

Khairunnisa Rahman, Mariam Setapa, Muharratul Sharifah Shaik Alaudeen Farizah Mamat Mohd Nor, Roha Mohamed Noah (Faculty of Business and Management, Universiti Teknologi MARA Johor Branch, Malaysia)

Abstract: Higher education institutions must prepare students for future employment and train them to carry out job obligations in order to foster innovation. Higher educational institutions aimed to prepare innovative professionals to develop youthful potential talents, particularly among students, as an important aspect of the higher education agenda. Graduate competencies are the result of university education, and one of the expected graduate outputs is innovation. The purpose of this study is to look at the impact of individual leadership competency on students' innovative behaviour. This study employed a random stratified sampling method to identify 728 student leaders from three public higher learning institutions in Malaysia's southern region. Descriptive statistics and SEM-Smart PLS are used to examine the data. Self-confidence, problem-solving, organization and planning, technology, all demonstrate a strong positive relationship towards innovative behaviour. This study is unique as it explores leadership competency and innovative behaviour among students in a non-western academic setting. Future studies should incorporate moderator or mediator variables to get a more holistic view of innovative behaviour, as the current study solely looked at leadership competency in relation to innovative student behaviour.

Key words: higher education institutions, innovative behaviour, interpersonal skills, leadership competency, Malaysia

JEL code: O3

1. Introduction

Higher education institutions are under pressure to adapt to new demands due to rapid changes in society and the workplace. Higher education must prepare undergraduates for future work, teach future employees to perform

Khairunnisa Rahman, Master, Senior Lecturer, Faculty of Business and Management, Universiti Teknologi MARA Johor Branch; research areas: training and development, human resource management, organizational behaviour, business communication and management. E-mail: khair330@uitm.edu.my.

Mariam Setapa, Ph.D., Senior Lecturer, Faculty of Business and Management, Universiti Teknologi MARA Kelantan Branch; research areas: operations management, management, knowledge management and enterprise risk management. E-mail: maria135@uitm.edu.my.

Muharratul Sharifah Shaik Alaudeen, Master, Senior Lecturer, Faculty of Business and Management, Universiti Teknologi MARA Johor Branch; research areas: management, finance and social media marketing. E-mail: muharr416@uitm.edu.my.

Farizah Mamat Mohd Nor, Master, Senior Lecturer, Faculty of Business and Management, Universiti Teknologi MARA Johor Branch; research areas: information technology in business, information communication & technology and management. E-mail: fariz676@uitm.edu.my.

Roha Mohamed Noah, Master, Senior Lecturer, Faculty of Business and Management, Universiti Teknologi MARA Johor Branch; research areas: management in business and entrepreneurship. E-mail: roham994@uitm.edu.my.

job duties. Ideally, generate new ideas that lead to innovation. Higher education institutions are supposed to prepare inventive individuals capable of fulfilling the demands of the twenty-first century regardless of the context (Avvisati et al., 2013; Trilling & Fadel, 2009). Several studies imply that higher education institutions alone will not be able to meet these expectations, given the role of education in building human innovation skills (Quintana et al., 2016). Previous research has found that the abilities needed to participate in innovation activities are less assessed (Edwards-Schacter et al., 2015). The failure of educational methods, particularly in higher education, to build these professional knowledge requirements has been criticized. So, developing young potential capabilities, especially among students, is one of the critical directions of the higher education agenda. An important role in innovative behaviour is played by innovative characteristics and leadership ability, and competency. Companies require innovation to be competitive, and the government requires innovation to provide high-quality, cost-effective services. As a result, future professionals capable of participating in innovation processes and contributing to the creation of innovations are in high demand. Therefore, this study aims to examine students' level of competency towards students' innovative behaviour in public higher learning institutions in the Southern Region of Malaysia.

1.1 Research Objective

The main objective of this study is to examine personal characteristics (level competency) towards students' innovative behaviour in Public Higher Learning Institution in the Southern Region of Malaysia. As such, the specific research objectives are as follows:

- 1) To examine the level of competency towards students' innovative behaviour.
- 2) To determine the dominant competency towards students' innovative behaviour.

2. Literature Review

This part will be discussed about the dependent variables which is innovative behavior and independent variable which is named by student leadership skills and competencies. Under student leadership skills and competencies, it could be divided into eight (8) components which is self-management, interpersonal skills, problem solving/decision making, cognitive development or critical analysis, organization and planning, self-confidence, diversity awareness and technology.

2.1 Innovative Behaviour

For this study, innovative behaviour is related to students' capabilities and readiness to be innovative. Student innovative behaviour defined as the ability to respond to changes and new ideas; accept different points of view and errors; freedom to experiment and take calculated risks; and willingness to embrace change and new ways of doing things (Roffeei et al., 2017). Students also can integrate knowledge, provide new solutions and create novel ideas.

2.2 Student Leadership Skills and Competencies

Cusson (2020) claimed the conceptual competence on innovative behaviour is needed for the students to selfidentify for the opportunity and chances to be innovators in their field. Several studies have been conducted with students from different backgrounds to examine their self-motivation, thinking, and reflective skills in making decisions and taking the opportunity. Binnawas et al. (2020) stated that students in a student club or association showed more confidence and self-motivation; however, limited studies are done on this sample to look at their innovative behaviour. Professional competency is defined as identified knowledge and abilities, a thorough understanding of procedures and technology, and awareness of competitors' business environment. A person with this competency level should demonstrate that they have the knowledge, skills and capacities to improve individual or group functionality (Bogler, 2004). Therefore, students who have this competency should produce a new idea and are prepared to implement new methods of doing things and ready to face any changes. Professional competence on innovative behaviour is a set of high performing non-technical actions practiced by people with skill as one engages with peers and members of the teams. Searle et al. (2012) also stated that professional competency is one of the crucial aspects of tertiary education in modelling self-motivation among students.

Thus, social competence is the ability of an individual to practice the relevant skills in every facet of life (Osman et al., 2014). According to Vahedi et al. (2012), the term "social competence" covers a broader domain rather than the term "social skills". The term "social skills" is ultimately based on behaviour and denotes behaviour types, which a person should participate successfully in various social settings.

2.2.1 Self-Management

Personal achievement is associated with good self-management (Britton & Tesser, 1991). According to Briton et.al. (1991), students' time management plays an essential role in their intellectual achievement. The study reveals that they will be able to demonstrate innovative behaviour at the workplace in the future. Good self-managed students indicate that they could manage themselves through time management and plan in their daily life. In addition to that, they can develop abilities to process complex information and focus on achieving goals within a limited time. Most studies for self-management and innovative behaviour focus on workers self-management and leadership towards innovative behaviour (Kör, 2021; Yuan & Woodmana, 2010; Luoh et al., 2014). The result from the studies indicates there is a positive relationship between these two factors. On the other hand, studies on students look more on academic behaviour achievement (Britton & Tesser, 1991; Park & Kim, 2021; Yoon et al., 2021) even though the studies mentioned that good self-management of a student has a prospect that they will demonstrate innovative behaviour, but there is a little study that focuses on self-management of students who are active in the association and be as a student also perform innovative behaviour.

The current situation of Covid-19 turns the teaching and learning also working method in a new norm which indirectly requires the future undergraduates need to be competitive such as adept with latest technological tools, new way to communicate and a new way of working. To demonstrate innovative behaviour, they should be able to self-manage, and in fact, it is one of the fundamental aspects of career development (Yu et al., 2021). Students who are active in a student club or association need to juggle between student life and personal life; therefore, they need to do proper planning on the daily task, personal life and time management since they have multiple roles to play. Therefore, it is crucial to investigate these factors.

