developing recommendations, and drawing conclusions. It is a coherent and systematic depiction of the research subject, encompassing metacognitive, reflective, and operational aspects-(Kivunja, 2018).

Figure 1 below shows the conceptual framework on the impact of UIC on graduate employability, which demonstrates the relationship between independent variables such as the role of UIC in the promotion of graduate employability at NUST and the result of UIC on the employability of NUST graduates and the dependent variables which are transferable skills, abilities and competencies, positive career development and enhanced employability and how they influence each other and lead to strategies to enhance UIC to improve graduate employability at NUST.



**Figure 1:** Conceptual framework on the impact of UIC on graduate employability

Source: Adapted from Joseph (2016)

Joseph (2016) observes discrepancies between industry and graduates' contributions. According to his study, these discrepancies can be caused by a lack of collaboration regarding the curriculum between industry and educational institutions. Joseph (2016) further emphasizes that workforce training should be more closely related to the skills and competencies to enable students to be absorbed in the industry. The observation can apply to the graduate's employability in the industry. To generate well-equipped and professionally skilled labor that can perform in the 21st-century workplace, educational institutions, authorities, and various stakeholders should promote UIP to enhance graduates' employability and career development.

### 3. Research Methodology - Materials and Methods

The article utilized a systematic literature review to analyze data and findings from other scholars related to the topic. It provided a critical overview of related studies. Further, the study used methods and techniques to collect data, which were influenced by its goal of reviewing the impact of UIC on graduate employability in a post-COVID-19 era.

The simple linear regression model represented the research model for this study is the following:

$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3$ ; where  $Y$  = university-industry collaboration's,  $X_1$  = graduate employability;  $X_2$  = enhance university-industry collaboration;  $X_3$  = strategies to enhance university-industry;  $\beta$  = gradient of the slope;  $\beta_0$  = intercept of the graph on the y-axis;  $Y$  is the outcome variable and from  $X_1$  to  $X_3$  represents the independent variables

The article analysis was based on an empirical study of literature related to a review of the impact of UIC on graduate employability in a post-COVID-19 era. The study analyzed the literature critically.

#### 3.1 The Role of UIC in Promoting Graduate Employability

Bridgstock (2009) highlights the need for educational institutions to develop graduates with the necessary skills and certifications to meet work requirements due to recent shifts in education and job market policies. Employability in an economic-driven climate requires more than just general abilities. Graduates must possess the necessary skills to navigate the professional environment effectively and independently manage their career development for favorable economic and social outcomes.

Tran (2016) emphasizes the need for higher education to align with economic and societal needs, focusing on enhancing graduates' employability. Collaboration between universities and businesses have integrated the job market's needs into education, allowing universities to adapt to economic demands and incorporate real-world market principles into their curricula. It is acknowledged that stakeholders must be supported to achieve shared objectives.

## 4. Results

The article sought to test the following hypotheses:

H0: There is no relationship between UIC's and the promotion of graduate employability.

HA1: There is a relationship between UIC's and the promotion of graduate employability.

H0: There is no relationship between the impact of UIC and the employability of Namibia University of Science and Technology graduates.

HA2: There is a relationship between the impact of UIC and the employability of Namibia University of Science and Technology graduates.

H0: There is no relationship between UIC enhancement strategies and the employability of Namibia University of Science and Technology graduates.

HA3: There is a relationship between UIC enhancement strategies and the employability of Namibia University of Science and Technology graduates.

The table below provides a summary of the findings of the literature review.

**Table 1:** Summary of findings

No	Author / Date	Hypothesis	Finding	Decision Accept / Reject
1	Yasin et al. (2023)	HA1	The study identified various factors influencing university objectives, including vision, stakeholder relationships, provider brand reputation, perception, ranking, and strategies used by university representatives to manage live project expectations.	Accept
2	(Bridgstock, 2009)	HA1	The research indicates that Australian universities should emphasize diverse skills and lifelong professional development, collaborating with academic departments, career services, and employers to improve career management competence and prepare graduates for the unpredictable future by connecting their educational offerings.	Accept
3	Tran, (2016)	HA2	The-research suggests that collaboration between educational institutions and workplaces enhance economic adaptability by incorporating real-world market experiences but emphasize adequate time allocation for	Accept

