

Employers' Perspectives on Skills Falling Short, HEIs' Education System, and Graduates' Attributes: A Proposed Framework

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Abstract

The purpose of this study is to determine what Malaysian employers think about the importance of employability skills falling short among engineers, the quality of education system at Higher Education Institutions (HEIs), and important graduates' attributes from the perspectives of employers in Malaysia. By the time this study was conducted, a proposed theoretical framework was developed and has been designed to be used as a reference for future research. The employers' perspectives (dependent variable), skills falling short, HEIs' education system, and graduates' attributes (independent variables) all influenced the development of this proposed theoretical framework. The results of this study offered important practical implication for industry, engineers, Malaysian HEIs', and graduates to be successful with the implementation of new skills, development programmes, and attributes to be ready for future industrial demands. It is hoped that current and future researchers working on related studies would find this proposed theoretical framework to be a useful resource.

Keywords: Proposed Framework, Employers' Perspectives, Skills Falling Short, Heis' Education System, Graduates' Attributes

Introduction

The concept of employability plays a central role in national and international labor market policies across the world (Belderbos, 2020). The idea of employability concept has gained attention the literature, drawing many scholars from all around the world (Hisa and Mohiddin, 2020). These days, equipping employees with the necessary knowledge and skills for their jobs requires substantial ongoing effort and investment (Naron and Seyhah, 2021). Employers seek for graduates who possess a wide range of abilities to lead their organizations and help them achieve a competitive advantage in the industry (Pazil and Razak, 2019).

According to Pazil and Razak (2019), it is no longer enough for graduates to have outstanding degrees and academic achievements, but employers now also expect them to have a well-developed employability skills. Modern global industry today, graduates with additional qualities are highly sought by potential employers (Heang et al. 2019). Naron and Seyhah (2019) emphasize that employers and the industry consistently demand knowledge and skills that align with specific company or industry needs, as well as those critical to company operations and growth.

Heang et al. (2019) stated, employers look for graduates who are work-ready, that can immediately begin contributing to their industry. According to Khoo et al. (2020), employability is the conceptualization of the abilities, skills, and personal attributes that the real-working world values and necessary to be able to secure relevant employment. On the other hand, employability skills are the skills needed to land and keep a job (Kenayathulla et al. 2019).

Individual employability became a key component in the European Employment Strategy 1997 to fight against youth and long-term unemployment (Winterton and Haworth, 2013). Employability skills have been applied at the local, regional, and national levels to increase competitiveness and encourage employment (Jagannathan and Geronimo, 2013; McQuaid and Lindsay, 2005; Organization for Economic Co-operation and Development, 2016). Stakeholders must work together to overcome the challenges posed by the current changes in the real-working world to ensure that future employment looks as promising as it can (Rodzalan et al. 2022).

Employers search for candidates who possess the unique skill set needed to perform a particular task in job (Kenayathulla et al. 2019). Therefore, this study intends to explore the following research questions: “What are the important employability skills that engineers falling short from the perspectives of E&E employers?”, “How the HEIs’ education system can meet the demand of E&E industry from the employers’ perspectives?”, and “What are the important graduates’ attributes required from the perspectives of E&E employers?”.

The main objective of this study is to identify the important employability skills that engineers falling short from the perspectives of E&E employers. Additionally, this study aims to investigate how the HEIs’ education system can meet the demand of E&E industry from the employers’ perspectives, and to determine the important graduates’ attributes required from the perspectives of E&E employers. Examining the long-term implications on student empowerment, the growth of engineer society, and the equality and quality of education at Malaysian HEIs may be helpful to be examined (Chan et al. 2018).

Industry’s requirements for engineering skills aligned with their organizational needs will help the industry to achieve future revolution with the implementation of new skills (Hasan and Adnan, 2019). At the same time, identifying the additional engineering skills needed to fulfil the demands of future revolution in job skills can aid in the development of technical competencies in graduates (Ismail and Hassan, 2019). The feedback from employers on Malaysian graduates’ employability skills can be used as a foundation for developing policies and strategies aimed at transforming HEIs. (Yaakob et al. 2018).

This study may be used as a beneficial guide for HEIs' educators to create development programmes for the graduates to improve their skills before entering the real-working world (Chan et al. 2018). Additionally, the framework of this study may aid educators to determine the most effective and reliable components in producing graduates with employability skills demanded by the industry (Saim et al. 2021). The encouragement for cooperation between industry and HEIs, along with regular updates to guideline, can ensure that graduates' skills remain relevant current industry demands (Tan et al. 2017) and help prepare graduates to be ready for future industry needs (Abbas and Sagsan, 2020).

The Ministry of Higher Education (MOHE) may also use this study to advance the education system at HEIs' in accordance with the needs of the industry (Ali and Jack, 2019). Moreover, this study may be used to utilize the developmental efforts on important graduate attributes that will enhance their personal and professional growth (Steurer et al. 2023). The required attributes of this study might make graduates more employable, help them deal with uncertainty, and prepare them for what lies ahead (Gamage et al. 2023). Last but not least, graduates can make use of this study to assist them in indicating the skills and attributes they should seek and develop to improve their employability in the eyes of potential employers (Borg and Scott, 2020).