2.2.2 Interpersonal Skills

According to Danquah (2018), interpersonal skills consist of soft skills such as negotiation, effective communication, leadership, training and development. This skill is crucial for a student to possess, gain employment, and be successful in their career. Interpersonal skills reflect a person to perform the task well as they need to integrate knowledge, communication skills, cooperation and tolerance to produce output at the workplace (Masduki & Zakaria, 2021). However, Danquah (2018); Roseberg (2012); Edward & Halim (2008) revealed that undergraduate students, especially new internship students or those who do not have the work experience, need to improve on interpersonal skills at the workplace so that they can demonstrate innovative behaviour in the workplace. As most

of the students did not show innovative behaviour, and at the same time, their interpersonal skills need to be supervised by the manager at the workplace.

Study from Sui et al. (2021) revealed that students with extraversion and conscientious personality from Big Five Personality demonstrate a positive relationship to perform innovative behaviour in works search compared to agreeableness and neuroticism, which have negative behaviour for career search. The Big Five Personality finding shows that interpersonal skills that are more competitive and positive are accepted in career search and indicate students who have low interpersonal skills show innovative negative behaviour. Both studies look at students in their final year. However, no study looks at the interpersonal skill of students who have the role of administrative post as a committee member in the student association. Therefore, there is a need to look at the relationship between these students' interpersonal skills and innovative behaviour.

2.2.3 Problem Solving or Decision Making

According to Warner (2002), problem-solving is creating the best solutions to problems while working. Meanwhile, Kim et al. (2018) mention that problem solving involves utilizing resources and technology with a thinking pattern to obtain the best solution for an issue. Problem-solving is seeking opportunity and utilizing it in any area. This skill is highly demanded in the working sector. Various issues have been raised, especially about university graduates' capabilities of problem-solving and innovative behaviour in the working environment (Masduki & Zakaria, 2021; Ramasamay et al., 2021; Pitan, 2016). Since seeking opportunities and solving, problems always occur in business; therefore, most of the studies conducted on problem-solving looked through entrepreneurship studies. Students are exposed to problem-solving as they have been taught in universities where case study, problem-based learning, team-based learning and outside classroom tasks are introduced. Students use the knowledge, critical thinking to solve the problem (Kim et al., 2018).

Findings from the study conducted by Kim et al. (2018) indicate a strong positive relationship between problem-solving skills and innovative behaviour among students. Students decide on the job based on the interest related to the academic field they have learned so that they know how to solve problems at work (Kamaruddin & Rasdi, 2021). Despite studies looking at the courses and students, little study looks on the students with leadership or administrative post in the student's club or society with problem-solving skills and relation to innovative behaviour. There is a need to look at this perspective as these students are exposed to real-life problems or situations to handle in their activities.

2.2.4 Cognitive Development or Critical Analysis

According to Papilia and Martorell (2014) cognitive development as a pattern of change in mental aptitude for learning, focus, memory, language, thinking, reasoning, and creativity. Ortiz (2009), define cognitive as a set of mental processes that occur between the receipt of a stimulus and the response to it. Individual thought processes such as skills, motivation, leadership and leadership effectiveness are highlighted in the cognitive approach. This need is met by the cognitive behavioural method, which teaches people how to recognize non-adaptive thinking patterns and lead to bad feelings. Changes in how one thinks perceives and assumes can result in a shift in emotions toward positive and the emergence of more adaptive behaviour patterns (Dobson & Dozois, 2010).

Albutti (2014) further stated that all academic leaders or educators must analyze three different critical outcomes, namely cognitive, skill and affective learning outcomes, to assess an individual's efficacy in moulding good thinking and inventive behaviour. Thus, cognitive development and critical analysis are crucial for creating innovative behavioural capabilities that are effective and important in expressing stances, criticisms, contradictions

and understanding the opinions and views of others. From points of view, cognitive development and critical analysis also show each individual or student's different and unique ways to process information, such as giving and accepting criticism from others. Meanwhile, the connection of cognitive development and critical analysis through good innovative behaviour also can improve knowledge and skills related to human resource development. Findings from the study conducted by Stein (2000), cognitive development and critical analysis may help develop critical thinking, besides contributing to forming opinions based on one's own opinions among peoples.

2.2.5 Organization and Planning

The critical skills needed for organizational performance are managing oneself and teams, which involves changes in roles and requires new skills to be competent to fulfil one responsibility. A great future leader must realign and redistribute talents, attention, and time between helping others and helping themselves (Gentry, 2016). In today's uncertain world, establishing leadership requires collaboration among organizational actors, including leaders, followers, and others (Collinson & Tourish, 2015). Based on this, the assumption that leadership encompasses the whole person, rather than just a set of skills, competencies, and knowledge, which allows students to learn about their own experiences, values, aspirations, and interactions with others, will have an impact on who they are and how they lead (Waddock & Lozano, 2013).

According to Lewis et al. (2001), planning is an ongoing process that involves preparing a plan and formulates the ways and stages towards problem-solving. By Capon et al. (2000), planning is closely related to the current problems of a place at a particular time. They serve as a way to solve problems or plan in the best way. In other words, planning is determining what needs to be done at a time by a person and this involves several stages of work. Findings from the study conducted by Robbins and Culter (2007), effective organizational management, is very closely related to systematic planning.

Meanwhile, a good formation of an effective organization shows productive, innovative behaviour among students in forming a formal organization. In any organization, organizational behaviour also defined as the nature and scope of activities to perform specific processes. In term of the dynamics of organization, business functions within an organization are classified into two main groups. Firstly, fundamental process (optional) is the provision of operational functions, production, or other work functions. Second is management process in which control functions are implemented, which are management and leadership (Ivanko, 2013). Clearly shows that the formation of an efficient organization can result in effective planning and creating good innovative behavioural characteristics that are competitive at various levels of students.

2.2.6 Self-Confidence

Self-confidence is defined as "individuals' performance expectations and their self-assessments of abilities and accomplishments" (Emrah & Orhan, 2013). Students may need to develop self-confidence as their ability. The ability will be needed in their social skills and demanded in leaderships. All leaders must have self-confidence as a most valuable characteristic. Through an internal psychological mechanism known as self-direction, self-confidence influences every element of a leader's thoughts, feelings, behaviour, relationships, and work performance (Ruth, 2017). A leader is a person who controls or commands a group, society, or country (Ahmad et al., 2021). Leaders in organizations tend to be more confident and have a stronger belief in their abilities and opinions, enabling them to lead and manage employees more effectively (Greenacre et al., 2014).

Meanwhile, innovative behaviour begins with the recognition of a problem, the selection of a new concept, and the resolution of the problem (Kanter, 1988). Innovative behaviour in business refers to the creation, adoption,

or use of new ideas to improve work and performance (Janssen, 2000). This study focuses on the need of self - confidence in students because it is an essential element not only in leadership but also as a basis in the innovative behaviour of students in problem-solving and decision-making.

2.2.7 Diversity Awareness

Diversity is an essential phenomenon in today's world. The variety of distinctions between persons in an organization is referred to as diversity. Race, gender, ethnicity, age, personality, cognitive style, tenure, organizational role, education, background, and more are all factors in diversity (Green et al., 2002, as cited in Rahman, 2019). The importance of diversity awareness among students to form a value of sensitivity to the difficulties or circumstances of other people around them. According to Liqaa (2019), the great range of values, ideas, attitudes, and rules that define regional, ethnic, religious, and other cultural groupings reflects cultural diversity. It usually occurs in a diverse community of more than one culture. Each student must create an attitude of appreciation even from the point of view of different beliefs and perceptions. This study will lead to the awareness of diversity among students, including aspects of innovative behaviour that will affect students' attitudes in leadership in future work. According to Ahmad et al. (2021), a community leader's success depends on the situation and the leader's ability to solve the problem, showing how diversity awareness can build innovative skills among students. The public should understand that leaders are born and honed despite coming from many different backgrounds (Ahmad et al., 2021).

