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Supporting the Adult Learners in the Open Distance Learning Model: an Analysis Using SEM

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Abstract:

The purpose of this study is to examine the relationships of support factors that influence the self-motivation of distance learners in higher education. Self-motivation is considered vital in ensuring the students' ability to complete their tertiary education successfully. With the learners limited contact hours that they have with peers and faculty, this paper inspires to identify the most important support element to a distance learner. From the literature examined, five factors of student motivation are identified. Using the primary data collection method, questionnaires were distributed to target respondents who have gone through at least one course through open and distance learning. The data collected was analyzed using Structural equation modeling (SEM) using AMOS version 21. Confirmatory factor analysis of measurement models indicates adequate goodness of fit after few items were removed through modification indices verifications. The finding is discussed in the perspective of open distance learners and its implication on distance learning providers.

Key words: Online learning, motivation, adult learner, e-learning, open distance learning, SEM.

1. Introduction

Open distance learning has undergone tremendous developments over the past decade coupled with the encouragement for lifelong learning in Malaysia. People are seeking opportunities for lifelong learning, and with diverse

background and circumstances, they seek the flexibility and opportunity for learning at their own pace and in their preferred locations. The demand for obtaining a tertiary education whilst holding on to their full time job creates a climate spurring the growth of open and distance learning in Malaysia. Coupled with encouragement from the government in motivating the people to obtain higher education towards achieving knowledge workforce by 2020.

Open and distance learning benefits workers as they get to achieve higher education whilst having on the job training, and companies and industries need workers who are willing to upgrade their skills throughout their lifetime (Adebayo 2007). Creed (2001) in Adebayo (2007) defined distance learning as 'an education process in which a significant proportion of the teaching is conducted by someone far removed in space and/or time from the learners'. According to Commonwealth of Learning, COL, there are no one definition of open and distance learning.

COL (2000), identified several characteristics isolated to ODL from conventional teaching, such as separation of teacher and learner, use of mixed-media courseware, possibility of face-to-face meetings or tutorials and use of industrialised processes where various staffs are assigned to work in course development.

On the part of the learner, COL (2000) mentioned that ODL offers learner-centered education, where the teaching and learning process offers flexibility in sequencing their study, flexibility in negotiating objectives, contents, learning methods , assessment and finally, choice of support mechanism.

One of the criticism online courses is the high dropout rate and low graduation rates (Howell, Williams & Lindsay 2003). The issue of student retention is a major issue that institutions that provides them must look into. This issue has been discussed worldwide and is not only unique to local environment. Limiting the drop out rates is a primary goals of

an institution in ODL.

Students who were first motivated to pursue many a times dropped out to various reasons, such as work commitment, family commitment, lack of drive and motivation or changing mode and education institution.

Previous studies have identified factors such as motivational and persistance level, locus of control, family and intrapersonal influences, course and tutor-related factors, workload and number of assignments amongst others (Chacon-Duque 1987; Whittington 1995; Parker 1999; Rotter 1966; Bull et al. 1990 in Chaiprasurt & Esichaikul 2013). The extent of student support has also been identified as a factor of drop-out (Kaye & Rumble 1991).

Thus, the objective of this study is to examine the causal relationship of several factors of student motivation in the context of open and distance learning in Northern Malaysia. This paper constructs as follows. First, review the motivation literature in higher education is presented concerning the areas of open and distance learning. Next, this study will present the research framework, methods, measures and findings. Finally, the results were discussed in terms of its contribution to limiting the drop-out rates in open and distance institution and recommendation for future research.

2. Literature Review

Open and Distance Learning (ODL) generally targets adult learner. Mature individuals enrolled in education programs are considered to be non-traditional learners, as "students who possess characteristics such as including delayed enrolment, part-time student status, full-time employment, financial independence, responsibility for dependents as agreed by Salter, 2011. Salter, 2011 claimed that mature adult learners typically possess one or more of the traits associated with non-traditional learners. Earlier researchers found that a good tutor

is essential in aiding a students' success, understanding and stimulating deeper studies, by providing support, constant contact, being emphatic, and respectful to the students (O'Rouke 2003). O'Rouke (2003) further went on to mention that tutors serve as a link between learners and the educational institution. Beside tutors, communication among peers and tutor during tutorial sessions is a key motivation factor. Researchers and practitioners noted that technology-enhanced learning alone was not enough, arguing that people needed experiential learning for the mastery and retention of knowledge and skills achieved through the blending of technology and face-to-face interaction (Collis & Moonen 2001; Singh 2003). Study by Xie, Durrington and Yen (2011) indicate that students' motivation was related to their online participation. Distance education students should be provided with some form of accessible, relevant academic support targeted all the needs of students studying via distance education (Nemati 2008).

Researchers also noted that technology-enhanced learning alone was not enough, arguing that people needed experiential learning for the mastery and retention of knowledge and skills achieved through the blending of technology and face-to-face interaction (Collis & Moonen 2001; Singh, 2003). It is planned to emphasize first on the content, and then focus on institutional processes, services, technology applications, and process integration. (Fathallah & Hamayil 2011). Park and Choi (2009), agreed that online course needs to be designed in ways to guarantee learners' satisfaction and be relevant to learners' needs.

