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DEVELOPMENT OF EMPLOYABILITY SKILLS ASSESSMENT TOOL FOR MANUFACTURING INDUSTRY

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ABSTRACT

Mastering employability skills is one of the global problems which employers are facing with graduates or their future employees. Various research on employability skills have been conducted nationally and internationally and it was found that many technical graduates nowadays are lack of employability skills rather than technical skills. The main goal of this research is to develop an employability skill assessment tool using the Kepner-Tregoe (K-T) method in which weight factor is set. Samples for this research consisted of 107 employers from five types of Malaysian manufacturing industry. The results showed that employers in all five categories of manufacturing industry are in consensus on the importance for all seven of the employability skills. These skills were ranked as follows; interpersonal skills, thinking skills, personal qualities/values, resource skills, system and technology skills, basic skills and informational skills. From these means, an employability skills assessment tool was developed using the K-T Method and an Employability Skills Assessment Tool Development Model was produced.

Keywords: *Employability skill, employability skill assessment tool, weight factor.*

1.0 INTRODUCTION

The changing technology for faster and sophisticated one can be seen in various employment fields. These changes requires for more skilled work force to fullfil the need and requirement of the industry which is known as employment rate. Of

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this employment rate, Taylor [1] stated that when the total number of low skills work force is too big, a developing country will not be ready to be an industrial based economy country. The changes in this technology field would influence the demand and requirement for skill workers and also other skills that could upgrade job performance in the employment field.

Employability skill is often debated with various interpretations which biased towards stating that employability skill is a preparation for the graduates to successfully get a job and to develop in their career. But from the point of view of human capital theory through social psychology perspective, "employability" is a job, but more towards the ability to do work. The main goal is the critical ability, reflective to convince and upgrade an individual with the skill other than his special or technical skill [2- 6]

According to Buck and Barrick [2]

> *"Employability skills are the attributes of employees, other than technical skills competence, that make them asset to the employer. These employability skills include reading, basic arithmetic and other basic skills; problem solving, decision making, and other high-order thinking skills; and dependability, a positive attitude cooperativeness, and other affective skills and traits."*

Ramlee [7] stated that production industrial employers in Malaysia found that technical graduates master sufficient technical skills, but lack of motivation, interpersonal, critical thinking, problem solving and entrepreneurship skills.

Syed Hussain [8] found that 62.3% graduates in technical fields are still jobless because they lack of employability skills rather than technical skills required by the industry. Therefore, he suggested that the human resource department has to provide several short courses to help upgrade these skills.

Mohamed Rashid [9] in his research on polytechnic graduates found that about 50.5% technical graduates of Malaysian Polytechnics are jobless for almost nine months of the year because of lack employability skills. He found that these graduates are also weak in communication, writing and computer skills. Kathleen [10], in her research on technical graduates in America, had also found that employers are not satisfied with the job applicants from graduates, not because they do not have enough technical skills or knowledge, but because they have not enough non-technical skills.

The research is done with the aim of developing an assessment tool to measure and assess individual level of employability skill. The objective of developing this employability skill assessment tool is very important as it can measure the employability level of an individual before joining the work force.

2.0 METHODOLOGY

The instrument being used in this research is questionnaire on employability which was adapted from the Secretary's Commission on Achieving Necessary Skills (SCANS) [11]. The items in the questionnaire include most of the elements of employability skills perceived necessary by industries in Malaysia. The employability skills questionnaire contain seven constructs namely: (i) Basic skills, (ii) Thinking skills, (iii) Resource management skills, (iv) Informational

skills, (v) Interpersonal skills, (vi) System and technology skills, and (vii) Personal quality skills.

The employers chosen as research samples were categorised into five categories according to the type of manufacturing industry which were electrical and electronic product (EE), metal based products (MB), machinery and equipment (ME), transport equipment (TE) and other kinds of product industry (OT).

