A Sight on E-learning Factors: Emerging Universities

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Abstract- E-learning has been used by numerous higher learning institutions around the globe to teaching and learning activities numbers of factors how effect or influence on e-learning especially in Emerging universities (EU). This paper attempts to sight on important e-learning factors in (EU). Framework has been proposed to investigate or explain the simultaneous effects of important factors on each other and their collective through e-learning in (EU). Questionnaire in this paper gathered was analyzed by using structural equation modeling (SEM) in SPSS AMOS. All respondents were instructors from University of Sumer-Iraq.

Index Terms- Organizational Climate, Community, Subject, Tools, Object.

I. INTRODUCTION

Several researchers such as Al-Azawei., (2015); and Harb, (2013) suggested and provided a number of factors as a instructions for future work on e-learning in many public universities, but many previous studies did not make test or an attempt to explain and test the factors simultaneously (directly and indirectly effect). In addition, they did not attempt to explain the simultaneous effects of these factors individually and collectively in (EUs). For instance, many studies proposed framework for e-learning with factors such as proposed by Khan (2009), Violato, et al.,(2007), Elameer (2017), Mutiaradevi (2009) etc., but no researcher has attempted to explain ad investigate a modeling of these factors and the simultaneous effects of these factors individually. Table 1 shows Critical Factors in E-Learning environment in previous studies. Therefore, this study using simultaneous analysis of several factors has been carried out, a new framework on e-learning readiness has been proposed. The analyses point out that (a) organizational climate has significant direct effects on subject and tools, and another significant indirect effect on engagement through subject and tools, (b) while organizational climate does not have direct effect on culture, in addition no indirect effect on engagement with culture, (c) also the subject/individual has significant direct effects on engagement and tools, and a significant indirect effect on engagement through tools, (d) this study explained the culture has significant direct effects on subject and engagement, and indirect effect on engagement through subject, (e) moreover, culture has no significant direct effect on tools and no indirect effect on engagement through the tools, and (f) tools have significant direct effects on engagement. All respondents were instructors from University of Sumer as a (EU) in Iraq. A stratified sampling technique was used to identify the sample. Data gathered was analyzed by using structural equation modeling (SEM), also several techniques of analysis were employed to exam the hypothesized model and the relationships among the factors of study. Thus, this study seek to investigate nine factors aforementioned (that have been identified and gathered from the literature review) and classified in Organizational Climate, Community, Subject, Tools, Object to study the simultaneous effects of these factors whether were individual and collective in EUs.

Table 1: Critical Factors in E-Learning Environment

Authors	Subjects		Factors
Khan(2005)	E-learning QUICK Checklist	➢ ➢ ➢ ➢ ➢ ➢ ➢	Institutional factors Management factors Technological factors Educational factors Ethical factors Interface design factors Evaluation factors
Mutiaradevi (2009)	Measurement of e-learning	➢ ➢ ➢ ➢ ➢ ➢ ➢ ➢	Technological skills Equipment/infrastructure Online learning style Attitude Human resources Cultural Environmental Financial
Critical Factors in e-learning environment (Adapted from Duong, 2011)			
Elmehdi (2013)	Factors Influencing Faculty and Students" Acceptance of E-learning Tools	➢ ➢ ➢	Technology (Internet access) Material Methods of teaching and learning
Chin & kon (2014)	Key Factors for fully Online E-learning Mode	➢ ➢ ➢ ➢ ➢ ➢	Pedagogy Management Resource support Ethical (Students" Language Capability) Technology (Internet connection) Institutional support student)

II. CONCEPTUAL FRAMEWORK AND FACTORS OF STUDY

The nine factors in this paper, called technological skills, equipment/infrastructure, online learning style, attitude; human resources, cultural; environment, financial and engagement readiness included in conceptual framework explained in Figure 1 based on tools, subjects, community, object components and organizational climate. These factors would be divided and classified as the following:
1) Subject/ Individual Readiness for Change involving attitude and online learning style factors.
2) Community/ Societal Readiness involving the cultural factor.