Theoretical Underpinning of Study

In this study, we undertake ARCS Model of Motivation Design by Keller (1987) as a basis of understanding the elements affecting students' motivation. Previous studies on online

learners motivational design has been mostly based on Keller's (1987) ARCS model, such as in Shih & Mill 2007; Bae, Lee & Lim 2005; Jones & Issroff 2007. The ARCS model aids the design of questionnaire along the dimensions of attention, relevance, confidence and satisfaction. The students were asked to rate each factor on a five (5) points Likert Scale, with labels from (1) 'strongly agree' to (5)'strongly disagree'.

The four dimensions, as adapted to measure the factors are explained as follows:

Attention refers to gaining and keeping the learner's interest. The questions were designed on tutor's skill when conducting tutorials and tutor's ability to make class lively and interesting.

Relevance refers to use of course information to real problems. The questions were designed for relevance of course materials to local context and relevance to industry related or work place need.

Confidence measures confidence in skills and abilities, and as such, questions were designed with confidence to initiate discussion with tutors in class and confidence to post and reply on LMS with tutors/ course coordinators and fellow students.

Satisfaction intents to gauge the satisfaction of the learners with the results of their learning experience, and uses new skills learnt in their work. Questions asked on the usefulness of the course content, relevancy to workplace need and if exam results and good grades are crucial to the respondents.

Motivation

Online distance learning has benefitted tens of thousands of learners, but motivation to complete a course, or stay long enough is a crucial factor. A variety of factors have been identified in previous research as factors crucial to the success of learning through ODL (McIsaac & Gunawardena 1996 in Hartnett et al. 2011). Motivation is one critical factor according to Bekele (2010). Brophy (2010) agrees that motivation is a key factor in learning and achievement in face-to-face context, and

not any less in online learning environments (Jones & Issroff 2007). Muilenberg & Berge (2005) posit that dropout rates for online courses are contributed by poor motivation. Motivation can influence what, how and when a learner chooses to learn (Schunk 1995) and previous research shows that motivated learners are likely to undertake challenging activities, be actively engaged and exhibit performance, persistence and creativity (Schunk et al. 2008). Brophy (2010) believes that motivation is linked to an individual's interactive relationship with the learning environment.

Role of Tutors and Motivation

It is critical role that the instructor has to transfer his/ her knowledge to students (Eom, Ashill & Wen 2006). In the ODL environment, the instructor transfers his/her knowledge in different locations (Leidner and Jarveepaa 1995). Thus, questions about the perception of students in regards to the knowledge and role of instructor is included.

E-learning demands a transition of the roles of students and instructor. Therefore, instruction becomes communication-oriented and instructor becomes a discussion facilitator / leader, rather than being a lecturer. According to Hyunh, 2005, the instructor's role is to become a facilitator, and his function is to stimulate, challenge, empower learning to his students, and not focusing entirely on the delivery of the content. Tutors should encourage and support undergraduate students, especially aged between 30 and 39, due to their lack of previous academic experience (Pierrakeas et al. 2004). A good tutor will encourage student-faculty interaction, encourages cooperation among students, encourages active learning, gives prompt feedback, emphasized time on task, communicates high expectation and respect diversity in talents amongst students (Gorsky & Blau 2009).

Tutorials and Motivation

Unlike traditional learning method, online distance learners either attend no classes or attend a minimal number of classes. These classes are usually termed as tutorials, and during this session, the learner gets to interact in person with their instructor or tutors and their peers.

The basic premise of the ODL model holds that students learnt through shared understanding of a group of learners (Eom, Ashill & Wen 2006). Attending to tutorials for distance learners are not confined to listening to their tutors, rather learners take this opportunity to get to know their peers, exchange contact and motivate one another. According to Dearnley (2003), academic network was divided into two distinct groups, 1) peers from the tutorial group, and 2) personal tutors. Dearnley (2003) also mentioned that attending tutorials seemed to add to academic experience, increase awareness of current thinking and in doing so, motivates the learner to continue. The findings from previous studies has found that group discussion was helpful in creating opportunities for group interaction (Gordon 1996; Stevenson & Sander 1998; and Bird 1999 in Dearnley 2003).

Course Content and Motivation

Course content is the materials provided for learning that bridges the gap between the teacher and the student, and generally, students are critical of the language, subject content, depth of subject matter and readability of the materials (Dadigamuwa & Senanayake 2012). Learner to content interaction is an area very little research has been conducted (Zimmerman, 2012). Previous research states that learner-content interaction is the fundamental form of interaction on which education is formed (Vrasidas 2000) and it is the most critical form of interaction because it is here that student learning takes place (Tuovinen 2000).

