

Employers' Perspectives Skills Matrix (EPSM): A Proposed Relationship Skill Matrix

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Abstract

The objective of this study is to identify the skills falling short, HEIs' education system, and graduates' attributes from the perspectives of employers, highlighting the urgent need for highly skilled employees in Malaysia to support industrial growth, and emphasizing the importance of employability skills as an important element for employment in the industrial sector. From this study, proposed relationship matrix has been developed, which has been designed specifically to serve as comprehensive guideline for literature reviews by the time of this study being conducted. The Employers' Perspectives Skills Matrix (EPSM) was developed based on the employers' perspectives on skills falling short, HEIs' education system, and graduates' attributes. It is anticipated that this relationship matrix will serve as a useful tool for current and future researchers to assist them in carrying out similar studies.

Keywords: Employers' Perspectives, Skills Falling Short, Heis' Education System, Graduates' Attributes, Relationship Skills Matrix.

Introduction

Malaysia needs highly-skilled employees to support growth of the industry (Kenayathulla et al. 2019), and employability skills are among the important skills that should be acquired by employees in the industrial sector today (Chan et al. 2018). Employability skills are considered as necessary skills to find an employment in the industry apart from the knowledge in the field of study (Nasreen et al. 2022), and have been chosen as most favourable aspect needed by employers as a performance indicator for employers in hiring new employees (Rohanai et al. 2020).

Problems arise when graduates lack the required engineering skills, which are either thought important or not really necessary for employment (Laguador et al. 2020). Low-skilled employees will no longer be a competitive advantage for developing countries (Adlakha, 2023), and graduates with greater talents will be appreciated more in the current industry

even though they lack of higher qualifications or an excellent academic record (Hidayat and Yunus, 2019).

Employers' decision to hire graduates are based on the quality and abilities that the graduates possess in addition to the tacit knowledge and skills (Mansingh and Reddy, 2021). Engineering graduates need to impress the employers to hire or retain them in the real-working world by showing their unique skills (Saleh, 2019b). Eryani and Munifi (2019) stated that employers today have been increasingly demanding that graduates should not only have the knowledge and skills, but they should be able to use them well as proof of competence. According to Okolie et al (2019), employability is not just about getting a job, but it is more to develop attributes, techniques, or experience just to enable a student to secure a job or to progress within a current career, and also to learn, in which the emphasis is less on "employ" and more on "ability". Malaysian HEIs are responsible for supplying highly skilled graduates to meet the needs of industry to the maximum (Othman and Hussin, 2020).

Due to the continuous changes in the workplace, basic and traditional skills have lost relevance and hardly help graduates to find suitable jobs or employers to improve their business (Saleh and Lamsali, 2019). There is a perceived gap on how well the current supply side graduates' skills in HEIs, with the demand side on the need of employers (Borg and Scott, 2020), and employers across the globe are facing difficulty in finding graduates with required employability skills and the situation is similar across the countries (Awadhiya, 2020). Work-ready behaviors, work-ready values, and work-ready skills are a few examples of the qualities that employers are looking for in employees (Borg and Scott, 2020). However, the expectation of employers to have work-ready graduates from HEIs' is not being met and employers are struggling to find suitable graduates with contemporary employability skills (Blom and Saeki, 2011; Shah and Nair, 2011; Wye et al. 2009; Awadhiya, 2022).

Due to these pertinent issues, Table 1 of this study suggests the skill matrix derived from employers' perspectives regarding skills falling short, HEIs' education system, and graduates' attributes. This table has gathered a focal point view from author and academic journals, regarding employers' perspectives and has been gathered together to come out with one of suggested table of related skills, namely Employers' Perspectives Skills Matrix (EPSM) table.

Employers' Perspectives Skills Matrix

The Employers' Perspectives Skills Matrix (EPSM) table is organized into several columns, representing the entry number for each study, the authors, the title of each research article, and a matrix that outlines the primary focus areas for each study. The "Matrix" is broken down into four categories: "skills falling short", "HEIs' education system", "graduates' attributes", and "employers' perspectives". Each of category is critical for understanding the gaps between industry needs and educational outcomes.

