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EMPLOYABILITY SKILLS DEVELOPMENT APPROACHES: AN APPLICATION OF THE ANALYTIC NETWORK PROCESS

Mohamad Shukri Abdul Hamid[1], Rafikul Islam[2]* and Noor Hazilah Abd Manaf[3]

[1]School of Quantitative Sciences, Universiti Utara Malaysia
06010 Sintok, Kedah, Malaysia
[2,3] Department of Business Administration
Kulliyyah of Economics and Management Sciences
International Islamic University Malaysia
Jalan Gombak, 53100 Kuala Lumpur, Malaysia

*Corresponding author: rislam@iium.edu.my

ABSTRACT

Institutions of higher learning need to re-evaluate their teaching-learning approaches to develop the necessary employability skills for their graduates. The main objectives of this study are to identify the important employability skills and the corresponding employability skills development approaches in a Malaysian setting. The results of the application of an analytic network process (ANP) show that the 'ability to speak fluently in English' is the most important skill, followed by the 'ability to write effectively in English' and the 'ability to think critically'. On the other hand, the most effective employability skills development approach is found to be 'work-integrated learning'. The other effective approaches are identified as 'stand-alone subject model', 'academic support programme', 'embedded subject model', 'non-academic support programme' and 'campus life activities'.

Keywords: Employability skills, analytic network process, Malaysia

INTRODUCTION

Every year, the number of graduates entering the labour market grows. However, debate has surfaced over whether these graduates possess the employability skills required by their prospective employers. Some critics contend that higher education institutions are falling behind the times in meeting the relevant job requirements of organisations (Parry, Ruthford, & Merrier, 1996). According to Salina, Nurazariah, Noraina Mazuin and Jegatheesan (2011), employers are complaining that graduates are unable to fulfil their needs in the uncertain environment of the current market. These complaints are supported by Harvey,

Moon and Geall (1997), who found a skills gap between employer requirements and the graduates from the educational system. Sahney, Banwet and Karunes, et al. (2004) revealed that higher education institutions (HEIs) often fall behind in meeting employer requirements because changes in industry move faster than the evolution of programmes offered by educational institutions. Higher education simply does not always keep pace. Industry is becoming more flexible, technology is changing, and there are demands for new skills and expertise. Additionally, Willis and Taylor (1999) stated that universities have been criticised as providing inadequate education. Shukran, Hariyati Shariman, Saodah and Noor Azlan (2006) support this finding, revealing that recent graduates are not equipped with up-to-date knowledge and technology. As a result, this deficiency has affected graduates' competencies, their ability to join the workforce, and also contributes to unemployment among graduates. According to statistics from the Ministry of Higher Education in Malaysia, the number of jobless graduates rose from 65,500 in 2010 to 71,600 in the first quarter of 2011.

The above facts should be taken into consideration by the higher education institutions. Efforts should be in place to produce employable graduates who are equipped with the relevant skills and knowledge to meet the demands of the employment market in not only Malaysia but also the global market. This study first aims to rank the importance of employability skills and then to identify the most effective employability skills development approaches for graduate institutions.

EMPLOYABILITY SKILLS

The terminology used to refer to employability skills is plentiful. The meaning of employability depends on the individual and the context (Clarke, 2008). According to Yorke (2000), the term employability has been described in many ways, such as generic, transferable, intellectual, cognitive and interpersonal skills. Broadly defined, employability refers to an individual's capability to obtain a job, retain suitable employment, and manoeuvre within the labour market to realise his or her potential through sustainable employment (Hillage & Pollard, 1998; McLeish, 2002; Brown, Hesketh, & Williams, 2003). Clarke (2008, p. 262) defines employability as "the minimum generic skills or competencies needed by school leavers and graduates to enter the labour market." At an individual level, Clarke (2008, p. 262) defines employability as "the skills, abilities, attitudes, and behaviours, as a current state, a process of a future outcome, an individual characteristic made up of the sum of an individual's job related skills, or as a reflection of the individual's position within the labour market." Nilsson (2010) remarks, that for graduates, employability is associated with the ability to find a job and to be employed. Moreau and Leathwood (2006) refer to employability as

skills such as understanding concepts and personal attributes that make graduates preferred and successful in their careers, along with the ability to benefit the workforce, community and economy in which they serve. Employability has different meanings depending on the context of the jobs researchers refer to. However, there are several general similarities and common criteria. Based on this literature review, the definition of employability can be summarised as "an individual's ability to find a job that is appropriate with his/her qualifications, remain relevant in the labour market, and the ability to make a transition between his/her job within the same organization or his/her ability to find a new job within the independent labour market."

