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Assessing the Measurement Model of Malaysian Students' Ability on Emotional Intelligence When Dealing With Covid-19 Pandemic by Using Confirmatory Factor Analysis

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Abstract:

The purpose of this exploratory study is to examine the emotional intelligence of university students as well as to investigate the influence on students' emotional intelligent ability during the Covid-19 pandemic. A survey was conducted utilising a self-administered questionnaire as part of the study. The sample consisted of 300 undergraduate students who were enrolled at a public university located on students from Kuala Lumpur, Malaysia. at the time of the study. To evaluate the undergraduate students' emotional intelligence, we used the Schutte Emotional Intelligence Scale (SEIS), while the Student Attitude Scale was used to evaluate their attitudes. For the purpose of determining the factorial validity of the Emotional Intelligence construct, a Confirmatory Factor Analysis (CFA) model was employed. It was discovered that emotional intelligence had only a somewhat favourable influence on dealing with Covid-19. Results from the regression analysis, particularly the relative weight analysis using the structural equation model (AMOS-26), revealed significant incremental variance in dealing with the COVID-19 pandemic. Moreover, it is warranted for university students at the undergraduate level to play a role in responding to the pandemic with better psychological performance using emotional intelligence.

Keywords: Emotional Intelligence; Covid-19, Confirmatory Factor Analysis, Measurement Model, Students, Psychological Performance, Malaysia.

1. INTRODUCTION

In 2021, the Malaysian government made the decision to implement a total lockdown or formally known as Movement Control Order (MCO) on Malaysian citizens for almost a year (Hashim et al., 2021). The association between seeking emotional assistance and the prospect of happiness has been studied and documented in the existing literature. Due to the COVID-19 pandemic, governments around the world closed educational institutions to slow the spread of the disease, which has had a direct impact on students, educators, and institutions (Rekha, 2022). In previous studies, it has been shown that emotional support for the online environment (Atlas, Abd El-Raouf, Ghoneim & Gad, 2022; Drentea et al., 2011) is particularly crucial during the occurrence of pandemics and other similar global crises.

The outbreak of the COVID-19 pandemic has affected the world in various ways. Every single entity, be it organizations, governments, communities, or individuals, must cope with a new and immediate

threat that requires the implementation of a set of rules which limits their daily functioning and routine (WHO, 2020). Apart from the threat to their physical health, students have also had to adapt to drastic changes in curriculum structure and delivery. They have been cut off from having face-to-face interactions with their friends, enjoyed less support from their peers, and have often had to deal with increased domestic responsibilities (Goodlet et al., 2022). The term is not well-known in the field of academic research. Past empirical studies have mainly focused on more immediate and relevant actions believed to have saved the lives of millions of people. Therefore, Malaysians are generally unprepared for any more MCOs. An emotional intelligence model is needed to guide students and institutions in dealing with the COVID-19 pandemic in the future.

Several studies have been conducted to assess ability emotional intelligence perspectives among students during the Covid-19 crisis. Henceforth, this study aims to provide insights into factual findings on ability emotional intelligence. This study first investigated the factorial validity of emotional intelligence among university students during the Covid-19 pandemic. The relationship journey explains how emotional intelligence will serve as a good example for students to possess in the face of the COVID-19 pandemic.

Research Objectives

This study looked at how students perceived themselves as students and their ability emotional intelligence in dealing with COVID-19, This study is important to measure the impact of training in addressing this issue and to investigate the attitude and leadership of potential leaders in making decisions during a crisis. The aim of this paper was to validate a measurement model for the latent construct, measuring emotional intelligence when dealing with the COVID-19 pandemic. This study also generated items to measure the construct using an appropriate quantitative approach.

LITERATURE REVIEW

Confirmatory Factor Analysis (CFA) has been used in many studies to substantiate factor loading and measurement. The CFA approach is twofold, namely involving factor loadings and fitness indexes. In other words, if the high factor loading is found insufficient, then the fitness index fails to meet the requirements. The assessment of the fitness index is carried out in three categories, namely parsimonious fit, absolute fit, and incremental fit. Although the structural equation modelling (AMOS) package serves numerous fitness options, the researcher can choose any fitness option if it represents each category. This approach is in line with Afthanorhan (2013), who stated that at least one fitness index from each category should be used to determine model fit. According to Awang et al. (2015), a particular latent construct is valid if its fitness indexes achieve the three Model Fit categories, namely Absolute Fit (RMSEA < 0.08), Incremental Fit (CFI and TLI >0.9), and Parsimonious Fit (Chisq/df <3.0).

