

Factors Affecting E-Learning Effectiveness in a Higher Learning Institution in Afghanistan

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ABSTRACT

The study of effectiveness in e-learning is a challenging and complex task for higher learning institutions. This study aims to understand the factors influencing e-learning effectiveness in the context of tertiary education in Afghanistan. For this purpose, an empirical study was conducted to examine the effect of individual barriers, technological barriers, organizational barriers, and e-learning effectiveness. In general, several prior studies have focused on the factors that influence e-learning effectiveness. However, there is limited research that simultaneously captures and explains the factors impacting e-learning effectiveness in higher education institution in Afghanistan. This empirical study takes a total of 384 students from four Afghanistan universities participating in this study. Findings indicate that individual barriers, technological barriers, and organizational barriers, each had a significant impact on the effectiveness of e-learning. The findings of this study can be useful for university leadership and management, enhancing effectiveness in the e-learning.

CCS Concepts

• **Social and professional topics** → **Information systems education** • **Applied computing** → **Education** •

Applied computing → **E-learning**

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Keywords

E-Learning; Barriers; Afghanistan; Higher Learning Institution; Education; Computer Science;

1. INTRODUCTION

The Internet has turned into an important way to find sources for research and learning by instructors and students, obtaining and spreading valuable information, especially for e-learning. Yet, according to Valentina Arkorful & Nelly Abaidoo, there is not any common definition for the term e-learning. Definitions of e-learning tend toward the conceptual, thus covering a range of applicable situations, learning methods, and processes [1]. More specifically, Koohang and Harman (2005) had usefully described e-learning as:

E-learning is the delivery of education (all activities relevant to instructing, teaching, and learning) through various electronic media. The electronic medium could be the Internet, intranets, extranets, satellite TV, video/audio tape, and/or CD ROM. [2].

As a phenomenon, the idea and applications of e-learning had evolved in various ways affecting businesses, education, and the military. Initially, during the 1960s, there were few available computers with which to apply e-learning in universities. E-learning evolved, then, in various approaches that affected businesses, education, and the military. In higher education, “e-learning” refers to the use of both software-based and online learning. The origin of e-learning refers back to the insightful work of Suppes (1964) and Bitzer (1962). Suppes work was a foundation for today’s e-learning, and after, Don Bitzer at the University of Illinois created a timeshared computer system called PLATO that was concerned with literacy programs. According to Blitzer (1962), PLATO could be used to develop and deliver computer-based education, including literacy programs. It allowed educators and students to use high resolution graphics terminals and an educational programming language, TUTOR, to create and interact with educational courseware and to communicate with other users

by means of electronic notes, thus being the forerunner of today's conferencing systems [3].

Nowadays, e-learning is evolving with the World Wide Web as a whole and it is changing to a degree significant enough to warrant a new name, namely e-learning 2.0. The term e-Learning 2.0 is used to refer to new ways of thinking about e-learning, as inspired by the emergence of Web 2.0. From an e-Learning 2.0 perspective, e-learning will concentrate on social [media] learning and the use of social software such as blogs, wikis, podcasts and other virtual worlds [4].

The most important take-away concerning e-learning is how it is obviously driven by the various advantages it offers [4]. The adoption of e-learning in education, especially for higher educational institutions, has several benefits [5], and it is acknowledged that some of the basic advantages of e-learning are as following: it improves the quality of learning, as well as improving access to education and training. In addition, e-learning reduces the cost of education. Furthermore, it is flexible when issues of time and place are taken into consideration [6] [5]. Another benefit of e-learning, as mentioned in many studies, is the capability of it to pay attention to the requests of individual students. As an example, Marc (2000) mentions in his book about e-learning strategies that one of the key benefits of e-learning in higher education is its focus on individual learners' needs, which is a main factor in the process of learning [5].

In spite of the many benefits e-learning offers to learners, it can be argued that it has some disadvantages. For example, users can become inattentive to the advantages of interactions with people and culture, given that the learning situation seems unlimited due to its online ever-available presence. There is also a risk of learners feeling left out because there is no physical presence of instruction. Boredom might also result from lack of attention in the form of physical interaction. [4]. The most frequent condemnation of e-learning is the complete absence of vital personal interactions, not only between learners and instructors, but also among colleague learners. Furthermore, regardless of all the disadvantages of e-learning, there are a lot of benefits that inspire its use and encourage search for ways to reduce its disadvantages. Disadvantages of e-learning listed in various studies include: it requires knowledge and skills; an organization might lack equipment; and the need to access resources such as a computer, internet, and software can pose difficulties [5, 7].

This research aims to determine the factors that influence the effectiveness of E-learning in higher education system of Afghanistan.

2. LITERATURE REVIEW

Reviewing the literature on e-learning practices shows common agreement on the importance of information and communication technology (ICT) in today's learning environment. Most organizations have understood that e-learning has to be integrated as part of daily tasks of students and employees (academics and managers), not to be seen as a separate tool or technique for learning and training [4]. Innovation is fostered with the implementation of e-learning because organizations can offer new educational and training programs [8]. Limited research has been conducted regarding the barriers in developing countries to e-learning that can result in the delay of e-learning adoption [8], [9]. The barriers to the implementation and adoption of e-learning can be related to personal issues, technical issues, or organizational issues [4].