2.2.8 Technology

Individuals live in a global world where technology, particularly information and communications technology, is changing the way organizations create and capture value, as well as how and where we work, engage, and communicate (Wayne & Ramiro, 2016). Industry 4.0, which harnesses the power of communications technology and inventive technologies to propel the manufacturing industry forward, requires students to have technological skills and competence (Kagermann et al., 2013 as cited in Shu et al., 2018). The digital age is all about using digitized data, information, and expertise to create and trade products and services. The infrastructure of information and communication technology serves as the foundation for this century. According to Beyrouti (2006), technology will undoubtedly make communication easier, faster, and less expensive for everyone. They have the potential to contribute not just to trade and business globalization but also to greater international political, social, and cultural integration, as well as a shift away from the tribal and ethnic conflicts that have dominated human history. Therefore, technology is vital in innovative behaviour. Students can use technological skills by using available resources to facilitate work and make it an advantage of expertise in competing in future careers. The best way to build effective communication channels is to provide social media facilities and community websites, distribute information, hold regular meetings, and communicate with other community organizations (Ahmad et al., 2021).

2.3 Research Framework

Figure 1 depicts the proposed conceptual framework for this investigation. A conceptual framework is given to recognize the linkages as shown in Figure 1 based on a thorough evaluation of previous research.



Figure 1 Research Framework

3. Research Methodology

This exploratory study used a questionnaire as its survey instrument to collect data and information. Also, this study was a cross-sectional study, a type of observational study that analyses data from a population, or a representative subset, at a specific point in time. This study was conducted at three campuses in Universiti Teknologi MARA at Southern Region of Malaysia, with 728 respondents. A simple random sampling used in this study that each individual is chosen entirely by chance, and each member of the population has an equal chance or probability of being selected. Since the subject matter of this study is among students who had a position in any club or organization on campuses, the total number from three campuses is 2,156 students. Table 1 illustrates the proposition of the population and sample from each campus. Responses received from respondents after three (3) weeks duration were given to them to answer the google form sheet questions. They are required to click the following link: https://docs.google.com/forms/d/e/1FAIpQLScOHV08gWfCt_0Jj_mKG87xi2tNrWs--ip0lKGUvEpzlE5RLw/vie wform?usp=sf link.

As the google form sheet questionnaire was well developed after getting the verification from the Ethics Committee, the questionnaire link was then disseminated among the respondents in these three (3) campuses. A leader from each branch was appointed to monitor the responses and ensure this study got good cooperation from the respondent. The questionnaire consisted of ten (10) parts. Part A was about the profile of the respondents that consists of seven (7) questions such as campus, gender, age, education, CGPA, race and position in club or organization. Meanwhile, Part B was about the independent variable covering eight (8) components: self-management, cognitive development/critical analysis, interpersonal skills, problem-solving, organization and planning, self-confidence, diversity awareness, and technology. Besides, Part C was about the dependent variable, which is innovative behaviour. Part B and C used the Likert Scale from 1 (Strongly Disagree) to 5 (Strongly Agree). The total number of items (questions) in this questionnaire is 76 items. The items used in this study adopted from previous studies. To determine the exact number of respondents, the researcher used G-Power software with a 95 per cent confidence level and 5 percent margin of error. The result shown in Table 1.

Campus	Population	Sample Targeted	Responses Received				
Campus A	149	101	149				
Campus B	580	232	263				
Campus C	1 440	304	316				
Total	2 156	637	728				

 Table 1
 Population and Sample of Respondents

Table 1 also shows the target population and sample of respondents. A total of 728 usable responses were analyzed using SEM-PLS 3.0. As mentioned earlier, the questionnaire was distributed to various clubs and organizations membered by students in three (3) campuses. The composition of student leadership skills and competencies consisted of eight (8) elements: self-management, cognitive development/critical analysis, interpersonal skills, problem-solving, organization and planning, self-confidence, diversity awareness and technology.

4. Result

For the study, the researchers had distributed a google form questionnaires to the students as respondents, who were membered in any club or organization in the university. Surprisingly, the response rate for this study was above 100%, and the cooperation from the student is highly appreciated. The responses received are shown in Table 1. For instance, respondents from Campus A have answered 149. Meanwhile, respondents from Campus B were a response to 263 instead of 232 needed. The same goes with respondents from Campus C responding to 316 instead of 304 needed, and the total number of respondents collected after three (3) weeks is 728.

4.1 Profile of the Respondents

Based on analysis using Statistical Package of Social Science (SPSS), the demographic profile of the respondents in this study has been divided into seven (7) categories. The campus, gender, age, education, CGPA, race and position in a club or organization. Table 2 shows that from the 728 responses analyzed, 316 respondents (43.4 percent) came from Campus C, 263 respondents (36.1 percent) came from Campus B, and 149 respondents (20.5 percent) are students from Campus C. The majority of the respondents were females, with 538 respondents (73.9 percent), and the rest were 190 respondents (26.1 percent) who were males. More than half of respondents were in the age group of 18 to 20 years old, with 454 respondents (62.4 percent). This is followed by respondents from the age group of 21 to 23 years old, with 259 respondents (35.6 percent) and 14 respondents (1.9 percent) were from the age of 24 to 26 years old. Based on the analysis, it was found that 462 respondents (63.5 percent) were Diploma students and the balance of 266 respondents (36.5 percent) were Degree students. Most of them were excellent in academic background. Their CGPA proves it, and the majority of them obtained 3.00 and above. In detail, 346 respondents (47.5 percent) had gotten 3.51 to 4.00, 326 respondents (44.8 per cent) had gotten 3.01 to 3.50. The rest had gotten 2.51 to 3.00, which is 51 respondents (7 percent) and only five (5) respondents (0.7 percent) had gotten 2.00 to 2.50. In terms of race, most of them were Malay students, which are 713 respondents (97.9 percent), 13 respondents (1.8 percent) were Bumiputera Sabahan, and only two (2) respondents (0.3 percent) were Bumiputera Sarawakian. Finally, their position in club or organization recorded that most of them were held in others position which is 255 respondents (33.0 percent), followed by the president as 100 respondents (13.7 percent), the multimedia unit as 79 respondents (10.9 percent), secretary as 60 respondents (8.2 percent) and vice president as 55 respondents (7.6 percent). Their balance would come from various positions such as treasurer, protocol unit,

activities unit, academic unit, and community units.

Item	Number of Respondents	Percentage of Respondents (%)
Campus		
Campus A	149	20.5
Campus B	263	36.1
Campus C	316	43.4
Total	728	100
Gender		
Male	190	26.1
Female	538	73.9
Total	728	100
Age		
18–20 years old	454	62.4
21–23 years old	259	35.6
24–26 years old	14	1.9
Above 26 years old	1	0.1
Total	728	100
Education		
Diploma	462	63.5
Degree	266	36.5
Total	728	100
CGPA		
2.00–2.50	5	0.7
2.51-3.00	51	7
3.01–3.50	326	44.8
3.51-4.00	346	47.5
Total	728	100
Race		
Malay	713	97.9
Bumiputera Sabah	13	1.8
Bumiputera Sarawak	2	0.3
Total	728	100
Position in Club or Organization		
President	100	13.7
Vice President	55	7.6
Secretary	60	8.2
Assistant Secretary	19	2.6
Treasurer	39	5.4
Assistant Treasurer	15	2.1
Multimedia Unit	79	10.9
Protocol Unit	26	3.6
Activities Unit	20	2.7
Academic Unit	38	5.2
Community Unit	22	3
Others	255	35
Total	728	100

Table 2	Profile of the Respondents

4.2 Measurement Model Evaluation

PLS-SEM (Smart PLS 3.0) was used to examine the measurement model (Ringle et al., 2015). Factor loading, composite reliability, Cronbach's alpha, average extracted variance (AVE) and discriminant validity, as well as Heterotrait-Monotrait (HTMT) as proposed by Henseler et al. (2015) were evaluated.