The EPSM table not only categorizes existing studies but it also serves as a comprehensive method for detecting where these gaps exist in the literature. The "X" symbols in each cell indicate which aspects are covered by each study, providing future researcher with a clear visual guide to areas that have been thoroughly investigated and those

that require more research. For example, study by Abbas and Sagsan (2020) addresses the gaps in both skills falling short and graduates' attributes, whereas Abdullah et al., (2020) focuses solely on skills falling short.

EPSM table may be used as a systematic approach to compare and analyse different studies, by helping future researchers and educators understand where the focus should be to better align education with industry needs and improve employability among graduates, particularly in Malaysia. By developing the EPSM, this study aims to serve as a useful tool for researchers, educators, and policymakers by highlighting the important areas of concern and providing approaches to align educational achievements with current industrial demands. The insights from this matrix are hoped to outline the important employability skills for engineers, shape the educational systems in Higher Education Institutions, and enhance the graduates' attributes to better meet the employers' perspectives within Malaysia's industrial sector.

Table 1

Table of Employers' Perspectives Skills Matrix (EPSM)

No.	Author	Title	Matrix			
			Skills falling short	HEIs' education	Graduates' attributes	Employers' perspectives
1	Abbas, J., and Sagsan, M. (2020).	Identification of key employability attributes and evaluation of university graduates' performance: Instrument development and validation. <i>Higher Education, Skills, and Work-Based Learning</i> , 10(3), pp. 449-466.		X		X
2	Abd Majid, M.Z., Hussin, M., Norman, M.H., and Kasavan, S. (2020).	The employability skills among students of Public Higher Education Institution in Malaysia. <i>Geografia</i> , 16(1).		X		X
3	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. <i>Romanian Journal of Information Technology and Automatic Control</i> , 30(2), pp. 15-26.	X			
4	Alkatheri, S. (2019).	A Systematic Literature Review and Analysis of Unemployment Problem and Potential Solutions. <i>International Journal of Computer Applications</i> , 182(44), pp. 27.	X	X		
5	Awadhiya, A.K. (2022).	Study on employability skill gaps among IT graduates: Exploring employers' views. <i>Biotechnology</i> , 5, pp. 6-10.	X	X	X	
6	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. <i>International Journal of Academic Research in Business and Social Sciences</i> , 13(4), pp. 1685-1692.	X	X		
7	Bassah, N.A.S.H., and Noor, M.A.M. (2023).	Employability skills needed for TVET graduates in Malaysia: Perspective of Industry Expert. <i>Online Journal for TVET Practitioners</i> , 8(1), pp. 52-59.			X	
8	Borg, J., Borg, N., Scott-Young, C.M., and Naderpajouh, N. (2021).	The work readiness-career resilience linkage: Implications for project talent management. <i>International Journal of Managing Projects in Business</i> , 14(4), pp. 917-935.			X	

Table 1
(Continued)

No.	Author	Title	Matrix			
			Skills falling short	HEIs' education	Graduates' attributes	Employers' perspectives
9	Borg, J., and Scott-Young, C.M. (2020).	Employers' perspectives on work readiness in construction: Are project management graduates hitting the ground running? <i>International Journal of Managing Projects in Business</i> , 13(6), pp. 1363-1379.	X		X	
10	Cheng, M., Adekola, O., Albia, J., and Cai, S. (2022).	Employability in higher education: A review of key stakeholders' perspectives. <i>Higher Education Evaluation and Development</i> , 16(1), pp. 16-31.		X		X
11	Fadhil, S.S., Ismail, R., and Alnoor, A. (2021).	The influence of soft skills on employability: A case study on technology industry sector in Malaysia. <i>Interdisciplinary Journal of Information, Knowledge, and Management</i> , 16, pp. 255.	X	X		X
12	Fajaryati, N., Budiyo, Akhyar, M., and Wiranto. (2020).	The employability skills needed to face the demands of work in the future: Systematic literature reviews. <i>Open Engineering</i> , 10(1), pp. 595-603.	X	X		X
13	Gauthier, T. (2020).	The value of microcredentials: The employer's perspective. <i>The Journal of Competency-Based Education</i> , 5(2), pp. 01209.	X			X
14	Halili, S.H., Fathima, N., and Razak, R. (2022).	Exploring relevant employability skills 4.0 for university students' readiness in the work-based learning program. <i>Journal of Technical Education and Training</i> , 14(3), pp. 68-78.	X	X		
15	Ismail, A.A., and Hassan, R. (2019).	Technical Competencies in Digital Technology towards Industrial Revolution 4.0. <i>Journal of Technical Education and Training</i> , 11(3), pp. 55-62.	X			X