2. METHOD

Participants and Procedure

This study applied a quantitative approach by using the Structural Equation Model. The respondents were university students from Kuala Lumpur, Malaysia. The sample was selected by using simple random sampling, and the sample size of 300 respondents was determined using the Hair et al. (2008) formula. Ten-response interval scales questionnaires with seventeen (17) items were used to collect data on the main construct, namely Emotional Intelligence (EI). The data were analysed by applying the Structural Equation Model (SEM) approach using AMOS 26 software. The participants

completed related instruments on a voluntary basis. The age of the respondents ranged between 19 and 26 years, with 96.5 % of them falling into the category of 21-25 years old. In terms of gender, 46% of the respondents consisted of male students (n = 138) and 54% consisted of female students (n = 162). In terms of academic background, the sample comprised students from various faculties (Engineering, Human Sciences, Economics, Information Technology, Law, and Architecture).

Measures

The structured questionnaire consists of three sections, namely Section A: Respondent's background information; Section B: Emotional Intelligence (EI) scale; and Section C: Schutte Emotional Intelligence Scale (SEIS). The SEIS was adopted from Schutte et al. (1998) and consists of 33 items with a response scale ranging from "strongly disagree" (1) to "strongly agree" (5). Out of 33 items, there were 30 positive items and only 3 negative items. In this study, items B5, B28, and B33 were recorded as being negatively correlated with other items. This is because statements B5 ("I find it hard to understand the nonverbal messages of other people"), B28 ("When I am faced with a challenge, I give up because I believe I will fail"), and B33 ("It is difficult for me to understand why people feel the way they do") can be read as negative statements. The 33 items represented the conceptual model of Salovey and Mayer (1990) whereby 13 items measure the appraisal and expression of emotion, 10 items measure the regulation of emotion, and another 10 items measure the utilisation of emotion. An internal consistency (Cronbach's alpha) of 0.90 for the 33-item scale was reported by Schutte et al. (1998). There are many arguments on the dimensions of SEIS. In a study on SEIS involving 300 university students, principal components analysis using both orthogonal and oblique rotation extracted four components. The four components are optimism, appraisal of emotions, social skills, and utilisation of emotions (Petrides and Furnham, 2000). EFA was carried out by Saklofske et al. (2003) to extract the components of EI and they also support the four factors obtained by Petrides and Furnham (2000).

3. RESULTS AND DISCUSSION

The CFA approach is twofold, namely involving factor loadings and fitness indexes. In other words, if the fitness index fails to meet the requirement, then the high factor loading is insufficient to be accepted. The assessment of fitness index is carried out in three categories, namely parsimonious fit, absolute fit and incremental fit. Although the AMOS package serves numerous fitness options, the researcher can choose any fitness option, as long as the chosen fitness represents each category. This is in line with Afthanorhan (2013), who uses at least one fitness index from each category model fit. According to Awang et al. (2015), a latent construct is considered valid if its fitness indexes achieved the three Model Fit categories, namely Absolute Fit (RMSEA < 0.08), Incremental Fit (CFI and TLI >0.9), and Parsimonious Fit (Chisq/df <3.0). The measurement model for latent constructs must pass three types of validity assessment, namely construct validity, convergent validity, and discriminant validity (Mohamad et al., 2018). Construct validity is assessed through the Fitness Indexes of the Measurement Model, convergent validity is assessed through computing the Average Variance Extracted (AVE), and discriminant validity is assessed through developing the Discriminant Validity Index Summary.

