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THE INFLUENCE OF EFFORT EXPECTANCY AND COGNITIVE NEED ON INTENTION TO ADOPT DISTANCE LEARNING

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Abstract—**This research aimed to investigate the effect of effort expectancy and cognitive needs on the students' intention to adopt distance learning. In this study, the quantitative research approach was employed. Data were collected from students of higher education institutions, and the total valid questionnaires suitable for analysis was 92. Many statistical tests including confirmatory, and structural equation modelling have been adopted in this paper and data was analyzed using AMOS 20 software. The findings show that both effort expectancy and cognitive needs have a significant effect on the students' intention to adopt distance learning. Hence, before implementing distance learning students should go through awareness programs that explain in details step by step how to use this technology and its related applications.**

Keywords— **Effort Expectancy, Cognitive Needs, Distance Learning.**

I. INTRODUCTION

The transformations appeared in the late twentieth century which focus on the technological side, which has a major influence on the formation of society. Also, the number of IT users multiplied several times this makes it a research area from different perspective especially it terms of digitalization (Alraja, Hussein, and Ahmed 2021). This big transformation led to focus on information and its development and its exchange to build various knowledge through the use of information and communication technology, in order to form a new society that relies on knowledge in all its sectors. This technology has contributed to support e-learning or the distance learning and has become one of its applications (Al-Adwan, Al-Adwan, and Smedley 2013).

Distance education is a virtual learning environment based on taking advantage of modern technological means to dispense with the methods used in traditional learning (Chan et al. 2015; Uddin, Ahmar, and Alraja 2016). On the other hand, this type of university education helps to achieve the democracy of education, as it transmits education to every citizen wherever he wants and where he wants, and on the other hand, it contributes to making education a continuous and extended process throughout life.

The issue of distance education has been addressed in many studies, where most of these studies (El-Masri and Tarhini 2017; Kim-Soon et al. 2015) have proven that this type of education faces many material and non-material challenges to achieve a successful learning environment as well as privacy and security issues (Alraja, Farooque, and Khashab 2019). And since the learner is one of the most important episodes of the educational process, research into the factors that stimulate or encourage the adoption of distance education is very important. It has been found through many studies that "effort expectation"(El-Masri and Tarhini 2017; Fianu et al. 2018) and "cognitive need" are key factors in influencing the learner's intention to adopt distance learning (Thongsri et al. 2018).

The present study will provide a theoretical framework describing both of "effort expectation" and "cognitive need" variables and measuring the relationship between them and the intention of learners to adopt distance learning.

II. LITERATURE REVIEW

Effort Expectancy (EE): It is simplicity level related with consumers' usage of technology (Alraja et al. 2016; Venkatesh, Thong, and Xu 2012) also it is the level of comfort associated with information systems usage (Venkatesh et al. 2003). Many previous studies have illustrated that effort expectancy has a positive effective on how he or she intends to use a system (Alraja 2015; Samsudeen and Mohamed 2019). The use and acceptance of learning management systems (LMS) have been investigated within higher-education systems, the findings revealed that the Effort Expectancy had a positive impact on the provision teachers' approaches (Radovan and Kristl 2017). Moreover, UTAUT theory were used to inspect a working model for learning outcomes. The results showed that the Effort Expectancy contributed in predicting both behavioral intention and in adopting the distance learning among higher-education (Chan et al. 2015). Further, UTAUT theory used to determine factors affecting students' intention to use mobile learning. The findings confirmed that "effort expectancy" have no relationship with the intention to adopt learning with mobiles (Kim-Soon et al.

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2015). Another study examined the dimensions influenced "Massive Open Online Courses" (MOOC) implementing and usage. It was proved that effort expectancy has not a significant effect on the intention of use of MOOC system (Fianu et al. 2018). This study is presuming that in case that the students realizes the easiness of adopting and using distance learning system, it is more probably to shift to this new system. For this reason, the study suggested the following hypothesis:

H1- There is a positive significant effect of effort expectancy on students' intention to adopt distance learning.