Table 1
(Continued)

No.	Author	Title	Matrix			
			Skills falling short	HEIs' education	Graduates' attributes	Employers' perspectives
16	Kenayathulla, H.B., Ahmad, N.A., and Idris, A.R. (2019).	Gaps between competence and importance of Employability Skills: Evidence from Malaysia. <i>Higher Education Evaluation and Development</i> , 13(2), pp. 97-112.	X		X	X
17	Khoo, E., Zegwaard, K., and Adam, A. (2020).	Employer and academic staff perceptions of science and engineering graduate competencies. <i>Australasian Journal of Engineering Education</i> , 25(1), pp. 103-118.	X		X	X
18	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. <i>Journal of Career Development</i> , 47(5), pp. 551-564.	X			X
19	Ma'dan, M., Ismail, M.T., and Daud, S. (2020).	Strategies to enhance graduate employability: Insights from Malaysian public university policy-makers. <i>Malaysian Journal of Learning and Instruction</i> , 17(2), pp. 137-165.		X		X
20	Malik, P. (2023).	Measuring the impact of learning organization on proactive work behavior: Mediating role of employee resilience. <i>Asia-Pacific Journal of Business Administration</i> , 15(3), pp. 325-344.			X	
21	McGunagle, D., and Zizka, L. (2020).	Employability skills for 21 st -century STEM students: The employers' perspective. <i>Higher Education, Skills, and Work-Based Learning</i> , 10(3), pp. 591-606.	X			
22	McQuillan, N., Wightman, C., et al. (2021).	Developing resilient graduates to be future workplace leaders. <i>Higher Education, Skills, and Work-Based Learning</i> , 11(1), pp. 214-227.			X	X
23	Misni, F., Mahmood, N., and Jamil, R. (2020).	The effect of curriculum design on the employability competency of Malaysian graduates. <i>Management Science Letters</i> , 10(4), pp. 909-914.	X	X		X

Table 1
(Continued)

No.	Author	Title	Matrix			
			Skills falling short	HEIs' education	Graduates' attributes	Employers' perspectives
24	Oraison, H., Konjarski, L., and Howe, S. (2019).	Does university prepare students for employment? Alignment between graduates attributes, accreditation requirements, and industry employability criteria. <i>Journal of Teaching and Learning for Graduate Employability</i> , 10(1), pp. 173-194.	X	X	X	
25	Osmani, M., Weerakkody, V., Hindi, N., and Eldabi, T. (2019).	Graduates employability skills: A review of literature against market demand. <i>Journal of Education for Business</i> , 94(7), pp. 423-432.		X	X	X
26	Prikshat, V., Nankervis, A., Burgess, J., and Dhakal, S. (2018).	Conceptualising graduate work-readiness: Theories, concepts and implications for practice and research, In Dhakal, S., Prikshat, V., Nankervis, A., and Burgess, J. (2019). <i>The Transition from Graduation to Work: Challenges and Strategies in the Twenty-First Century</i> . Singapore: Asia Pacific and beyond, Springer, pp. 15-31.	X		X	
27	Pusiran, A.K., Janin, Y., Ismail, S., and Dalinting, L.J. (2020).	Hospitality internship program insight. <i>Worldwide Hospitality and Tourism Themes</i> , 12(2), pp. 155-164.	X	X		X
28	Ramkund-Mansingh, A., and Reddy, N. (2021).	South African specific complexities in aligning graduate attributes to employability. <i>Journal of Teaching and Learning for Graduate Employability</i> , 12(2), pp. 206-221.			X	
29	Rohanai, R., Daud, K.A.M., Omar, N.H., Ismail, M.E., and Sulaiman, A. (2020).	Concept of Correlation between Active Learning and Employability Skills in TVET. <i>Online Journal for TVET Practitioners</i> , 5(1), pp. 15-22.	X		X	X
30	Steurer, M., Van Der Vaart, L., and Rothmann, S. (2023).	Managerial expectations on graduate employability attributes: An empirical study. <i>SA Journal of Industrial Psychology</i> , 49(1), pp. 1-12.			X	

