A Structured Equation Modelling on the Indirect Effect of Self-Efficacy on Extrinsic Motivation and Students' Performance Relationship in Malaysian Online Distance Learning Institutions

Zahir Osman⁴

Open University Malaysia, Jalan Tun Ismail, 50480 Kuala Lumpur, Malaysia.

Abdul Rahman bin S Senathirajah^{*2} D <u>orcid.org/0000-0001-6044-9051</u>

INTI International University, Persiaran Perdana BBN Putra Nilai, 71800 Nilai, Negeri Sembilan, Malaysia, Senior Lecturer, Faculty of Business and Communications.

*Corresponding Email: arahman.senathirajah@newinti.edu.my

Rasheedul Haque³

Faculty of Business, Finance & Information Technology (FOBFIT), MAHSA UNIVERSITY, Bandar Saujana Putra, 42610 Jenjarom, Selangor, Malaysia Email: rasheedul@mahsa.edu.my

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Abstract

The main purpose of this study is to develop a mediating effect understanding of self-efficacy on extrinsic motivation and students' performance relationship in Malaysia online distance learning institutions. The model was developed and later tested by adopting the partial Least Square (PLS) procedure on data collected from a survey that yielded 210 usable questionnaires. The findings showed that extrinsic motivation enhances self-efficacy in Malaysian online distance learning institutions. It was also revealed that self-efficacy partially mediates the relationship between extrinsic motivation and students' performance. In future more research needs to be carried out to explore the role of self-efficacy in Malaysian online distance learning institutions. It is important to do the study utilizing experimental design by capturing longitudinal data in Malaysian online distance learning institutions using robust measures. The findings imply that the relationship between self-efficacy and attrition rate may reside in self-efficacy's influence on students' performance, and that self-efficacy plays a crucial function within the Malaysian online distance learning institutions. This study uses Smartpls 2.0 and SPSS 18.0 to test the hypothesis and analyze respondents' profile respectively.

Keywords: - Extrinsic Motivation, Self-Efficacy, Students' Performance, Online Distance Learning

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1. INTRODUCTION

Academic achievement is the utmost important amongst students who pursue their tertiary education. A tertiary education institution's performance normally will be measured by its

ability to retain the students and the students' results. Thus, if the students' failure rate is too high, it will give the higher education institution negative image and the performance. In addition, a high failure rate among students will be even worse because of the recent government decision to increase the rate of enrolment and widen access to education, and also reducing financial support to tertiary education sector. The main aim of this study is to probe on how self-efficacy mediates the relationship between extrinsic motivation and students' performance in Malaysian online distance learning institutions and therefore put forward a perspective of how these factors influence the performance of the students in their studies. This study was quantitative in nature, filling in the current gap regarding this issue in the current education literature. The findings will direct the academics on how to motivate their students and increase their performance.

2. LITERATURE REVIEW

Online distance learning has passed through substantial change for more than a decade (Larreamendy-Joerns & Leinhardt, 2006). The explosion of internet and other technologies have caused online teaching and learning to come together into university regular practices. At the same time, it has also permitted the distance education to gain new appeal (Tallent-Runnels et al., 2006). According to Bates (2005), online learning is supposed to be a distance education subcategory that utilises the World Wide Web and internet. Online distance learning has secured popularity over the years and is being exploited by education institutions in many countries to give opportunities and meet the needs and wants of student population growth and increase (Rumble & Latchem, 2004).

Miltiadou and Savenye (2003) discovered that studies on online distance learning environments and motivation have utilised many frameworks (e.g., Artino, 2008; Shroff et al., 2007; Yukselturk & Bulut, 2007). Most of these studies, intrinsic-extrinsic motivation theory has been adopted to find out the reasons why students keep connected in online learning environments (e.g., Martens, Gulikers, & Bastiaens, 2004; Xie et al., 2006). A well-known theory that explains intrinsic-extrinsic motivation in detail is self-determination theory (SDT, Deci & Ryan, 1985). Self-determination theory is a modern theory of situated motivation that is built on the basis of learner autonomy. SDT proposes that an individual has an inner need which is autonomous and thus is capable and associated with their environment. SDT emphasizes that if the conditions of the environment accommodates a person's autonomy, then a more autonomous appearance of motivation will prop up (Deci & Ryan, 2000). Extrinsically motivated students engage in activities where the reasons are separated from the activity (Deci & Ryan, 2000), such as obtaining good grades, keeping away from negative consequences or because the task has value of utility, for instance to earn a degree by passing the courses. SDT depicts extrinsic motivation processes from the external regulation perspective due to reasons for doing the tasks that lie beyond the individual.

Students with extrinsic motivation more likely to take their time with class assignments and must be pushed to study. These students continuously put less effort in their studies. Afzal, Ali, Khan & Hamid, (2010) in their study found that extrinsic motivation has a positive impact on academic performance of students.