Problem Statements

According to Yusof and Jamaluddin (2015), graduate employability is currently the main emphasis of most labour market policies in many countries and the majority of manpower strategies. Graduate employability has been a hot topic of discussion among academicians, Ministry of Higher Education (MOHE) officials, students, and graduates in HEIs across various developing and advanced countries, including Malaysia (Sohaimi and Senasi, 2020). Winterton and Turner (2019) stated that employability is widely used in debate on graduates' readiness to enter the real-working world, and has become the main concern of policymakers, HEIs, academics, employers, and graduates (Misni et al. 2020).

Engineering graduates will be working in an increasingly complex, fast changing, and uncertain world of unemployment (Ortiz et al. 2021), and the transition from graduation to professional life is often challenging, as graduates must experience numerous of challenges when they begin working (Anjum, 2020). Today, industries require precise indicator of the skills engineers need because those who possess skills that do not align with industry demands will not be hired if their abilities do not match the required skill set (Saleh, 2019a). According to Naron and Seyhah (2021), employers are one of the key players in the industry that demands skills and knowledge as the most important component for company operation and growth, and the future of work requires workers with skills related to their job (Rodzalan et al. 2022). Employers nowadays want graduates to not only have excellent degrees and perform well in their academics, but also to equip themselves with employability skills (Pazil and Razak, 2019), and the employability skills possessed by graduates must be aligned with the skills demand by the nature of the industry (Saleh, 2020).

As future jobs will be different from those of the past, graduates with greater talents will be appreciated more in the current industry even though they lacks of higher qualifications or an excellent academic record (Hidayat and Yunus, 2019). Malaysia requires a high-skilled workforce to support the growth of the industry (Kenayathulla et al. 2019), and graduates are required to have modern skills in order to fulfil the needs of the present industry (Abdullah et al. 2020).

However, a study by Saim et al. (2021) emphasized that the industry criticized the Malaysia's education system, particularly its engineering programme, for producing graduates who perform poorly and their incompetence to demonstrate newly acquired skills and knowledge to their jobs. One of the reasons why graduates are unemployed is due to lack of skills (Kadir et al. 2020), and these problems arise when graduates lack the required engineering skills, which are either thought important or not really necessary for employment (Laguador et al. 2020).

According to Mitiku et al. (2021), the acquisition of skills in the workplace is seen universally as a key driver of economic and technological development, thus, early introduction of employability skills and knowledge during the tertiary level of education to graduates is essential to ensure graduates are prepared for job hunting, as well as prepare professional skills for the current and future demand (Ishak and Madzuki, 2022). Rodzalan et al. (2022) stated, graduates must be exposed to the relevant skills that correspond to these breakthroughs to equip them for the challenges of Industrial Revolution 4.0 (IR4.0).

Industries today prefer to hire graduates who already have the basic skills required (Yusof and Mohiddin, 2018), therefore, educators in HEIs must work to restructure graduates to ensure that all levels of employees have access to the most-up-to-date information and incorporate industry-based curriculum to adapt with the rapidly changing employment requirements (Kenayathulla, 2021; Jamaludin et al. 2021). According to Othman and Hussin (2020), Malaysian HEIs are responsible for supplying highly skilled graduates to meet the needs of the country's industry to the maximum.

Nevertheless, graduates also need to take more responsibility for their own learning process (Eryani and Munifi, 2019). There has been so much debate about the graduate attributes that make up and promote employability among graduates (Barrie, 2006; Madhavi, 2018). There are claims from employers that university graduates do not fully develop the employable attributes required in the real-working world (Zakaria et al. 2020). Previous study by Masole and Dyk (2016) emphasized, employers have two dissatisfactions regarding the work-readiness attributes of current emerging graduates.

The field-specific knowledge and technical skills alone are insufficient to label graduates' work-readiness, hence, they need professional skills and the capacity to handle stressful nature of the real-working world's environment (Masole and Dyk, 2016). Yet, only a little study has been done on the work-readiness attributes of graduates or whether their work-readiness levels meet employers' requirements (Borg et al. 2017). For these reasons, engineering graduates need to impress the employers to hire or retain them in the real-working world by showing their unique skills (Saleh, 2019b).

Due to these pertinent issues, this study proposes a theoretical framework derived from employers' perspectives regarding skills falling short, HEIs' education system, and graduate attributes. This theoretical framework has been developed and aims to provide an organized way to investigate and understand the key elements and their relationships for this study. The theoretical framework developed for this study serves as a guide to systematically evaluate the information, identify important variables, and draw meaningful conclusions, ensuring that this study is based on established theories and concepts.

Research Framework

The theoretical framework illustrated in Figure 1 designed based on the literature examined and analyzed in determining the E&E employers' perspectives towards the skills falling short, HEIs' education system, and graduates' attributes. The variables used for this study are

dependent and independent variables, which are the analytical factors assigned as dependent variable in determining the independent variables. Referring to Figure 1, the hypotheses developed for this study are based on the research questions and research objectives.