Table 1
(Continued)

No.	Author	Title	Matrix			
			Skills falling short	HEIs' education	Graduates' attributes	Employers' perspectives
31	Winterton, J., and Turner, J.J. (2019).	Preparing graduates for work readiness: An overview and agenda. <i>Education and Training</i> , 61(5), pp. 536-551.			X	

Furthermore, from the relationship among variables in Table 1, this study tries to examine and elaborate the related variables as per below:

Employers' Perspectives

Previous studies in Malaysia highlighted the importance of employability skills required from Malaysian engineering graduates based on the employers' perspectives (Saim et al. 2021). From the perspectives of employers, graduates' employability skills will help employers to overcome challenges faced by the industry and effectively helps to resolve all or any issues that may arise (Rohanai et al. 2020).

In the challenges of the real-working world today, employers are looking for graduates who can carry out various tasks and responsibilities in addition to those with technical skills as a way of hiring them (Juhdi et al. 2010). The employability skills possessed by the graduates must be aligned with the skill demand by the nature of the industry (Saleh, 2020). Employers have a preference to employ graduates with quick learning skills, flexibility, and adaptability to handle and succeed in changing markets (Suarda et al. 2017), and increasingly demanding that graduates have real-world work experience that can be applied to make a difference in their company (Diver, 2019).

According to Ismail and Hassan (2019), employers simultaneously demand that each graduate be equipped with the additional skills needed for IR4.0 as well as the global 21st century skills, such as the abilities to communicate, collaborate, creative, and critical-thinking. It is important for graduates to possess the skills in accordance with the demand and need of the industry so that they managed to be employed by employers (Saleh, 2019b). Employers need those who are able to adapt to a dynamic work environment (Misra and Khurana, 2017), and employees who have three key types of skills such as technical, cognitive, and non-cognitive skills (Fajaryati et al. 2020). However, there is a significant difference between the expected level of skills availability and the actual competency level among graduates in Malaysia (Kenayathulla et al. 2019). Therefore, graduates need to find space and must discover the opportunities for self-advancement in order to compete in the real-working world (Hamid and Razak, 2020).

Skills Falling Short

Recently, the employment market shifted in terms of employers' perspectives on the skills of new employees (Gauthier, 2020). Employers have started to concentrate on the skills they require from those new employees as a result of the large number of young graduates entering the industry each year and the subsequent increase in choice (McGunagle and Zizka, 2020). Most industries are experiencing IR4.0, and graduates are required to learn new skills to be ready for the future (Aziz et al. 2023). 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 (Saleh and Lamsali, 2020).

According to Kenayathulla et al (2019), Malaysia needs highly-skilled employees to contribute to industry's growth. However, Malaysia Education Plan 2015-2025 (Higher Education) stated that there is a mismatch between supply and demand for graduates, with employers claiming that graduates lack the skills, and HEIs lacking clear signals of industry requirement (Aziz et al. 2023). The lack of skills has been recognized as main factors of unemployment (Amiruddin and Zainudin, 2015), and unemployment may occur if skills possessed by graduates do not align with employers' demand (Aziz et al. 2023).

