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## Using the Health Belief Model to Assess Graduate Emotional Wellness: An Empirical Study from Malaysia\*

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### Abstract

Graduate well-being is foundational to academic success, and they are becoming more and more vulnerable. This is as they suffer from mental health challenges like anxiety and depression at rates six times higher than the general population. When the nature of their educational experience changes, such as when they had to stay in their homes during the COVID-19 pandemic, the stress on their mental health increases. The number of cases of emotional wellness among university students is considered a public health problem, but these young people often do not seek appropriate treatment. This study, therefore, aims to identify the influence of health behavior factors on graduate emotional wellness. This study used a questionnaire with a cross-sectional survey design. Questionnaires were distributed online to graduates from selected Private and Public Higher Education Institutions in Malaysia. The Partial Least Square Equation Model (PLS-SEM) was used to analyze the results of the study. Overall findings indicate that the health behavior factors have a significant influence on graduate emotional wellness. The findings from this study will benefit the management, academics, counselors, and other entities, including the Students' Representative Council, in identifying ways to improve services and upgrade the necessary facilities to enhance the graduate's emotional wellness.

**Keywords:** Health Belief Model, Graduate Emotional Wellness, Higher Education Institutions, PLS-SEM

**JEL Classification Code:** M10, M12, M14

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### 1. Introduction

University life is known for putting a lot of pressure on students' levels of well-being. They have to balance competing for academic and social goals, as well as to manage their efficacy beliefs to both success and failure. People's lives have been thrown off by the COVID-19 virus. There is a sense of uncertainty and anxiety about what will happen because there has been a big rise in people who have been infected all over the world. This stress could have negative effects on how well students learn and how well they feel in general (Yang et al., 2021). In addition, the move from face-to-face teaching to online learning could have a big impact on students' careers and well-being, which could be very severe for them (Cha & Noh, 2020; Lee, 2020).

The number of cases of emotional wellness among university students is considered a public health problem, but these young people often do not seek appropriate treatment. Entry into higher education is also part of the transition to adulthood. It can result in an overload of anxiety, fear, and

challenges, which can cause anxiety disorders (one of the most common disorders).

In the context of higher education, graduate emotional wellness has been associated with central outcomes, such as educational aspirations, academic engagement, academic achievement, and dropout (Jeno et al., 2018). After all, in younger people, well-being grows thanks to positive experiences with peers and significant adults in different settings. So, the university plays a central role in youths' lives: the need for belonging, relationships with colleagues, and acceptance takes special importance for it.

Graduate emotional wellness, which is also known as one health behavior is widely researched throughout the year. Health behavior has been defined by Gochman (1997) as behavioral patterns, actions, and habits that relate to health maintenance, health restoration, and health improvement. Studying such health behaviors has been an important area in health psychology and can make important contributions to improving health. Numerous models have been developed, and a large number of studies have been conducted to this end (El-Ghoroury et al., 2012; Koo et al., 2021; Mulyono et al., 2020; Quinn et al., 2022).

Among all of the theories related to health behavior, the Health Belief Model (HBM) was one of the first models (1950s) to adapt the theory from behavioral sciences to health problems, and to date, it remains one of the most widely recognized conceptual frameworks of health behavior (Otu et al., 2020). The HBM has provided a useful framework for investigating health behaviors and identifying key health beliefs, and it has shown moderate success in predicting a range of health behaviors. The changes in health behaviors are influenced by a variety of factors, including perceived vulnerability, perceived severity, perceived advantages, perceived barriers, and self-efficacy (Park, 2011). The main objective of the study is to identify the influence of health behavior factors on graduate emotional wellness.