Table 1
Types of Validity and its Threshold

Validity		**Name of Category**	**Threshold**	**Sources**
Construct Validity	Fitness Indexes	Absolute Fit Incremental Fit Parsimonious Fit	RMSEA <0.08 CFI & TLI>0.9 Chisq/df<3.0	Awang et al. 2015
Convergent Validity	Average Variance Extracted (AVE)		>0.5	Afthanorhan et al. 2018, 2019
Discriminant Validity	Discriminant Validity Index Summary			
Composite Reliability	CR		>0.6	Awang 2014, 2015

Table 2
Construct Validity

	Name of Category	Name of Index	Level of Acceptance	Index Value	Comment
Construct Validity	Absolute Fit	RMSEA	< 0.08	0.043	Achieved
	Incremental Fit	CFI	>0.9	0.960	Achieved
	Parsimonious Fit	Chisq/df	< 3.0	1.549	Close to 3.0
	Thus, the measurement model of EI has achieved the requirement for construct validity				

Figure 1 below summarises the results of hierarchical regression and relative weight analysis.

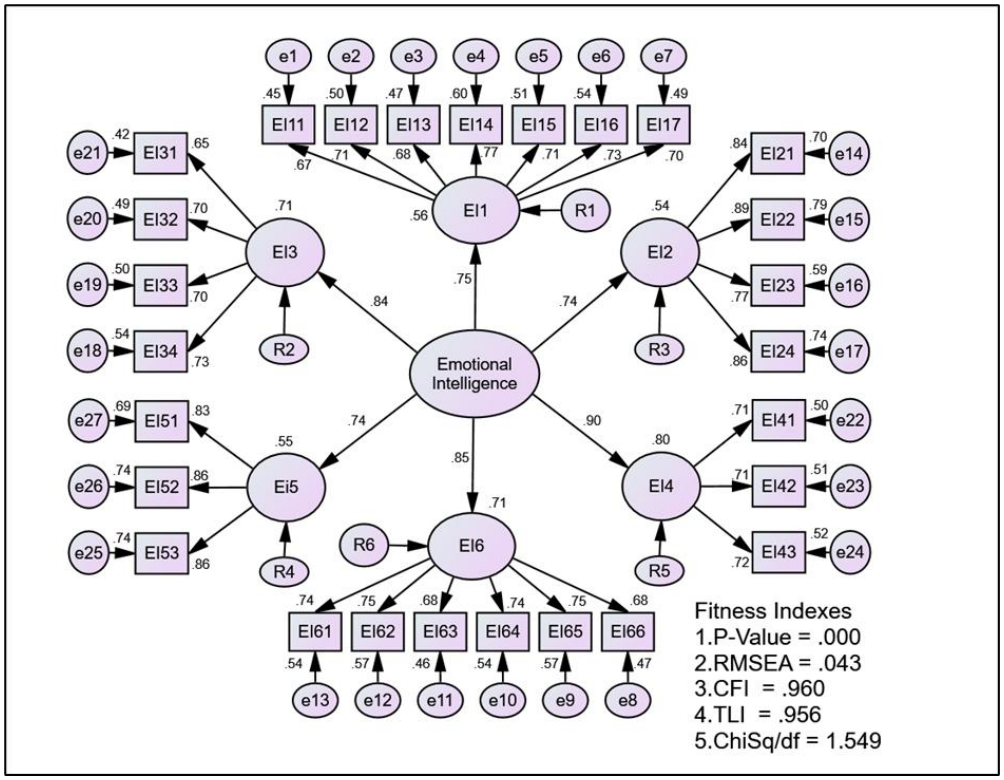

Figure 1. The CFA results for EI construct.

Figure 1 shows the final model which illustrates the arrangement of the items, factor loading, and fitness index for the Voluntary Saving Decision construct. This measurement model can be applied to the structural model in future research. The purpose of this paper was to develop a measurement model using the CFA. The final model summarises the arrangement of the items, factor loading, and fitness index of authentic leadership attitudes. The fitness indexes showed that the model was a fit. Thus, the measurement model of Voluntary Saving Decision construct met the requirement for construct validity.

