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Higher-order Thinking Skills and Employability Skills among Students at Pahang's Higher Education Institutions

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Abstract

The development of highly qualified individuals who can meet the demands of the contemporary corporate environment depends on the business management programs which the university is teaching. It is necessary to empirically evaluate a business management program's module to determine how well they prepare students with the soft skills they will need to meet professional and sophisticated performance levels. When we use critical thinking, we analyse, interpret, evaluate, and form opinions about what we read, hear, say, or write. This research investigates the link between higher-order thinking abilities (critical thinking, decision making and problem-solving) and employability skills. The number of participants involved in this study was 91. The outcome obtained from PLS-SEM analysis illustrates that decision-making and problem-solving are strongly linked with individuals' employability abilities. However, critical thinking only shows significant connections. This study will play a significant role in identifying the crucial measures which could be highly considered for developing a curriculum that will boost up to produce the best quality graduates who can contribute more to the sustainable economy.

Keywords: Employability Skills, Higher-Order Thinking Skills, Critical Thinking, Decision Making, Problem Solving.

Introduction

From elementary school to university, students' study for many years to gain knowledge and information. A student gains several skills over their years in college and universities, including intellectual, interpersonal, communication, leadership, decision-making, creative thinking, self-management, time management and others (Fayeq, 2017). The current research evaluates the relationship between students' higher-order thinking skills (critical thinking, decision making and problem-solving) and employability skills. According to Sarimah and Dahiru (2015), in developing countries such as the UK, USA, Japan, Singapore and even Malaysia, interpersonal, problem-solving, and communication skills are three of the most crucial employability skills compared to hard skills.

On the other hand, employability is a set of achievements, skills, understandings and personal attributes that make graduates more likely to gain employment and be successful in their chosen occupations, which benefits themselves, the workforce, the community and the economy. Employability is not the only essential quality of a new graduate. It should be updated throughout an individual's working life (Yorke, 2006). Numerous studies have demonstrated the significance of possessing employability skills for graduates from higher education institutions (Billing, 2003; Crebert et al., 2004; Candy & Crebert, 1991; Dunne & Rowlinson, 2000) and capable of using their acquired skills and technical knowledge in the workforce (Crebert et al., 2004). Students have opportunities to study and learn the place of work behaviour that labour markets require. These ways increase student's knowledge of values, attitudes and work responsibilities (Robinson, 2000). However, studies show that graduates at entry-level jobs need more employability skills required by industries, making them unprepared to enter the labour market (Robinson & Garton, 2008). Despite the importance of cognitive skills for academic success, understanding the process of higher-order thinking skills and their assessment among students represents a central goal in education.

Developing students' higher-order thinking skills have been critical to redesigning and reforming learning systems (Kim, 2005). Therefore, those colleges must change the paradigm of their curriculum so that each program they offer graduates employability skills as well as technical ones (Evers et al., 1998; Robinson & Garton, 2008).

Literature Review

Higher-Order Thinking Skills

According to Robinson (2000), success in work depends on the ability to use higher-order thinking skills. For an employee to succeed and progress, they must be able to reason, think, and make wise decisions. They are viewed as a great asset if they can think critically, act logically, and analyse situations to make judgments and solve problems. Higher-order thinking skills are being used increasingly in technology, instruments, tools, and information systems, which could increase an employee's value to the organisation.

Helping students develop flexible knowledge bases and higher-order thinking skills is becoming more crucial in the information age (Simon, 1980). Higher-order thinking skills are referred to by educators as high-order thinking that takes place when a student acquires new information, stores it in his memory, and then correlates, organises, or evaluates it to accomplish a particular goal. The highest levels of Bloom's cognitive taxonomy, such as analysis, synthesis, and evaluation, must be included in these sub-skills (Abosalem, 2016).

Additionally, critical, logical, reflective, metacognitive, and creative thinking are also higher-order thinking skills. When people encounter unfamiliar issues, uncertainties, questions, or challenges, they get engaged (King et al., 1997). A crucial component of teaching and learning, particularly in higher education institutions, is using higher-order thinking skills (Ahmad et al., 2017). Higher-order thinkers are better equipped to learn how to enhance their performance and lessen their deficiencies (Heong et al., 2011). Higher-order thinking skills also emphasised that educating children to think critically is an essential endeavour that must be taken seriously to prepare the students to become better future workers and problem solvers (Kerka, 1992).

Employers today are concerned with finding good workers with higher-order thinking abilities like learning, reasoning, thinking creatively, making decisions, and problem-solving, as well as core academic skills like reading, writing, science, mathematics, oral

communication, and listening (Shafie & Nayan, 2010). Additionally, Bereiter and Scardamalia (1987) contend that developing fresh models of instruction and curricula that support critical thinking and problem-solving strategies might assist students in improving their higher-order thinking abilities.