4.2.1 Measurement Model Evaluation - Internal Consistency Reliability

Internal consistency reliability, which comprises of Cronbach's Alpha and composite reliability, is the first criterion in the measurement model. To indicate the research's modest dependability, the composite reliability values should be larger than 0.70 (Hair et al., 2014).

Using SEM-PLS, Table 3 shows the composite reliability and Cronbach's Alpha values for self-management, cognitive development/critical analysis, interpersonal skills, problem-solving, organization and planning, self-confidence, diversity awareness, technology and innovative behaviour. All constructs had strong composite reliability where values between 0.856 and 0.953 are considered strong and satisfactory (Nunnally & Bernstein, 1994). The Cronbach's alpha values for the constructs were strong with the self-management reported as 0.871, cognitive development/critical analysis as 0.776, interpersonal skills as 0.901, problem-solving as 0.923, organization and planning as 0.946, self-confidence as 0.889, diversity awareness as 0.854, technology as 0.765 and innovative behaviour as 0.929. The internal consistency of 0.60 is minimally acceptable, and all these values were well above that (Nunnally & Bernstein, 1994). As a result, all of the constructs had composite reliability greater than 0.70, and Cronbach's Alpha values were greater than 0.60, implying acceptable reliability.

Construct	Item	Loading range (> 0.70)	Composite Reliability (> 0.70)	Cronbach's Alpha $(\alpha) (> 0.60)$
Self-Management (SM)	9 items	0.704–0.784	0.900	0.871
Cognitive Development/Critical Analysis (CD/CA)	4 items	0.753–0.806	0.856	0.776
Interpersonal Skills (IS)	11 items	0.722-0.790	0.920	0.901
Problem Solving (PS)	10 items	0.709–0.820	0.936	0.923
Organization and Planning (OP)	15 items	0.742-0.843	0.953	0.946
Self-Confidence (SC)	5 items	0.812-0.859	0.918	0.889
Diversity Awareness (DA)	4 items	0.805-0.848	0.900	0.854
Technology (T)	2 items	0.891-0.909	0.895	0.765
Innovative Bahavior (IB)	9 items	0.702-0.825	0.941	0.929

 Table 3
 Internal Consistency Reliability

4.2.2 Measurement Model Evaluation - Convergent Validity

To test the convergence validity of a measurement model, the loadings, average variance extracted (AVE), and composite reliability are typically utilized (Gholami et al., 2013). According to Hair et al. (2010) the authors used a factor loading value of more than 0.70. The loadings were all higher than 0.7 except for BA1, BA2, BC16, BC18, BC19, BD32, BE36, BE41 and BE49, which need to be deleted. Aside from the loading values, the composite reliability and average variance extracted (AVE) are also factors to consider when establishing convergence validity. Table 4 shows the new loading values after eliminating nine (9) entries. All of the loadings were higher than the acceptable value of 0.70 (Hair et al., 2010). The composite reliability (CR) values, which show how well the construct indicators signal the latent construct, ranged from 0.856 to 0.953, which was higher than the recommended threshold of 0.70 (Hair et al., 2010). Because it is thought to explain more than half of the variance, the construct's

AVE should be greater than 0.50. Meanwhile, AVE values less than 0.50 indicated that there were more residual mistakes in the items that the construct had not yet explained. As a result, all of the AVE values at the construct level in Table 4 imply that the measurement model is convergently valid. The AVE ranged between 0.564 and 0.809.

Construct	Loading range (> 0.70)	CR (> 0.70)	AVE (> 0.50)	Cronbach Alpha (α) (> 0.60)
Self-Management (SM)	0.704–0.784	0.900	0.564	0.871
Cognitive Development/Critical Analysis (CD/CA)	0.753–0.806	0.856	0.599	0.776
Interpersonal Skills (IS)	0.722-0.790	0.920	0.591	0.901
Problem Solving (PS)	0.709–0.820	0.936	0.618	0.923
Organization and Planning (OP)	0.742-0.843	0.953	0.631	0.946
Self-Confidence (SC)	0.812-0.859	0.918	0.692	0.889
Diversity Awareness (DA)	0.805–0.848	0.900	0.694	0.854
Technology (T)	0.891-0.909	0.895	0.809	0.765
Innovative Bahavior (IB)	0.702–0.825	0.941	0.638	0.929

Table 4 Convergent Validity of Measurement Model (After Deletion of 9 Items)

4.2.3 Measurement Model Evaluation - Discriminant Validity

Cross-loadings, the Heterotrait-Monotrait (HTMT) Ratio, and the Fornell-Larcker (1981) criterion of comparing construct correlations to the square root of the AVE for that construct are all typical ways for determining discriminant validity. When an item's loading on a construct is greater than all of its cross-loading with other constructs, this method is used to evaluate discriminant validity. The results demonstrate that the first construct, self-management, is made up of nine (9) elements, all of which have significant loadings in this construct. Four (4) items were found to have substantial loadings for cognitive development/critical analysis, while eleven (11) items were found to have significant loadings for interpersonal skills. In addition, there are ten (10) items in the problem-solving section that have significant loadings. Meanwhile, the organization and planning consist of fifteen (15) items also found to have significant loadings. Besides, the self-confidence, diversity awareness, technology and innovative behaviour which comprises five (5), four (4), two (2) and nine (9) items respectively also found to have significant loadings. Table 5 illustrates that all the cross-loading values of the items.

	Self- management	Cognitive development/ Critical analysis	Interpersonal skills	Problem solving	Organization and planning	Self confidence	Diversity	Technology	Innovative behavior
BA3	0.723	0.530	0.489	0.540	0.493	0.472	0.418	0.335	0.469
BA4	0.770	0.511	0.499	0.520	0.534	0.446	0.450	0.378	0.457
BA5	0.784	0.481	0.520	0.521	0.560	0.488	0.455	0.366	0.497
BA6	0.772	0.538	0.515	0.529	0.547	0.461	0.517	0.398	0.478
BA7	0.753	0.555	0.560	0.555	0.530	0.519	0.487	0.358	0.489
BA8	0.746	0.569	0.531	0.600	0.520	0.445	0.531	0.412	0.476
BA9	0.704	0.562	0.532	0.566	0.543	0.447	0.530	0.401	0.470
BB10	0.459	0.761	0.549	0.516	0.479	0.450	0.393	0.318	0.461
BB11	0.579	0.775	0.516	0.569	0.497	0.426	0.521	0.356	0.470
BB12	0.560	0.806	0.634	0.620	0.578	0.520	0.451	0.354	0.503
BB13	0.605	0.753	0.535	0.591	0.553	0.451	0.530	0.378	0.478
BC14	0.494	0.513	0.722	0.576	0.554	0.550	0.449	0.361	0.504

