Effective organizational factors in adopting e-Learning in education: extracting determinants and frameworks

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Abstract

Organizational contextual factors, influencing the implementation of any new system, either in a business enterprise or an education institution, should be taken into consideration when comprehensive implementation of new system is considered. This scoping review was conducted with the aim of identifying the effective organizational factors in adopting e-learning. Data collection was carried out by searching the related keywords Web of sciences (WOS) and Scopus, with no limitation on date of publication. Different search strategies were applied to find the related articles. The content of the articles was analyzed by using a qualitative synthesis approach, and according to the inclusion and exclusion criteria. The search resulted in 21 articles eligible for analysis, which showed 20 effective organizational factors in adopting e-learning. These factors were classified in to four main themes: 1) institutional infrastructure and compatibility, 2) resources allocation, 3) organizational support and monitoring, and 4) motivation, innovation & change management. The results also showed that Unified Theory of Acceptance Model (UTAUT) was the most prevalent adoption theory in the studies, followed by Technology Acceptance Model (TAM). This study reviewed the literature pertaining to the organizational effective factors in adopting e-learning. The results acknowledged that organizational factors are the backbone of e-learning adoption in universities and institutions. This fact should be taken into consideration by mangers and policy makers, especially in developing countries.

KEYWORDS: E-Learning, Organizational Factors, Adoption, Acceptance, University, Institution.

1. Introduction

Recently, the advances in technology have extended its border to education which is an appealing realm for reform and innovation. Thus, we have witnessed drastic changes in teaching and learning, namely E-learning which has removed the barriers to accessibility to education by learning anytime and anywhere. E-learning can be found among the innovative methods of teaching and learning, and are offered in the form of E-contents via content management platforms, mainly learning management systems (Lopez-Belmonte, Segura-Robles, Moreno-Guerrero, & Parra-Gonzalez, 2021). E-learning allows learners to deploy e-contents both synchronously and asynchronously (Campos Soto, Soler Costa, & Moreno Guerrero, 2018).

There are several advantages distinguishing e-learning, as a modern approach to teaching and learning, over other conventional methods. Availability of learning materials, anywhere anytime, flexibility of learning strategies, connectivity and interactivity are some of the advantages. E-learning allows learners to use their own individualized strategies of learning, and learn at their own pace. Moreover, the platforms used for e-learning

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facilitates the communication between learners and teachers through forums, chat box, message systems, online classes, etc. (Alqudah et al., 2020; Farhan, Razmak, Demers, & Laflamme, 2019; Ibrahim, Ibrahim, Zukri, Yusof, & Roslan, 2019; Kim, Hong, & Song, 2019; Tawafak, Romli, bin Abdullah Arshah, & Malik, 2020). Leaners could also manage their learning progress through self-assessment, progress reports, and feedbacks they receive. (Wu et al., 2020).

However, E-Learning has some challenges and limitations(Wu et al., 2020). Resistance to adopt e-learning by managers, instructors and students has often been reported as the main impediment for the development of e-learning especially in developing countries (Abbasi Kasani, Shams Mourkani, Seraji, Rezaeizadeh, & Abedi, 2020; Adams, Sumintono, Mohamed, & Noor, 2018; DeAlwis, 2020). Lack of training programs for e-teachers, lack of basic infrastructure, and support systems, lack of awareness of advantages of e-learning, and how to integrate e-learning in curriculum, resistance to change (Rakhyoot, 2017), and lack of assessment of organizational readiness for e-learning adoption (Alshaher, 2013) are the challenges in facing e-learning. Lopes (2007) remarks that the business, technology, content, culture, human and financial resources can influence the readiness for e-learning and consequently its adoption(Lopes, 2007). Al Ajmi et al. (2017) have mentioned cost reduction, information technology readiness, viability influenced by organizational factors, and decision makers supports as effective factors in adopting cloud computing in e-learning(Al Ajmi, Arshah, Kamaludin, Sadiq, & Al-Sharafi, 2017). Administrative, organizational, technological and human challenges, have also been reported as the main barriers to adoption of e-learning in many institutes(Faria Kanwal, Rehman, Bashir, & Qureshi, 2017).

Organizational contextual factors, influencing the implementation of any new system, either in a business enterprise or an education institution, should be taken into consideration when introducing a new system, approach, method, etc. E-learning is no exception to this principle, and there some studies reporting the significant effect of organizational contextual factors in adopting e-learning in institutions (Al-Sayyed & Abdalhaq, 2016; Mokhtar, Ali, Al-Sharafi, & Aborujilah, 2014; Tom, Virgiyanti, Rozaini, & Ieee, 2019).