Learning Management System and Motivation

Learning management system or LMS is designed to provide a platform of learning and interaction with peers and teaching staff. The LMS is designed to reduce the distance barrier, as physical separation from their peers and instructors may result in a lack of communication, interaction and a weaker sense of belonging in a classroom (Chaiprasurt & Esichaikul 2013). This affects the students' performance and can lead to dissatisfaction and subsequently their drop out of the system (Balaban-Sali 2008; Hirumi 2002, Rau, Gao & Wu 2008 in Chaiprasurt & Esichaikul 2013).

Support System and Motivation

Support system in this model refers to non-academic support such as networking, administrative support, library support and learner support. Dearnley (2003) mentioned that appropriate student support make the difference between student success and failure. Dearnley (2003) also found that students that were returning to education after many years of lapse and for most, it was their first open learning experience, hence required some support from academic and non-academic such as administrative departments.

3. Methodology

This study formulates the factors of students' motivation as shown in Figure 1 below. In the research framework, it shows that online support, which is the learning management system (LMS), support system, role of tutors, tutorials, course content are direct antecedents of student motivation. In this study, the mediating effect of support system towards motivation was also investigated.

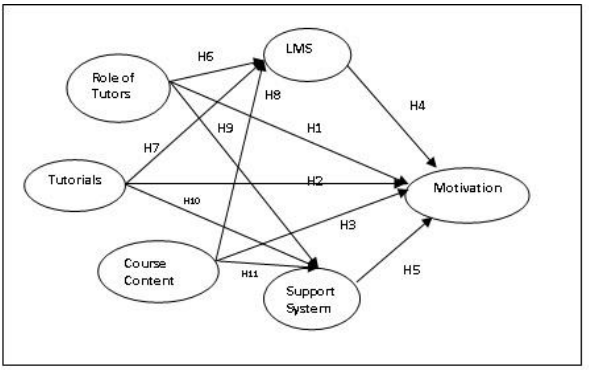

Figure 1: Research Framework

This research framework is translated into the hypothesized model as in Chart 1. In the hypothesized model, the manifesting variables are drawn with the error terms for each latent variable. The three exogenous variables of the role of tutors, tutorials and course content each, contains seventeen, seven and nine manifesting (observed) variables respectively. For structural equation modeling, the error of each item is indicated unobserved variables in round circles and labelled e01 to e33. For mediating variable, learning management system and support system, the manifesting variables are six and eight respectively. The error for both items are labelled as in the diagram. The endogenous variable is attached with a unique error.

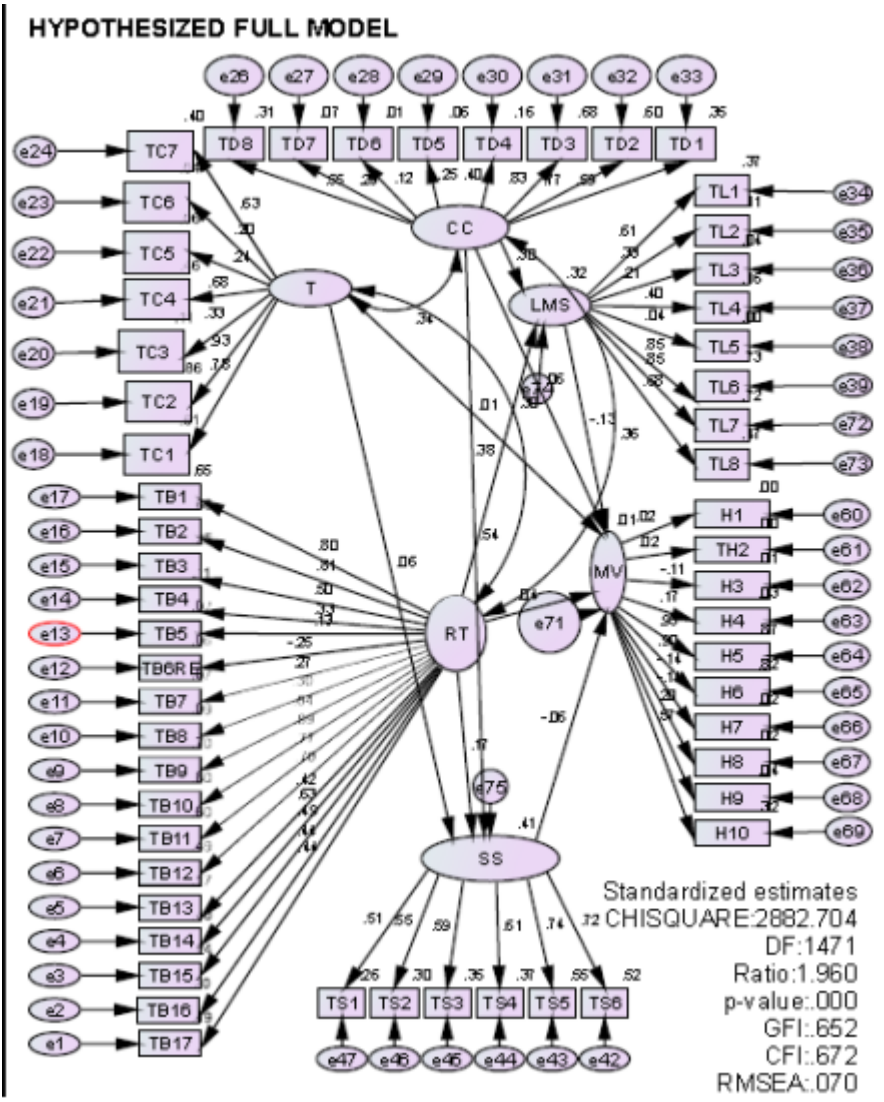

Chart 1: Hypothesized Full Model

Sampling and instrument

A total of 270 sets of questionnaires was distributed to adults who have gone through at least one module of learning through open and distance learning. The questionnaires were distributed to the respondents through email by using purposive sampling technique. A response rate of a 76.30% was