The objective of choosing employers from various categories is to observe how important the employability skills are to this different groups of employers. Employer's questionnaire analysis is the input towards development of the assessment tool in this research. Any aspects which were not important to these employers were eliminated. Analysis of the data using ANOVA were done to identify which employability skill to be chosen and which to eliminate according to its importance to the employer needs in each type of manufacturing industry mentioned earlier. Thus, the employability skills which were chosen were ranked and used as skill items to be assessed in the assessment tool.

The method that was identified suitable to develop an assessment tool to assess the employability skill is the Kepner-Tregoe method (K-T Method) [12]. It is a method or analysis which is frequently used by employers in deciding the performance level of employees. It contains several steps in determining the most rational decision, which are:

i) Defining the set of criteria needed in decision making. The criteria are the objectives to be achieved.
ii) Listing the criteria according to its weight factor. From scale 10 (the most significant) to scale 1 (the least significant).
iii) Assessing all options in decision making.
iv) Giving scores to sub-criteria from scale 10 for highest skills and scale 1for the lowest skills.
v) Repeating the score process for all the criteria.
vi) Multiplying relative scores with weight factor for all criteria.
vii) Total all scores.
viii) Comparing total scores for all options.
ix) Choosing the highest score option.

3.0 RESULTS AND DISCUSSION

Analysis of the responses of employers in five types of manufacturing industry on the importance of seven employability skills is shown in Table 1. The results showed that employers in all five categories of manufacturing industry are in consensus on the importance for all seven of the employability skills. The mean score for each employer in the five types of manufacturing industry showed somr difference. Additionally each of the means showed medium ranges of standard deviations indicating a relatively small variability in the distribution as shown in Table 1. From the mean value, the skills were ranked according to most important to less important. As a result of the study, an employability skills assessment tool was developed (refer Appendix 1).

Table 1: Importance of employability skills according to type of manufacturing industry

Skills	Type of Industry	n	Mean	SD	F	p
Basic Skill	EE	31	4.33	.39	.43	.651
	MB	26	4.22	.55		
	ME	21	4.43	.40		
	TE	20	4.44	.51		
	OT	9	4.01	.47		
	Total	107	4.21	.46		
Thinking Skill	EE	31	4.33	.44	.44	.643.
	MB	26	4.43	.35		
	ME	21	4.44	.27		
	TE	20	4.44	.48		
	OT	9	4.11	.60		
	Total	107	4.27	.42		
Resource Skill	EE	31	4.33	.34	.54	.663
	MB	26	4.10	.45		
	ME	21	4.12	.56		
	TE	20	3.65	.68		
	OT	9	4.21	.64		
	Total	107	4.00	.53		
Informational Skill	EE	31	4.33	.44	.61	.549
	MB	26	4.12	.69		
	ME	21	3.65	.46		
	TE	20	3.50	.55		
	OT	9	4.25	.54		
	Total	107	3.89	.54		
Interpersonal Skill	EE	31	4.33	.44	1.61	.202
	MB	26	4.65	.21		
	ME	21	4.61	.30		
	TE	20	4.10	.44		
	OT	9	4.22	.71		
	Total	107	4.30	.36		
System &Technology Skill	EE	31	4.33	.44	.77	.465
	MB	26	4.12	.63		
	ME	21	3.65	.60		
	TE	20	4.10	.75		
	OT	9	4.17	.69		
	Total	107	4.01	.62		
Personal Qualities	EE	31	4.33	.44	1.17	.147
	MB	26	4.12	.32		
	ME	21	3.65	.44		
	TE	20	4.15	.56		
	OT	9	4.18	.59		
	Total	107	4.01	.47		

Note:*p <.05, (significant at level .05)

4.0 EMPLOYABILITY SKILLS ASSESSMENT TOOL DEVELOPMENT MODEL

The researchers proposed an assessment tool development model using this method. This model gives a guideline and concept to develop an assessment tool systematically (Figure 1).