Al-Fraihat et al. (2017) in a study about the success factors of e-Learning in higher education noticed that planning, readiness, management, support, pedagogy, technology, faculty, institution, evaluation and ethics were the main dimensions of adoption in a successful e-learning program (Al-Fraihat, Joy, & Sinclair, 2017).

Satria's 2022 systematic review uncovered four categories of obstacles in e-learning: human factors, technological factors, financial factors, and organizational factors. Educational institutions need to modify their material delivery methods as one way to tackle this issue, potentially incorporating gamification. Furthermore, the organization's role is crucial in addressing these barriers, acting as both policymakers and supporters, providing financial aid and training (Satria, 2022).

However, there are few studies in which the effective organizational factors in adopting e-learning have been comprehensively investigated. This, scoping review was conducted to identify effective organizational factors, and the most prevalent model in adopting e-learning through a comprehensive literature review. The findings of this study could assist mangers and decision makers, especially in developing countries, when adoption of e-learning is in progress.

2. Materials and methods

This study was a scoping review conducted in January 2020. We included published papers in the Web of Science (WOS) and Scopus, addressing effective organizational factors in adopting e-learning, with no limitation on date of publication in these databases. Web of Science (WOS) and Scopus were selected as the databases for searching the articles since they are the most influential citation and information databases worldwide. Articles were included without limitation on publication date (from 1986 until January 2020) and type of article. Thus, all articles indexed in the Web of Science and Scopus, including original articles, reviews, and short articles addressing organizational factors in adopting e-learning were included for evaluation. Studies were retrieved by a Boolean search of the following keywords:

Search strategies on the Scopus:
1. ((TITLE (e-learning) AND TITLE (adoption) AND TITLE-ABS-KEY ("Organizational factors"))
2. ((TITLE (e-learning) AND TITLE (adoption) AND TITLE-ABS-KEY (management))
3. (TITLE (e-learning) AND TITLE (adoption) AND TITLE-ABS-KEY (administration))
4. (TITLE (e-learning) AND TITLE (adoption) AND TITLE-ABS-KEY (organization))
5. (TITLE (e-learning) AND TITLE (adoption) AND TITLE-ABS-KEY (institution))

Search strategies on the WOS:
1. ((TITLE (e-learning) AND TITLE (adoption) AND Topic ("Organizational factors"))
2. ((TITLE (e-learning) AND TITLE (adoption) AND Topic (management))
3. (TITLE (e-learning) AND TITLE (adoption) AND Topic (administration))
4. (TITLE (e-learning) AND TITLE (adoption) AND Topic (organization))
5. (TITLE (e-learning) AND TITLE (adoption) AND Topic (institution))

Upon the initial search, 209 articles were retrieved (76 articles form WOS and 133 articles from Scopus) and entered into EndNote software. After removing the duplicates (75 articles), the rest of the articles were evaluated on the basis of the titles, among which 40 articles were eliminated due to having irrelevant titles. In the next step, articles were evaluated on the basis of abstracts and subject relevance. Thereafter, two articles were eliminated because the abstract and full text were not accessible. The remaining 92 articles were reviewed by considering the content relevance. Ultimately, after reading the abstracts and full text of the studies, 21 related articles were selected to be closely reviewed. The selected articles (presented in Table 2) were analyses in terms of study objectives and results. The search process is depicted in Figure 1.
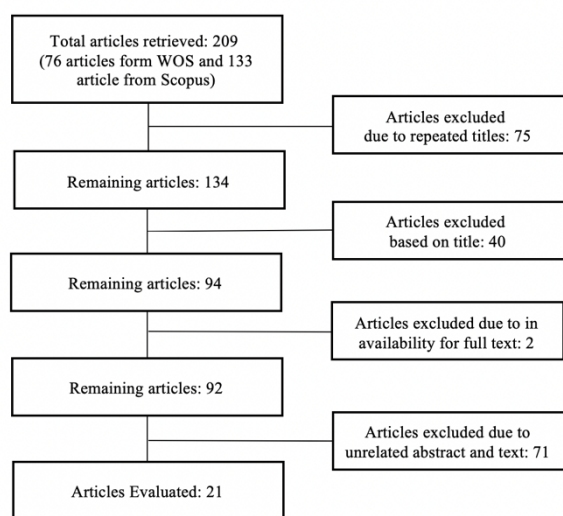

Figure 1 - Process of search, retrieval and inclusion of articles in the study.