Cognitive Need (CN): It is identified as is the encouragement of students to utizied things in the same way of creative thinkers do it. Students are assumed to be confronted to blend their information of their education to solve their daily obstacles. In addition to that they should improve their skills to develop recent knowledge to solve problems, and to share their knowledge. Thus, to achieve the constructing knowledge demand, should be a tool (for instance an m-learning application) capable to motivate learners to increase their knowledge that are related to Integrating teaching practices (Thongsri et al. 2018). In this study students who are encouraged by information systems to explore for information if they perceive it as useful, they are more likely to use it more regularly.

H2- There is a positive significant effect of cognitive needs on students' intention to adopt distance learning.

Base on the above-mentioned literature and suggested hypotheses the following (figure 1) model is proposed:

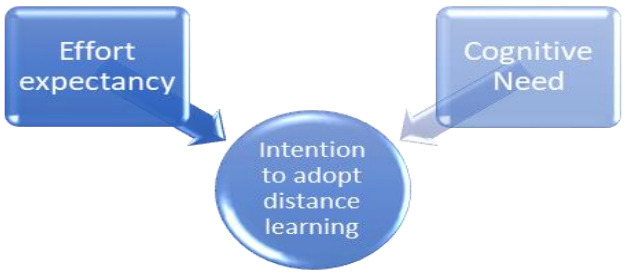

Figure 1: Study Model

III. Research Methods

An online questionnaire distributed to collect the primary data about the study variables (Effort Expectancy, Cognitive Need). However, this tool has been prepared based on previously validated instruments (ALraja and Chikhi 2015; Thongsri et al. 2018; Venkatesh et al. 2012). The privacy of the respondents has been confirmed. Moreover, the responses were collected based on the five-point Likert scale. The questionnaire was distributed to the students of Universities and colleges; only 92 questionnaires were valid questionnaires for analysis. Further, all the proper statistical investigations for confirming the validity and reliability of the instrument has been run. The results of those statistical analyses appear in the table (1), which ensure the internal consistency of construct and measures validity. As well as, to test the study hypothesis the structural equation modelling was adopted.

IV. Results and Analysis

The values of statistical test Cronbach's alpha as seen in table (1) all the constructs reached the acceptable level (0.70) (Hussein, Ahmed, and Alraja 2017; Wamba et al. 2017). Further, Skewness and Kurtosis statistics tests has been used to check the normal distribution, the results were within the acceptable rang +2 and -2. Further, all the loadings of the variables' items were above the threshold 0.40(Alraja 2016; ALraja and Chikhi 2015; Alraja and Malkawi 2015; Malkawi, Alraja, and Alkhayer 2010).

Table -1 Instrument Validity

Constructs	Items	Mean	Std. D	Skew	Kurtosis	α	*Factor loadings
Effort Expectancy (EE)	EE1	3.58	0.88	-0.19	-0.79	0.84	0.87
	EE2						0.85
	EE3						0.74
Cognitive Needs (CN)	CN1	3.37	0.80	-0.37	0.87	0.73	0.54
	CN2						0.48
	CN3						0.87
Intention to adopt distance learning (Int)	Int1	3.5	0.89	-0.36	0.09	0.75	0.77
	Int2						0.66
	Int3						0.61

*Principal Component Analysis with Varimax rotation

Moreover, to check wither the collected data is suitable for Exploratory Factor Analysis (EFA), the statistical test Kaiser-Meyer-Oklin (KMO) was performed. Table 2 present the result of the mentioned test however the value for the dataset was above 0.60 and Bartlett's test of Sphericity had a p-value of < 0.001)(Alraja et al. 2019).

Table -2 Kaiser-Meyer-Oklin (KMO)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.837
Bartlett's Test of Sphericity	Approx. Chi-Square	396.008
	df	36
	Sig.	0.000

Furthermore, as appear in table (3) the extracted factor with the highest initial eigen value was 37.585 % which is less than 50 % (Alraja et al. 2020). This indicate no common method biases were detected in this research.

Table -3 CMV

Component	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %

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1	**4.695**	**42.167**	**37.585**	**4.695**	**42.167**	**42.167**
2						
8						
9	**.199**	**2.21**	**100.000**			

Note: Extraction Method: Principal Component Analysis

The fit indices for confirmatory factor analysis shown in table (4) were in the acceptable level (Alraja et al. 2019).