collected back amounting to 206 responses.

Each variable is measured using previously development instrument adapted from previous research conducted by on lifelong learning. However, the questions were adapted to fit in the online distance learning environment.

There are also nine demographic questions included in the instrument which use ordinal and nominal scale, such as gender, age, ethnicity, marital status, with or without dependents, programme of study in an ODL environment, and entry qualification to the institution of learning.

Data screening and analysis

The 206 dataset were coded and entered into SPSS version 21 and analysed using AMOS version 21.0. During the process of data screening, eight datasets were deleted due to Mahalanobis values more than the chi-square, $\chi 2$ value ($\chi^2 = 81.40$; n=46, $p<.001$). The balance of 198 dataset were finally left for analysis. Univariate normality computations using z-scores of skewness statistics and standard error of skewness as well as kurtosis statistics tests were also conducted. According to Hair et al. (2006), Z-score skewness of more than 2 needs to be transformed since it is considered as non-normal data. The z-score skewness values where required were transformed using reflect function for negative values followed by square root function and ending in reflect function. For positive z-values, reflect function was omitted (Tabachnik & Fidell 2007). The transformed variables were then used in subsequent CFA and structural models.

Thereafter, several statistical validity tests and analysis were carried out such as Cronbach's alpha reliability test and composite reliability test, validity test using CFA or confirmatory factor analysis for construct convergent, discriminant and nomological validities.

Once the data has been confirmed suitable and cleaned for analysis, the dataset were subjected to descriptive analysis,

correlation and structural equation modeling analysis. The analysis in SEM are CFA analysis, measurement analysis, discriminant analysis or average variance extracted analysis and composite reliability test. Finally, the direct indirect impact analysis or the mediating effects tests were carried out to test the fit for the hypothesized structural model and revised model.

4. Results

Demographic Profile of the Respondents

The respondents' age ranges from twenty-one to forty-eight years old averaging 27 years old. There are more female (64.65%) than male respondents (35.35%). The respondents are majority holding full time jobs (86.36%) compared to 13.64% who are not holding full time employment. All of the respondents have completed at least one module in the open distance learning, with most of them having done a bachelor degree and a small minority in diploma. 70.20% of them are single, and 57% are married. Out of the total married respondents, 26% of them have children and the balance of 74% of them did not. It is also important to know if the respondents have pre-tertiary education, and 68.18% of them did have either a diploma or some pre-university education. The balance of 32% of the respondent did not have any exposure to pre-tertiary education.

Descriptive Analysis of Variables

The research framework consists of three exogenous and three endogenous variables. Each construct shows Cronbach alpha readings of acceptable values of above 0.6, satisfying Nunnally (1970) recommendation of 0.60 limit. Composite reliability shows similar high readings except for motivation (0.642), which is still within the acceptable range. Both Cronbach alpha and composite reliability readings confirm the reliability of the scales used in the construct of the measurement scale (Table 1).

Descriptive							
		Frequency	**Percent**			**Frequency**	**Percent**
Gender	Male	70	35.35%	**Entry Qualification**	Open	63	31.82 %
	Female	128	64.65%		Regular	135	68.18 %
Ethnicity	Malay	9	4.55%	**Marital Status**	Single	139	70.20 %
	Chinese	157	79.38%		Married	57	28.79 %
	Indians	24	12.12%		Others	2	1.01%
	Others	8	4.04%				
Full Time Job	Yes	171	86.36%	**Dependents**	With Children	51	25.76 %
	No	27	13.64%		Without Children	144	74.24 %
Age Group	21-30	122	61.60%				
	31-40	67	33.80%				
	41-50	9	4.50%				

Table 1: Demographic Profile of Respondents

Convergent Validity (Confirmatory Factor Analysis-CFA)

From the confirmatory factor analysis (CFA) results, it is observed that the regression estimates or factor loadings of all manifesting observed variables ranging from 0.234 to 0.758. Hair et al., 2006 recommended that the loadings of latent to observed variable should be above 0.50. Using modification indices to guide deletion, the remaining numbers of items for each construct are as follows: role of tutors (from 17 to 4 items), tutorials (from 7 to 2 items), course content (from 8 to 4 items), LMS (from 8 to 5 items), support system (from 6 to 3 items), and motivation (10 to 7 items). (Table 4)

Composite Reliability

Composite Reliability is calculated based on the standardized factor loadings obtained from the final revised structural model.