Proposed Theoretical Framework

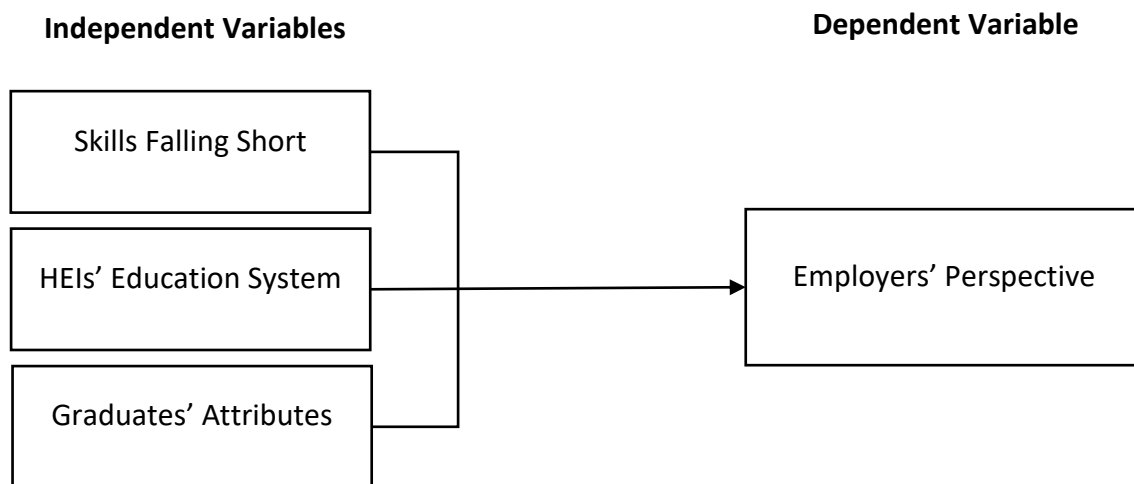


Figure 1 Theoretical Framework

Hypotheses Development

Based on the research objectives and conceptual relationship between the variables, the following hypotheses are examined and tested in this study:

Relationship between Skills Falling Short and Employers' Perspectives

The graduates' skills falling short is a factor contributing to graduate unemployment in Malaysia (Chavan and Carter, 2018). Mismatch issue vary from expectation mismatch to skill mismatch (Abdullah et al. 2020). According to Green and Henseke (2016), there is always some mismatch between educational achievement and employment requirements, particularly in regard to IR4.0 employment requirements (Abdullah et al. 2020).

Aziz et al. (2023) stated that, the skills of graduates play a major role in determining the impact of IR4.0 on employability. However, if the skills possessed by the graduates do not match with employers' demand, unemployment may occur (Aziz et al. 2023). Due to the continuous changes in the workplace, basic and traditional skills have lost relevance and hardly help graduates to find suitable jobs (Saleh and Lamsali, 2019). The graduates' skills must align with the demand of E&E manufacturing company today if they want to find the employment opportunities (Saleh, 2019a).

Moreover, in order to guarantee every graduate are capable to work in IR4.0 settings, they need to acquire a skill set that will equip them to fulfill the demands of future industry (Kamaruzaman et al. 2019). The perspectives of employers from the World Economic Forum (2020) identified the top skills that employers perceive as becoming more crucial in the years leading up to 2025 are people management, self-management, problem-solving, and technical skills (World Economic Forum, 2023).

According to Saari et al. (2021), the four primary skill sets for IR4.0 are empowering digital skills, competence with entrepreneurial mentality, high impact technology, and a mix of soft and technical skills. Additionally, a study by Tajuddin et al. (2022) highlighted the employers

in the IR4.0 environment are looking for individuals who possessed information and communication technology (ICT) or digital skills, communication skills, interpersonal skills, leadership skills, and personal attributes. Graduates in HEIs must leave their comfort zone in order to meet the challenges of IR4.0 (Ahmad, 2017).

This is accordance with the significance of mastering the 4C elements which are primarily focused on critical thinking and problem-solving, communication, cooperation, and creativity, at all level of learning as outlined by World Economic Forum (WEF) (Nor et al. 2022). Nowadays, employees with Higher Order Thinking Skills (HOTS) such as problem solving, decision making, reasoning, creativity, and learning skills as well as those who can adapt to change are in high demand among employers (Estacio and Manuel, 2021).

As schools place a close attention on higher order thinking skills, graduates at HEIs also should be proficient in the 4C (critical thinking, communication, collaboration, and creativity) elements in every aspect of their lives (Nor et al. 2022). However, it is crucial for graduates to obtain twenty-first (21st) century skills (Rios et al. 2020), as employers have complained that recent graduates from HEIs lack these skills when they enter the real-working world (Goodman et al. 2015).

Study by Orasion et al. (2019) found that employers prioritize employability factors such as 21st century skills and practical competencies in graduates. According to Ismail and Hassan (2019), industries simultaneously demand that each graduate acquire the skills necessary for IR4.0 as well as other global 21st century skills, such as the capability to be creative, communicate, think critically, and collaborate. From employers' perspectives, graduates must gain 21st century skills before stepping into the real-working world (Asefer and Abidin, 2021).

Therefore, this study proposes the following hypothesis:

H1: There is A Positively Significant Relationship Between Skills Falling Short and Employers' Perspectives.

Relationship Between Heis' Education System and Employers' Perspectives

The challenging conditions of today have increased the employers' pressure on HEIs, especially from the industry to ensure graduates have more than just academic skills (Misni et al. 2020). According to Hajazi (2016), the role of HEIs is getting more challenging due to the need to produce knowledgeable and skilled graduates who needs to be matched with industry's demands and value.

HEIs' education systems are expected to develop graduates with basic academic, personal, and teamwork skills (Kenayathulla, 2021). However, a study by Griffin and Annulis (2013) have found that, the most common employer complaints on recent graduates are lack of self-learning, problem solving, teamwork, and decision-making skills, compared to those who left HEIs with full of theories without the ability to apply them into practice. Yet, there has not been much empirical study to determine how HEIs aid in the acquisition of these skills (Misni et al. 2020).