Bandura (1986) defined self-efficacy as the personal confidence in a person and the capability to complete specific task successfully. Self-efficacy beliefs are important influential elements to determine an individual's ability to use effort on tasks and continuously deal with difficulties. A person with a high self-efficacy will place more effort to accomplish given tasks and never give up although the tasks can be complicated Moustafa & Sudhir (2013) in their study on undergraduate students found that self-efficacy partially mediates the relationship between perceived academic climate and academic performance. Meliha Canpolat A. (2012) in the study on primary school students found that self-efficacy is a mediator and positively and significantly mediates the relationship between class climates and goal orientation. Raafat & Dennis (2009) found that self-efficacy significantly and positively mediates the relationship between computer anxiety on perceived ease of use when conducted the study on online learning university students.

Research Hypotheses

The following are the research hypotheses tested in this study:

H1: There is a positive and significant relationship between extrinsic motivation and student performance.

H2: There is a positive and significant relationship between extrinsic motivation and self-efficacy.

H3: There is a positive and significant relationship between self-efficacy and student performance.

H4: There is a positive and significant mediating effect of self-efficacy on extrinsic motivation and student's performance relationship.

3. **RESEARCH METHODOLOGY**

The survey instrument consists of 15 observed variables including the measurement of independent variable of extrinsic motivation (5 items), moderating variable of self-efficacy (5) items and dependent variable of student performance (5 items). The scaling adopted in this research is the 5-point Likert scale of 1-strongly agree, 2-agree, 3-neutral, 4-disagree and 5-strongly disagree.

Sample

Online distant learning (ODL) students who are studying in the diploma, bachelor and postgraduate programmes were the main respondents in the study. A total of 300 O students were requested to complete a questionnaire that contained measures of the construct. The questionnaires were distributed to the respondents in the Klang Valley on the spot by using convenient sampling technique. Out of the 300 distributed questionnaires, 226 were returned. This made up the response rate of 75.3%. In view of that, the rate of response is sufficient for SEM analysis.

Data Analysis

This study adopt Partial Least Square (PLS) (Chin, 1988a, b, 2001) to evaluate the models. Wold (1982) developed PLS as a second generation structural equation modeling technique. It works well with with structural equation models consist latent variables and a series of cause-and-effect relationships (Gustafsson and Johnson, 2004). Mediation effects are the result of two relationships; between the independent variable and the mediator, and between the mediator and the dependent variable.

4. **RESULTS**

Construct Validity, Dimensionality and Reliability

All constructs were analyzed to assess the construct's validity, dimensionality and reliability. The average variance extracted (AVE), the AVE square root, composite reliability; R Square, Cronbach's Alpha and communality were computed for each construct. Cronbach's Alpha for individual construct was evaluated to obtain the construct validity. The results are shown in Table 1.

	AVE	AVE square root	Com. Rel	R2	C. Alpha
EM	0.639	0.799	0.898	0	0.859
SE	0.741	0.861	0.934	0.409	0.911
SP	0.726	0.852	0.93	0.659	0.906

 Table 1: Construct Validity & Reliability

All constructs achieved a higher Cronbach's Alpha than recommended 0.7 (Hair et al. 2014). After that, AVE, composite reliability and communality all constructs were evaluated and processed within the model by using PLS evaluation. All the constructs achieved higher than the minimum required for each parameter. (Chin 1988; Stan and Saporta, 2005). Then, based on Geffen and Staub (2005), each construct had its AVE square root extracted to assess construct dimensionality. The results acquired used as a reference when the entire construct correlated and each correlation weight within the two constructs has to be smaller than the AVE square root as shown in Table 2.

Fable 2: Value	ariable Correlatio	n Matrix based on	& AVE square Root
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	EM	SE	SP
EM	0.799		
SE	0.6392	0.861	
SP	0.7453	0.724	0.852

The cross-loadings showed in Table 3 displays adequate discriminant validity levels for each construct. Each individual item factor in the bold value of Table 3 shows strong loading values to the corresponding latent construct and low loading values to other constructs.

	EM	SE	SP
EM1	0.851	0.561	0.648
EM2	0.834	0.625	0.674
EM3	0.793	0.489	0.505
EM4	0.746	0.400	0.535
EM5	0.768	0.445	0.593
SE1	0.554	0.871	0.624
SE2	0.551	0.905	0.643
SE3	0.542	0.883	0.656
SE4	0.529	0.765	0.549
SE5	0.574	0.872	0.638
SP1	0.633	0.609	0.839
SP2	0.659	0.663	0.896
SP3	0.596	0.501	0.813
SP4	0.615	0.659	0.831
SP5	0.670	0.640	0.880

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The relationship between AVE square roots values and the correlations among first-order latent constructs embrace the similar conclusion. In Table 2, it is clearly indicated that the square roots of AVE (bold numbers in diagonal) are greater than the correlations among other constructs (off-diagonal values).

Model Evaluation

To begin with, the direct path from extrinsic motivation to student performance and selfefficacy were presented. Both links were significant where the path coefficients of 0.745 and 0.640 respectively. At this juncture no indirect effect was hypothesized or assessed (refer to Figure 1).