The literature suggests two types of employability skills: subject-specific skills and non-subject specific skills (Yorke, 2000). A subject-specific skill refers to specific skills or knowledge required to perform a specific job (i.e., doctor, lawyer, accountant, etc.), while non-subject specific skills are non-technical skills and knowledge. Cox and King (2006) contend that the concept of employability has two aspects, namely, subject skills and transferable skills. Transferable skills refer to knowledge, skills, abilities and personal characteristics that can be transferred or used within any profession and at any stage of a career, while subject skills are relevant only to a single profession. Dench (1997) extends the concept of employability skills to include personal attributes, namely, honesty, reliability and integrity. According to Clarke (2008), organisations that are able to hire employees with highly developed soft skills are able to compete more successfully than employers who focus on the retention of employees with only subject-specific skills. Hii (2007) states that a study of Fortune 500 chief executive officers (CEO) found that 75% of long-term business success depends on soft skills, and only 25% depends on technical skills. Therefore, the development and assessment of the soft skills of graduates is essential for ensuring a successful transition from the university setting to the employment market. According to Nilson (2010, p. 548), the key components of employability include "formal competence, social contacts and networks, literacy, and oral and written communication skills."

GRADUATES' EMPLOYABILITY SKILLS AND APPROACHES FOR DEVELOPING THOSE SKILLS

For the purposes of this study, a list of graduate employability skills was developed by reviewing studies conducted by previous researchers. Based on an extensive literature review, the dimensions and attributes of graduates' employability skills are shown in Table 1. This method generated a list of 49 graduate employability skill attributes. These attributes focus on computational

skills, management skills, critical thinking skills, enterprise and entrepreneurial skills, interpersonal skills, communication skills and analytical skills.

Table 1
Dimensions and attributes of the employability skills used in the study

Dimensions	Attributes	Selected References
1. Interpersonal skills		$\alpha = 0.917$
The skill to interact with others	1. Ability to work and contribute to the group/team 2. Ability to understand other peoples' problems, emotions, concerns and feeling related to work 3. Ability to negotiate with subordinates or Colleagues 4. Ability to encourage and motivate others 5. Ability to network 6. Ability to work in a diverse environment 7. Ability to deal with superiors 8. Ability to manage others	Wickramasinghe & Perera (2010); Shukran et al. (2006); Rasul , Ismail, Ismail, Rajuddin, & Rauf (2010); Rahmah, Ishak, & Wei Sieng (2011); Nabi (2003); Mustapha & Greenan (2002); Willis & Taylor (1999).
2. Computing skills		$\alpha = 0.876$
The skills of knowledge and understanding of information and communication technology (ICT) and the ability to use computer programmes and related applications that are associated with computers	1. Level of keyboard competency 2. Ability to use word processing software 3. Ability to use statistical software package 4. Ability to deliver effective presentations using computer software 5. Ability to use database programmes for/data management 6. Ability to use spread sheets for data analysis 7. Ability to search and manage the relevant information from various sources	Shukran et al. (2006); Kementerian Pengajian Tinggi Malaysia [KPTM] (2006); Rasul et al. (2010); Rahmah et al. (2011); Nabi (2003); Willis & Taylor (1999).

(continue on next page)

Table 1 *(continued)*

Dimensions	Attributes	Selected References
3. Enterprise and entrepreneurial skills		α = 0.837
The skills to explore an opportunity and create risk awareness, and to be creative and innovative in business/work	1. Ability to explore and identify business Opportunities 2. Ability to develop a business plan 3. Ability to develop business opportunities 4. Ability to capitalise on business opportunities 5. Ability to be self-employed	KPTM (2006); Nguyen, Yoshinari, & Shigeji (2005); Mustapha & Greenan (2002).
4. Communication skills		α = 0.859
The skills that people use to communicate effectively with others	1. Ability to listen attentively and give appropriate feedback 2. Ability to negotiate and reach consensus 3. Ability to write effectively in Bahasa Malaysia 4. Ability to write effectively in English 5. Ability to write effectively in other languages 6. Ability to speak fluently in bahasa Malaysia 7. Ability to speak fluently in English 8. Ability to speak fluently in other languages 9. Ability to communicate formally and informally with people from different backgrounds 10. Ability to effectively deliver presentations of a case/project 11. Ability to express his or her own ideas clearly, effectively and with confidence	KPTM (2006); Wickramasinghe & Perera (2010); Shukran et al. (2006); Nguyen et al. (2005); Rasul et al. (2010); Rahmah et al. (2011); Nabi (2003); Mustapha & Greenan (2002); Willis & Taylor (1999).