Moreover, previous studies have found that further research is still required to assess the effectiveness of HEIs' education system to meet the demand of the industry among graduates (Alias et al. 2013). According to Okolie et al. (2019), the curriculum is a major area of importance that has not received enough attention it needs from HEIs' education system. HEIs' education system must keep up with the pace of technological advancement to

guarantee students acquired the necessary employability skills to secure employment in future (Goulart et al. 2022).

At the same time, Saleh and Lamsali (2020) stated that employers demand the employees to equip themselves accordingly with competencies and capabilities besides excellent academic knowledge before entering the real-working world and face the stiff global competition. Thus, HEIs' education system must use innovative teaching and learning methodologies to effectively address the requirements of skills needs in new technology of real-working world (Ilori and Ajagunna, 2020).

Additionally, to ensure graduates are taught or trained the practical skills required by the industry, the HEIs' curriculum should be established only by authorized experts based on the industry's demands, under the supervision of industry's executives and professionals from the Directorate of Employment (Okolie et al. 2019). There is a growing demand for academicians in HEIs to impart training on skills such as competent reasoning, analytical thinking, and the ability to structure information and arguments, in order to prepare graduates to meet industry's demands (Villiers, 2010; Osmani et al. 2019).

The employability skills of graduates can be enhanced if the HEIs' education system provides an adequate teaching and proper training in the specific career path to improve skills acquisition through curriculum and innovations in teaching pedagogy (Okolie et al. 2019). Okolie et al. (2019) added, employers emphasized that HEIs can concentrate on providing well-planned training for the acquisition of concrete skills rather than abstract learning, and also focus on integrating only relevant theories with skill practice rather than multiple theories with few or no practical experimentation.

According to Baird and Parayitam (2019), employers have equal accountability for the development of talent emerging from HEIs. However, the competencies and skills that employers in industry need and demand from recent graduates looking for employment can only originate from a collaborative and strategic alliances among graduates, HEIs, and employers (Baird and Parayitam, 2019). Nowadays, the cooperation between HEIs and industry has become an integral part of technology and innovation policy in newly industrialized countries (Rast et al. 2012).

Strategic partnership is one of the important factors to develop more competitive human capital (Ma'dan et al. 2020). The employers' perspectives support the idea of raising graduates' employability skills while also attempting to lower the unemployment rate in Malaysia (Ma'dan et al. 2020). Based on previous study, the collaboration between industry and HEIs is required to update the curriculum both directly and indirectly through idea-generating sessions or giving advice to HEIs about the skills, knowledge, and characteristics of employability required in current industry's demands (Anas and Hamzah, 2017; Minocha et al. 2017; Tanius, 2018).

Thus, the following hypotheses is proposed for this study:

H2: There is A Positively Significant Relationship Between Heis' Education System and Employers' Perspectives.

Relationship Between Graduates' Attributes and Employers' Perspectives

The primary pillars of economic and social development in any nations are graduates' education and employability (Osmani et al. 2019), and are characterized by a combination of personal attributes, skills, and achievements that increase graduates' chances to land a job

and succeed in their chosen career sector (Holmes, 2013; Hurrell et al. 2012; Yorke, 2006). A study by Eustice (2010) reported several employers' perspectives about graduates' personal attributes and skills.

Teamwork, efficient time management and a high level of productivity when working under pressure, the ability to work with different personalities and experience dealing with difficult people, strong leadership qualities and initiative, and tackling complex information and effectively communicating it to others are cited as core interpersonal attributes that employers look for in graduates (Eustice, 2010).

According to Lau et al. (2020), development trends indicate that employee's capacity over the long run is not just reliant on their technical expertise or educational background. Yet, employers are starting to place more value on graduates who have a broad range of skills that apply to all jobs (Lau et al. 2020). It is important for graduates to possess the skills aligned with the demand of the industry to be hired by employers (Saleh, 2019a).

Due to the shift of emphasis in the employment criteria, employers are more interested in candidates who possess the attributes and skills that make them ready for success in the rapidly evolving working environment (Lau et al. 2020). Therefore, the potential to succeed in the workplace after graduation has led to the adoption of work-readiness as a new hiring criterion (Lotto et al. 2006; Hart, 2008). The main goal of HEIs is to prepare graduates for the workforce through work-readiness, which is a compulsory component of performing well in the real-working world (Borg and Scott, 2020).

Work-readiness is the set of behaviors, skills, and values that assist in making an effortless employment's transition, along with discipline-specific technical knowledge (Caballero and Walker, 2010; Prikshat et al. 2018; Business Council of Australia, 2016). Due to the increasing demand from employers and industry on recent graduates to possess work-ready skills and attributes, it is important to consider additional possible attributes that might aid in the improvement of work-readiness (Lau et al. 2020).

Manyika et al. (2017) suggest that everyone should prioritize resilience as a skill to manage problems at work and the harsh nature of the industry. Machines cannot fully replace the range of jobs performed by humans, and people will still have a job as long as there are problems discovered in the workplace (Low et al. 2021). According to Collard et al. (1996), resilience is the ability to adapt to shifting work conditions, even when the conditions are upsetting or unpleasant. Yet, the study on the resilience construct is currently forming in its early stages (Borg et al. 2021).

Borg et al. (2021) stated that graduates must possess resilience to remain work-ready for the duration of their careers. Supported by Seibert et al. (2016), employers perceived resilient graduates as flexible and willing to change their career objectives and approaches in the event of unexpected shift in work conditions. Professionally resilient employees are perceived as proactive employees who are dedicated to continuous self-improvement and life-long learning to adapt to the evolving nature of the work environment (Borg et al. 2021).