Table 3
Composite Reliability, Convergent Validity, and Discriminant Validity

Construct	**Item**	**Factor Loading**	**CR (Above 0.6)**	**AVE (Above 0.5)**
Emotional Intelligence	**EI1**	0.75	**0.917**	**0.649**
	EI2	0.74		
	EI3	0.84		
	EI4	0.90		
	EI5	0.74		
	EI6	0.85		
EI1	EI11	0.67	**0.877**	**0.505**
	EI12	0.71		
	EI13	0.68		
	EI14	0.77		
	EI15	0.71		
	EI16	0.73		
	EI17	0.70		
EI2	EI21	0.84	**0.906**	**0.708**

	EI22	0.89		
	EI23	0.77		
	EI24	0.86		
EI3	EI31	0.65	**0.808**	**0.513**
	EI32	0.78		
	EI33	0.70		
	EI34	0.73		
EI4	EI41	0.71	**0.757**	**0.509**
	EI42	0.71		
	EI43	0.72		
EI5	EI51	0.83	**0.887**	**0.723**
	EI52	0.86		
	EI53	0.86		
EI6	EI61	0.74	**0.876**	**0.541**
	EI62	0.75		
	EI63	0.68		
	EI64	0.74		
	EI65	0.75		
	EI66	0.75		

Table 2 presents the results of the reliability and validity tests of measurement model evaluations. This table was produced well after all the requirements of the measurement model have been met using the CFA approach. The study shows that the reliability of EI meets the convergent validity and discriminant validity requirements.

4. DISCUSSION

The model has been proposed Emotional intelligence significantly predicts will increase emotional intelligent abilities among the students in Malaysia. The hierarchical regression results showed the existence of significant emotional intelligence among students when dealing with the COVID-19 pandemic. Figure 1.1 shows that the fitness indexes met the threshold values specified in Table 4.3. The Absolute Fit category, RMSEA, was 0.043 (less than 0.08) and the Incremental Fit category, CFI, was 0.960 (greater than 0.90). Meanwhile, the Parsimonious Fit category ratio, Chisq/df, was 1.549 (achieved the threshold of 3.0). As a result, the Authentic Leadership Attitude measurement model met the requirements of construct validity (Awang et al., 2018; Mohamad et al., 2018, 2019; Raza & Awang, 2019, 2020, 2021; Bahkia et al., 2019, 2020; Afthanorhan et al., 2020, 2020a). For the assessment of the convergent validity on the model, the study computed the AVE. If the AVE of the construct exceeds the threshold value of 0.5, it has achieved convergent validity (Afthanorhan et al., 2017, 2017a, 2018, 2019, 2020, 2020a; Rahlin et al., 2019a, 2020; Mahfouz et al., 2019, 2020; Sarwar et al., 2020). To assess the composite reliability, the study computed the CR and its value was found to be greater than the threshold value of 0.6. Thereby, this reliability was also achieved (Awang, 2014, 2015; Awang et al., 2018). Table 4.7 displays the AVE and CR values for the main constructs and their respective sub-constructs. Although the findings reported in this study provide supportive evidence for the construct validity of trait EI, it is recommended that more research be carried out on the creation and psychometric features of the EI scale investigated here. Because this specific scale seems to need further improvement, replications of the present study's findings

using alternative measures of trait EI would appear to be in order during the post-Covid-19 era. More research is also needed to determine improved ability EI assessments that can be used to predict both self-reported and ability EI outcomes. The existing cohabitation of trait EI and ability EI measures is a more general issue in EI research, emotions direct cognition would enhance emotional intelligence skills especially in enhancing creativity and making decisions.

5. CONCLUSION

In conclusion, this study has analysed the elements connected to the ability EI among Malaysian students in dealing with the COVID-19 pandemic. By utilising the CFA in SEM, this research has achieved the requisite fitness, reliability, and validity tests to corroborate the given theory and proven EI scale which are optimism, appraisal of emotions, social skills, utilization of emotions and improved abilities in dealing with COVID-19. This measurement model was assessed for future research to ensure that the next study would include it for decision-making in times of crisis.

Contribution of Study

Based on the results of this study, it is recommended that future studies be carried out on decision-making by students using emotional intelligence. Furthermore, this study is one of the most recent studies to propose validated measuring items of Emotional Intelligent. As a result, prospective researchers may be encouraged to undertake future research on decision-making using emotional intelligence, which can serve as a dependable source of information for research on the emotional abilities of both researchers and practitioners.

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