Table 5 Cross-Loadings

BC15	0.569	0.644	0.781	0.650	0.647	0.588	0.517	0.439	0.546
BC17	0.517	0.503	0.772	0.549	0.572	0.582	0.405	0.336	0.477
BC20	0.560	0.590	0.761	0.646	0.607	0.537	0.539	0.418	0.577
BC21	0.558	0.567	0.796	0.619	0.607	0.575	0.464	0.376	0.543
BC22	0.465	0.488	0.749	0.526	0.495	0.533	0.383	0.304	0.460
BC23	0.531	0.545	0.790	0.680	0.603	0.541	0.478	0.385	0.564
BC24	0.560	0.576	0.777	0.709	0.648	0.562	0.552	0.415	0.574
BD25	0.579	0.601	0.688	0.782	0.616	0.597	0.517	0.470	0.623
BD26	0.615	0.608	0.645	0.820	0.653	0.593	0.622	0.459	0.599
BD27	0.542	0.579	0.648	0.809	0.618	0.577	0.555	0.471	0.615
BD28	0.598	0.594	0.634	0.791	0.621	0.546	0.600	0.462	0.576
BD29	0.598	0.615	0.636	0.812	0.670	0.552	0.630	0.467	0.586
BD30	0.608	0.591	0.651	0.803	0.662	0.554	0.621	0.504	0.617
BD31	0.497	0.525	0.538	0.708	0.538	0.437	0.503	0.417	0.496
BD33	0.524	0.552	0.651	0.774	0.643	0.562	0.537	0.485	0.599
BD34	0.591	0.589	0.634	0.769	0.728	0.577	0.637	0.528	0.623
BE35	0.543	0.537	0.581	0.642	0.755	0.549	0.621	0.459	0.534
BE37	0.523	0.528	0.627	0.624	0.766	0.562	0.529	0.479	0.545
BE38	0.559	0.549	0.695	0.660	0.791	0.601	0.530	0.432	0.595
BE39	0.531	0.513	0.533	0.578	0.759	0.496	0.529	0.431	0.532
BE40	0.605	0.571	0.652	0.671	0.824	0.619	0.568	0.458	0.608
BE42	0.607	0.504	0.615	0.646	0.806	0.574	0.592	0.502	0.597
BE43	0.598	0.575	0.614	0.700	0.840	0.589	0.654	0.527	0.611
BE44	0.546	0.571	0.659	0.667	0.843	0.626	0.607	0.475	0.613
BE45	0.543	0.551	0.616	0.597	0.764	0.595	0.571	0.442	0.588
BE46	0.582	0.557	0.613	0.671	0.842	0.615	0.644	0.501	0.623
BE47	0.575	0.546	0.644	0.680	0.788	0.629	0.573	0.504	0.666
BE48	0.546	0.494	0.501	0.614	0.742	0.501	0.634	0.485	0.537
BF50	0.535	0.508	0.635	0.584	0.621	0.825	0.520	0.414	0.557
BF51	0.563	0.494	0.615	0.602	0.634	0.859	0.544	0.432	0.553
BF52	0.483	0.507	0.586	0.581	0.609	0.813	0.537	0.427	0.531
BF53	0.498	0.505	0.597	0.579	0.596	0.850	0.520	0.426	0.572
BF54	0.518	0.476	0.587	0.602	0.587	0.812	0.564	0.450	0.563
BG55	0.551	0.540	0.612	0.661	0.671	0.625	0.805	0.536	0.627
BG56	0.548	0.534	0.582	0.658	0.625	0.571	0.848	0.542	0.582
BG57	0.515	0.463	0.396	0.543	0.565	0.446	0.837	0.521	0.479
BG58	0.526	0.487	0.433	0.573	0.582	0.471	0.841	0.527	0.488
BH59	0.416	0.399	0.446	0.517	0.518	0.455	0.511	0.891	0.514
BH60	0.488	0.419	0.448	0.568	0.557	0.473	0.636	0.909	0.559
C1	0.552	0.520	0.613	0.666	0.662	0.578	0.562	0.540	0.801
C2	0.537	0.482	0.548	0.607	0.616	0.545	0.598	0.558	0.792
C3	0.548	0.513	0.575	0.634	0.612	0.548	0.559	0.500	0.825
C4	0.509	0.484	0.520	0.585	0.598	0.518	0.560	0.445	0.801
C5	0.490	0.487	0.559	0.624	0.572	0.500	0.514	0.452	0.818
C6	0.420	0.418	0.514	0.491	0.518	0.488	0.391	0.357	0.702
C7	0.485	0.492	0.553	0.610	0.574	0.522	0.520	0.464	0.814
C8	0.525	0.507	0.560	0.605	0.600	0.555	0.538	0.483	0.825
C9	0.484	0.531	0.539	0.597	0.569	0.534	0.499	0.468	0.802

Meanwhile, Henseler et al. (2015) proposed the Heterotrait-Monotrait (HTMT) correlation ratio as a rigorous technique of obtaining discriminant validity. In order to use HTMT as a criterion, it must be compared to a predetermined threshold. A result of 0.90, according to Gold et al. (2001), indicates a lack of discriminant validity. As a result, discriminant validity has been established, as shown in Table 6.

Constructs	1	2	3	4	5	6	7	8	9
1. Cognitive Development/Critical Analysis (CD/CA)									
2. Diversity Awareness (DA)	0.745								
3. Innovative Behavior (IB)	0.727	0.729							
4. Interpersonal Skills (IS)	0.859	0.685	0.754						
5. Organization and Planning (OP)	0.795	0.816	0.788	0.832					
6. Problem Solving (PS)	0.877	0.822	0.813	0.882	0.869				
7. Self Confidence (SC)	0.719	0.727	0.734	0.812	0.797	0.780			
8. Self-Management (SM)	0.867	0.744	0.704	0.781	0.782	0.813	0.709		
9. Technology (T)	0.590	0.785	0.704	0.594	0.702	0.717	0.626	0.616	

Table 6 Heterotrait–Monotrait (HTMT)

The Fornell-Larcker criterion compares the square root of the AVE values to the correlations of the latent variables as the following step. The square root of any AVE construct must be bigger than its highest correlation with any other construct in order to use this strategy. This study's Fornell-Larcker Criterion is shown in Table 7.

Table 7 displays the Fornell-Larcker criterion results with the square root of the AVE on the diagonal and the correlations between the variables in the lower left triangle. Overall, the square roots of the AVEs for the construct cognitive development/critical analysis (0.774), diversity awareness (0.833), innovative behaviour (0.799), interpersonal skills (0.769), organization and planning (0.794), problem-solving (0.786), self-confidence (0.832), self-management (0.751) and technology (0.900). As a result, this study work meets the criteria for the cross-loadings technique, the HTMT Ratio, and the Fornell-Larcker criterion, demonstrating the constructs' discriminant validity. In conclusion, the measures in this study were found to have both convergent and discriminant validity.

Constructs	1	2	3	4	5	6	7	8	9
1. Cognitive Development /Critical Analysis (CD/CA)	0.774								
2. Diversity Awareness (DA)	0.613	0.833							
3. Innovative Behavior (IB)	0.618	0.663	0.799						
4. Interpersonal Skills (IS)	0.723	0.621	0.694	0.769					
5. Organization and Planning (OP)	0.682	0.740	0.742	0.773	0.794				
6. Problem Solving (PS)	0.743	0.739	0.756	0.811	0.815	0.786			
7. Self Confidence (SC)	0.598	0.645	0.667	0.726	0.732	0.709	0.832		
8. Self-Management (SM)	0.713	0.645	0.635	0.694	0.710	0.729	0.624	0.751	
9. Technology (T)	0.455	0.640	0.597	0.497	0.598	0.604	0.516	0.504	0.900

 Table 7
 Fornell-Larcker Criterion

Note: Diagonals (in bold) represent the average variance extracted while the other entries represent the squared correlation.