We gathered relevant data from sources to align with our research objectives. Then, we grouped this information into primary themes based on similarities or relationships. Within each theme, we identified and classified additional subtopics or subcategories present in the data. Continuously, we reviewed and refined the sub-themes to ensure they accurately represented the data and aligned with our research goals.

3. Results

As it is displayed in Figure 1, 21 articles related to the topic of "organizational factors in adopting e-learning" were closely evaluated. Table 1 shows the main themes and sub themes extracted after reviewing the articles. Four main themes, showing the effective organizational factors in adopting e-learning were identified: 1) Institutional Infrastructure and Compatibility, 2) Resources Allocation, 3) Organizational Supporting

and Monitoring, and 4) Motivation, Innovation & Change Management.

Table 1 - Themes and sub-themes obtained from evaluating articles.

No.	Main theme	Sub-theme
1	Institutional Infrastructure and Compatibility	1. Accessibility 2. Facilitating Conditions (FC) 3. Organizational Compatibility 4. Service Quality 5. Security Concerns
2	Resources Allocation	1. Allocate Resources 2. Resources Management 3. Human Resource Readiness 4. Cost, Investment
3	Organizational Supporting and Monitoring	1. Government Support 2. Institutional Support from Management and Educators 3. Academics' Commitments 4. Leadership Support 5. Management Support 6. Organizational Support 7. Service Provider Support 8. Comprehension Monitoring Strategies
4	Motivation, Innovation & Change Management	1. Strategic Change Management Plans 2. Innovative Ideas 3. Incentives 4. Competitive Pressure

Table 2 shows the bibliographic information of the articles along with the aim of the study and the findings. In addition, the table depicts the adoption models applied in the studies and the effective organizational factors. As it is seen, the most prominent adoption theory was Unified Theory of Acceptance and Use of Technology (UTAUT), followed by Technology Acceptance Model (TAM).

4. Discussion

This study was carried out to pursue two main objectives: 1) identifying the main effective organizational factors in adopting e-learning in universities and educational institutions, 2) identifying the most prominent theory / model applied as reported in the literature. First, we found that organizational factors have determining effects on comprehensive adoption of e-learning. This finding has been confirmed by several previous studies. However, it seems that there are still hidden angles in this field and more detailed studies should be performed. In 2020, Porto discovered that hierarchical culture prevails in higher educational institutions. They found a strong correlation between teachers' acceptance of technology and the embrace of e-learning. Through linear regression, it was revealed that four out of six dimensions of organizational culture impact technology adoption, alongside all constructs of the Technology Acceptance Model (TAM). Furthermore, attitude and behavior were found to predict the actual adoption of e-learning technologies in an educational context.

