MACRO ENVIRONMENT EFFECT ON E-LEARNING READINESS IN MIDDLE EAST COUNTRIES: A CONCEPTUAL MODEL

SABA KAMIL JAAFAR AL-WASSITI[1,*],
IBRAHIM MOHAMED[2], WAEL JABBAR ABED AL-NIDAWI[3]

[1,2]Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Malaysia
[3]Computer Techniques Engineering Department, Al-Mustaqbal
University College, Hillah, 51001, Babil, Iraq
*Corresponding Author: p103496@siswa.ukm.edu.my

Abstract

E-readiness assessment is one of the crucial aspects for attaining successful implementation of e-learning systems in higher education. The readiness assessment should consider various factors such as technical readiness, content readiness, financial readiness and human resources readiness. Many studies related to e-learning in developing countries including middle east have emerged to investigate organizations readiness and the veritable factors that can hinder the e-learning successful adoption and implementation. Different analysis approaches and models have been developed for such purpose. However, they commonly utilized to examine the e-learning from single perspective such as instructors, students and administrators. Based on the reality of e-learning in higher education in the Middle East countries and Iraq in particular, this research proposed a conceptual model for investigating the effect of macro-environment on e-learning readiness using PESTLE (social, economic, technological, political, legal, environmental) factors. This model can help to assess and provide a clear vision on the external barriers that hinder e-learning adoption and implementation, consequently put an effective plan to avoid the effect of such barriers. This can assist to reduce time and effort and ensure successful implementation of e-learning.

Keywords: Challenges, Conceptual model, E-learning, PESTLE.

1. Introduction

The information and communication technology (ICT) supported education and broke the limitations of the traditional education [1] and led to emerge several e-concepts such as e-learning. This form of learning became a substantial component of the education in higher educational institutions in developing countries [2]. It became predominant in the higher education field and was broadly adopted in higher education especially during Covid-19 pandemic. Most universities shifted promptly to distance and online learning and have to deal with various and existing trends of learning such as e-learning systems and applications of mobile learning [3]. However, several organizations failed in implementing e-learning system due to lack of organizational readiness assessment for e-learning [4, 5] indicated that e-learning readiness measurement is vital for its successful implementation in higher education. Abdullah and Toycan 6] indicated that preceding researches revealed that measuring the e-learning readiness is essential to its successful adoption. Al-araibi et al. [2] stated that organizations must be qualified for e-learning through measuring its readiness to conquer the challenges and obstacles. Therefore, e-learning readiness assessment is useful and should be conducted continuously for e-learning successful implementation [7, 8].

1.1. E-learning in the middle East

In developed countries, the e-learning systems implementation reached advanced stages; however, in many developing nations and particularly in the Middle East, the implementation process is still in its early stages. This lag is due to diverse barriers that impeding the effective adoption and implementation of this technology [9]. According to Mulhanga and Lima [10], lack of IT skills, weak interface design, insufficient technical support are the key obstacles that imped the successful implementation of current e-learning projects.

Likewise, Mousa et al. [11] stated that poverty and poor ICT services are the major challenges to the adoption and implementation of e-learning technology towards developing the education process. It was pointed out that all Arab countries in the middle east region have attained acceptable stages of e-learning implementation, excluding Iraq. The UAE, Jordan and Saudi Arabia have achieved a leading position in the use of e-learning [9]. However, experts currently suggest that the Middle East region is a forthcoming market, and key suppliers of IT and e-learning extended their boundaries to this region during the last years [12].

In Iraq, e-learning programs are still in its infancy and face many difficulties which made Iraq to lag behind his neighbouring countries in e-learning enhancement [13]. The latest decades witnessed a progressive decline in higher education of Iraqi because of insufficient budget as a consequence of two successive wars, sanctions enforced by United Nations, political disputes, and disorganized plans [9]. To attain e-learning successful adoption and implementation, the readiness for all institutions of higher education in Iraq should be attained.

The readiness assessment enables institutions to design systems and appropriate measures to succeed. The assessment should consider various factors such as technical readiness, content readiness, financial readiness and human resources readiness [14]. However, Covid-19 pandemic has made the transition to electronic

learning inevitable even without the availability of the appropriate tools and resources and the readiness for the success of this experiment.

1.2. E-learning challenges in the middle east

Many e-learning studies related to developing countries including the middle east have emerged to investigate organizations readiness and the veritable factors that can hinder the e-learning successful adoption and implementation. Aung and Khaing [15] reviewed the literature and identified several challenges to e-learning system adoption in developing countries.

The challenges include ICT Infrastructure, course, individuals' characteristics, contextual factors, instructors' competencies, technical skills, literacy, language competency, awareness and e-readiness [15]. According to Abdullah and Toycan [6], the main obstacles to e-learning adoption and implementation in developing countries can be classified into technology infrastructure barriers, human resource barriers, educational content barriers, administrative barriers and cultural barriers.