			work-integrated learning.	
4	Ma'dan et al. (2020)	HA2	The study emphasizes the need for Malaysian public institutions to enhance graduates' employability and competence through institutional reforms, advanced teaching methods, and university-industry collaboration, focusing on organizational structure, curriculum development, and student achievement programs.	Accept
5	(Abelha et al., 2020)	HA2	The research concludes that higher education institutions prioritize developing graduates' employability skills, focusing on creative and collaborative practices for global competency growth, with underrepresentation in certain countries due to differences in countries and higher learning institutions.	Accept
6	Obioha and Sotshangane, (2022)	HA3	A South African study reveals that employers expect graduates to possess 13 essential job skills but less in mathematical and leadership abilities. Critical employability skills include reading, writing, communication, cooperation planning, ethical awareness, problem-solving, and presentation. These skills are crucial in public and commercial health and education, especially for entry-level positions.	Accept
7	Mgaiwa (2021)	HA2	Universities and industries must collaborate to build knowledge-based economies and combat foreign job dominance. Aligning programs, regular curriculum reviews, and quality assurance systems can improve Tanzania's graduate employability.	Accept
8	Lawrence et al. (2023)	HA3	The paper explores the role of foresight and environmental intelligence in strategy and career counselling, suggesting that aligning career counselling with energy demands and sustainable green technologies can improve outcomes. It introduces a pragmatic framework for cultivating employable individuals and entrepreneurs.	Accept



9	Bernhard and Olsson (2023)	HA3	The paper discusses the role of foresight and environmental intelligence in strategic intelligence and career counselling. It suggests enhancing employability by aligning career counselling with energy demands and sustainable green technologies.	Accept
10	(Lubbe et al. (2021)	HA2	The paper explores the potential of anticipation and environmental intelligence in strategic intelligence and occupation counselling, suggesting that it can enhance employability by integrating sustainable green technologies.	Accept
11	Goteng et al., (2022)	HA1	The research suggests that students connect exam questions with lab experiences, improving understanding in technologically challenging domains like cloud computing and IoT. Industry-oriented courses and affiliations enhance learning experiences, leading to superior exam performance and higher tuition costs.	Accept
12	Aloysius et al. (2018).	HA1	The study points out that Nigerian universities integrate employability skills, but graduates struggle to apply knowledge. Additional training opportunities and collaboration between universities and industries are needed.	Accept
13	Gomwe, (2019)	HA1	The study suggests that SADC should integrate academic and industrial sectors, align economic policies, and implement facilitative measures to achieve its potential in knowledge-based economies.	Accept
14	Murire et al., (2023)	HA2	The research suggests that unemployed graduates can effectively utilize social media platforms to display their skills and raise awareness about job market challenges.	Accept
15	Littleton et al. (2023).	HA2	The study emphasizes the significance of trust and respect among stakeholders in attracting interest in Urban Innovation Centers among Australian universities, highlighting five key themes: stakeholder trust, business alignment, employability, dedication to cause, and innovation concentration.	Accept

## 5. Discussion

Bridgstock (2009) and Tran (2016) emphasize the need for educational institutions to equip graduates with work skills that align with economic and societal needs through business collaboration. In addition, Ma'dan et al. (2020) and Abelha et al. (2020) state that graduates face challenges in Malaysia, Spain, Australia, and Asia, thus emphasizing the need for continuous improvement, enhanced collaborative efforts, and strengthened soft skills for successful industry

integration. They further suggest aligning traditional education practices with real-world demands and further research on strategic intelligence and university talent management.

Yasin et al. (2023) emphasize the need for improved academic reading and writing abilities in university students, while Bernhard and Olsson (2023) call for overhauling and restructuring doctoral programs and educational outputs. Lubbe et al. (2021) also implore adopting new training strategies, real-world employability skills, and the responsible use of social media and artificial Intelligence (AI). and emerging technologies for graduates' personal growth and development. Furthermore, collaborative efforts between academia and industry remain crucial for enhancing graduate employability and gaining a competitive advantage, as demonstrated by Nigeria University's employability skills implementation strategies.

According to the research findings, it is recommended that higher learning educational institutions in Namibia emphasize UIC and move to form strategic collaborative ties with industry. HEIs will require continuous assistance in implementing project-based learning initiatives for students enrolled in their respective academic programs. According to the hypotheses presented in this research, the educational programs offered by universities in Namibia place an increased emphasis on problem-based learning and group projects, and they may also provide specialized classes on topics such as time management and career development.

## 6. Conclusion

The emphasis placed on incorporating industry-specific training inside educational curricula at universities worldwide has great importance, especially for students nearing the completion of their studies at these academic institutions. The methodology above can augment students' employment opportunities and foster their proactive involvement in creating, acquiring, disseminating, and applying knowledge within their respective vocational endeavors.

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