Critical Thinking Skills

An established, approved, a comprehensive framework must be established to set standards for describing or rating critical thinking (Bean & Melzer, 2021). According to Monteiro et al (2020), the definition of critical thinking includes a description of cognitive abilities and attitudes. In this context, Alharbi et al (2022) define critical thinking as a set of cognitive abilities and dispositions of the highest level compared to lower-order or simpler talents. Further, active learning strategies promote critical thinking by triggering cognitive processes (Lechelt et al., 2020). When people intentionally and routinely apply intellectual norms and criteria to their reasoning, it is called critical thinking (Darty & Akpan-Umoh, 2020).

According to the characteristics of critical thinkers, They are "outcome-driven, open to new ideas, flexible, willing to change, innovative, creative, analytical, communicators, assertive, persistent, caring, energetic, risk-takers, knowledgeable, resourceful, observant, intuitive, and 'out of the box' thinkers," (Borg, 2020). According to Mukminatien and Suryati (2022), critical thinking is a self-directed and well-organized cognitive process that produces high-quality conclusions and judgments. This process may be accomplished through the examination, research, measurement, and reformulation of thinking. For this study, the operational definition of critical thinking can be traced from Din (2020), which comprises the ability to analyze, synthesize, infer, and evaluate situations.

There are several methods to monitor critical thinking, but it is mainly seen as a process rather than an aim or outcome (Gunawardena & Wilson (2021). Critical thinking happens throughout and across these domains and is not constrained by knowledge areas, disciplines, or experiences (Gunawardena & Wilson, 2021). Critical thinking is prone to grow via analysis of both information and experience. As Cáceres et al (2020) demonstrated, students must reflect on their thoughts to develop critical thinking, a reflective activity that inspires action. Academic institutions should emphasize how to think, not what to think, to their students (Fitzpatrick, 2021).

Critical thinking is a skill that must be developed over time. Because their style of thinking may result in rigid routines in their teaching practices, academics must be conscious of the need for a change to adapt their teaching techniques to their students' learning during this procedure. (Mahdi et al., 2020). According to Hasanah and Malik (2020), Critical thinking abilities are both teachable and learnable. When active teaching techniques and lecture-based instruction are combined, such as group discussions and critical questioning, knowledge is acquired, and students can profit greatly.

Decision Making Skills

One of the most fundamental competencies for each person is the ability of decision-making. Every aspect of human existence requires decision-making, a crucial cognitive activity (Zakirov & Krasilnikov, 2020). Making decisions entails utilizing one's judgment to select one option from various alternatives (Herrera et al., 2020). The literature frequently outlines how individuals should approach the decision-making process. These so-called "normative models" of decision-making often place a strong emphasis on the necessity of adopting a

reasonable (or logical and thorough) approach in order to make judgments that have a positive impact (Gangemi, 2022).

According to Cinelli et al (2020), decisions are deliberate actions rather than preset outcomes based on standards developed in tandem with the assessment of the possibilities available. Making decisions entails choosing the optimal course of action from various feasible alternatives that would provide the decision maker distinct benefits.

Problem Solving Skills

Getting the best response to an unknown or making a judgment subject to limits is what is meant when discussing problem-solving (Fadda et al., 2022). Solving problems differs from solving exercises from a textbook. Problem-solving is one of the most critical learning outcomes people employ in their personal and professional lives (Edwards et al., 2023). The ability to solve problems is a crucial talent for entry-level work in various areas, according to multiple studies that have repeatedly found this to be the case (Kovács & Zarádné, 2022). Businesses seek people with rapid problem-solving skills, intelligence, and creativity (Jackson et al., 2022). Graduates that can solve problems collaboratively and effectively are sought after by employers (Bhatti et al., 2022).

Employability Skills

The preparation of graduates to be job-ready after graduation is one of the objectives of educational institutions. Nevertheless, many conventional programs continue to teach the old curriculum in traditional methods, overlooking the information and skills required for current and future employment markets (Crimmins et al., 2022). Employability skills are a collection of critical personal qualities and transferable abilities that are highly regarded by employers and necessary for product success. According to Laguador et al (2020), employability skills are required to get, maintain, and perform well in a job. Employees require these skills in order to work well with others and be able to make critical judgments. The importance of employability skills, relevant to all career levels, vocations, and business sizes, is acknowledged across all industry types. The capacity to progress professionally and successfully supports the strategic goals of one's company without doing so directly is made possible by employability skills, which are essential for both getting work and climbing the corporate ladder (Dill et al., 2021).