Table 2 - Summary of information on articles included in the study

Art. Code	Title	Authors	Year	Adoption models	Effective Organizational Factors
1	E-Learning during COVID-19 Outbreak: Cloud Computing Adoption in Indian Public Universities	Bhardwaj, A.K. Garg, L. Garg, A. Gajpal, Y.	2021	Technology Acceptance Model (TAM) Technology-Organization Environment (TOE) Diffusion of Innovation (DOI)	senior leadership support, security concerns, government support
2	Identifying key factors affecting college students' adoption of the e-learning system in mandatory blended learning environments	Zhang, Z. Cao, T. Shu, J. Liu, H.	2020	Unified Technology Acceptance and System Success (UTASS)	facilitating conditions (FC)
3	E-learning benchmarking adoption: A case study of sur university college	Zoubi, S.I.A. Alzoubi, A.I.	2019	McLean & DeLone Information System Success (IS Success) and Diffusion of Innovation (DOI)	service quality
4	Factors affecting the adoption of e-learning technologies among higher education students in Nigeria: A structural equation modelling approach	Yakubu, M.N. Dasuki, S.I.	2019	Unified theory of acceptance and use of technology (UTAUT)	facilitating conditions
5	Empirical investigation of E-learning adoption of university teachers: A PLS-SEM approach	Xian, X.	2019	UTAUT 2	facilitating conditions
6	Understanding the Determinants of Infrastructure-as-a Service-Based E-Learning Adoption Using an Integrated TOE-DOI Model: A Nigerian Perspective	Tom, A.M. Virgiyanti, W. Rozaini, W.	2019	Diffusion of Innovation; Technological, Organizational, Environmental theory	cost savings, competitive pressure, service provider support
7	E-Learning Adoption in the UAE: A Case Study of the Higher College of Technology	Alblooshi, S. Hamid, Naba	2019	unified theory of acceptance and use of technology (UTAUT)	facilitating conditions
8	E-learning adoption in rural-based higher education institutions in South Africa	Patel, N.M. Kadyamatimba,A. Madzvamuse, S.	2018	UTAUT (Unified Theory of Acceptance Model)	institutional support from management and educators
9	Analysis of the Factors for the Successful E-Learning Services Adoption from Education Providers' and Students' Perspectives: A case study of Private Universities in Northern Iraq	Abdullah, M.S. Toycan, M.	2018	technology acceptance model (TAM)	human resource readiness factor
10	A comparative evaluation of e-learning adoption in private and public higher education institutions: A Tanzania survey	Mwamahusi, M.P. Tossy, T.	2016	None	initial investment, strategic change management plans, innovative ideas
11	Challenges affecting adoption of e-learning in public universities in Kenya	Mutisya, D.N. Makokha, G.L.	2016	None	investment
12	Determinants of E-Learning Adoption in Universities: Evidence from a Developing Country	Ansong, E. Boateng, S.L. Boateng, R. Effah, J.	2016	technological, organizational and environmental (TOE)	organizational compatibility
13	Interventional factors affecting instructors adoption of e-learning system: A case study of Palestine	Al-Sayyed, F. Abdalhaq, B.	2016	Technology Acceptance Model (TAM)	management support, organizational support,
14	Exploring factors that influence adoption of e-learning within higher education	King, E. Boyatt, R.	2015	None	institutional infrastructure
15	E-learning adoption model: A case study of Pakistan	Kanwal, F. Rehman, M.	2014	Technology Acceptance Model (TAM)	Accessibility
16	Trust as an Organizing Principle of e-Learning Adoption: Reconciling Agency and Structure	Martins, J.T. Nunes, M.B.	2013	None	academics' commitments
17	Barriers to E-learning adoption in China's traditional higher education institutions: An exploratory study at the institutional level	Fan, W. Yi, S.	2012	None	incentives
18	Measuring the acceptance and adoption of e-learning by academic staff	Al-Alak, B.A. Alnawas, I.A.M.	2011	None	management support
19	An investigation on predictors of E-learning adoption among Malaysian E-learners	Haron, H. Suriyani, Sahar	2010	None	comprehension monitoring strategies, resources management strategies
20	e-learning adoption inside jordanian organizations from change management perspective	Harfoushi, O.K. Obiedat, R.F. Khasawneh, S.S.	2010	None	leadership
21	Factors affecting e-Learning adoption by faculties	Plaisent, M. Diallo, A. Bernard, P.	2007	None	Allocate resources

The results indicate that empowering and involving faculty actively is crucial for technology adoption in an educational setting. This underscores the dual role of teachers as both creators of the learning environment and shapers of organizational culture (Porto, 2020). Satria's (2022) systematic review findings revealed four barrier categories in e-learning: human factors, technological factors, financial factors, and organizational factors. To address this challenge, educational institutions must alter their material delivery methods, with gamification being one potential approach. Additionally, the organization plays a crucial role in addressing these barriers, serving as policymakers and supporters, both financially and as training providers (Satria, 2022).

In our study, the results indicate that "institutional infrastructure and compatibility", have significant effect on e-learning adoption in universities and educational institutions. Accessibility, facilitating conditions, organizational compatibility, service quality, and security concerns are the main determinants addressed in the literature (Alblooshi & Hamid, 2019; Ansong, Boateng, Boateng, & Effah, 2016; Bhardwaj, Garg, Garg, & Gajpal, 2021; F. Kanwal & Rehman, 2014; Xian, 2019; Yakubu & Dasuki, 2019; Zhang, Cao, Shu, & Liu, 2020). Likewise, Kanwal et al. (2017), found that organizational infrastructure, and accessibility of hardware and internet; are the critical factors of e-learning adoption(Faria Kanwal et al., 2017). Al-Fraihat et al (2017) remarked that administrative affairs, academic affairs, student services, student advice and consultation, leadership commitment to effective learning, appropriateness of the processes to the e-learning environment, strategy, financial sustainability and feasibility, institution and service quality, leadership strategy, change in the study habits, and making people understand how to learn; are the main institutional factors influencing e-learning adoption (Al-Fraihat et al., 2017). Thus, the issue of "institutional infrastructure and compatibility" should be taken into consideration when successful implementation on e-learning is considered.