Therefore, Based on The Discussion, A Hypothesis is Proposed As Follows:

H3: There is A Positively Significant Relationship Between Graduates' Attributes and Employers' Perspectives.

Conclusions

This study is a part of Master of Science Research, aims to provide a theoretical framework that can be used as an informative guide for present and future researchers conducting related studies. It was regarded as accurate at the time this paper was published and created for use the time of this study was being conducted. Therefore, any disagreements resulting from its use and application outside of this context are not the responsibility of the corresponding author. Appreciation is extended to all who have contributed to the support of this study.

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References

- Abbas, J., and Sagsan, M. (2020). Identification of key employability attributes and evaluation of university graduates' performance: Instrument development and validation. *Higher Education, Skills and Work-Based Learning*, 10(3), pp. 449-466.
- Abdullah, Q. A., Humaidi, N., and Shahrom, M. (2020). Industry revolution 4.0: The readiness of graduates of higher education institutions for fulfilling job demands. *Romanian Journal of Information Technology and Automatic Control*, 30(2), pp. 15-26.
- Ahmad, A. (2017). Industri 4.0 ubah cara kerja, hidup. *Berita Harian*, 10 June.
- Al Asefer, M., and Zainal Abidin, N.S. (2021). Soft skills and graduates' employability in the 21st century from employers' perspectives: A review of literature. *International Journal of Infrastructure Research and Management*, 9(2), pp. 44-59.
- Al Eryani, A. Y., and Al Munifi, A. A. (2019). A Roadmap to the Development of Key Competencies of Engineering and Technology Graduates. *International Journal of Engineering Pedagogy*, 9(5), pp. 75-88.
- Ali, S. H., and Jack, C. (2019). Kepuasan Majikan Terhadap Graduan Politeknik Malaysia: Kajian Di Politeknik Kota Kinabalu, Sabah, Malaysia.
- Alias, R., Mohd Hamzah, M. I., and Yahya, N. (2013). Generic skill requirements: Between employer's aspiration and the need of professional employees. *Jurnal Pengurusan*, 37, pp. 105-114.
- Anas, I., and Hamzah, S. R. (2017). Conceptual study on the enhancement of employability among undergraduates in work-based learning setting. *International Journal of Academic Research in Business and Social Sciences*, 7(4), pp. 65-79.
- Anjum, S. (2020). Impact of internship programs on professional and personal development of business students: A case study from Pakistan. *Future Business Journal*, 6(1).
- Aziz, K. A., Abd Aziz, N. A., Osman, A.A., and Abd Halim, S.N. (2023). Developing a skill-set model for Industrial Revolution 4.0 (IR4.0) Era: A conceptual paper. *International Journal of Academic Research in Business and Social Sciences*, 13(4), pp. 1685-1692.
- Baird, A. M., and Parayitam, S. (2019). Employers' ratings of importance of skills and competencies college graduates need to get hired: Evidence from the New England region of USA. *Education + Training*, 61(5), pp. 622-634.
- Barrie, C. (2006). Understanding what we mean by the generic attributes of graduates. *Higher Education*, 51(2), pp. 215-241.

- Belderbos, T. (2020). The employability of international branch campus graduates: Evidence from Malaysia. *Higher Education, Skills, and Work-Based Learning*, 10(1), pp. 141-154.
- Borg, J., and Scott-Young, C. M. (2020). Employers' perspectives on work readiness in construction: Are project management graduates hitting the ground running? *International Journal of Managing Projects in Business*, 13(6), pp. 1363-1379.
- Borg, J., Borg, N., Scott-Young, C. M., and Naderpajouh, N. (2021). The work readiness-career resilience linkage: Implications for project talent management. *International Journal of Managing Projects in Business*, 14(4), pp. 917-935.
- Borg, J., Scott-Young, C. M., and Turner, M. (2017). Student work readiness: Evaluating a new model. *European Academy of Management Conference (EURAM 2017)*, United Kingdom: Glasgow, Scotland.
- Business Council of Australia. (2016). Being work ready: A guide to what employers want. *Business Council of Australia*. [online] Available at: <https://www.beingworkready.com.au> [Accessed on 19 September 2023].
- Caballero, C., and Walker, A. (2010). Work readiness in graduate recruitment and selection: A review of current assessment methods. *Journal of Teaching and Learning for Graduate Employability*, 1(1), pp. 13-25.
- Casner-Lotto, J., Barrington, L., and Wright, M. (2006). *Are they really ready to work? Employers' perspectives on the basic knowledge and applied skills of new entrants to the 21st-century U.S. workforce*. Partnership for 21st Century Skills. Available at: <https://files.eric.ed.gov/fulltext/ED519465.pdf> [Accessed on 12 November 2023].
- Chan, S. W., Ahmad, M. F., Zaman, I., and Ko, W. S. (2018). Employers' perception on important employability skills in the manufacturing industry. *International Journal of Engineering & Technology*, 7(2.29), pp. 170-175.
- Chavan, M., and Carter, L. (2018). Management students – Expectations and perceptions on work readiness. *International Journal of Educational Management*, 32(5), pp. 825-850.
- Collard, B. A., Epperheimer, J. W., and Saign, D. (1996). Career resilience in a changing workplace.
- De Villiers, R. (2010). The incorporation of soft skills into accounting curricula: Preparing accounting graduates for their unpredictable futures. *Meditari Accountancy Research*, 18(2), pp. 1-22.
- Estacio, A. D. L., and Carlos-Manuel, J. A. (2021). Employer's level of satisfaction on the job performance of Bachelor of Science in Architecture graduates in Bulacan State University. *International Journal of Engineering Technology Research and Management*, 5(10), pp. 55-62.
- Eustice, K. A. (2010). What recruiters want from graduate candidates. *The Guardian*, July 12, 2010. [online] Available at: <http://www.theguardian.com/careers/what-recruiters-want-from-graduate-candidates> [Accessed on 17 August 2023].
- Gamage, K.A., Jeyachandran, K., Dehideniya, S. C., Lambert, C. G., and Rennie, A. E. (2023). Online and hybrid teaching effects on graduate attributes: Opportunity or cause for concern? *Education Sciences*, 13(2), pp. 221.
- Goodman, M. J., Sands, A. M., and Coley, R. J. (2015). America's skills challenge: Millennials and the future. *Educational Testing Service*.
- Goulart, V.G., Liboni, L. B., and Cezarino, L. O. (2022). Balancing skills in the digital transformation era: The future of jobs and the role of higher education. *Industry and Higher Education*, 36(2), pp. 118-127.