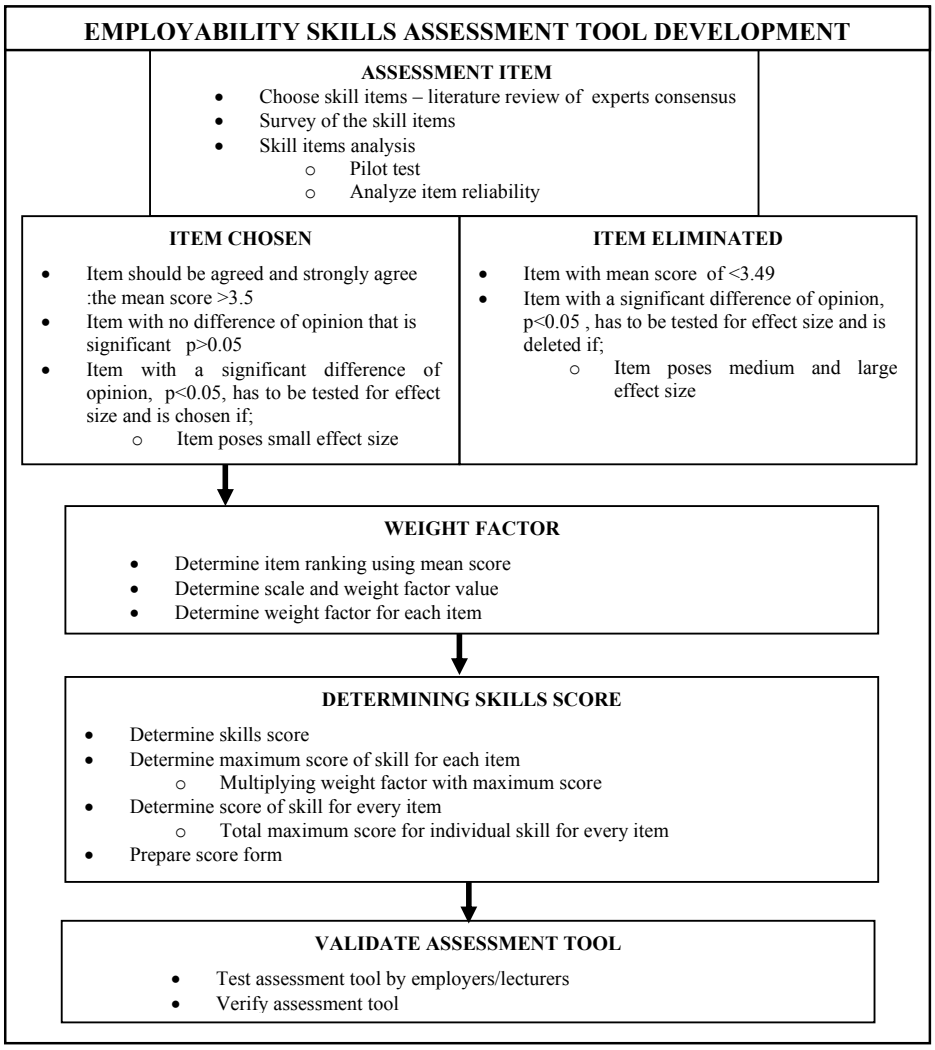

Figure 1: Employability skills assessment tool development model

This model suggests four phases that has to be considered when developing an assessment tool. These phases are identifying the item of the assessment tool, determining the weight factor, determining individual score level and verifying the assessment tool. In the first phase, to develop an assessment tool one has to identify which aspects of the skill are to be assessed in an individual. These

aspects of the skill will be the item for the assessment tool. These aspects can be identified through various sources such as literature review, survey, assessment tool instrument or panel of experts. Nonetheless, the item selected for the assessment tool has to be tested for its reliability through certain processes such as statistical test, interviews, expert's consensus and other research methods which are suitable.

The third phase is to set the employability score for the individual. The score scale can be designed or adopted from any other related and relevant measurement assessment tools. The score should be scaled and graded. A score form should be used in order to assess the employability performance of the individual assessed.

The fourth phase is to verify the developed assessment tool. Verification should focus on the assessment tool system efficiency an assessment tool measurement performance. On the assessment tool measurement performance, the assessment tool developed should be tested on the real employees by the employers. Checklist and interviews of the employers, trainers, students, graduates or employees should be conducted to see if the agreement coefficient can be accepted.