3) Tools are Technological Readiness involving equipment/ infrastructure, technology skills, and human resource factors.
4) Object is related to engagement readiness factor.
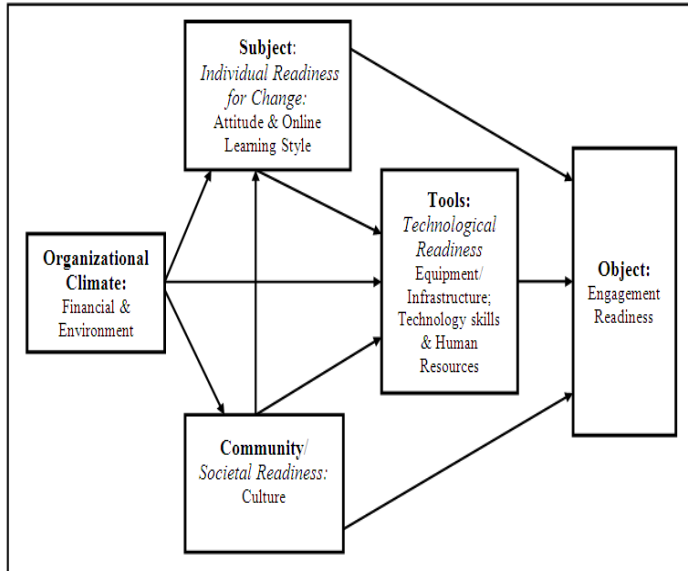5) Organizational climate involving financial and environmental factors.

Figure 1. Conceptual framework and factors of the study

A. Problem Statement

Many factors have been identified in different studies about e-learning readiness for several countries, but no study yet has exam or investigate the simultaneous effects of these factors individually and collectively. this study is devoted to effects of these factors individually and collectively (directly and indirectly) for e-learning based on nine dimensions for instructors, namely technological skills, equipment/infrastructure, online learning style, attitude, human resources, cultural, environmental, financial, and engagement readiness (EUs).

B. Research Objectives

1) To examine how organizational climate has a direct effect on factors of subject, tools, and culture readiness, and an indirect effect on engagement through subject, tools, culture as mediating variables in the e-learning environment of (EUs).

2) To examine how subject has a direct effect on tools and factor engagement and indirectly on engagement through the tools in e-learning environment of (EUs).
3) To examine how factor culture has a direct effect on subject, tools, and engagement and an indirect effect on engagement readiness through subject and tools as mediating variables in e-learning environment of (EUs).

4) To examine how factors tools have a direct effect on engagement in e - learning environment of (EUs).

C. Research Questions

1).Does factors organizational climate have a direct effect on subject, tools, and culture, and an indirect effect on factor engagement through subject, tools, culture as mediating variables in e-learning environment of (EUs)?

2). Does factors subject have a direct effect on tools and engagement and indirectly on engagement through the factors of tools in e-learning environment of (EUs)?

3). Does factor culture have a direct effect on subject, tools, and engagement and an indirect effect on factor engagement through subject and tools as mediating variables in e-learning environment of (EUs)?

4). Does factors tool have a direct effect on engagement in e-learning environment of (EUs)?

III.   SEARCH TECHNIQUE

In this paper, the population refers to all instructors at the University of Sumer. They were chosen from; involving different colleges have a total of more than 110 instructors. In this study, 30 samples were selected to be involved, with an average of 5 instructors from each college. However, from the 90 instructors identified, only 55 instructors responded the questionnaire. Then, out of this 90, another 18 cases of missing data were detected, resulting a final number of respondents as 72.

IV. RESEARCH INSTRUMENT

This study is identification of the research instrument. In this study, the instrument– a questionnaire - was adapted from the literature review. Five-point Likert scales, which were categorized as: 1. strongly disagree; 2. Disagree; 3. Neutral; 4. Agree and 5. Strongly agree.

V. RESULTS AND ANALYSIS

Reliability indicates the stability and consistency by which a survey questionnaire measures the construct, and helps to assess the goodness-of-fit of a measure (Alkarzon et al., 2014) suggested Cronbach's Alpha coefficient to determine the strength of the relationships among the items within each scale. In this paper, Cronbach's Alpha as a coefficient of internal consistency, was used to measure the reliability of the instrument through a score ranging from 0 to 1. In this study 13 questionnaires were completed and returned. Table 2 shows the reliability results for the nine factors used in the questionnaire. The analysis indicates that the reliability values or the Cronbach's Alpha values are greater than 0.70.

Table 2: Reliability Results from the Pilot Study in EUs

No.	Factors		Cronbach's Alpha	Number of Items
1.	Tools			
1.1		Technological skills readiness	.804	7
1.2		Equipment/infrastructure readiness	.861	8
1.3	Human Resources	Support Personnel	.864	5
		Management	.840	4
2.	Subject(Individual Readiness of Change)			
2.1	Attitude readiness		.885	24
2.1.1	Confidence		.808	6
2.1.2	Enjoyment		.793	5
2.1.3	Importance		.828	2
2.1.4	Motivation		.837	4
2.1.5	Self-Development		.881	3
2.1.6	Anxiety		.822	4
2.2	Online learning style readiness		.848	8
3.	Organizational Climate			
3.1	Environmental readiness		.899	4
3.2	Financial readiness		.854	7
4.	Community/ Societal Readiness			
4.1	Cultural readiness		.837	6
5.	Object (Engagement Readiness)		.820	15
5.1	Intellectual readiness		.896	3
5.2	Social readiness		.829	3
5.3	Academic readiness		.838	3
5.4	Professional readiness		.833	3
5.5	Personal readiness		.858	3