Al-araibi et al. [16] indicated that one of the reasons of e-learning failure is the organization readiness and they stated that insufficient readiness and weak planning can lead to unsuccessful implementation of e-learning. Although developed and developing countries made large investment in e-learning systems, the learners' uptake of these systems is generally low. Several researchers have tried to find solutions for this matter by recognizing the significant factors affecting adoption and implementation [17].

Regarding Iraq, the critical political and economic conditions had a substantial effect on the entire infrastructure with regards to the vital services that should be offered to the Iraqi people and the country technological infrastructure [18]. Most reports agree that the most common issues affecting e learning in Iraq include insufficient budget, critical security conditions, in addition to lack of readiness and support, insufficient information and communication technology and infrastructure of e-learning, lack of financial restraints on open and acceptable internet bandwidth, lack of effective approaches to e-learning, lack of technical skills of e-learning, poor quality of e-learning services and teacher e-learners [9, 19]. In conclusion, e-readiness is a major challenge and is mandatory for successful e-learning system adoption and implementation.

2. Theoretical foundation

Previous studies used different analysis approaches and models to investigate e-learning challenges. Alkhuwaylidee [20] used the unified theory of acceptance and use technology (UTAUT) to elucidate the student's intention to use computer-based intelligent tutoring system in Iraq.

Mousa et al. [11] used the Technology Acceptance Model (TAM) for measuring the readiness of university users (students and academics) in adopting e-learning in Iraq. Alshaher [4] suggested a framework to evaluate the readiness of three colleges in Mosul University in Iraq to execute e-learning system based on McKinsey 7S model.

Abdullah and Toycan [6] developed a model to identify the e-learning technology readiness factors which include technology readiness, leadership readiness, content readiness, human resource readiness, cultural readiness and

educational readiness. They also investigated the intention of students using the technology acceptance model (TAM).

Almaiah et al. [21] used the TAM with innovation diffusion theory (IDT) model to examine the crucial factors influencing the Malaysian students using of e-learning system. Solangi et al. [22] inspected the various barriers that affect the e-learning successful implementation and proposed a model based on TAM theory to measure user (students and instructor) acceptance of e-learning system in different faculties in Saudi Arabia.

Kanwal and Rehman [23] examined the impact of several factors on the adoption and acceptance of technology in developing countries like Pakistan using the TAM. Fadi [24] proposed a module to measure the higher education ministry readiness in Jordan for e-learning.

Dheyaa [25] developed a model for e-learning readiness among Iraqi university instructors to investigate the effects of various factors namely equipment/infrastructure, technological skills, attitude, human resources, online learning style, financial, environmental, cultural and engagement readiness.

Al-Gahtani [26] explored the factors affecting e-learning student acceptance based on TAM3. Salloum et al. [27] developed a SEM model for the impact of quality, innovativeness, knowledge sharing and trust on e-learning systems acceptance by university students in UAE. Almaiah et al. [21] developed a framework for defining the success factors of implementing e-learning system in Saudi Arabia. Alqabbani et al. [28] proposed a conceptual framework for instructors' readiness concerning the unexpected move towards emergency remote teaching in Princess Nourah Bint Abdulrahman University in Saudi Arabia due to COVID-19 pandemic lockdown.

Based on the above, several models and theories have been utilized to measure the factors affecting e-learning adoption and implementation, as well as to investigate attitudes and acceptance of students and instructors toward e-learning adoption and usage. In other word, they commonly used to analyse e-learning from internal factors such as instructors, students, administrators, system style, content and design rather than external factors (macro-environmental factors). External factors are the factors outside organizations and are not controlled or predicted by organizations but have an impact on their performance. The basic of macro-environmental factors are social, economic, technological, political, legal, environmental [29, 30].

To best of our knowledge, there has not been a thorough analysis of the external factors influencing the e-learning implementation, adoption and readiness. No model has been used to analyse the external factors (macro factors) on e-learning readiness. Most of previous research study some factors of the external environment in addition to internal factors.

Dheyaa [25] studied technology, cultural, financial, e-learning style environmental. Kanwal and Rehman [23] investigated technology, social and e-learning characteristics. Ahmad et al. [12] examined financial, social and culture, [18] addressed technology, culture and e-learning design. Organizations are exposed to a high interference level from their environment, leading to create a macro view on factors that shape organizational decisions toward e-learning [31].

Most of the developing countries, particularly the Arab counties in the middle east, suffer from various political, economic, social and technological factors which affect mainly all those countries initiatives and projects including e-learning [32]. Therefore, it is required to investigate the influences of those factors on e-learning readiness. PESTLE method is commonly used for analysing macro environment of organizations and used for strategic planning in various fields. It is an acronym for political, economic, social and technological, legal and environment that commonly affect businesses [33, 34]. The factors affecting e-learning readiness can be alleviated or avoided by the support of government top management. The top management of any government has a substantial role in enlarging the positive effect of all factors or alleviating their negative effect on e-learning. Leaders and top management of governments can ensure successful implementation of all e-government initiatives including e-learning [35-38].