5.0 CONCLUSIONS

The developed employability skills assessment tool is an analysis instrument in making decision on students, graduates and employees. The developed assessment tool could be used in comparing the decision made on two or more individuals in order to select the best among them. This developed assessment tool could help simplify the assessment of individual employability skills as well as producing a firmed and consistent assessment. The employability skills assessment development model can be used as a guide to develop any skills assessment tool.

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Appendix 1

EMPLOYABILITY SKILLS ASSESSMENT TOOL					
Employability Skills	**Employability Skills Aspects**	**Weight Factor (w)**	**Maximum Score**	**Score (1 – 10) (x)**	**Total Score (x.w)**
Basic Skills	**Reading:** Locates, understands, and interprets written information in prose and documents, including manuals, graphs, and schedules to perform tasks, learn from text by determining the main idea or essential message	9.00	90.00		
	Writing: Communicates thoughts, ideas, information, and messages in writing, and creates documents such as letters, directions, manuals, reports, graphs and flow chart.	8.00	80.00		
	Mathematics/Arithmetic: performs basic computations and approaches practical problems by choosing appropriately from a variety of mathematical techniques.	6.00	60.00		
	Listening: Receives, attends to, interprets, and responds to verbal messages and other cues such as body language in ways that are appropriate to the purpose.	10.00	100.00		
	Speaking: Organizes ideas and communicates oral messages appropriate to listeners and situations, participates in conversation, discussion, and group presentations.	7.00	70.00		
	Overall Score		400.00		X1
				Skill Level	X1/400 = a
Thinking Skills	**Creative/Innovative Thinking:** Generates new ideas, uses imagination freely, combines ideas or information in new ways, makes connections between	9.00	90.00		

	seemingly unrelated ideas and reshapes goals.				
	Decision Making: Specifies goals and constraints, generates alternatives, considers risks and evaluates and chooses best alternatives	5.00	50.00		
	Problem Solving: Recognizes that a problems, identifies possible reasons for the discrepancy and devices and implements a plan of action to resolve it. Evaluates and monitors progress and revises plan as indicated by findings.	10.00	100.00		
	Seeing Things In The Mind's Eye: Organizes and processes symbols, pictures, graphs, objects and other information.	6.00	60.00		
	Knowing How To Learn: Recognizes and can use learning techniques to apply and adapt new knowledge and skills in both familiar and changing situations.	8.00	80.00		
	Reasoning: Discovers a rule or principle underlying the relationship between two or more objects and applies it when solving a problem.	7.00	70.00		
	Overall Score		450.00		X2
				Skill Level	X2/450 = b
Resource Skills	**Manages Time:** Selects relevant, goal related activities, ranks them in order of important allocates time and prepares and follows schedules.	7.00	70.00		
	Manages Money: Uses or prepares budget, making cost and revenue forecast, track budget performance and makes appropriate adjustments.	8.00	80.00		
	Manages Materials and Facility Resources: Acquires stores, allocates and distributes materials,	10.00	100.00		

	supplies, parts, equipment, space or final products in order to make the best use of them.				
	Manages Human Resources: Assesses knowledge and skills and distributes work accordingly, evaluates performance and provides feedback.	6.00	60.00		
	Manages Risks: Identifies, assesses, analyzes and organizes risk.	9.00	90.00		
	Overall Score		400.00		X3
				Skill Level	X3/400 = c
Informational Skills	**Acquires and Evaluates Information:** Identifies need for data, obtains it from existing sources or creates it, and evaluates its relevance and accuracy.				
	Uses Computers To Process Information: Employs computers to acquire, organize, analyze and communicate information.				
	Overall Score		190.00		X4
				Skill Level	X4/190 = d
Interpersonal Skills	**Participates as a Member of a Team:** Works cooperatively with others and contributes to group with ideas, suggestion and effort.	6.00	60.00		
	Teaches Others: Help others learn needed knowledge and skills, identifies training need and supplies job information to help others.	7.00	70.00		
	Serves Clients/Customers: Work and communicates with client and customers to satisfy their expectations.	10.00	100.00		
	Exercises Leadership: Communicates thoughts,	8.00	80.00		