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Table 1 *(continued)*

Dimensions	Attributes	Selected References
5. Thinking Skills		$\alpha = 0.838$
The ability to think critically, creatively, innovatively and analytically, and the ability to apply the knowledge in different contexts	1. Ability to recognise and analyse problems 2. Ability to explain, analyse and evaluate data and information 3. Ability to generate creative ideas 4. Ability to think critically 5. Ability to learn and apply new knowledge skills 6. Ability to understand statistical and numerical data 7. Ability to think outside of the box 8. Ability to make logical conclusions by analysing relevant data	KPTM (2006); Wickramasinghe & Perera (2010); Shukran et al. (2006); Nguyen et al. (2005); Rasul et al. (2010); Rahmah et al. (2011); Nabi (2003); Mustapha & Greenan (2002); Willis & Taylor (1999).
6. Management Skills		$\alpha = 0.892$
The skills to effectively lead, supervise and manage projects/people	1. Ability to lead a project 2. Ability to supervise group members 3. Ability to optimise the use of resources 4. Good time management 5. Ability to plan, coordinate and organise a project 6. Ability to monitor group members to achieve targets 7. Ability to plan and implement an action plan 8. Ability to work under pressure 9. Ability to work independently 10. Ability to deliver expected results	KPTM (2006); Shukran et al. (2006); Wickramasinghe & Perera (2010); Rasul et al. (2010); Rahmah et al. (2011); Nabi (2003); Willis & Taylor (1999).

To determine the importance and satisfaction of the graduates' employability skills as perceived by the employers, a set of questionnaires was sent to companies (obtained from the 2009 directory of Federation of Malaysian Manufacturers), government agencies and semi-government agencies. Of the 942 questionnaires mailed, 233 completed questionnaires were received, for approximately a 25% response rate (see Table 2 for the demographic information of the respondents).

Table 2
Respondents' demographic information

Variables	Frequency	Per cent (%)
Gender		
• Male	111	48.1
• Female	120	51.9
Age		
• 30 years or below	46	19.9
• 31–40 years old	52	22.5
• 41–50 years old	89	38.5
• 51 years old and above	44	19.1
Ethnicity		
• Malay	149	64.5
• Chinese	53	22.9
• Indian	22	9.5
• Others	7	3.0
Qualification		
• Diploma	43	18.8
• Bachelor	124	54.4
• Master	47	20.6
• PhD	8	3.5
• Others	6	2.6
Working experience		
• 5 years or less	86	37.6
• 6 –10 years	57	24.9
• 11–15 years	28	12.2
• 16 years and above	58	25.3
Position at the company		
• Top Management	128	54.7
• Middle Management	101	43.2
• Lower Management	5	2.1

The mean importance and satisfaction of the graduates' employability skills as perceived by the employers were plotted in the importance-performance analysis (IPA) map, as shown in Figure 1. Based on the IPA map, 13 graduates' employability skills fell in the 'area to improve' quadrant, which means that these attributes are perceived as important by the employers, but satisfaction levels are low; consequently, HEIs need to focus more attention on these skills. These 13 attributes are:

1. Ability to express his or her own ideas clearly, effectively and with confidence
2. Ability to generate creative ideas
3. Ability to think critically
4. Ability to make logical conclusions by analysing relevant data
5. Ability to explain, analyse and evaluate data/information
6. Ability to search and manage the relevant information from various sources
7. Ability to manage others
8. Ability to encourage and motivate others
9. Ability to effectively deliver presentations of a project
10. Ability to recognise and analyse problems
11. Ability to speak fluently in English
12. Ability to think outside of the box
13. Ability to write effectively in English