## 2. Literature Review

### 2.1. Health Belief Model

The Health Belief Model (HBM) is a health-specific social cognitive model that attempts to predict and explain why individuals change or maintain specific health behaviors (Laranjo, 2016). HBM focuses on the psychosocial characteristics that determine a particular health-related behavior (Kim & Kim, 2020). The model offers insights into how people are brought up to respond to health risks and interpret their actions to control a health condition (Shang et al., 2020). The five core factors of HBM namely, perceived susceptibility and perceived severity of the condition, perceived benefits and perceived barriers to the recommended health behavior, and self-efficacy were used

as factors that influenced their emotional health (Champion & Skinner, 2008).

Perceived susceptibility, referred to as perceived vulnerability or perceived likelihood, is a person's belief that they may acquire an adverse health outcome due to a particular behavior. In contrast, perceived severity is the belief in the degree of harm from an acquired disease or harmful state as a result of a particular behavior (Sukeri et al., 2020). Perceived severity and susceptibility are the two factors of HBM, an intrapersonal behavior change theory designed to elucidate how beliefs predict commitment to health-protective behaviors and screenings.

Perceived benefits refer to a person's opinion of the value or usefulness of new behavior in lowering the risk of disease. To make a change, people must believe that the change will have a positive result. While perceived barriers refer to a person's view of the obstacles that stand in the way of behavior change. Perceived barriers are the most significant factor in determining behavior change (Green et al., 2020).

Lastly, self-efficacy refers to a person's confidence and belief in his/her ability to act or perform a given behavior. People generally do not try to adopt new behaviors unless they believe they can do them (Champion & Skinner, 2008). A person who thinks altering their behavior is worthwhile (perceived benefit) but is unsure of their ability to make a change is unlikely to attempt lifestyle changes. In other words, even if a person believes adopting healthier behaviors will have significant benefits, they are unlikely to change current behaviors if they doubt that the barriers to change can be overcome. Self-efficacy can be increased with encouragement, training, and other support (Champion & Skinner, 2008; Green et al., 2020).

### 2.2. Graduate Emotional Wellness

Wellness is defined as a dynamic and ongoing process involving self-awareness and healthy choices to achieve a successful lifestyle. This relies on a balance between the physical, emotional, intellectual, social, and spiritual realms (Thimmapuram et al., 2017). Emotional wellness also implies having an awareness of an individual's positive feelings, their expression in a healthy manner, stability of mood, a sense of well-being, a positive attitude toward others, and having stress-coping abilities at rough and tough times of life (Habib et al., 2012). The Wellness Centre of Vanderbilt University defined emotional wellness as the awareness of feelings and their expression in a healthy manner with the stability of mood, sense of self, positive attitude toward others, and the ability to cope with stress (Zhang et al., 2014). The emotional wellness of an individual is determined by the level of self-control and self-awareness of a person (Foster et al., 2007). It further emphasizes the importance of a positive outlook toward life circumstances, the capability to cope with

stress, and the ability to maintain fulfilling relationships with others (Foster et al., 2007). Emotional health is important for an individual as this is also dependent on self-respect, self-confidence, and one's dignity, which in turn also play a role in performance (Katpar et al., 2017).

### 2.3. Hypotheses Development

#### 2.3.1. Health Behavior Factors and Graduate Emotional Wellness

The Health Belief Model (HBM) was initially developed to explain the failure of individuals to participate in health promotion programs. The author (Henshaw & Freedman-Doan, 2009) applied the HBM to the conceptualization of mental health. Specifically, they defined the concepts of the HBM in terms of mental health behaviors, with perceived susceptibility being an individual's acceptance of a mental health diagnosis, perceived severity being the perceived severity of mental health symptoms, and perceived benefits as being the benefits of therapy, perceived barriers being the barriers to committing to therapy, and perceived self-efficacy is an individual's belief that they can change through therapy.

