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CONTENTS

Blended Learning in Entrepreneurship Education: The Assessments of the Measurement Model using SmartPLS

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Abstract

Scholars of blended learning are calling for more empirical research in the area of blended learning in entrepreneurship education. Therefore, the aim of this study is to develop a measurement model that involved student interactions, motivation and student engagement on satisfaction in blended learning among entrepreneurship students. This study was underpinned by the Self-Determination Theory (SDT). The respondents of this study are Universiti Teknologi MARA (UiTM) students who enrolled Fundamental of Entrepreneurship (ENT300) and participated in the flipped classroom module. ENT300 is a university subject, hence massive enrollment is expected every semester. Questionnaires were distributed to the respondents 15 minutes before the class ends in Week 14. The measurements for all constructs were adapted from previous scholars and approved by the ethical committee of the university. Data was analyzed using SmartPLS. The results indicated that the measurement model achieves its reliability and validity thus valid for further analysis. This study contributes to the empirical literature of entrepreneurship education and the practices on handling a massive enrollment using blended learning. The conclusions and recommendations for future research are also presented in this study.

Keywords: Blended Learning, Entrepreneurship Education, UiTM, measurement model, SmartPLS

Introduction

Blended learning is becoming more important since the pandemic of Covid-19 started. Majority of universities around the world move their learning to the online platform. For the subject of Fundamental of Entrepreneurship (ENT300) in the Universiti Teknologi MARA (UiTM), this pandemic has not affected much. Even though this subject is a university subject with massive enrollment every semester, UiTM can be calm with experience learned since 2012. An article by Noraini, Ramayah and Noor (2020) discussed about the scenario of handling massive enrollment for ENT300 in UiTM Perlis using flipped classroom. However, the discussion does not end there because the need of handling this subject should be improved to align with the students' needs.

Even though blended learning is widely used, but scholars of entrepreneurship education raised their concerns with the use of technology to facilitate teaching and learning in the area. As such, scholars like Ratten and Usmanij (2020) urge more studies to be conducted relating to integrating the technology in teaching and learning activities in entrepreneurship education. Satisfaction has always been used as an indicator of the usage of blended learning (Shen & Ho, 2020; Yeop, Yaakob, Wong, Don, & Zain, 2018). Other factors that have always been used are student motivations (Wong et al., 2019), student interactions (Ahmed, Ahmad, Ahmad, & Zakaria, 2019; Najafi & Heidari, 2018) and student engagement (McCardle, Young, & Baker, 2019; Nasirun, 2017; Zhou, Chen, Fan, & Ji, 2019) and among the important variables that have been identified to give impact to the satisfaction among students who used blended learning. Moreover, student engagement can serve as the mediator in the blended learning setting (Guo, 2018)

Hence the aim of this study is to develop a measurement model of blended learning for ENT300. Satisfaction is used to measure the usage of blended learning among students. While student motivation, student interactions and student engagement have been identified to give an impact on satisfaction. We used Self-Determine Theory (SDT) as the theory to underpin this study. The theory supports the research framework to explain the influence of motivation to promote student engagement and satisfaction among students in the self-regulated learning environment.

Research Methodology

Respondents and Data Collection Procedure
Data were collected from diploma students who enrolled for the Fundamental of Entrepreneurship (ENT300) in the Universiti Teknologi MARA (UiTM) Perlis Branch (UiTM Perlis). In UiTM Perlis, questionnaires were distributed at week 12, after students have completed with the submissions of their assessments.

Measurement
The measurement consists of 58 items for measured variables (Student Interactions, Student Engagement, Satisfaction, Efficiency, and Effectiveness), adapted from previous scholars. The items for Satisfaction were adapted from Kuo et al. (2014). Student Interactions was adapted from Kuo et al. (2014), and measured using three dimensions namely Student-Content, Student-Instructor and Student-Student. Moreover, Student Engagement was adapted from Dixson (2010), measured using three dimensions known as Emotional, Participation and Skill. Finally, Motivation was adapted from the revisited measurement of the need for satisfaction by Standage, Duda and Ntoumanis (2005) namely anatomy, competence and relatedness.

Results

Respondents Profile
There were 281 respondents participated in this study. All of them were diploma students at Universiti Teknologi MARA (UiTM) Perlis Branch. The gender distribution is 81 (28.8%) male while 200 remainings were female (71.2%). The age distributions are 207 (73.7%) of age 20 years old, 62 (22.1%) of age 21 years old, 9 (3.6%) of age 22 years old, 2 (0.6%) of age 23 years old and 1 (0.4%) of age 25 years old. A total of 100 (35.5%) respondents were business students, while 181 (64.5%) were non-business students.