The equation for composite reliability is as follows:

$$CR = \frac{(\sum \text{standardized factor loading})^2}{(\sum \text{standardized factor loading})^2 + \Sigma \varepsilon j}$$

Where ε is error and Σ is summation, Σ standardized factor loadings = Sum of standardized factor loadings

The readings of composite reliability of all exogenous constructs are all above the recommended 0.60 index as suggested by Nunnally, 1970. (Table 3).

Variable	**C.R.**	**Cronbach's Alpha (standardized items)**
RT (role of tutors)	0.94785	0.858
T (tutorials)	0.95786	0.735
CC(Course Content)	0.91267	0.717
SS (Support System)	0.9492	0.784
LMS (Learning Management System)	0.93542	0.714
MV(Motivation)	0.64229	0.613

Table 3: Composite Reliability and Cronbach alpha readings on the constructs.

Discriminant Validity

Average Variance Extracted (AVE) is a test used to measure the extent to which a construct is truly distinct from other constructs. The results obtained from the AVE score should be more than correlation squared to qualify the construct as truly

distinct from another construct. The AVE is calculated from the calculation of variance extracted using the following formula.

$$\textbf{Variance Extracted (VE)} = \frac{\Sigma \text{ (standardized SMC}^2\text{)}}{\Sigma \text{ (standardized SMC}^2\text{) + } \varepsilon\Sigma j}$$

To satisfy the requirements of discriminant validity, the AVE extracted of any two constructs must be more than the square of the correlations between the given two constructs.

AVE varies from 0 to 1 , and it represents the ratio of the total variance that is due to the latent variable. According to Dillon and Goldstein and Bagozzi (1991), a variance extracted of >0.50 indicate that the validity of both the construct and the individual variable is high.

The figures in table 7, indicate that the validity and construct and individual variable of all exogenous variable are good with the exception of course content and support system. For course content and support system, the R^2 is less than the AVE showing that the distinct validity of the construct must be rechecked and the questions needs to be rephrase or designing.

AVERAGE VARIANCE EXTRACTED (AVE) VERSUS CORRELATION ² MATRIX							
	VARIABLE NAME	1 RT	2 T	3 CC	4 SS	5 LMS	**6 MV**
	ROLE OF INSTRUCTOR (RT)	1.000					
AVE	TUTORIALS (T)	0.471	1.000				
R^2		0.088					
AVE	COURSE STRUCTURE (CC)	0.366	0.498	1.000			
R^2		0.131	0.103				
AVE	SUPPORT NOT ONLINE (SS)	0.448	0.609	0.273	1.000		
R^2		0.144	0.084	0.370			
AVE	ONLINE SUPPORT (LMS)	0.415	0.565	0.439	0.537	1.000	
R^2		0.238	0.177	0.171	0.229		
AVE	MOTIVATION (MV)	0.202	0.275	0.214	0.261	0.242	1.000
R^2		0.131	0.103	0	0.003	0.01	

Table 7: Comparison of Average Variance Extracted and Correlation Squared

Nomological Validity

Nomological validity test is used to examine whether the

correlations between constructs in the measurement theory makes sense such as correlation must be positive or negative according to theory (Hair et al., 2006). From table 5, it is observed that all directions of correlations are in the hypothesized direction as based on theory. Thus, it can be deduced that nomological validity is substantiated for all measures used in this study.

CORRELATION MATRIX (FROM AMOS)						
VARIABLE NAME	1 RT	2 T	3 CC	4 SS	5 LMS	6 MV
ROLE OF TUTOR (RT)	1.000					
TUTORIALS (T)	0.297(0.088)	1.000				
COURSE CONTENT (CC)	0.362(0.131)	0.321(0.103)	1.000			
SUPPORT SYSTEM (SS)	0.379(0.144)	0.29(0.084)	0.608(0.370)	1.000		
LEARNING MGMT SYSTEM (LMS)	0.488(0.238)	0.42(0.177)	0.414(0.171)	0.479(0.229)	1.000	
MOTIVATION (MV)	0.362(0.131)	0.321(0.103)	-0.003(0.000)	-0.053(0.003)	0.097(0.010)	1.000

Table 5: Correlation & Correlation square Matrix among Exogenous Variables

Goodness-of-Fit of Structural Model

To achieve a goodness-of-fit (GOF) structural model, first all constructs and measurement models were tested through confirmatory factor analysis (CFA). The goodness-of-fit model will reveal a model which fits into the variance-covariance matrix of the dataset used.

The CFA, measurement and structural model has a good fit with the dataset based on criteria assessed. The criteria used were goodness-of- fit index (GFI), CFI, RMSEA as suggested by Bagozzi & Yi, (1988). All CFA constructs produced good fir as indicated by the indices such as CMIN/df ratio (<2), p-value of >0.5, GFI of >0.95, and RMSEA (root mean square error of approximation >0.08.