Table -4 CFA Fit Indices

fit indices	X2/df	GFI	CFI	RMR	RMSEA
Recommended	2< X2/df<5	>0.90	>0.90	0.08	0.08
Measured	2.72	0.905	0.901	0.07	0.08

Moreover, table (5) display the Standardized Factor Loadings all the assigned values were exceeded the acceptable level 0.50. More, the composite reliability prove the convergent validity, all constructs were got more than 0.70 (Alkhaldi et al. 2017).

Table -5 CFA Results

Constructs	**Items**	**Standardized Factor Loadings (St. FL>.50)**	**CR>.60**
Effort Expectancy (EE)	**EE1**	**0.82**	**0.84**
	EE2	**0.80**	
	EE3	**0.78**	
Cognitive Needs (CN)	**CN1**	**0.77**	**0.73**
	CN2	**0.66**	
	CN3	**0.62**	
Intention to adopt distance learning (Int)	**Int1**	**0.76**	**0.79**
	Int2	**0.85**	
	Int3	**0.61**	

To test the research proposed hypothesis Structural Equation Modelling (SEM) was adopted as it shown in Figure (2).

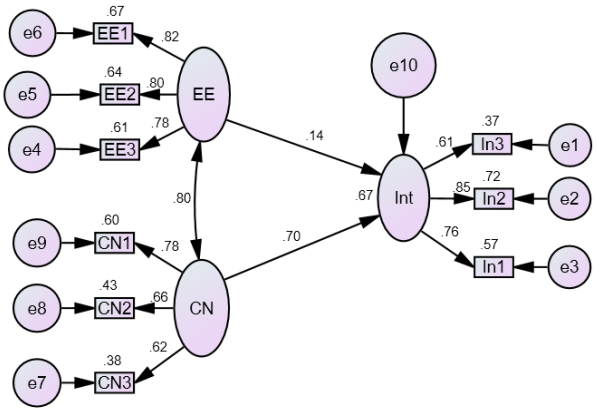

Figure 2. Tested model

As shown in Figure (2) the fit indices for the tested model show good fit as they are within their recommended values. The results show that effort expectancy and cognitive needs positively influences the students' intention to adopt distance learning. The weights of standard regression were 0.14 (p=0.00), and 0.70 (p=0.00) respectively, explaining 67% of variance in the intention to adopt distance learning. Table 6 displays the results of hypothesis test which will be discussed in detail in the following section.

Table -6 SEM results

Hypotheses	**Path**	**Standard Regression Weights (SRW)**	**Supported**
H1- there is a positive significant effect of effort expectancy on students intention to adopt distance learning.	**EE→Int**	**0.14**	**yes**
H2- there is a positive significant effect of cognitive needs on students intention to adopt distance learning.	**CN→Int**	**0.70**	**yes**

V. DISCUSSION

The aim of this study was to identify the effect of effort expectancy and cognitive needs on the students' intention to adopt distance learning. In this regard the findings suggest that:

Effort Expectancy have a positive effect in encouraging students to adopt distance learning. This finding presents the importance of the required skills and efforts from the students to conduct the distance learning. This result comes in agreement with the results of (Alraja 2015; Kim-Soon et al. 2015; Samsudeen and Mohamed 2019) Who proved that effort expectancy have an important in supporting students to adopt distance learning. While this result was in contrary with(Fianu et al. 2018; Kim-Soon et al. 2015) who found that effort expectancy has no effect on adopting e-learning method by students.

Cognitive needs have a positive effect in encouraging students to adopt distance learning. Thereby, students think they will adopt distance learning if they perceive itis useful, they are more likely to use it. This result comes in agreement with the results of (Thongsri et al. 2018) Who found that cognitive needs are important in explaining students' intention to adopt distance learning. Hence, before implementing distance learning students should go through awareness programs that explain in details step by step how to use this technology and its related applications.

VI. CONCLUSION

The study aimed to investigate the effect of effort expectancy and cognitive needs on the students' intention to adopt distance learning. The study found that both effort expectancy and cognitive needs have a significant effect on the students' intention to adopt distance learning.

However, as all other research this study has its own limitation. The sample size was the main limitation thereby the results generation, as current situation (Covid-19 spread) researcher was not able to reach a significant number of students. Therefore, future research to include more respondents to solve this problem. In addition, study other factors to find out what are main factors that affect the students' intention to adopt distance learning.

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