Figure 1: Direct Path Coefficient

After that, the model of self-efficacy plays a mediating role between extrinsic motivation and student performance was presented (refer to Figure 2).



Figure 2: Indirect Path Coefficient

Mediation is said to be existed when the direct path coefficient between the independent variable and dependent variable is decreases when the indirect path through the mediator is created in the model. The direct path is evaluated without the interference of mediator and with the intervention of mediator. The direct path standardized beta was 0.745 and change to 0.419 after the introduction of self-efficacy as a mediator. The amount of the decrease of the relationship between extrinsic motivation and student performance accounted by the mediator was 0.326 which represent 43.76% of the direct effect. The result shows that the indirect effect

of extrinsic motivation to student performance with the present of self-efficacy as a mediating factor is significant at p<.000. The significance of mediating effect was computed by using PROCESS by Hayes (2012) by using the application of bootstrapping technique where the specific model in question with both direct and indirect paths included and execute N bootstrap re-sampling and explicitly compute the product of direct paths that form the indirect path being assessed (Table 4 and 5).

	Beta	T- Value
EM>SE	0.640	17.826
EM>SP	0.745	25.273

 Table 4: Direct Path Coefficient & T-Value

Table 5: Indirect Path C	Coefficient & T-Value
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	T-
Beta	Value
0.639	18.855
0 4 1 9	10 354
0.417	10.554
0.478	8.812
	Beta 0.639 0.419 0.478

Then, the significance of the mediating effect can be determined by examine either percentile bootstrap or bias corrected bootstrap which has been shown to have the least biased confidence intervals, greatest power to detect non-zero effects and contrasts, and the most accurate overall Type I error (Williams and MacKinnon 2008). The result drawn from PROCESS indicates that the indirect effect of extrinsic motivation to student performance with the present of self-efficacy as a mediating factor is significant at p<.000 where the lower level confidence level (LLCL) is 0.0613 and upper level confidence level (ULCL) is 0.2508 (Table 6).

Table 6: Indirect effect of X on Y

	Effect	Boot SE	BootLLCI	BootULCI
EM	0.1405	0.0476	0.0613	0.2508

The indirect effect is significantly different from zero at p<.000 (two tailed). With 95% confidence that, because zero is not within this interval, zero is not likely a value for the indirect effect of extrinsic motivation on student performance. The true indirect effect is estimated lies between 0.0613 and 0.2508. Therefore, the indirect path extrinsic motivation to self-efficacy and from self-efficacy to student performance was 0.639 * 0.419 = 0.27. The confidence

interval level provided by PROSESS was between 0.613 and 0.2508, p<.000. This shows that the partial mediation effect present. Therefore, all the hypotheses are supported (Table 7).

	Hypothesizes	Path	T-	Conclus
H 1	There is statistical significance that extrinsic motivation predicts self- efficacy	0.639	18. 855	Support ed
H 2	There is statistical significance that extrinsic motivation predicts student's performance	0.419	10. 354	Support ed
H 3	There is statistical significance that self- efficacy predicts student's performance	0.478	8.8 12	Support ed
H 4	There is statistical significance that self- efficacy mediates the relationship between extrinsic motivation and student's performance	0.141	0.0 00	Support ed

Table 7: Hypotheses Result

5. DISCUSSION & CONCLUSION

The aim of this study is to develop the mediating effect understanding of self-efficacy on extrinsic motivation and student performance relationship in Malaysia online distance learning institutions. From the academic studies early findings, the model was developed and it was revealed that extrinsic motivation has a positive and significant direct effect on self-efficacy. The same model also revealed that extrinsic motivation has a positive and significant direct effect on student performance. After that the mediating relationship was brought in the model where self-efficacy was put in place as mediator in the relationship of extrinsic motivation and student performance. This study adopted PLS technique data analysis. To begin with, the most accepted relationship between extrinsic motivation and student performance is validated. The direct relationship path coefficient between the extrinsic motivation and student performance is 0.745 and is significant. Then, the most accepted theory that connects extrinsic motivation and student performance also strongly supported with the direct relationship path coefficient between extrinsic motivation and self-efficacy is 0.640 and is significant. Then, this study analyzes the mediating effect of self-efficacy on extrinsic motivation and student performance relationship. The strength of the relationship between extrinsic motivation and student performance accounted by the mediator was (0.745-0.419) = 0.326, which equal to 43.76% of direct effect. Therefore, there is evidence that self-efficacy is partially mediates the relationship between extrinsic motivation and student performance and it also shows that self-efficacy as mediator has mediating influence on extrinsic motivation and student performance relationship in Malaysian online distance learning institutions. This study has revealed that self-efficacy has a significant impact on extrinsic motivation towards students' performance. The implications with regards to the findings imply that prior to the students to achieve good performance in academic they should be motivated as high as possible. There is a contribution value of selfefficacy as demonstrated by the findings in mediating the relationship between extrinsic motivation and students' performance.

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