Table 4 shows that the GOF of generated or revised model is comparatively better than the hypothesized model. According to Bryne, 2010, it is expected that the generated model to be better than the hypothesized model, as the latter is more towards confirmatory.

GFI of the generated model is 0.905 compared to GFI of hypothesized model of 0.653. Root mean square error

approximation, RMSEA of the generated model is 0.008 compared to RMSEA of the hypothesized model of 0.069.

Final Models	**Role of Tutors**	**Tutorials**	**Course Content**	**LMS**	**Support System**	**Motivation**	**Hypothesized Model**	**Generated Model**
Original Items	17	7	8	8	6	10	56	
Items Remaining	4	2	4	5	3	7		18
CMIN	457.26	61.36	66.133	65.314	51.558	413.735	2872.497	264.487
Df	119	14	14	20	9	35	1473	261
CMIN/df	4.843	4.383	4.724	3.266	5.729	11.821	1.950	1.013
p-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.428
GFI	0.753	0.913	0.912	0.930	0.924	0.732	0.653	0.905
CFI	0.750	0.887	0.877	0.891	0.867	0.231	0.675	0.997
RMSEA	0.125	0.136	0.137	0.107	0.155	0.234	0.069	0.008

Table 4: Confirmatory Factor Analysis (CFA)-Goodness-of-Fit Analysis (GOF) of Models

Hypotheses Results

The discussion of the results uses the generated form the fit model. The hypothesized model's is not suitable for use in the discussion of hypotheses results as the hypothesized model did not achieve model fit ($p<0.000$).

The direct hypotheses for this study is formulated as follows:-

H1: Role of tutors is related positively with student motivation

H2: Tutorials is related positively with student motivation

H3: Course Content is related positively with student motivation

H4: Learning Management System is related positively with student motivation

H5: Support System is related positively to student motivation

H6: Role of tutors is positively related to Learning

Management System

H7: Tutorials is positively related to learning management system

H8: Course Content is positively related to Learning Management System

H9: Role of tutors is positively related to support system

H10: Tutorials is positively related to support system

H11: Course Content is positively related to support system

From the generated results, H6, H7 and H9 is supported with CR value >1.96 and p-value >0.005.

The result demonstrates that role of tutors has a significant impact on LMS (β=0.261, CR=2.544, p<0.005). Tutorials also has significant impact on LMS (β=0.338, CR2.815 , p<0.005) and tutor role is also significant to support system (β=0.36, CR=3.389, p<0.001).

The hypotheses of variables to motivation are all not significant. This largely is demonstrated by CR value of less than 1.96.

SEM proposed 3 new direct paths in the output, as was put in Figure 2.

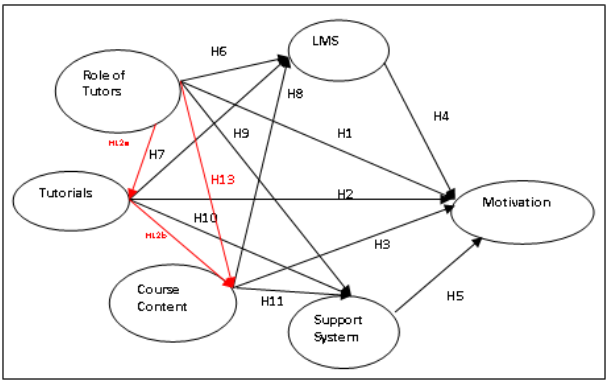

Figure 2: New Paths Suggested in SEM

The revised model generated three new paths (H12a, H12b and H13).

From these three new paths, the only significant direct path is H12a (the direct role of tutors towards tutorials at ß=0.294, CR=3.15 and p<0.005). The other 2 paths suggested by the revised model generated -H12b and H13 is not significant (Table 8).

H	Endogenous		Exogenous	Std. Estimate	S.E.	C.R.	P-Value	Status
H1	Motivation	<---	Role of Tutors	0.059	0.306	0.431	0.667	
H2	Motivation	<---	Tutorials	-0.023	0.189	-0.189	0.85	
H3	Motivation	<---	Course Content	0.129	1.997	0.726	0.468	
H4	Motivation	<---	LMS	-0.022	0.547	-0.182	0.855	
H5	Motivation	<---	Support System	-0.181	0.65	-0.828	0.407	
H6	LMS	<---	Role of Tutors	0.261	0.051	2.544	0.011	Sig
H7	LMS	<---	Tutorials	0.338	0.042	2.815	0.005	Sig
H8	LMS	<---	Course Content	0.193	0.367	1.308	0.191	
H9	Support System	<---	Role of Tutors	0.36	0.08	3.389	***	Sig
H10	Support System	<---	Tutorials	0.144	0.048	1.585	0.113	
H11	Support System	<---	Course Content	0.5	1.208	1.558	0.119	
H12a (New)	Role of Tutors	<---	Tutorials	0.294	0.004	3.15	0.222	Sig
H12b (New)	Course Content	<---	Tutorials	0.314	0.002	1.503	0.133	
H13 (New)	Role of Tutors	<---	Course Content	0.321	0.001	1.500	0.134	

Table 8: Direct Impact of Generated Model: Standardized Regression Weights

Mediating Effect Analysis of Revised Model

Table 9 shows the indirect effect estimates to test the mediating effects of online learning management system (online support) and support system which refers to the non-online support as hypothesized in hypotheses.