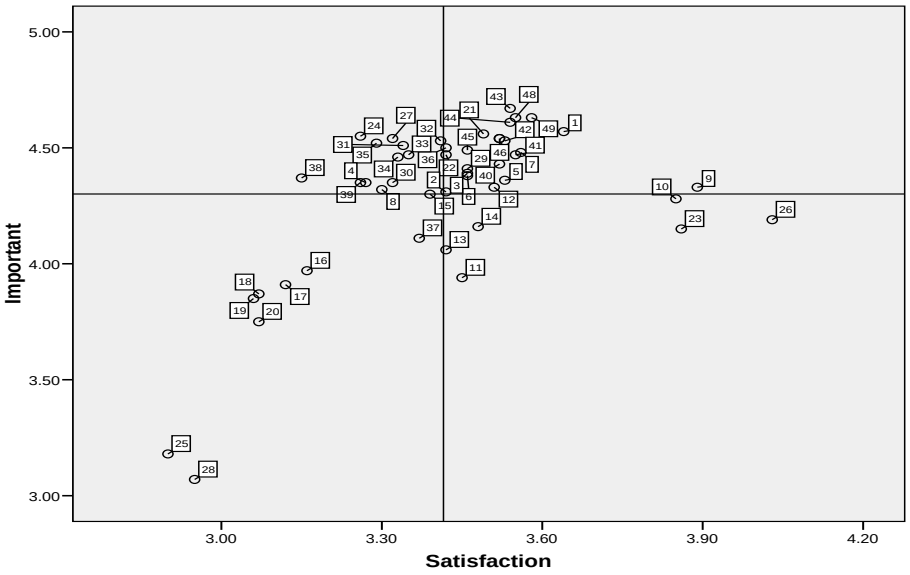

Figure 1. Map of employability skill attributes

Then, employability skills' development approaches were identified from the soft skills development modules for HEIs (Kementerian Pengajian Tinggi Malaysia [KPTM], 2006). The employability skills development approaches are the methods that the lecturers and students can apply in their teaching-learning process. Table 3 shows the employability skills development approaches used for analysis during the ANP approach.

Table 3
Employability skills development approaches

	Attributes	Definitions
1.	Academic support programmes	Involve programmes and activities that are created, developed and used to support soft skills either directly or indirectly as associated with academic matters (e.g., learning skills programme, English language support programme, etc.).
2.	Campus life activities	Students' life in university residences and campus surrounding (e.g., programmes and activities on soft skills development).
3.	Embedded subject model	Embedding the soft skills in the teaching and learning activities across the curriculum (e.g., integrated into core subject such as mathematics, statistics, economics, etc.).
4.	Non-academic support programmes	Involve programmes and activities that are created, developed and used to support soft skills either directly or indirectly which are not related to academic matters but more related to personality and professional development of the students (e.g., PALAPES, SUKSIS, etc.).
5.	Stand-alone subject model	Develop soft skills through specific courses that are carefully planned for this purpose (e.g., English language, entrepreneurship, etc.)
6.	Work-integrated learning	Form of learning whereby periods of study are alternated with periods of related work in business, industry or government agency. In this way students are given the opportunity to effectively integrate the theory of the classroom with the practice and the responsibility of the workplace (e.g., industrial/ practical training).

ANALYTIC NETWORK PROCESS

The analytic network process (ANP) generalises the analytic hierarchy process (AHP) by incorporating feedback and interdependent relationships among decision elements and alternatives. This provides a more comprehensive approach when modelling problems based on complex decisions. Both the AHP and the ANP derive the relative priority weights of absolute numbers from individual judgments by making paired comparisons of elements on a common property or a control criterion. In the AHP, these judgments represent independent assumptions of the higher-level cluster from the lower level in a multi-level hierarchical structure, while the ANP uses a network without the need

to specify levels (Saaty, 2005). In other words, the ANP enables interrelationships not only between clusters (outer dependence) but also among elements (inner dependence) within a cluster (Figure 2).