In particular, a meta-analysis of HBM studies indicated that perceived benefit was the most powerful predictor among all the health belief factors. Meanwhile, perceived barriers will decrease the likelihood of protective behavior. Focusing on the negative aspects, perceived barriers refer to the tangible or psychological costs of adopting the preventative behavior. Thus, from the above literature, the following hypothesis is proposed:

*H1: There is a significant effect of Health Behavior Factors on Graduate Emotional Wellness*

## 3. Research Methods

### 3.1. Sample and Data Collection Procedure

The power analysis was conducted to minimize the total cost of sampling error and derive the optimal sample size for the study. Following suggestions from Kline (2015), Ringle (2006), and Kocyigit and Ringle (2011) the parameter of power analysis was employed to identify sample size in structural equation modeling (SEM) analysis. G\*Power 3.1 software was used to conduct power analysis. It was reported that with a power of 0.95, an alpha significance level of 0.05, a medium effect of 0.15, and 5 main predictors, a minimum sample of 172 would be required. Data were gathered from students in public and private universities in Malaysia, with a total of 10 universities.

Respondents were approached using various means, including searching students through their social media

profiles from university groups and sending questionnaires through e-mail and WhatsApp. A total of 373 valid responses have been included for data analysis in this study.

Of the total of 373 respondents, 232 respondents were female, and the rest were male with a total of 141 respondents. In terms of age, the highest number of respondents were from age 20 years old with a total number of 88 respondents. The religion of the respondents was categorized into four subgroups which are Islam (270 respondents), Buddhism (45 respondents), Christianity (22 respondents), and Hinduism (35 respondents). From the total of 373 respondents, it can also be concluded that most of the respondents were in their second year of study. For sponsorship, the majority of the respondent were non-scholarship graduates, with a total of 221 respondents. For the overall Cumulative Grade Point Average (CGPA), from 373 respondents, 233 had a CGPA ranging from 3.50–4.00. Lastly, the mode of study was categorized into three groups which are full-time (237 respondents), part-time (15 respondents), and online distance learning (121 respondents).

### 3.2. Measurement

To test the research hypotheses, an online survey with three parts was developed. The first part focused on the demographic data of the participants. The second part consisted of 35 items, and the third part consisted of 10 items that were used to measure the model constructs. The measures were rated using a five-point Likert scale ranging from 1 "strongly disagree" to 5 "strongly agree". The measures of the constructs were taken from the literature and slightly modified to fit the context of this study.

Making use of a quantitative methodology, the instrument utilized in this study was in the form of questionnaires developed by previous researchers and was deemed relevant to the purpose of this study. The constructs and sample items are shown in Table 1 below:

### 3.3. Data Analysis

All variables used in the model (independent variables, and dependent variables) are latent variables with multiple items of measurement. Hence, the multivariate technique, SEM is the most appropriate in this case. Variance-based partial least square structural equation modeling (PLS-SEM) has been used in this study.

The data processing using Smart PLS 3 software was employed because all constructs are latent variables that are measured by indicators and dimensions. This study has adopted multidimensional constructs which are a combination of reflective measurement and composites (Jarvis et al., 2003).

**Table 1:** Measurement Items

Construct	Sample Item	Number of Items	Author/s
Perceived Susceptibility (Stress Factor)	"I am concerned about my risk of getting mental health problems"	6	(Greene, 2018)
Perceived Severity (Health Concern)	"Having mental health problem would negatively affect my work"	6	(Greene, 2018)
Perceived Benefits (Knowledge & Practice)	"Getting health therapy can improve my perspective on mental health problems"	6	(Greene, 2018)
Perceived Barriers (External Stress)	"I would prefer to get help from a family member or friend rather than a therapist"	10	(Greene, 2018)
Self-efficacy (Personal Competence)	"I believe health therapy will help me cope with mental health problems"	7	(Greene, 2018)
Emotional Wellness	"I suffer frequent mood swings and attacks of anxiety"	10	(Rehman et al., 2015)

This study operationalizes the Health Behavior Factors as a single construct made up of five first-order variables: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and self-efficacy, as shown in Table 2. The five variables reflect the second-order construct. While emotional wellness is formed as a first-order construct. Figure 1 shows the research model.