According to Abdullah et al (2020), the unemployment issue discussed is mostly related to the lack of IR4.0 skills among graduates from HEIs. Study has found that soft skills, communication, creativity, and problem-solving skills, commonly referred to as 21st century skills (Chaka, 2020), are among the skills classified as IR4.0 skills and essential for employability in the era of IR4.0 (Asefer and Abidin, 2021). Employers wants the graduates to acquire 21st century skills in order for them to be able to communicate their ideas, understand corporate and personal ethics, develop social skills, and respect a culturally diverse team of peers (McGunagle and Zizka, 2020). Therefore, graduates in HEIs' must be well equipped and ready for IR4.0, and aware of new industrial technologies to compete for employment in the industry (Halili et al. 2022).

HEIs' Education System

The government has allocated huge expenses every year in developing the education system in Malaysia (Mokhtar and Lakman, 2021). Over the years, Malaysian HEIs have consistently produced many graduates (Ibrahim and Nashir, 2022), and must be able to meet the needs and wants of employers in the industry (Ali and Jack, 2019). Malaysia Education Blueprint 2015-2025 (Higher Education) emphasizes that Malaysia needs graduates who are able to successfully navigate complex challenges (Kenayathulla et al. 2019).

Ministry of Higher Education (MOHE) has placed a big priority on HEIs to produce competitive engineering graduates in the future marketplace (Saim et al. 2021). According to Mokhtar and Lakman (2021), the increase number of students entering HEIs has produced many competent graduates from both public and private HEIs, is seen as a positive indicator for a country as it can provide many educational opportunities the people. However, rapid growth of IR4.0 has prompted Malaysian HEIs to transform the current education system into the future education system 4.0 (Bujang et al. 2020). The current industrialization situation of Malaysia requires more people with high education and high competency for the

technologically changing workplace (Adnan et al. 2017). MOHE consistently proposes HEIs to be industry-friendly (Ahmad et al. 2018), and provide graduates with knowledge and skills that are relevant to the real-working world (Fajaryati et al. 2020). Therefore, HEIs can develop graduates' employability by transforming the current education system on curriculum and teaching methods to be industry-focused with the help of consultation and perspectives from employers (Abbas and Sagsan, 2020), in order for graduates to be productive and employable in the eyes of industry (Fajaryati et al. 2020).

Graduates' Attributes

Employability is not just about getting a job, but it is more to develop attributes, techniques, or experience that enable student secure a job and progress within their current career (Okolie et al. 2019). Science and engineering graduates must acquire strong professional or non-technical skills and competencies, other than their technical capabilities (Khoo et al. 2020). Graduate attributes are important for the holistic development of graduates (Halibas et al. 2020; Mansingh and Reddy, 2021).

These attributes are commonly defined as the qualities, talents, and understandings that HEIs expect graduates to acquire during their studies (Halibas et al. 2020). According to Winterton and Turner (2019), employers are calling on HEIs to ensure the work-readiness of graduates and develop graduates' capacity to take personal responsibility for their own learning and development process. Employers also wants HEIs to produce graduates who are prepared for the real-working world (Burke et al. 2016; Rowe and Zegwaard, 2017), and work-readiness is closely related to employability skills that employers demand (Bassah and Noor, 2023). Work-readiness means the readiness of an individual to venture into a chosen career field (Othman and Hasan, 2019), and is recognized as an essential component of performing well in the real-working world (Borg et al. 2021; Prikshat et al. 2018). Education and skills development of graduates are recognized worldwide as important in shaping an economy, which also have the potential to change how people behave at work (McQuillan et al. 2021).

According to Confederation of British Industry (2019), one of the top three talents that employers are looking for is resilience. Employers are looking to hire upcoming future leaders who can successfully contribute favourably to their professional communities (McQuillan et al. 2021). Therefore, resilience is essential for graduates to remain work-ready throughout their entire career life spans (Borg et al. 2021).

Conclusion

This study is a part of Master of Science Research, aims to provide a relationship skills matrix that can serve as a valuable tool for current and future researchers conducting similar studies. It is assumed correct at the time of this paper being published. This matrix was specifically designed and best to be used by the time of this study was being conducted. Therefore, the corresponding author would not be responsible for any disagreements arising from its use and application outside of this context. Appreciation is extended to all who have supported this study.

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