Moreover, "Employability" can relate to a person's success in a shifting labour market and their long-term capacity to grow a career (Weerasombat et al., 2022). According to Van der Heijden et al. (2022), A group of achievements, comprehensions, and soft skills called employability skills aid people in landing employment and excelling in their chosen professions. Graduates think many employability skills are more important than how good they are at them. Businesses, in particular, feel that higher education needs to do more to strengthen graduates' employability abilities (Succi & Canovi, 2020).

Research Methods

The study applied a cross-sectional research design. This study targeted UiTM Pahang undergraduate students, and the unit of analysis is individual. The G*Power 3.1.9.7 was employed to determine the minimum sample size. Based on four predictors, an effect size of 0.15, an alpha level of 0.05, and a power level of 0.80, 77 samples were recommended. However, considering Hair's et al (2014) advice, a greater sample size enhances the accuracy and reliability of PLS-SEM results. The researcher distributed 130 questionnaires, and 99 were

returned (76.15% response rate). However, eight respondents responded with substantial blank answers. Therefore, 91 final usable questionnaires were considered adequate to produce sufficient power. The researcher used a purposive sampling technique to ensure the respondents met the profile. Items for this study were adapted from past studies. The independent variable for this study is critical thinking (Jones, 2004), decision-making (Robinson & Garton, 2007), and problem-solving (Robinson & Garton, 2008). Employability skills (Curtis & McKenzie, 2002) were the dependent variable. All the items were evaluated using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Item modification was made to meet the study context and validated by the field experts. Next, two-stage measurement and structural model analysis were used using Smart PLS software for hypothesis testing (Ringle et al., 2015).

Results and Findings

Table 1									
PATH COEFFICIENT ASSESSMENT									
Hypotheses		Std Beta	Std Error	T Statistics	P Value	f2	Q2	Result	
H1: Critical Thinking -> Employability Skills		0.088	0.103	0.855	0.393	0.01	0.366	NS	
H2: Decision Making -> Employability Skills		0.5	0.123	4.066	0	0.302		**	
H3: Problem Solving -> Employability Skills		0.281	0.092	3.067	0.002	0.098		**	

Note: $R^2 = 0.615$, ** $p < .05$

The results of one-tailed path coefficients with a significant value of $p < 0.05$ are shown in Table 1. It was found that decision-making and problem-solving are significantly related to employability skills ($\beta = 0.5$, $p < 0.05$ and $\beta = 0.281$, $p < 0.05$), respectively. However, it is noted that the relationship between critical thinking and employability skills is found to be not significant. The value of the coefficient of determination (R^2) of the main effect model suggests that the exogenous constructs explain 61.5% of the variances in employability skills. The effect sizes for H1, H2 and H3 are 0.01, 0.302 and 0.098. The predictive relevance of Q2 is 0.366.

Based on the results, there are three main findings to be discussed. The result indicates that undergraduate students' critical thinking skills still need to improve.

According to Mahat et al., 2009; Abdullah et al., 2012; Yoke & Ngang, 2017, local graduates lack adequate critical thinking in Malaysia.

Tutor et al (2019) also added that graduates need to develop critical thinking sufficiently. However, critical thinking emerged as critical in influencing employability skill levels (Tan et al., 2021). Thus, the university should regularly revise its course syllabus to meet market demand. Secondly, this study indicates that decision-making and problem-solving have a significant positive impact on employability skills. This is because decision-making abilities are highly required for employability skills (Bhatti et al., 2022). Furthermore, this study has answered the issue raised by Tutor et al (2021) that graduates feel they lack problem-solving skills. Miller (2018); Pepper and McGrath (2019) studies have the same finding as this study problem-solving skills enhance employability.

Thus, critical thinking significantly influences employability skills (Tan et al., 2021). Thirdly, according to Maxwell and Armellini (2019), the integrated framework's planned structure led to a notable improvement in graduate development. Therefore, Tan et al. (2021) suggest that employability module implementations and creative coursework significantly impact graduates' confidence in soft skills.

Conclusion

The development of student's abilities will be aided through learning settings that encourage inquiry-based learning and the practical application of knowledge. However, learning skills requires training, practice, and patience. This study looks at how problem-solving, critical thinking and decision-making are related to employability abilities among students in higher education in Pahang state. The study found significant findings that decision-making and problem-solving are strongly linked with individuals' employability abilities, whereas critical thinking has shown a nominal relationship. Furthermore, future research could consider including the proper moderating variable, which might explore different study dimensions with more remarkable findings. This study's findings have substantial practical implications for enhancing employability, leading to more contributions from future graduates. Higher education institutions must ensure their curriculum remains more aligned with current market desires.

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