H	Path	β_0	Sig.	βL	Sig.	Status	Verdict
14	LMS <-- RT	0.261	0.011	0.261	0.011	Sig.	
			(S)		(S)		LMS is not a significant mediator - non-mediator between role of tutor and motivation
	MV <-- RT	-0.011	0.922	-0.022	0.855	NS	
			(NS)		(NS)		
	MV <-- LMS <- RT	0	0	0.059	0.667	NS	
			(S)		(NS)		
15	LMS <- T	0.338	0.005	0.338	0.005	Sig.	
			(S)		(S)		LMS is a non-mediator between tutorials and motivation
	MV <- LMS	-0.031	0.78	-0.022	0.855	NS	
			(NS)		(NS)		
	MV <- LMS <- T	0	0	-0.023	0.85	NS	
					(NS)		
16	LMS <- CC	0.192	0.191	0.193	0.191	NS	
			(NS)		(NS)		LMS is a non-mediator between course
	MV <- CC	-0.024	0.828	-0.131	0.78	NS	content and motivation
			(NS)		(NS)		
	MV <- CC <- LMS	0	0	0.131	0.463	NS	
					(NS)		
17	SS <- RT	0.358	***	0.36	***	Sig.	
			(S)		(S)		Support System is a non-mediator between role of tutors and motivation
	MV <- SS	-0.135	0.422	-0.19	-0.371	NS	
			(NS)		(NS)		
	MV <- SS <- RT	0	0	0.06	0.657	NS	
					(NS)		
18	SS <- T	0.145	0.108	0.144	0.113	NS	
			(NS)		(NS)		Support System is a non-mediator between tutorials and motivation
	MV <- SS	-0.055	0.705	-0.181	0.407	NS	
			(NS)		(NS)		
	MV <- SS <- T	0	0	-0.023	0.85	NS	
					(NS)		
19	SS <- CC	0.497	0.12	0.5	0.119	NS	
			(NS)		(NS)		Support System is a non-mediator between course content and motivation
	MV <- SS	-0.055	0.705	-0.181	0.407	NS	
			(NS)		(NS)		
	MV <- SS <- CC	0	0	0.129	0.468	NS	
					(NS)		

Table 9: Mediating Effects Findings: Comparison between generated model and revised model

H14: Learning Management system (LMS) mediates the relationship between role of tutors (RT) and student motivation (MV).

H15: Learning Management System (LMS) mediates the relationship between tutorials and student motivation (MV).

H16: Learning Management System (LMS) mediates the relationship between course content (CC) and student Motivation (MV).

H17: Support System (SS) mediates the relationship between role of tutors and student motivation (MV).

From the result obtained, none of the mediating hypotheses were supported. This means that H14, H15, H16 and H17 are not supported. This finding implies that direct relationships have stronger impact than mediating effects.

Overall Comparison between structural Models

The results from this study in Table 4 shows the overall comparison between the hypothesized and generated fit model derived from this study. The hypothesized model produces two significant direct paths.

However, this result is not generalisable, as the model did not achieve, p value <0.05. However, the findings from the hypothesized model is consistent with the revised model, where the role of tutors are positively related to learning management system, H6. From the revised model, three direct paths were found to be significant, role of tutors to learning management system H6 , tutorials to learning management system H7 and role of tutors towards support system, H9. In the hypothesized model, course content towards support system is found to be a significant path. However, in contrast, in the revised model, course content is not found to be significant to support system.

The generated structural model found three new paths, (H12a, H12b and H13). However, only one path is found to be

significant, H12a that is role of tutors towards tutorials.

For mediating effects of support system and learning management system, the results from both the structural models are consistent, where both revealed the results of non-mediating effect. Learning management system and support system are both non-mediators in the model.

5. Discussion

This study attempts to examine the causal relationship of five factors influencing the motivation of adult learners in online distance learning. Keller's ARCS Motivation theory (1987) is used as the conceptual underpinning in this study, as it is the noted authority used by many researchers in conventional and online teaching studies. Student motivation leads to the students being successful in finishing their online distance learning. The implication to institution is the retention and reducing the drop-outs of students. The link of student motivation has been linked to intrinsic feeling of motivation, and the latter being the key element in motivation of the individual (Baxter, 2012).

The initial hypothesized model did not achieve the model fit as expected, as $p=0.000$ ($p<0.05$). Therefore, the hypothesized model could not be generalised to the population. The revised model however, achieve model fit with $p=0.428$ ($p>0.05$), GOF Index=0.905, CFI =0.997 and RMSEA =0.008 which close fit is suggested at RMSEA <0.05.