A. Structural Equation Modeling Technique

structure equation modeling (SEM) is technique used in academic research Preacher (2008), because it allows for the estimation of a series and the performance of multiple regression in analysis (i.e., the regression including two or more independent variables together). SEM also has the ability to involve latent variables and account for measurement error in the estimation process.in this study SEM technique used in analysis. Confirmatory factor analysis (CFA) was conducted to estimate the quality of the structural reliabilities and designated factor loadings by testing the model fit between the proposed measurement models and the collected data. The result of a statistical test of the overall measurement model was accepted as the following χ2 = 1954.124, df = 1458, χ2/df =1.332, RMSEA = 0.029, CFI= 0.953, TLI=0.950, NNFI= 0.953. Figure 2 present the results of CFAs with the fit indices, which are recommended (AlRadhi, 2008; Alkarzon et al., 2014; Matar, et al 2011). In addition, all factor loadings have been statistically significant (t-value > ±1.96, p < 0.05), and standardized loading estimates ranged from 0.681 to 0.848 which are higher than 0.6. On the basis of the estimates of factor loadings, the measures included in the study can be considered as reasonable results that confirmed the existence of reflection of the underlying latent variables. Figure 2 summarizes the results of CFA for the overall measurement model.
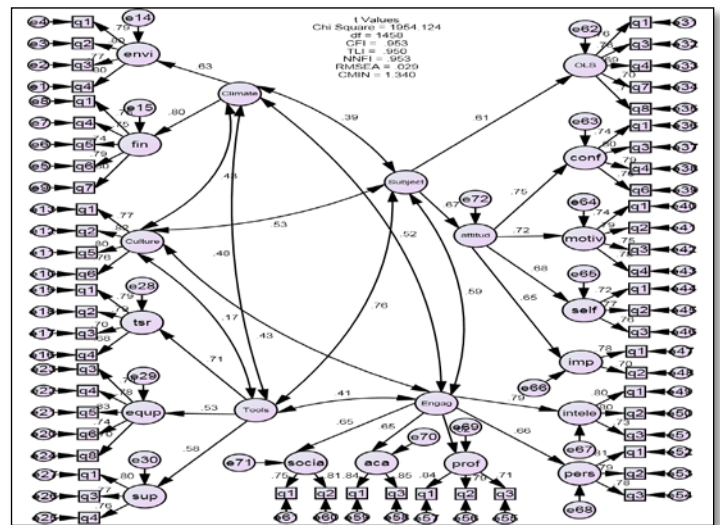

Figure 2: Overall measurement model

B. Assessment of the Structural Model

The structural model was based on the measurement model obtained in the previous section (CFA results) for the purpose to determine whether the theoretical relationships specific at the conceptualization stage are supported by the collected data. Five main latent constructs (Engagement, Culture, Subject, Tools, and Organizational Climate) and 56 observed variables were used to test the structural model which includes estimates of the path coefficients indicating the strength of the relationships between model constructs; and estimates of the R2 values, which represent the amount of variance in the dependent variable explained by the independent variables. It was found that for the proposed model presented an acceptable fit with the data (RMSEA = 0.029, CFI = 0.953, IFI = 0.952, TLI = 0.974; χ2 = 1954.124, χ2/df = 1.340. However, the proposed structural model had two non-significant paths, namely, between (1) Culture and tools, (2) organizational climate and culture explained in Figure 3.
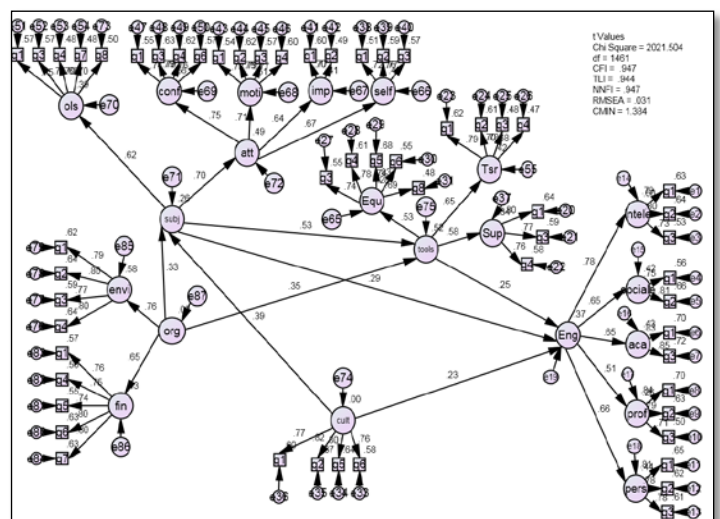

Figure 3: Structural model

C. Direct Effects

The results of the study as depicted in Figure 3, indicates that seven of the paths were significant in the structural model explained in Table 3.