- Green, F., and Henseke, G. (2016). Should governments of OECD countries worry about graduate underemployment? *Oxford Review of Economic Policy*, 32(4), pp. 514-537.
- Griffin, M., and Annulis, H. (2013). Employability skills in practice: The case of manufacturing education in Mississippi. *International Journal of Training and Development*, 17(3), pp. 221-232.
- Gutiérrez Ortiz, F. J., Fitzpatrick, J. J., and Byrne, E. P. (2021). Development of contemporary engineering graduate attributes through open-ended problems and activities. *European Journal of Engineering Education*, 46(3), pp. 441-456.
- Hajazi, M. (2016). Strategi menghasilkan generasi cemerlang melalui Pendidikan: Peranan Universiti. *Proceeding, International Seminar of Education 2016*, Indonesia: Faculty of Tarbiyah and Teacher Training, Syarif Hidayatullah State Islamic University Jakarta, pp. 15-22.
- Hart, P. D. (2008). How should colleges assess and improve student learning? Employers' views on the accountability challenge, A survey of employers conducted on behalf of: The Association of American Colleges and Universities. In *Peter, D. Hart Research Associates, Inc., 2008*. United States of America: Washington, DC.
- Hasan, A. A., and Adnan, N. A. (2019). A new skills of TVET graduates toward future revolution.
- Heang, L.T., Ching, L. C., Mee, L. Y., and Huei, C. T. (2019). University education and employment challenges: An evaluation of fresh accounting graduates in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, 9(9), pp. 1061-1076.
- Heang, L. T., Mee, L. Y., Ramalingam, L., and Hoe, C. S. (2019). Job opportunities and employability skills required of business graduates in Malaysia: An investigation through online job advertisements. *Journal of Marketing Advances and Practices*, 1(1), pp. 37-49.
- Hidayat, M., and Yunus, U. (2019). The entrepreneurship learning in Industrial 4.0 Era (Case Study in Indonesian College). *Journal of Entrepreneurship Education*, 22(5), pp. 0-15.
- Hisa, A., and Mohiddin, F. (2020). The Key Employability Skills: A closer look at the employers' perceptions and the youth acquisitions' of the employability skills. *The 2nd Asia Conference on Business and Economic Studies*, Vietnam: Ho Chi Minh City, 13-14 September 2019.
- Holmes, L. (2013). Realist and relational perspectives on graduate identity and employability: A response to Hinchliffe and Jolly. *British Educational Research Journal*, 39(6), pp. 1044-1059.
- Hurrell, S. A., Scholarios, D., and Thompson, P. (2012). More than a Humpty Dumpty term: Strengthening the conceptualization of soft skills. *Economic and Industrial Democracy*, 34(1), pp. 161-182.
- Ilori, M. O., and Ajagunna, I. (2020). Re-imagining the future of education in the era of the fourth industrial revolution. *Worldwide Hospitality and Tourism Themes*, 12(1), pp. 3-12.
- Ishak, N. A., and Madzuki, I. D. (2022). An Analysis of BIM Employability Skills Among Polytechnic Architecture Graduates. *Journal on Technical and Vocational Education*, 7(1), pp. 51-66.
- Ismail, A.A., and Hassan, R. (2019). Technical Competencies in Digital Technology towards Industrial Revolution 4.0. *Journal of Technical Education and Training*, 11(3), pp. 55-62.
- Jagannathan, S., and Geronimo, D. (2013). Skills for competitiveness, jobs, and employability in developing Asia-Pacific. *Asian Development Bank Briefs*, 18, pp. 1-8.