In the ANP, there is an associated network of influences among the elements and clusters. The ANP allows both interaction and feedback within clusters of elements (inner dependence) and between clusters (outer dependence), with respect to an underlying control criterion (Saaty, 2005). Inner and outer dependencies can capture and represent the concepts of influencing relationships or being influenced by relationships, within and between clusters of elements. Then, pairwise comparisons are made systematically including all the combinations of element/cluster relationships. Pairwise comparisons of the elements in each cluster are conducted with respect to their relative importance to their control criterion. The control criterion for these pairwise comparisons can be the criteria at the upper or lower levels. In the case of interdependencies, components within the same level can be viewed as controlling components for each other, or levels may be interdependent on each other. The ANP uses the same fundamental comparison scale (1–9) as the AHP. This fundamental scale enables the decision-maker to incorporate subjectivity, experience and knowledge intuitively and indicates how many times an element dominates another with respect to the control criterion (Bayazit, 2006). The decision-maker can express his or her preference between each pair of elements by verbal judgments such as equally important, moderately important, strongly important, very strongly important and extremely important or by stating a single number taken from the fundamental comparison scale.

Table 4 shows the fundamental comparison scale used by the ANP. The ANP is able to handle interdependencies among elements through the calculation of composite weights as developed in a supermatrix. After completing the pairwise comparisons, the derived priorities of the unweighted supermatrix are obtained for each control criterion. Then, using the cluster weights matrix, the priorities of all factors in each cluster are weighted and then the results are synthesised through addition for the entire control criterion. The supermatrix and its powers are the fundamental tools needed to lay down the interaction effects of the ANP (Saaty, 2005).

Table 4
The fundamental comparison scale in the ANP

Intensity of Importance	Definition	Explanation
1	Equal importance	Two activities contribute equally to the objective.
3	Moderate importance	Experience and judgment slightly favour one activity over the other.
5	Strong importance	Experience and judgment strongly favour one activity over the other.
7	Very strong importance	An activity is favoured very strongly over the other; its dominance is demonstrated in practice.
9	Extreme importance	The evidence favouring one activity over the other is of the highest possible order of affirmation.
2, 4, 6 and 8	For compromise between the above values	Compromise judgment between the above values because there is no good word to describe them.

There are five steps in the ANP:

Step 1: Set up the ANP model and perform pairwise comparisons of the elements in the cluster
Step 2: Construct an unweighted supermatrix
Step 3: Make pairwise comparisons between clusters/elements
Step 4: Calculate the weighted supermatrix
Step 5: Calculate the limit matrix by raising the weighted supermatrix to the power of $2k + 1$

THE PRESENT EXAMPLE

This example presents the case of implementing the ANP to prioritise graduates' employability skills and to determine the most effective employability skills development approaches for Malaysian higher education institutions (HEIs). These steps are as follows:

Step 1: Construction of the Model

The first step in the ANP is to develop a model to be examined. In this paper, the ANP model consists of three clusters (objective cluster, employability skills cluster and employability skills development approaches cluster) which are

connected by arrows and loop to one another. The arrows and loop represent the inter dependencies and inner dependencies between clusters and various elements in the cluster. Figure 2 shows the ANP model for the present study. The purpose of this model is to identify the most effective employability skills development approaches to equip graduates with the necessary employability skills. In this model, the loop shows the interdependency among elements in the employability skills development approaches cluster. In other words, there is inter-correlation among elements in the cluster. Meanwhile, the arrow shows the relationship between elements in the cluster of employability skills with the elements in the cluster of employability skills development approaches.