3. Conceptual model

PESTLE analysis is used in strategic planning to analyse macro-environmental factors in which an organization works. The method is known in diverse fields because it is appropriate for strategic analysis of the active variables in extended planning [33, 34]. Therefore, this research uses PESTLE method to investigate the external factors influencing e-learning readiness with considering the top management support moderating role on such effect. Therefore, a conceptual model is proposed to show the relations between PESTLE factors, e-learning readiness and the top management support as shown in Fig. 1.
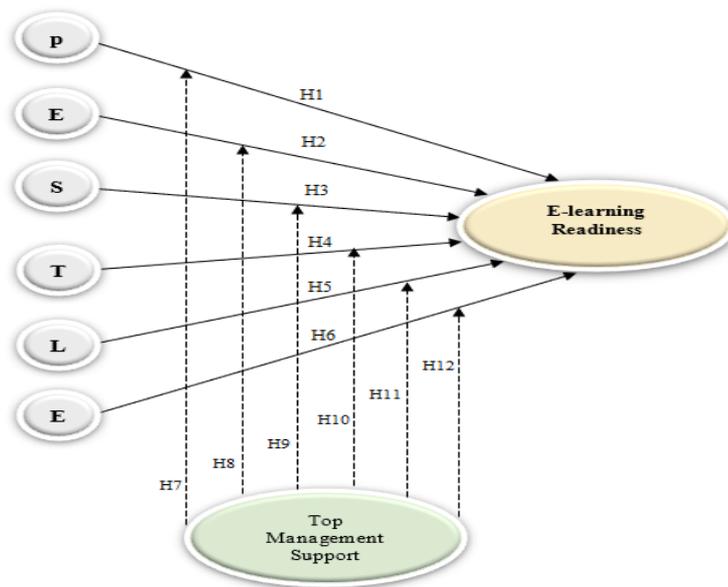

Fig. 1. Proposed conceptual model [34].

The research independent variables are the PESTLE factors, while the dependent variable is the e-learning readiness, and the top management support is the moderator.

A. Independent variables

The research aims to investigate if these variables can cause a change in the dependent variables. The independent variables include several items [2, 3, 32-34, 39, 40].

   i. Political Factors

   These factors include political stability, regulations and policies of government, corruption level, government funding, government commitment, government support.

   ii. Economic Factors

   They include government expenditure, economic stability, economic growth, income, inflation rates, gross domestic product (GDP), Internet high cost, funds allocation.

   iii. Social Factors

   These factors include society cultures, language barrier, behaviours, lack of government adequate IT skills, lack of IT skills (ICT literacy), poor awareness of e-learning, absence of trust in e-learning, resistance to adopt an E- learning.

   iv. Technological Factors

   They include infrastructure, Internet access, technology development, technical skills and support, security and privacy, system flexibility and content.

   v. Legal Factors

   They include the laws influencing the environment of e-learning like legislative system, privacy and security laws, lack of an evident legal framework for supporting the implementation of e-learning.

   vi. Environmental Factors

   They include availability of electricity, availability of internet, climate change.

B. Dependent variable

E-learning Readiness

Based upon the conceptual mode, this variable is subject to the independent variables effect. This variable includes several items which used to assess the e-learning readiness. It includes students' readiness, instructors; readiness and technology, infrastructure readiness and financial readiness [1, 22, 41].

C. Moderating variable

Top Management Support

This research seeks to investigate the effect of top management support on the relation between independent and dependent variables. The moderator variable refers to leaders accept and adopt of e-learning system, positive support and strategy [35, 37, 38].

D. Hypotheses

Based upon the proposed conceptual model, six direct hypotheses are hypothesized to investigate the PESTLE factors effect on e-learning readiness, in addition to six hypotheses for the moderating effect of top management.

i. Direct hypotheses

H1: Political factors have a substantial effect on e-learning readiness

H2: Economic factors have a substantial effect on e-learning readiness

H3: Social factors have a substantial effect on e-learning readiness

H4: Technological factors have a substantial effect on e-learning readiness

H5: Legal factors have a substantial effect on e-learning readiness

H6: Environmental factors have a substantial effect on e-learning readiness

ii. Moderating hypotheses

H7: Top management support affects the relation between political factors and e-learning readiness

H8: Top management support affects the relation between social factors and e-learning readiness

H9: Top management support affects the relation between economic factors and e-learning readiness

H10: Top management support affects the relation between technological factors and e-learning readiness

H11: Top management support affects the relation between legal factors and e-learning readiness.

H12: Top management support affects the relation between environmental factors and e-learning readiness.

4. Conclusions

It is essential to investigate the effect of macro-environmental factors on e-learning readiness in order to develop a strategy for reducing their effect on e-learning system performance. E-readiness is essential for e-learning systems successful implementation. E- learning effective implementation requires comprehensive strategy and plan, and top management commitment and support, otherwise it will face many difficulties. The conceptual model assists to understand the factors that deter e-learning implementation and helps to take the required actions to avoid the effect of such factors and ensure successful e-learning implementation. The future work includes testing and validating the proposed conceptual model by using factor analysis. A mix method approach, including interview and a structured questionnaire, will be utilized to collect the research data. SPSS and AMOS software package will be utilized to analyse the collected data and develop the structural equation modelling (SEM).

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