- Jamaludin, K.A., Alias, N., and DeWitt, D. (2021). *Technical communication pedagogical strategies for an industry-based curriculum*, Kuala Lumpur: University of Malaya Press.
- Kadir, J. M. A., Naghavi, N., Subramanian, G., and Abdul Halim, N.A. (2020). Unemployment Among Graduates – Is There a Mismatch. *International Journal of Asian Social Science*, 10(10), pp. 583- 592.
- Kamaruzaman, F. M., Hamid, R., Mutalib, A.A., and Rasul, M.S. (2019). Conceptual framework for the development of 4IR skills for engineering graduates. *Global Journal of Engineering Education*, 21(1), pp. 54-61.
- Kenayathulla, H.B. (2021). Are Malaysian TVET graduates ready for the future? *Higher Education Quarterly*, 75(3), pp. 453-467.
- Kenayathulla, H.B., Ahmad, N.A., and Idris, A.R. (2019). Gaps between competence and importance of employability skills: Evidence from Malaysia. *Higher Education Evaluation and Development*, 13(2), pp. 97-112.
- Khoo, E., Zegwaard, K., and Adam, A. (2020). Employer and academic staff perceptions of science and engineering graduate competencies. *Australasian Journal of Engineering Education*, 25(1), pp. 103-118.
- Laguador, J. M., Chavez-Prinsipe, N.H., and De Castro, E.L. (2020). Employability Skill Development Needs of Engineering Students and Employers' Feedback on Their Internship Performance. *Universal Journal of Educational Research*, 8(7), pp. 3097-3108.
- Lau, P. L., Wilkins-Yel, K. G., and Wong, Y. J. (2020). Examining the indirect effects of self-concept on work readiness through resilience and career calling. *Journal of Career Development*, 47(5), pp. 551- 564.
- Low, S. P., Gao, S., and Ng, E. W. L. (2021). Future-ready project and facility management graduates in Singapore for Industry 4.0: Transforming mindsets and competencies. *Engineering and Architectural Management*, 28(1), pp. 270-290.
- Ma'dan, M., Ismail, M. T., and Daud, S. (2020). Strategies to enhance graduate employability: Insights from Malaysian public university policy-makers. *Malaysian Journal of Learning and Instruction*, 17(2), pp. 137-165.
- Madhavi, B. K., Mohan, V., and Nalla, D. (2018). Improving attainment of graduate attributes using Google Classroom. *Journal of Engineering Education Transformations*, 31(3), pp. 200-205.
- Manyika, J., Chui, M., Miremadi, M., Bughin, J., George, K., Willmott, P., and Dewhurst, M. (2017). A future that works: Automation, Employment, and Productivity. In *McKinsey Global Institute*, California: San Fransisco
- Masole, L., and Van Dyk, G. (2016). Factors influencing work readiness of graduates: An exploratory study. *Journal of Psychology in Africa*, 26(1), pp. 70-73.
- Mat Yusof, M., and Mohiddin, N.H. (2018). Student reflection on the effectiveness of Industrial Training courses: Study case of Polytechnic Muadzam Shah students. *Attarbawiy: Malaysian Online Journal of Education*, 2(2), pp. 46-54.
- McQuaid, R.W., and Lindsay, C. (2005). The concept of employability. *Urban Studies*, 42(2), pp. 197- 219.
- Minocha, S., Hristov, D., and Reynolds, M. (2017). From graduate employability to employment: Policy and practice in UK Higher Education. *International Journal of Training and Development*.

- Misni, F., Mahmood, N., and Jamil, R. (2020). The effect of curriculum design on the employability competency of Malaysian graduates. *Management Science Letters*, 10(4), pp. 909-914.
- Mitiku, G., Zeleke, B., and Adem, B. (2021). Examining the Role of TVET-Industry Partnership on the Acquisitions of Employability Skills of Polytechnic Graduates in Oromia. *American Journal of Humanities and Social Sciences Research (AJHSSR)*, 5(2), pp. 588-596.
- Mohd Saim, N., Mohd Noor, N. A., Alias, R., and Rosli, S. H. (2021). Evaluation of Programme Outcomes Under the Psychomotor and Affective Domain for Diploma Civil Engineering Students Through Industrial Training: A Statistical Study from Employers' Perspective in Malaysia. *International Journal of Engineering Pedagogy*, 11(5).
- Naron, V., and Seyhah, V. (2021). *Exploring insights into vocational skills development and industrial transformations in Cambodia*. Coalition for Disaster Resilient Infrastructure Working Paper Series, 131.
- Nor, M. M., Ilias, K., Abd Hamid, M., Siraj, S., Abdullah, M. H., Yaakob, M. N., and Norafandi, N.A.D. (2022). The use of Fuzzy Delphi Method in developing soft skills of industrial revolution 4.0 in PDPC at Malaysian Institute of Teacher Education. *Resmilitaris*, 12(2), pp. 7345-7358.
- Okolie, U. C., Nwosu, H. E., and Mlanga, S. (2019). Graduate employability: How the higher education institutions can meet the demand of the labour market. *Higher Education, Skills and Work-Based Learning*, 9(4), pp. 620-636.
- Oraison, H., Konjarski, L., and Howe, S. (2019). Does university prepare students for employment? Alignment between graduate attributes, accreditation requirements, and industry employability criteria. *Journal of Teaching and Learning for Graduate Employability*, 10(1), pp. 173-194.
- Organization for Economic Co-operation and Development. (2016). *Enhancing employability: Report prepared for the G20 Employment Working Group*.
- Osmani, M., Weerakkody, V., Hindi, N., and Eldabi, T. (2019). Graduates employability skills: A review of literature against market demand. *Journal of Education for Business*, 94(7), pp. 423-432.
- Othman, N. Z., and Hussin, S. F. (2020). Faktor-faktor yang mempengaruhi tahap kebolehpasaran graduan mengikut bidang di Politeknik Mersing.
- Pazil, A. H. M., and Che Razak, R. (2019). Perspectives of Asian employers on graduates' soft skills: A systematic review. *Universal Journal of Educational Research*, 7(1), pp. 2397-2405.
- Prikshat, V., Nankervis, A., Priyono, S., Salleh, N. M., Connell, J., and Burgess, J. (2018). Graduate work-readiness challenges in the Asia-Pacific region and the role of HRM. *Equality, Diversity, and Inclusion: An International Journal*, 37(2), pp. 121-137.
- Rast, S., Khabiri, N., and Senin, A. A. (2012). Evaluation framework for assessing university-industry collaborative research and technological initiative. *Procedia-Social and Behavioral Sciences*, 40, pp. 410-416.
- Rios, J. A., Ling, G., Pugh, R., Becker, D., and Bacall, A. (2020). Identifying critical 21st century skills for workplace success: A content analysis of job advertisements. *Educational Researcher*, 49(2), pp. 80-89.
- Rodzalan, S. A., Noor, N. N. M., Abdullah, N. H., and Saat, M. M. (2022). TVET skills gap analysis in electrical and electronic industry: Perspectives from academicians and industry players. *Journal of Technical Education and Training*, 14(1), pp. 158-177.