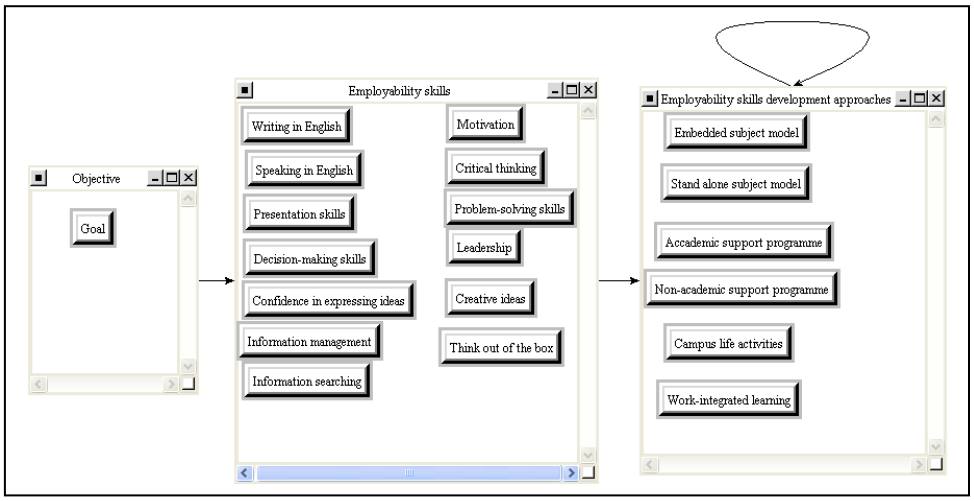

Figure 2. ANP model

Step 2: Pairwise Comparison Matrices between Elements

The next step is to make a comparison between clusters and elements. The elements in each cluster that are related to control criteria are compared. The elements were compared using pairwise comparisons and presented in the form of a matrix. First, to calculate the importance weight of the employability skills, employers were asked to make pairwise comparisons between elements in the cluster. An example of a question posed to the employers is: which skill is more important to your company "ability to write in English "or" ability to speak in English", and how much more important it is? Then, the same types of questions were repeated for all the remaining skills.

Second, to calculate the weight of the relationship matrix between employability skills and employability skills development approaches, 50 lecturers were

contacted to make comparisons between each pair of employability skills' development approaches on every employability skills. Examples of the questions posed are: which method, "embedded subject model "or " stand alone subject model," is more effective to equip graduates with skills of "ability to think outside of the box" and how effective it is? Again, which method, "embedded subject model or "support programmes," is more effective to equip graduate with skills of "ability to think outside of the box" and how effective it is? The same types of questions were repeated for all 13 employability skills.

Finally, the effect of the employability skills development approaches on every other method and the influence of the method upon itself were calculated. The lecturers were asked to make pairwise comparisons between elements in the cluster of employability skills development approaches. Examples of the questions asked are: which method creates a larger effect on the work-integrated learning, "embedded subject model or stand-alone subject model"; which method has a larger effect on work-integrated learning, "embedded subject model or academic support programs?" The same types of questions were repeated for all the remaining approaches. Geometric mean was used to aggregate the pairwise comparison matrices for all the respondents.

Step 3: Supermatrix Formation

The next step is to construct unweighted, weighted and limit supermatrices of the entire set of elements within the network system. By using Super Decision software 2.0.6, the unweighted (Table 5) and weighted supermatrices (Table 6) were obtained. The result shows that the employers placed "ability to speak fluently in English" highest with a weight of 0.204. The next most important skills are "ability to write effectively in English" and "ability to think critically" with priority weights of 0.142 and 0.136, respectively.

The weighted supermatrix is stochastic, irreducible and acyclic (Andronikidis, Georgiou, Gotzamani, & Kamvysi, 2009). The limit supermatrix (which is stable) is calculated by raising the weighted supermatrix to powers by multiplying it times itself. The process is continued until the number in every column in the matrix is the same and hence the multiplication process is stopped (Saaty, 2005). The limit matrix for identifying the most effective employability skills development approaches is shown in Table 7. The results show that the most effective employability skills development approach is "work-integrated learning", with a priority of 19.7% . The next most effective approach is 'stand-alone subject model"with 18.5%. The standings of the remaining approaches are as follows: embedded subject model, non-academic support programme, and campus life activities.

Table 5
Unweighted supermatrix

		Employability skills development approaches						Employability skills												
	Objective	1	2	3	4	5	6	A	B	C	D	E	F	G	H	I	J	K	L	M
Objective	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Employability skills development approaches	0.000	0.173	0.161	0.157	0.166	0.189	0.192	0.156	0.178	0.169	0.173	0.173	0.139	0.199	0.000	0.178	0.261	0.194	0.208	0.202	0.176
	0.000	0.183	0.151	0.110	0.141	0.189	0.142	0.178	0.180	0.171	0.135	0.210	0.142	0.157	0.000	0.116	0.151	0.176	0.167		
	0.000	0.183	0.164	0.191	0.156	0.189	0.181	0.096	0.082	0.180	0.183	0.145	0.106	0.160	0.273	0.138	0.000	0.181	0.189	0.241	0.190
	0.000	0.136	0.136	0.136	0.136	0.136	0.136	0.104	0.134	0.107	0.151	0.199	0.084	0.129	0.260	0.086	0.000	0.172	0.162		
	0.000	0.161	0.175	0.191	0.181	0.131	0.156	0.156	0.228	0.146	0.161	0.208	0.155	0.223	0.213	0.203	0.267	0.214	0.000	0.224	
	0.000	0.204	0.183	0.181	0.188	0.210	0.193	0.223	0.228	0.189	0.203	0.186	0.187	0.189	0.226	0.219	0.267	0.257	0.253	0.000	
	0.000																				
Employability skills	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	0.075	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	0.136	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	0.057	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	0.043	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	0.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	0.049	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	0.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	0.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	0.110	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	0.204	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	0.051	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
	0.142	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	