## 4. Results and Discussion

### 4.1. Evaluation of Measurement Model

The reliability and validity were examined for the assessment of the measurement model. Internal consistency reliability was measured through composite reliability (CR), while the outer loadings were used to measure indicator reliability. Furthermore, the average variance extracted (AVE) was used to evaluate convergent validity.

As depicted in Table 2, all CR values exceeded 0.7 while AVE exceeded by more than 0.5 (Hair et al., 2019). Items with outer loadings that were less than 0.6 (HBMSF1, HBMHC1, HBME1, HBME2, HBME7, EW5, EW6, and EW7) were deleted to increase the CR and AVE as factor loading should exceed the threshold of 0.6.

The discriminant validity was assessed using the Heterotrait-Monotrait (HTMT) ratio of correlations approach. As recommended by Henseler et al. (2015), the threshold would be acceptable if it is below 0.90 for the similar constructs and below 0.85 for the distinct constructs.

As shown in Table 3, all HTMT values are below the threshold. Hence, these results support the discriminant validity of the study.

### 4.2. Structural Model Evaluation

After the reliability and validity of the measurement model are confirmed, the next step is to test the research hypotheses using the structural model. The adequacy (goodness) of the structural model was tested using the coefficient of determination ( $R^2$ ) and the  $t$ -value of the path coefficients. The value of  $R^2$  indicated that the model constructs explained 40.0% of the variance in graduate emotional wellness. A full bootstrapping procedure with (5000 replicate samples) was used to assess the significance of the standardized path coefficients. The results of the hypotheses are presented in Table 4 and Figure 2.

## 5. Discussion and Conclusion

The objective of this study is to identify the relationships between Health Behavior Factors and Graduate Emotional Wellness. Findings from this study reveal that graduate emotional wellness can be predicted by the following model ( $R^2 = 40.0\%$ ). Other than that, the findings also identify that there is a significant relationship between Health Behavior Factors and Graduate Emotional Wellness. with a  $t$ -value = of 8.900.

HBM is a model that focuses on individual beliefs about health conditions. Based on the findings it can be concluded that the probability of a person participating in a health practice is based on individual beliefs; the probability of adopting recommended behaviors (e.g., emotional wellness) will increase by changing the individual perceptions. According to the health belief model, people will adopt preventive health behavior when they feel threatened

**Table 2:** Measurements Model Results

Second Order	First Order	Items	Loading	CR	AVE
Health Behavior Factors	Perceived Susceptibility (Stress Factor)	HBMSF2	0.84	0.77	0.51
		HBMSF3	0.85		
		HBMSF4	0.68		
		HBMSF5	0.74		
		HBMSF6	0.74		
	Perceived Severity (Health Concern)	HBMHC2	0.77	0.90	0.64
		HBMHC4	0.91		
		HBMHC5	0.95		
		HBMHC6	0.67		
	Perceived Benefits (Knowledge & Practice)	HBMKP1	0.80	0.92	0.66
		HBMKP2	0.90		
		HBMKP3	0.69		
		HBMKP4	0.80		
		HBMKP5	0.87		
		HBMKP6	0.83		
	Perceived Barriers (External Stress)	HBMEX2	0.63	0.78	0.55
		HBMEX3	0.74		
		HBMEX5	0.83		
		HBMEX6	0.72		
		HBMEX8	0.77		
		HBMEX9	0.68		
		HBMEX10	0.63		
	Self-efficacy (Personal Competence)	HBMPC1	0.60	0.89	0.62
		HBMPC2	0.74		
		HBMPC3	0.81		
		HBMPC4	0.83		
HBMPC5		0.79			
HBMPC6		0.74			
Emotional Wellness	EW1		0.78	0.81	0.59
	EW2		0.80		
	EW3		0.73		
	EW4		0.69		
	EW8		0.61		
	EW9		0.66		
	EW10		0.70		