- Saari, A., Rasul, M. S., Yasin, R. N., Rauf, R. A. A., Ashari, Z. H. M., and Pranita, D. (2021). Skills sets for workforce in the 4th Industrial Revolution: Expectation from authorities and industrial players. *Journal of Technical Education and Training*, 13(2), pp. 1-9.
- Saleh, H. (2019a). Employer Satisfaction with Engineering Graduates Employability: A Study Among Manufacturing Employers in Malaysia. *International Journal of Scientific and Technology Research*, 8, pp. 813-817.
- Saleh, H. (2019b). Do Malaysian employer impress with the skills of Malaysian engineering graduates: A fundamental study. *International Journal of Scientific & Technologies Research*, 8(12), pp. 1280-1285.
- Saleh, H. (2020). The relationship between engineer skill ability towards manufacturing employers' satisfaction: A fundamental study. *Journal of Technical Education and Training*, 12(3), pp. 71- 76.
- Saleh, H., and Lamsali, H. (2019). Engineering skills: Employer satisfaction among Malaysian graduate engineer. *International Journal of Electrical Engineering and Applied Sciences*, 2(2), pp. 63–68.
- Saleh, H., and Lamsali, H. (2020). Fundamental general skills and engineering skills as an important skills for engineering graduates employability: A fundamental study. *International Journal of Scientific & Technologies Research*, 9(2), pp. 3370-3373.
- Schwab, K., and Zahidi, S. (2020). *The future of jobs report 2020*. World Economic Forum, October, 2020. [online] Available at: https://www3.weforum.org/docs/WEF_Future_of_Jobs_2020.pdf [Accessed on 11 October 2023].
- Seibert, S. E., Kraimer, M. L., and Heslin, P. A. (2016). Developing career resilience and adaptability. *Organizational Dynamics*, 45(3), pp. 245-257.
- Sohaimi, N. S., and Senasi, V. (2020). A Review on Curriculum Design and Malaysian Graduate Employability.
- Steurer, M., Vaart, V. D. L., and Rothmann, S. (2023). Managerial expectations on graduate employability attributes: An empirical study. *SA Journal of Industrial Psychology*, 49(1), pp. 1- 12.
- Tajuddin, S. N. A. A, Baharu, K. A., Al-Majdhoub, F. M., Baboo, S. B., and Samson, H. (2022). The expectations of employability skills in the Fourth Industrial Revolution of the communication and media industry in Malaysia. *Education + Training*.
- Tan, A. Y. T., Chew, E., and Kalavally, V. (2017). The expectations gap for engineering field in Malaysia in the 21st century. *On the Horizon*, 25(2), pp. 131-138.
- Tanius, E. (2018). Employability skills – A study on the perception of business students graduates and employers in Malaysia. *Asia Pacific Journal of Research in Business Management*, 9(1), pp. 86-99.
- Winterton, J., and Haworth, N. (2013). Employability, In *Arrowsmith, J., and Pulignano, V., 2013. The Transformation of Employment Relations in Europe: Institutions and Outcomes in the Age of Globalisation*, (Ed.), London: Routledge, pp. 166-183.
- Winterton, J., and Turner, J. J. (2019). Preparing graduates for work readiness: An overview and agenda. *Education + Training*, 61(5), pp. 536-551.
- World Economic Forum. (2023). *The Future of Jobs Report 2023*. [online] Available at: <https://www.weforum.org/reports/future-of-jobs-report-2023> [Accessed on 26 September 2023].
- Yorke, M. (2006). Employability in higher education: What it is-what it is not. *Learning and Employability*, 1.

- Yaakob, H., Radzi, N. F., and Ahmad Sudan, R. (2018). Employers' perception on Malaysian Polytechnic graduates employability skills. *First International Multidisciplinary Academic Conference 2018 (IMAC'18)*, Sabah: Politeknik Kota Kinabalu, October 2018, pp. 1–8.
- Yusof, N., and Jamaluddin, Z. (2015). Graduate employability and preparedness: A case study of University of Malaysia Perlis (UNIMAP). *Malaysian Journal of Society and Space*, 11(11), pp. 129-143.
- Zakaria, N. S., Yussof, K. Y. S. K. M., Ibrahim, D., and Tibok, R. P. (2020). Career after graduation: Future graduates' perceptions of job attributes in Small and Medium Enterprises (SMEs) and Multi-National Corporations (MNCs). *e-Bangi*, 17(6), pp. 252-264.