	feelings, and ideas to justify a position, encourages, persuades, convinces, or otherwise motivates an individual or groups, including responsibly challenging existing procedures, policies or authority.				
	Negotiates: Works toward agreements that may involve exchanging specific resources or resolving divergent interest.	9.00	90.00		
	Work with Cultural Diversity: Works well with men and women and with variety of ethnic, social or educational backgrounds.	5.00	50.00		
	Overall Score		450.00		X5
				Skill Level	X5/450 = e
System & Technology Skills	**Understands System:** Knows how social, organizational and technological system work and operates effectively within them.	9.00	90.00		
	Monitor and Corrects Performance: Distinguishes trends, predicts impacts on system operations, diagnoses deviations in systems and takes necessary action to correct performance.	6.00	60.00		
	Select Technology: Judges which set of procedures, tools or machines, including computers and their programs will produce the desired results.	10.00	100.00		
	Applies Technology to Task: Understand overall intent and proper procedures for setting up and operating machines, including computers and their programming.	8.00	80.00		
	Maintain and Troubleshoot Technology: Prevents, identifies or solve	7.00	70.00		

	problems in machines, computers and other technologies.				
	Overall Score		400.00		X6
				Skill Level	X6/400 = f
Personal Qualities /Values	**Responsibility:** Exerts a high level of effort and perseverance toward goals attainment. Work hard to become excellent at doing tasks by setting high standards, paying attention to details, working well and displaying a high level of concentrations.	7.00	70.00		
	Self-Esteem: Believes in own self-worth and maintains a positives view of self, demonstrates knowledge of own skills and abilities, is aware of impact on others, and knows own emotional capacity and needs and how to address them.	5.00	50.00		
	Sociability: Demonstrates understanding, friendliness, adaptability, empathy and politeness in new and on-going group settings. Asserts self in familiar and unfamiliar social situations, relates well to others and takes an interest in what others say and do.	3.00	30.00		
	Self-Management: Assesses own knowledge, skills and abilities accurately, set well-defined and realistic personal goals, monitors progress toward goal attainment and motivates self through goal achievement, exhibits self-control and respond to feedback unemotionally and non-defensively and is a self starter.	6.00	60.00		
	Integrity/Honesty: Can be trusted. Display high	9.00	90.00		

	standards of ethical conduct and understands the impact of violating these standards on an organization, self and others. Is trustworthy, a refusal to lie, steal, or mislead in any way.				
	Conscientiousness: Display a high level of effort and commitment towards performing work, demonstrates high standards of attendance, punctuality, enthusiasm, vitality, and optimism in approaching and completing tasks.	8.00	80.00		
	Ability to work without supervision: Works with minimal supervision, is motivated to achieve and demonstrates responsible obstacles.	4.00	40.00		
	Work Safety: Awareness's of personal and group health and safety practices and procedures, and act in accordance with these.	10.00	100.00		
	Overall Score		520.00		X7
				Skill Level	X7/520 = g

Overall Employability Skills Assessment Achievement					
Employability Skills	**Weight Factor (w)**	**Maximum Score**	**Skill Level (p)**	**Total Score (w.p)**	**Achievement**
Basic Skills	6	60	a	6a	Good
Thinking Skills	9	90	b	9b	Excellent
Resource Skills	8	80	c	8c	Excellent
Informational Skills	5	50	d	5d	Moderate
Interpersonal Skills	10	100	e	10e	Excellent
System & Technology Skills	7	70	f	7f	Good
Personal Qualities/Values	8	80	g	8g	Excellent
Overall Total Score		530		Y	
Employability Skill Level				Y/530 = Z	

Employability Skills Level		
Scale (0 -10)	**Percentage (%)**	**Achievement**
8.0 – 10.0	80 – 100	Excellent
6.0 – 7.9	60 – 79	Good
4.0 – 5.9	40 – 59	Moderate
Below 4.0	Below 40	Poor