Other findings indicate that resources allocation, resources management, human resource readiness, cost, and investment are other effective organizational factors affecting e-learning adoption (Abdullah & Toycan, 2018; Haron & Suriyani, 2010; Mutisya & Makokha, 2016; Plaisent, Diallo, & Bernard, 2007; Tom et al., 2019). We categorized these factors in "resources allocation". In line with our results, Knawal et al. (2017), and AlAjmi et al. (2017) have discussed that economic concerns is a significant factor in e-learning adoption(Al Ajmi et al., 2017; Faria Kanwal et al., 2017). Thus, universities and educational institutes must be prepared in terms of resources allocation to adopt e-learning.

Also, the findings reveal that "organizational supporting and monitoring" have significant effect on e-learning adoption. Government support, institutional support from management and educators, academics commitments, leadership support, management support, organizational support, service provider support, and comprehensive monitoring strategies are the main factors reported in the literature (Bhardwaj et al., 2021; Haron & Suriyani, 2010; Martins & Nunes, 2013; Patel, Kadyamatimba, & Madzvamuse, 2018; Tom et al., 2019). Other studies also show that administrative and organizational support is a crucial factor in comprehensive adoption of e-learning(Al Ajmi et al., 2017; Faria Kanwal et al., 2017). Harrison (2018) noticed that top management support, organizational culture-E-learning strategy and policies, institutional leadership and strategy are effective organizational factors in the successful adoption of e-learning (Harrison, 2018). Thus, e-learning adoption needs the support of organization's leadership more than any other factors. In 2020, Ahmed Al Mulhem discovered an unprecedented strong correlation between organizational elements (specifically top management support and change management) and the quality of e-learning systems. Furthermore, the findings indicated a noteworthy and positive impact of quality factors (including course content quality, system quality, and service quality) on students' satisfaction with e-learning system quality. Consequently, educational institutions aiming to maximize the advantages of e-learning systems should prioritize both quality and organizational factors during the design and implementation phases, recognizing their critical role in enhancing e-learning system quality and service(Al Mulhem, 2020).

"Motivation, innovation & change management"; is the last theme identified as effective factors of e-learning adoption in this study. We classified strategic change management plans, innovative ideas, incentives, and competitive pressure as the sub-themes of this theme. (Fan & Yi, 2012; Mwamahusi & Tossy, 2016; Tom et al., 2019). Nayanajith et al (2019) have reported that there is a positive relationship between innovation and adoption of e-learning (Nayanajith, Damunupola, & Ventayen, 2019). In line with our findings, El-Masri et al (2017) reported that hedonic motivation is a significant factor in the adoption of e-learning and inferred that "users achieve an acceptable level of intrinsic motivation while using web-based learning systems" (El-Masri & Tarhini, 2017). Almaiah et al (2020) mentioned change management as one of the challenging issues, since it touches government policies and legislation, students, and instructors (Almaiah, Al-Khasawneh, & Althunibat, 2020).

5. Conclusion

This study has reviewed the literature pertaining to the organizational effective factors in the adoption of e-learning. The results indicate that organizational factors

are the backbone of comprehensive e-learning adoption in universities and institutions. The findings also show that Unified Theory of Acceptance Model (UTAUT) is the most prevalent adoption theory, followed by Technology Acceptance Model (TAM).

This study clearly identified 20 effective organizational factors in the adoption of e-learning, which were classified into four themes: 1) institutional infrastructure and compatibility, 2) resources allocation, 3) organizational supporting and monitoring, and 4) motivation, innovation & change management. However, more studies are required to demonstrate a full scenario of successful adoption of e-learning. The results of this study help mangers and policy makers in successful implementation of e-learning, especially in developing countries.

Authors' contributions

Mohmmadhiwa Abdekhoda, contributed to the current study by acting as the corresponding author, supervisor and final reviewer of the manuscript.

Afsaneh Dehnad, as the counsellor of the research, gave technical advice during the research process.

Declarations

Ethics approval and consent to participate: different ethical aspects of the present research were approved by the Ethics Council of Tabriz University of Medical Sciences (IR.TBZMED.REC.XXX. XXXX).

Competing interests

The authors declare that there is no conflict of interest.

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