The role of tutor is found to be significant in motivating adult online distance learners. It is suggested from the results in SEM analysis, that role of tutors is significant to Learning management system, the support system and during tutorials. It is also found that tutorials and LMS are positively related. Course content, is not found to be significant in motivating the students. This finding is consistent with the findings from previous research that the role of tutor in offering student

support are not only vital, but also unique, as open learning tutors are usually supportive (Knowles 1990; Rogers 1993 in Dearnley 2003). SEM suggested three new paths, which only tutorials to the role of the tutors was found to be of significance. It was also interesting to find that learning management system, which is the online support to students in the ODL mode and support system (non academic, non online) support is not found to be a significant mediating variable in the model.

This finding is consistent with the results from previous studies that indicated that the success of ODL students appeared to be a combination of intrinsic determination to succeed, the ability to create a home environment that supports study and coupled with university intervention when carried out by staffs and tutors (Baxter 2012). It is therefore, important for the providers of online distance learning (ODL) to select and recruit only dedicated tutors as they will act as an agent for the university and they play a key role as the face that will link the learners with the institution.

6. Suggestion for Future Research

The findings from this study could not be generalised as it is conducted in the northern part of Malaysia. Future research could be conducted on all distance learners in Malaysia.

Future research could also look into the moderating effects of gender, age and family commitment into the model of student motivation in distance learning. Futhermore, future studies could also consider looking at prior learning experience as mediator to success in students completing an online learning programme. Home learning environment, the learner's employment situation and intrinsic determination are some interesting areas future studies may be conducted in.

7. Conclusion

This study has established four direct causal effects. They are (1) role of tutors to learning management system, (2) tutorials to learning management system, (3) role of tutors to support system, and (4) tutorials to role of tutors. This study also finds that students' motivation is not mediated by learning management system or by support system provided by the learning institution.

APPENDIX

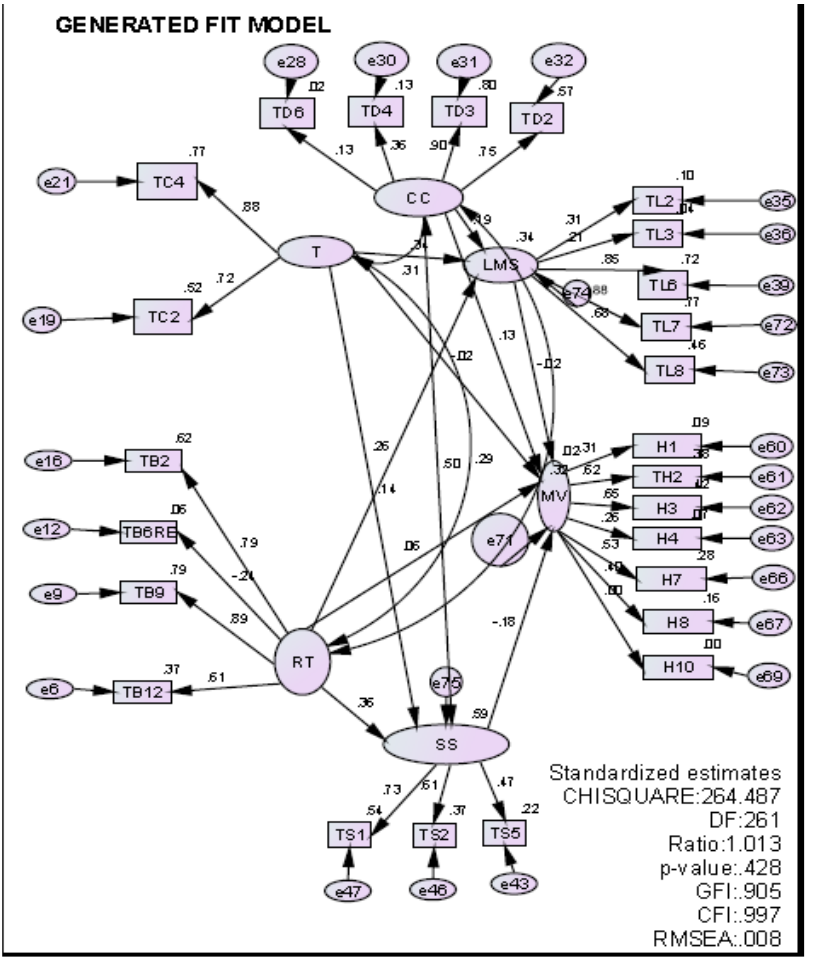

Chart 2: Generated Fit Model

AVERAGE VARIANCE EXTRACTED (AVE)						
VARIABLE NAME	1 RT	2 T	3 CC	4 SS	5 LMS	6 MV
ROLE OF INSTRUCTOR (RT)	1.000					
TUTORIALS (T)	0.471	1.000				
COURSE STRUCTURE (CC)	0.366	0.498	1.000			
SUPPORT NOT ONLINE (SS)	0.448	0.609	0.273	1.000		
ONLINE SUPPORT (LMS)	0.415	0.565	0.439	0.537	1.000	
MOTIVATION (MV)	0.202	0.275	0.214	0.261	0.242	1.000

Table 6: Average Variance Extracted (AVE) Matrix of Exogenous Variables

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