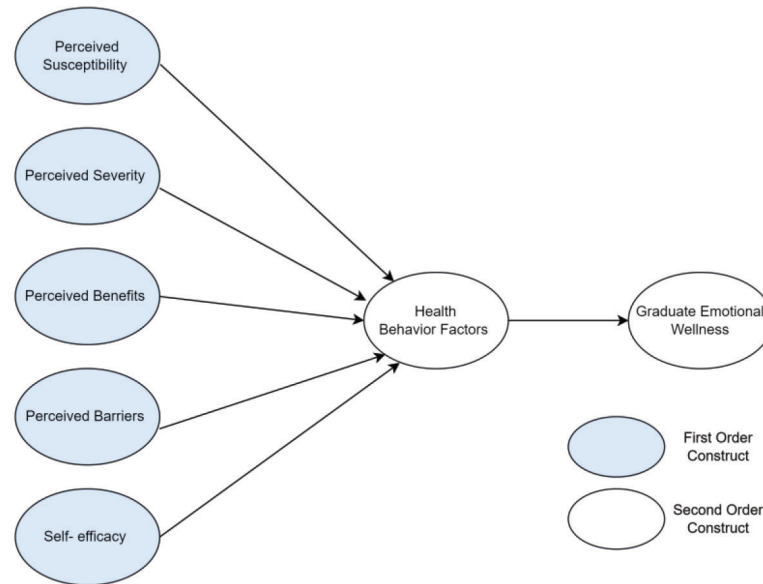


Figure 1: Research Model

Table 3: Discriminant Validity - Heterotrait-Monotrait (HTMT)

	#1	#2	#3	#4	#5	#6	#7
#1 Stress Factor							
#2 Health Concern	0.28						
#3 Knowledge & Practice	0.46	0.84					
#4 Personal Competence	0.14	0.18	0.54				
#5 External Stress	0.32	0.37	0.80	0.18			
#6 Health Behavior Factors	0.42	0.45	0.86	0.22	0.63		
#7 Emotional Wellness	0.27	0.59	0.7	0.20	0.30	0.40	

Table 4: Bootstrapping Results

	Path Coefficient	Standard Deviation	T-value	Decision
Stress Factor → Health Behavior Factors	0.141	0.023	6.196**	Accepted
Health Concern → Health Behavior Factors	0.133	0.046	2.893**	Accepted
Knowledge & Practice → Health Behavior Factors	0.440	0.030	14.615**	Accepted
External Stress → Health Behavior Factors	0.238	0.029	8.167**	Accepted
Personal Competence → Health Behavior Factors	0.445	0.027	16.182**	Accepted
H1: Health Behavior Factors → Emotional Wellness	0.410	0.047	8.812**	Accepted

Note: \*\*t-value ≥ 2.33 at p = 0.01 level.