Table 6
Weighted supermatrix

	Objective	Employability skills development approaches						Employability skills												
		1	2	3	4	5	6	A	B	C	D	E	F	G	H	I	J	K	L	M
Objective	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
Employability skills development approaches	0.000	0.000	0.178	0.262	0.194	0.209	0.203	0.173	0.161	0.157	0.166	0.189	0.193	0.156	0.178	0.169	0.173	0.173	0.139	0.199
	0.000	0.157	0.000	0.117	0.152	0.176	0.168	0.184	0.151	0.110	0.142	0.189	0.142	0.176	0.178	0.180	0.171	0.135	0.210	0.143
	0.000	0.273	0.138	0.000	0.182	0.189	0.242	0.184	0.165	0.192	0.157	0.189	0.182	0.097	0.083	0.180	0.184	0.145	0.106	0.160
	0.000	0.129	0.260	0.086	0.000	0.172	0.163	0.094	0.164	0.167	0.166	0.091	0.134	0.190	0.105	0.134	0.108	0.151	0.199	0.085
	0.000	0.213	0.204	0.268	0.215	0.000	0.225	0.161	0.175	0.192	0.181	0.132	0.157	0.156	0.228	0.146	0.161	0.209	0.156	0.223
	0.000	0.227	0.220	0.268	0.257	0.254	0.000	0.204	0.184	0.181	0.188	0.210	0.193	0.224	0.228	0.189	0.204	0.187	0.188	0.189
Employability skills	0.023	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.075	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.136	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.057	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.043	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.029	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.049	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.040	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.042	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.110	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.204	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.051	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.142	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 7
Limit supermatrix

	Objective	Employability skills development approaches						Employability skills												
		1	2	3	4	5	6	A	B	C	D	E	F	G	H	I	J	K	L	M
Objective	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Employability skills development approaches	0.000	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174
	0.000	0.134	0.134	0.134	0.134	0.134	0.134	0.134	0.134	0.134	0.134	0.134	0.134	0.134	0.134	0.134	0.134	0.134	0.134	0.134
	0.000	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.174	0.185
	0.000	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136	0.136
	0.000	0.185	0.185	0.185	0.185	0.185	0.185	0.185	0.185	0.185	0.185	0.185	0.185	0.185	0.185	0.185	0.185	0.185	0.185	0.185
	0.000	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197	0.197
Employability skills	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

CONCLUSION

This paper demonstrates an application of the Analytic Network Process for identifying the most effective employability skills development approaches to equip graduates with the necessary skills. The use of these approaches in evaluating employers' perceptions of currently held skills was to identify the importance of the skills to employers, identify specific areas that require improvement and to identify the most effective approaches for improving graduates' employability skills.

The results of this study demonstrate the importance of work integrated learning in developing employability skills. Work integrated learning is a form of training whereby periods of study are alternated with periods of related work in an organisation. Through work integrated learning programmes, students are able to practice the theories and knowledge that they have learned during their studies at school. Graduates are able to equip themselves with the latest skills needed by industries. In addition, graduates are able to develop their confidence levels, teamwork skills, and communication skills. Therefore, universities should provide students with real-life work environments and hands-on learning through on-the-job training programmes. HEIs need to work closely with industries to improve the marketability and employability of graduates because the employability of graduates is one of the key performance indicators for higher education.

To ensure the effectiveness of on-the-job training programmes, HEIs must ensure that graduates are assigned to the right companies and that the tasks assigned to them are in accordance with their specialisation. Additionally, tasks that are assigned should be beneficial to enhancing their employability skills. If there is a mismatch between a graduate's area of specialisation and the tasks assigned to him or her, the graduate would be unable to practice or apply his or her knowledge and skills in the actual workplace. Thus, the objectives of the work integrated learning programme would not be fulfilled.

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