4.3 Structural Model Evaluation

The structural model was evaluated using path analysis. The R2 value and the level of significance of the path coefficient are the major evaluation criteria for the structural model (Hair et al., 2011). Figure 2 illustrates the

structural model of the study consists of eight (8) independents variables which are self-management, cognitive development/critical analysis, interpersonal skills, problem-solving, organization and planning, self-confidence, diversity awareness and technology. Meanwhile, innovative behaviour a dependent variable in this study.



Figure 2 Structural Model



The structural model requires figuring out how latent variables or constructs are linked. The first stage in analyzing the structural model is to look into issues of collinearity between each set of constructs separately for each component. Table 8 shows the Variance Inflation Factor (VIF) results for the various analysis. As can be seen, all of the VIF outputs are clearly below the threshold of 5. As a result, collinearity among the constructs is not an issue in the structural model. As a result, the author can continue to examine the path coefficient, R2, f2, and Q2 values in the default report.

Construct	VIF (< 5)
Self-Management (SM)	2.719
Cognitive Development/Critical Analysis (CD/CA)	2.770
Interpersonal Skills (IS)	3.901
Problem Solving (PS)	4.923
Organization and Planning (OP)	4.166
Self-Confidence (SC)	2.628
Diversity Awareness (DA)	2.915
Technology (T)	1.852

 Table 8 Collinearity Assessment of the Constructs

4.3.2 Structural Model Evaluation - Assessment of Path Coefficients

The strength of the links and hypotheses is empirically supported, as indicated by path coefficients. Only four (4) path correlations are confirmed to be important, as shown in Table 9. The exogenous constructs such as problemsolving, organization and planning, self-confidence and technology are significantly contributed to explaining the variation in the endogenous latent variable namely the innovative behaviour with the β value of 0.257 (30%), 0.201 (20%), 0.123 (10%) and 0.148 (15%) respectively. Meanwhile the relationships between self-management, cognitive development/critical analysis, interpersonal skills and diversity awareness with innovative behavior are not significantly with the β value 0.041 (p-value 0.194), 0.022 (p-value 0.293), 0.089 (p-value 0.053) and 0.055 (pvalue 0.122) respectively. The parameter's t-values represent the strength of the association represented by the parameter, with a higher t-value indicating a stronger link. The t-values of each coefficient were calculated using the bootstrapping process using a 5000 sample (Chin, 2010).

Structural Path	Path coefficient (β)	t- value	P-value
Self-Management (SM) \rightarrow Innovative Behavior (IB)	0.041	0.863	0.194
Cognitive Development/Critical Analysis (CD/CA) \rightarrow Innovative Behavior (IB)	0.022	0.545	0.293
Interpersonal Skills (IS) \rightarrow Innovative Behavior (IB)	0.089	1.617	0.053
Problem Solving (PS) \rightarrow Innovative Behavior (IB)	0.257	4.251	0.000***
Organization and Planning (OP) \rightarrow Innovative Behavior (IB)	0.201	3.237	0.001***
Self-Confidence (SC) \rightarrow Innovative Behavior (IB)	0.123	2.846	0.002***
Diversity Awareness (DA) \rightarrow Innovative Behavior (IB)	0.055	1.168	0.122
Technology $(T) \rightarrow$ Innovative Behavior (IB)	0.148	3.847	0.000***

Table 9 Significant Testing Results of the Structural Model Path Coefficients

* 1.645–2.32, ** 2.33 and above, ***p < 0.01.

4.3.3 Structural Model Evaluation - Assessment of Coefficient of Determination (R2)

The R2 value is a measure of model prediction accuracy that is determined as the squared correlation between the actual and projected values of a certain endogenous component. When it comes to the R2 value, there is no hard and fast rule. Chin (1998) proposed 0.67 (substantial), 0.33 (moderate), and 0.19 as threshold values for measuring R2 value (weak). The R2 value for the endogenous construct that reaches the appropriate R2 value is shown in Table 10. Overall, the model explains a "moderate" quantity of data, as expected by Chin (1998). The proposed theoretical model explains 65 percent or 0.652 of the variances in innovative behaviour, which is a very good level of model predictability, according to the R2 values for the endogenous variable in this study's research model. As a result,

this model is useful and has a high predictive potential.

Endogenous variable	R ² value	Threshold
Innovative Behavior (IB)	0.652	\geq 0.33 (moderate)

Table 10	Determination	Coefficient ((\mathbf{R}^2)
I GOIC IO	Deverminution	Countration	

4.3.4 Structural Model Evaluation — Assessment of Effect Size (f2)

The effect size (f2) is a metric for determining the relative impact of an exogenous (predictor) construct on an endogenous (endogenous) construct (Hair et al., 2014). Following Cohen's (1988) standards, f2 values of 0.02 may be regarded a minor effect, 0.15 a medium effect, and 0.35 a big effect when measuring the relative effect size of the exogenous construct on the endogenous construct. Table 11 shows the final result. The exogenous constructs namely self-management, cognitive development/critical analysis, interpersonal skills, problem-solving, organization and planning, self-confidence, diversity awareness and technology in explaining the predictive value on the endogenous latent variable, namely innovative behaviour has an f2 effect size of 0.002, 0.000, 0.006, 0.038, 0.028, 0.016, 0.003 and 0.034 respectively. In summary, all of the constructs had a small effect size in producing the f2 for innovative behavior.

 Table 11
 Effect Size (f²) of the Latent Variable

Structural Path	Effect size (f ²)	Rating
Self-Management (SM) \rightarrow Innovative Behavior (IB)	0.002	Small
Cognitive Development/Critical Analysis (CD/CA) \rightarrow Innovative Behavior (IB)	0.000	Small
Interpersonal Skills (IS) \rightarrow Innovative Behavior (IB)	0.006	Small
Problem Solving (PS) \rightarrow Innovative Behavior (IB)	0.038	Small
Organization and Planning (OP) \rightarrow Innovative Behavior (IB)	0.028	Small
Self-Confidence (SC) \rightarrow Innovative Behavior (IB)	0.016	Small
Diversity Awareness (DA) \rightarrow Innovative Behavior (IB)	0.003	Small
Technology $(T) \rightarrow$ Innovative Behavior (IB)	0.034	Small

Note: The values of f^2 ; 0.02 = small, 0.15 = medium, 0.35 = large

4.3.5 Structural Model Evaluation - Assessment of Predictive Relevance (Q2) and Blindfolding

The Q2 score in SEM-PLS is a predictive relevance metric based on the blindfolding approach (Hair et al., 2014). A Q2 score greater than zero for a reflecting endogenous latent variable in the structural model demonstrates the path model's predictive importance for this construct. The Q2 value was acquired using the blindfolding procedure in SmartPLS3.2.1, as indicated in Table 12. The Q2 value is significantly higher than zero, indicating that the model is predictive of the reflecting endogenous latent variables.

 Table 12
 Predictive Relevance (Q2) of Endogenous (Omission Distance = 7)

Endogenous variable	Q2>0			
Innovative Behavior (IB)	0.382			

4.3.6 Overall Results of Structural Model Analysis

Table 13 summaries the findings of the hypothesis testing. Only four (4) hypotheses were accepted and were statistically significant at p < 0.01. Problem solving (H4; = 0.257, t = 4.251**), organization and planning (H5; = 0.201, t = 3.237**), self-confidence (H6; = 0.123, t = 2.846**), and technology (H8; = 0.148, t = 3.847**) all exhibit substantial direct correlations with innovative behaviour. In the end, four (4) hypotheses were shown to be valid in

this study.