Table 3: Parameters Estimation of the Structural Model

(N = 409)

Hypothesis	Hypothesized path			Std path coefficients (β)	t- value	Sig
H1a	Organizational climate	--->	Subject	.327	3.332	Supported
H1b	Organizational climate	--->	Tools	.348	3.343	Supported
H1c	Organizational climate	--->	Culture	.188	1.117	N.S
H2a	Culture	--->	Subject	.392	4.946	Supported
H2b	Culture	--->	Tools	.128	0.914	N.S
H2c	Culture	--->	Engagement	.228	3.221	Supported
H3a	Subject	--->	Tools	.527	4.443	Supported
H3b	Subject	--->	Engagement	.289	2.027	Supported
H4	Tools	--->	Engagement	.252	2.055	Supported

D. Indirect and Total Effects

As the structural model was a meditational model, the significance of the indirect effects was computed. As multiple mediators needed to be tested simultaneously, the analyses of the indirect effects employed the bootstrap estimate method as proposed by Preacher (2008). This method also allowed for the total effects to be computed. The result of the bootstrap analysis showed that all the indirect effects reached statistical significance explained in Table 4.

Table 4: Standardized Causal Effects for the Final Structural

Model

Endogenous Variables	Determinant	Standardized Effects		Causal Total
		Direct	Indirect	
Subject (R²=0.263)	Organizational climate	.327	-	.327
	Culture	.392	-	.392
Tools (R²=0.522)	Subject	.527	-	.527
	Organizational climate	.348	.173	.521
	Culture	-	.207	.207
Engagement (R²=0.373)	Subject	.289	.133	.422
	Tools	.252	-	.252
	Culture	.228	.165	.393
	Organizational climate	-	.226	.226

E. Final framework for e-learning readiness in EUs

The findings of the main study showed that the initially hypothesized model fit the observed data well. In addition to Evaluating the model fit, the coefficients between variables were examined. Some paths with significant coefficients were retained in the final model, and some paths with non-significant coefficients were removed from the model. And based on the structural model, it can be summarized that:

1). Organizational climate had direct effects on subject and tools and indirectly on engagement through subject and tools.

2).Subject had direct effects on the engagement and tools and indirectly on engagement through the tools.

3). Culture had a direct effect on subject and engagement and indirectly on the engagement through the subject.

Tools had a direct effect on engagement.
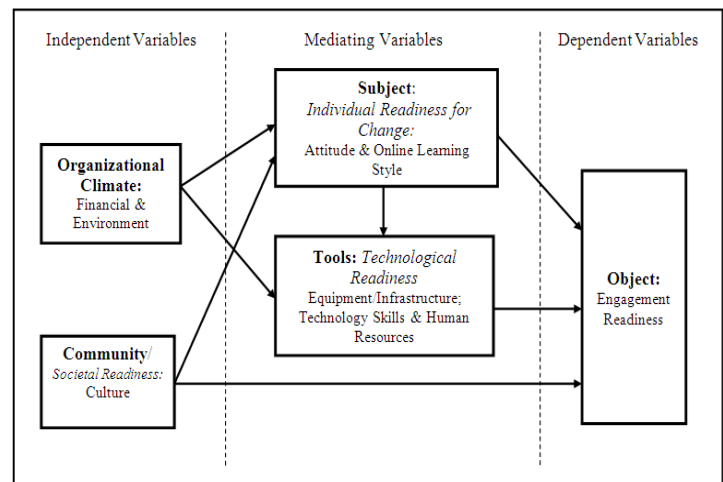The final framework for e-learning readiness among the instructors in EUs is shown in Figure 4.

Figure 4: Final framework for e-learning readiness in EUs

VII. CONCLUSION

The results provided better understanding of the role of SEM, especially CFA as a sophisticated analysis method in modeling important factors and how those factors affect each other for e-learning readiness. These findings imply the need for further research on e-learning readiness. This study has also identified and improvement in future studies. This study Contributes to finding important factors which drive e-learning readiness in EUs.

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