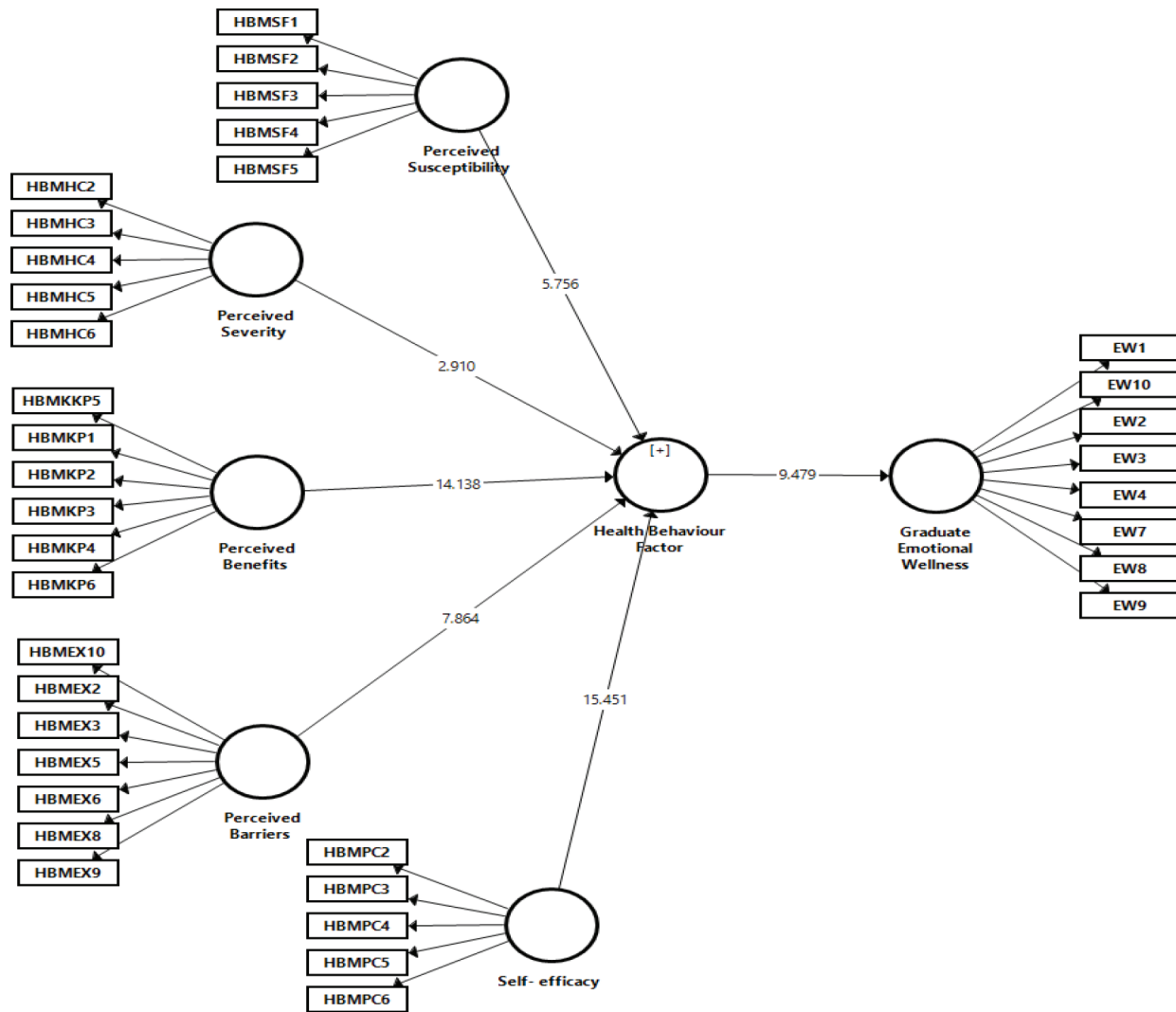


Figure 2: Structural Model

(perceived susceptibility) or consider that the disease can have serious ramifications for their health (perceived severity). Likewise, with the information and guidance, people receive from their surroundings or inner environment (self-efficacy), they believe in the usefulness of preventive behaviors such as going to a counselor or therapy (perceived benefits), and the perception of negative aspects of a given behavior to perform (perceived barriers).

The findings of this study provide important implications to the management, academics, counselors, and other entities which include the Students' Representative Council. The model used in this study is reliable for testing the graduate emotional wellness at Malaysian HEIs, and the findings can assist in improving the services and in upgrading the

necessary facilities. The findings could also facilitate the graduates in coping with the transformation of the education landscape that might enhance the graduates' emotional wellness.

As with any empirical study, this study also has limitations that offer avenues for further research. Some of the limitations are the data are cross-sectional in nature rather than longitudinal which does not enable us to interpret the time sequence of the relationships among the main research variables. Therefore, it is suggested that longitudinal research would provide additional insights into probable causations to establish the underlying relationships more firmly.

As for the future study, it is recommended that the research be conducted from a different point of time during

the endemic. For example, how has the reopening of universities, in various learning modes impacted perceived barriers, perceived benefits, and self-efficacy? In addition, conducting interviews or focus groups might provide additional and in-depth insights about the topic under study.

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