Hypotheses	Relationship	Standard Beta (β)	Standard Error	t-value	f2	p-value	Decision
H1	Self-Management (SM) → Innovative Behavior (IB)	0.041	0.048	0.863	0.002	0.194	Not Supported
H2	Cognitive Development/Critical Analysis (CD/CA) → Innovative Behavior (IB)	0.022	0.040	0.545	0.000	0.293	Not Supported
Н3	Interpersonal Skills (IS) → Innovative Behavior (IB)	0.089	0.055	1.617	0.006	0.053	Not Supported
H4	Problem Solving (PS) \rightarrow Innovative Behavior (IB)	0.257	0.060	4.251	0.038	0.000***	Supported
Н5	Organization and Planning (OP) \rightarrow Innovative Behavior (IB)	0.201	0.062	3.237	0.028	0.001***	Supported
H6	Self-Confidence (SC) \rightarrow Innovative Behavior (IB)	0.123	0.043	2.846	0.016	0.002***	Supported
H7	Diversity Awareness (DA) → Innovative Behavior (IB)	0.055	0.047	1.168	0.003	0.122	Not Supported
H8	Technology (T) \rightarrow Innovative Behavior (IB)	0.148	0.037	3.847	0.034	0.000***	Supported

Table 13 Results of the Structural Model Analysis (Hypotheses Testing)

* 1.645 - 2.32, ** 2.33 and above, ***p < 0.01

5. Discussion

There are a few points worth discussing, overall only four (4) personal characteristics have strong direct relationships with the innovative behaviour. These are problem solving, organization and planning, self-confidence and technology. First, the authors were astonished to find, the problem-solving is associated with innovative behaviour among students in public higher learning institution in Southern Region of Malaysia. This is in line with the study by Kim et al., (2018) which stated that students are exposed to problem-solving during the courses that they have been taught in universities where case study, problem-based learning, team-based learning and outside classroom tasks are introduced. In addition, Kamaruddin and Rasdi (2021) also agreed that students make decision on the job based on the interest related to the academic field that they have learn so that they know how to solve problem occur in the work.

Second, the findings also described that organizational and planning has strong relationship with innovative behaviour. As stated by Robbins and Coulter (2007), a good formation of an efficient organization shows effective innovative behaviour among students in the formation of a formal organization. Clearly shows that the formation of an efficient organization can result in effective planning and creating good innovative behavioural characteristics that are competitive at various levels of students. The next finding to be discussed concerns the part of the self-confidence with also related with innovative behaviour. A study done by Janssen (2000) focuses on the need of self -confidence in students because it is an important element not only in leadership but also as a basis in the innovative behaviour of students in problem-solving and decision-making.

Finally, the research revealed that technology also has relationship with innovative behavior among students. This supported the previous research done by Ahmad et al. (2021) which stated that technology is important in innovative behaviour where students can use technological skills by using available resources to facilitate work and make it an advantage of expertise in competing in future careers. The best way to build effective communication channels is to provide social media facilities and community websites, distribute information, hold regular meetings, and communicate with other community organizations.

6. Conclusion

The effect of student leadership competency on innovative behaviour were empirically examined in this work, which developed a model and tested it., this research concentrates on undergraduate students whose perceptions of their ability to innovate influenced by their competency perceptions. Generalization to other groups would necessitate careful interpretation and comprehension of individual distinctions. This study only focuses on the undergraduate student of the University of Technology MARA in the Southern Region and data collected were limited for this area only. Further study can enlarge the sampling size that covers all regions to make a better generalization. This study also suggested being conducted in different types of universities, such as Research University or Private University. As the current study only focused on the level of leadership competency towards student innovative behaviour, future studies should include moderator or mediator variables to have a more holistic view of innovative behaviour. In conclusion, it is suggested to provide a specific leadership development programme to develop leadership capabilities and competencies among students.

Acknowledgements

The authors gratefully acknowledge Universiti Teknologi MARA Cawangan Johor for the financial support provided for this research under Bestari Research Grant Phase 2/2020 600-UiTMJ (PJIA.5/2).

References

- Ahmad A. M. R., Mohd F. A. A., Nurfazreen A. M. N. and Roziah M. R. (2021). "Characteristics and success factors of rural community leadership in Malaysia: A focus group analysis", *Pertanika J. Soc. Sci. & Hum*, Vol. 29, No. 3, pp. 1591-1609.
- Albutti A. M. (2014). "Leadership competencies of the academic head of department at Ha'il University", *Journal of Educational and Psychological Sciences*, Vol. 15, No. 2, pp. 629-662.
- Avvisati F., Jacotin G. and Vincent-Lancrin S. (2013). "Educating higher education students for innovative economies: What international data tell us", *Tuning Journal for Higher Education*, Vol. 1, pp. 223-240.
- Beyrouti (2006). "The impact of technological innovation on organizations, work environment and personal lives Nouri", in: *PICMET 2006 Proceedings*, 9-13 July, Istanbul, Turkey (c) 2006 PICMET.
- Binnawas M. S. H., Khalifa G. S. and Bhaumik A. (2020). "Antecedents of student's behavioural intentions in higher education institutions", *International Journal of Psychosocial Rehabilitation*, Vol. 24, No. 03, pp. 1949-1962.
- Bogler R. and Somechb A. (2004). "Influence of teacher empowerment on teachers' organizational commitment, professional commitment and organizational citizenship behaviour in schools", *Teaching and Teacher Education*, Vol. 20, pp. 277–289.
- Britton B. K. and Tesser A. (1991). "Effects of time-management practices on college grades", *Journal of Educational Psychology*, Vol. 83, No. 3, p. 405.
- Chin W. W. (2010). "How to write up and report pls analyses", in: V. Vinci, W. Chin, J. Henseler, & H. Wang, *Handbook of Partial Least Squares: Concepts, Methods and Applications in Marketing and Related Fields*, Berlin; Springer, pp. 655-690.
- Chin W. (1998). The Partial Least Squares Approach for Structural Equation Modeling, Marcoulides G. A (Ed.), NJ: Lawrence Erlbaum Associates, Mahwah, NJ.
- Cohen J. (1988). Statistical Power Analysis for The Behavioral Sciences (2nd ed.), Hillsdale: Lawrence Erlbaum Associates.
- Collinson D. and Tourish D. (2015). "Teaching leadership critically: New directions for leadership pedagogy", Academy of Management Learning and Education, Vol. 14, No. 4, pp. 576-594.
- Cusson R. M., Meehan C., Bourgault A. and Kelley T. (2020). "Educating the next generation of nurses to be innovators and change agents", *Journal of Professional Nursing*, Vol. 36, No. 2, pp. 13-19.
- Danquah K. (2018). "Bridging the gap between university curriculum and industrial needs: A case study of teaching interpersonal skills", *International Journal of Organizational Leadership*, Vol. 7, pp. 61-69.
- Dobson K. S. and Dozois D. J. (2010). "Historical and philosophical bases of the cognitive-behavioral therapies", in: K. S. Dobson (Ed.), *Handbook of Cognitive-Behavioral Therapies*, New York: Guilford Press, pp. 3-38.