Preliminary Analysis
In the preliminary analysis, we analyze normality and common method variance. We test the data distribution using the skewness and kurtosis calculator (https://webpower.psychstat.org/) (Cain & Zhang, 2016). The result indicates that the skewness: $\beta = 1.732$, or for kurtosis: $\beta = 44.073$, hence this set of data is qualified for a non-parametric analysis with bootstrapping function. Also, we addressed the issue related to the common method variance by using the full collinearity estimates (Kock & Lynn, 2012). The result indicates that the VIF values for the variables all are below 3.3: Student Interactions (1.856), Motivation (2.269), Student Engagement (2.519) and Satisfaction (1.764) thus confirming that this set of data is free from the common method variance.

The Assessments of the Measurement Model
We used SmartPLS version 3.2.9 to test the measurement model for the research framework. This study using a higher-order construct model design and it consists of reflective-formative constructs. We used the disjoint two-stage approach as proposed by Sarstedt, Hair, Cheah, Becker, and Ringle (2019). There are three constructs for this study formed by the lower order components: namely Student Interactions, Student Engagement, and Motivation. Student Interactions' lower-order components are Student-Content, Student-Instructor and Student-Student. Whereas, Student Engagement was formed by Emotional, Participation and Skill. Finally, motivation consists of anatomy, competence and relatedness. In stage two, these single-item scores were measured the higher-order construct for the model (Student Interactions, Student Engagement, and motivation), while satisfaction is measured using standard multi-item.
The loading for Satisfaction items is between 0.723 and 0.851. The average variance extracted (AVE) is 0.615 and CR is 0.888. The AVE is above the threshold value of 0.5 and the composite reliability

(CR) is above 0.8 (Hair, Risher, Sarstedt, & Ringle, 2019), hence achieve its reliability and convergence validity.

Table 1 exhibits the measurement model for the formative constructs (student interactions, student engagement and motivation). All t-value presented are significant at $p<0.001$. Except for participation, all VIF values are below 3.3. For participation, the variance inflation factor (VIF) is 3.315 and slightly above 3.3, but we accept this value with the condition if we round up this value to one decimal point, it will be 3.3. The result presented in this table concludes that the second-order constructs are valid for further analysis.

Table 1
Assessment of the measurement model
(second-order construct - formative)

Constructs	Dimensions	Beta	t-Value	VIF
Interactions	Student-Content Interaction	0.835	43.736	2.213
	Student-Student Interaction	0.915	82.062	2.687
	Student-Instructor Interaction	0.877	47.220	2.450
Motivation	Anatomy	0.857	51.636	2.365
	Competence	0.845	45.353	2.708
	Relatedness	0.734	16.906	1.331
Engagement	Emotional	0.909	76.071	2.785
	Participation	0.909	76.071	3.315
	Skills	0.896	65.818	3.075

We used the Heterotrait-Monotrait Ratio of Correlations (HTMT) to assess the discriminant validity of this model. The $HTMT_{value}$ for all constructs is below $HTMT_{0.85}$, hence we can conclude this model has achieved its discriminant validity and valid to be the assessment of the structural model and hypotheses testing. See Table 2

Table 2
Discriminant validity using Heterotrait-Monotrait Ratio of Correlations (HTMT)

Constructs	1	2	3	4
1. Satisfaction				
2. Motivation	0.672			
3. Student Engagement	0.688	0.739		
4. Student Interactions	0.697	0.746	0.802	

Conclusion and Recommendations

The result of this study shows that this measurement confirms its eligibility to use the bootstrapping function offered by SmartPLS and free from the common method variance issue. Moreover, the measurement model achieves its validity and reliability. This research model for this study is reflective-formative constructs. Hence, the use of SmartPLS is appropriate for this research model because of the software ability to analyze the higher-order construct model. With the result presented, this model is ready to be tested for structural model assessment. This research model confirms that the measurement model developed for this study explained the Self-Determine Theory, where student motivation achieves its reliability, convergence validity, as well as discriminant validity when tested together with student interactions, student engagement, and satisfaction. It indicates that motivation through anatomy, competence, and relatedness has the potential to influence the tested research framework. Further studies need to be conducted to test the impacts of these variables on the satisfaction and the possibilities to use student engagement as the mediator in the blended learning setting, particularly in the entrepreneurship education context.

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