- Edward B. J. and Halim H. (2008). "Undergraduate internships in accounting: What and how do Singapore interns learn from experience?", *Accounting Education: An International Journal*, Vol. 17, No. 2, pp. 151-172.
- Edward-Schachter M., Garcia-Granero A., Sanchez-Barrioluengo M., Quesada-Pineda H. and Amara N. (2015). "Disentangling competencies: Interrelationships on creativity, innovation and entrepreneurship", *Thinking Skills and Creativity*, Vol. 16, pp. 27-39.
- Emrah O. and Orhan Ul. (2013). "Classification of self-confidence: Is general self-confidence an aggregate of specific self-confidence?", available online at: https://www.researchgate.net/publication/258154488.
- Gholami R., Sulaiman A. B., Ramayah T. and Molla A. (2013). "Senior managers' perception on green information systems (IS) adoption and environmental performance: Results from a field survey", *Information & Management*, Vol. 50, No. 7, pp. 431-438.
- Greenacre L., Tung N. M. and Chapman T. (2014). "Self-confidence and the ability to influence", *Academy of Marketing Studies Journal*, Vol. 18, No. 2, pp. 169-180.
- Gentry W. (2016). Be the Boss Everyone Wants to Work for: A Guide for New Leaders, Center for Creative Leadership, NCL CCL Publishing, Greensboro, NC.
- Gold A. H., Malhotra A., and Segars A. H. (2001). "Knowledge management: An organizational capabilities perspective", Journal of Management Information Systems, Vol. 18, No. 1, pp. 185-214.
- Hair J. F., Black W. C., Babin B. J. and Anderson R. E. (2010). *Multivariate Data Analysis* (7th ed.), Upper Saddle River, NJ: Prentice Hall.
- Hair J. F., Ringle C. M. and Sarctedt M. (2011). "PLS-SEM: Indeed, a silver bullet", Journal of Marketing Theory and Practice, Vol. 19, No. 2, pp. 139-151.
- Hair J. F., Hult G. T., Ringle C. M. and Sarctedt M. (2014). A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM), Thousand Oaks: Sage.
- Henseler J., Ringle C. M. and Sarstedt M. (2015). "A new criterion for assessing discriminant validity in variance-based structural equation modelling", *Journal of the Academy of Marketing Science*, Vol. 43, pp. 115-135.
- Janssen O. (2000). "Job demands, perceptions of effort-reward fairness and innovative work behaviour", *J. Occup. Org. Psychol*, Vol. 73, pp. 289-302.
- Kamaruddin A. and Rasdi R. M. (2021). "Work value orientation and TVET students' career decision-making self-efficacy: The mediating role of academic major satisfaction", *Pertanika Journal of Social Sciences & Humanities*, Vol. 29, No. 2.
- Kanter R. M. (1988). "When a thousand flowers bloom: Structural, collective, and social conditions for innovation in organizations", in: Staw B. M., Cummings L. L. (Eds.), *Research in Organizational Behavior*; JAI Press: Greenwich, CT, USA, pp. 169-211.
- Kim J. Y., Choi D. S., Sung C. S. and Park J. Y. (2018). "The role of problem-solving ability on innovative behaviour and opportunity recognition in university students", *Journal of Open Innovation: Technology, Market, and Complexity*, Vol. 4, No. 1, p. 4.
- Kör B., Wakkee I., and van der Sijde P. (2021). How to promote managers' innovative behaviour at work: Individual factors and perceptions. Technovation, 99, 102127.
- Liqaa H. (2019). "Cultural diversity, awareness and teaching: A study in an EFL context", *The Journal of Asia Tefl*, Vol. 16, No. 3, pp. 987-995.
- Luoh H. F., Tsaur S. H. and Tang Y. Y. (2014). "Empowering employees: Job standardization and innovative behaviour.", *International Journal of Contemporary Hospitality Management*.
- Masduki M. and Zakaria N. (2020). "Fulfilling the demand for workplace communication skills in the civil engineering industry", *Pertanika Journal of Social Sciences and Humanities*, Vol. 28, No. 4, doi: https://doi.org/10.47836/pjssh.28.4.32.
- Nunnally J. C. and Berstein I. H. (1994). Psychometric Theory (3rd ed.), New York: McGRAW-HILL.
- Ortiz A. (2009). Aprendizaje y Comportamiento Basados en el Funcionamiento del Cerebro Humano: Emociones, Procesos Cognitivos, Pensamiento e Inteligencia, Barranquilla, Colombia: Ediciones Litoral.
- Osman A., Hadi A. M. and Abdullah M. S. (2014). "An analysis on student leadership behaviour: A higher education institutional perspective", *International Journal of Scientific & Technology Research*, Vol. 3, No. 8.
- Park S. and Kim N. H. (2021). "University students' self-regulation, engagement and performance in flipped learning", *European Journal of Training and Development*, doi: https://doi.org/10.1108/EJTD-08-2020-0129.
- Pitan O. S. (2016). "Towards enhancing university graduate employability in Nigeria", *Journal of Sociology and Social Anthropology*, Vol. 7, No. 1, pp. 1-11.
- Quintana C. D. D., Mora J., Perez P. J. and Vila L. E. (2016). "Enhancing the development of competencies: The role of UBC", *European Journal of Education*, Vol. 51, No. 1, pp. 10-24.

- Rahman H. F. (2019). *Diversity Management and the Role of Leader*. Norwegian University of Science & Technology, Ålesund, Norway.
- Ringle C. M., Wende S. and Becker J. M. (2015). "SmartPLS 3. SmartPLS GmbH, Boenningstedt", Journal of Service Science and Management.
- Roffeei S. H. M., Kamarulzaman Y. and Yusop F. D. (2017). "Inculcating innovative behavior among students: Determinant of innovation culture in Malaysian higher education", *Malaysian Online Journal of Education Management (MOJEM)*, Vol. 5, No. 4, pp. 1-17.
- Ruth H. A. (2017). Leadership and Self-Confidence. Chapter 17: Leadership Today: Practices for Personal and Professional Performance, Joan Marques and Satinder Dhiman, eds., Springer.
- Searle I. and Zadeh H. (2012). "Developing professional competence in project management using e-simulation on campus", in: Dale Holt, Stephen Segrave and Jacob L. Cybulski (Eds.), Professional Education Using E-Simulations: Benefits of Blended Learning Design, Hershey, PA: IGI Global, pp. 198-214.
- Shu I. T., Lee T. C. and Ahmad N. A. A. (2018). "An overview of industry 4.0: Definition, components, and government initiatives", Journal of Advanced Research in Dynamical and Control Systems.
- Stein D. (2000). *Teaching Critical Reflection: Myths and Realities No.* 7, Columbus, OH: ERIC Clearinghouse on Adult, Career, and Vocational Education, ED445256.
- Sui L., Qin H., Ned J. and Sun L. (2021). "Personality traits and job exploration among Latino business students: An exploratory investigation", *Psychology in the Schools*, Vol. 58, No. 1, pp. 18-32.
- Trilling B. and Fadel C. (2009). 21st Century Skills: Learning for Life in Our Times, Jossey-Bass, San Francisco, CA.
- Vahedi S., Farrokhi F. and Farajian F. (2012). "Social competence and behaviour problems in preschool children", *Iran J Psychiatry*, Vol. 7, No. 3, pp. 126-134.
- Waddock S. and Lozano J. (2013). "Developing more holistic management education: Lessons learned from two programs", Management Learning and Education, Vol. 2, No. 1, pp. 264-285
- Warner M. (2002). "Publics and counterpublics", Public Culture, Vol. 14, No. 1, pp. 49-90.
- Wayne F. C. and Ramiro M. (2016). *How Technology Is Changing Work and Organizations*, Organizational Psychology and Organizational Behavior ·
- Yoon M., Lee J., and Jo I. H. (2021). "Video learning analytics: Investigating behavioural patterns and learner clusters in video-based online learning", *The Internet and Higher Education*, Vol. 50.
- Yu L., Fan W., Wang Z., Wang X. and Yu C. (2021). "The antecedent role of proactive personality in career self-management", *Journal of College Student Development*, Vol. 62, No. 3, pp. 351-355.
- Yuan F. and Woodman R. W. (2010). "Innovative behaviour in the workplace: The role of performance and image outcome expectations", *Academy of Management Journal*, Vol. 53, No. 2, pp. 323-342.