2.1 Technology Barriers

Technology is critical in implementing and adopting e-learning [10]. It requires adjustments from both sides: the users and the organization. For organizations to effectively implement e-learning, they need to ensure that they have the appropriate capacity to run e-learning systems and that serious consideration is given to hardware compatibilities and capabilities [11]. These obstacles refer to the investment level in the right information technology infrastructure to ensure accessibility and availability of hardware, software and high bandwidth on web based systems to all employees in the organization [12]. As for communication related factors, studies have showed that slow internet access (Johnson, 2001; Zhang, 1998) acts as one of the main factors of difficulty to be addressed. Another difficulty is cost: many institutions and users in developing countries may not be able to afford the cost of the necessary IT infrastructure and Internet, even with donor funding [13]. Hence, user friendliness and usefulness of e-learning will impact its acceptance in the organization [14]. The ease of use could be facilitated by ensuring that personal computers, intranet, extranet and internet are available and readily accessible to everybody in the organization [12]. Yet another difficulty is the lack of technology infrastructure at national level, which can adversely impact the organizational IT infrastructure [12]. Additionally, maintaining connectivity and bandwidth for lengthy downloading of course materials can lead to students losing interest in the educational course, its ease of accessibility and usability, whereby such limited access to the course materials and learning websites negatively affect the learning process. Likewise, technical barriers can present difficulties, such as, lack of technical support, where learners sometimes find it difficult to register for online courses or find it difficult to master the new set of technological skills, such as, using online tools, communicating effectively, and dealing with specific procedures (for example, passwords and permissions) [11]. Technical support is also a significant issue, especially where the suppliers do not provide this service [12]. In brief, Technology Infrastructure, Technical Support, Bandwidth and Connectivity Issue, Software and Interface Design, Compatible Technology, Poor Quality of Computers, and Virus attack [15].

2.2 Individual Barriers

E-learning is based on learner-centeredness and empowering learners to take responsibility for their own development. Learner-centered implies that learners are self-motivated and induced toward self-directed learning. For such learners, however, discomfort arises when learners resist learning on their own due to difficulty with learning new tools and methods; the preference for learning through social interaction rather than experiencing learner isolation; and the need to interact with instructional experts [12]. A learner attitude of openness towards e-learning is fundamental for accepting and adopting the technology. Moreover, where the learning experience is workplace training via e-learning, such training can cause employee resistance due to a perception that power and authority over traditional job tasks will be lost.

Indeed, resistance to change caused by use of technology is emerging as one of the most visible barriers to success in e-learning. Even when well aligned with the objectives of an organization and/or well designed with the job specifications, e-learning systems can be expected to fail when resisted by users [11]. In this, most commonly cited are: time management problems, where finding time for learning is interrupted by outside distractions; language problems, when materials are not made available in the local language; misperceived attitudes towards e-

learning; and misalignment with learning styles, such as learners who prefer passive or active learning [11]. The authors, however, identified many additional individual barriers (with scope of individual barriers restricted to student-related barriers) including: Prior Knowledge, Computer Anxiety, Social Loafing, Awareness and Attitude Towards ICT, Student's Support, Student's Individual Culture, Computer Literacy. In total, the proposed TIPEC framework contained twenty-six unique barriers relating to the individual student for full details concerning barriers [15]. Learners need IT skills to use the e-learning hardware and software, and enjoy their learning experience. This can only improve the user friendliness of technology and ensure that the learners perceive e-learning as easy to use [12].

2.3 Organizational Barriers:

According to Vencatachellum and Munusami (2006), a high quality learning culture is essential to the effectiveness of e-learning in an organization, providing the strengths of on-going learning, self-directed learning and self-development, all of which provide motivation for the employees to learn. Lack of a strong organizational learning culture is therefore most detrimental to effective e-learning. To assure strength in a learning culture, supportive human resource strategies should be developed by the organization [12].

Other cultural resistances have been noticed by Geisman (2001), such as assuming that computers should only be used for work assignments; that traditional ways of conducting training should be used; that there is no need to invest in new technology for trainings, which can lead to ambivalence toward trainings. Furthermore, this barrier can be negatively reinforced by deficient peer and managerial input -- a crucial absence of encouragement -- due to probability that some managers or peers will feel reluctant, thus will not motivate employees to embrace e-learning (Geisman, 2001). Indeed, in another study, management saw e-learning as a useless process, unproductive for learning [4].

Not only are some managers and peers at times found to be negatively affecting e-learning projects: trainers that lack knowledge and skill in e-learning are another block [16]. Countering this effect can be the creation of new titles for trainers, for instance, e-trainer, e-moderator, or e-instructors. In that way, attitudinal change toward e-learning will grow positively in the organization. This can also lead, then, to more focused solutions of problems encountered by learners and by the organization. It is best, then, if trainers already have IT skills and knowledge with which to build, given the internet context--rather than seeing e-learning as a limitation or threat to the role of trainers. To evolve effectively, the focus of training roles should be on facilitating so that training is less centered on the authority of the trainer and more focused on placing the learner at the center of empowered learning, which is one of the key requirements for success in e-learning [12].

Organizations should be aware of these blocks to success in e-learning, thereby developing a cognizant plan to address them. The risk is that, arguably, rates of drop-outs are more numerous in e-learning courses than in traditional courses [8]. Organizational barriers include lack of e-learning awareness, where the potential benefits to be achieved from creating an e-learning culture are not publicized, and lack of management support and commitment, where people in charge are not aligned with the intention to build an e-learning culture [17]. Commonly cited are also lack of strategic planning and direction, especially when there is no alignment with the objectives, lack of time available for learning and training, where organizations do not train their staff on how to

use e-learning or how to instruct e-learning courses, and lack of appropriate content and assessments where these might be poor, unclear, or irrelevant. Last but not least, lack of incentives and credibility, where there are cultural problems concerning the credibility of e-learning, is also a potent organizational barrier [11].

Consequently, the following hypotheses are proposed:

H1. Technology Barriers have a significant effect on E-Learning effectiveness.

H1. Individual Barriers have a significant effect on E-Learning effectiveness.

H1. Organizational Barriers have a significant effect on E-Learning effectiveness.

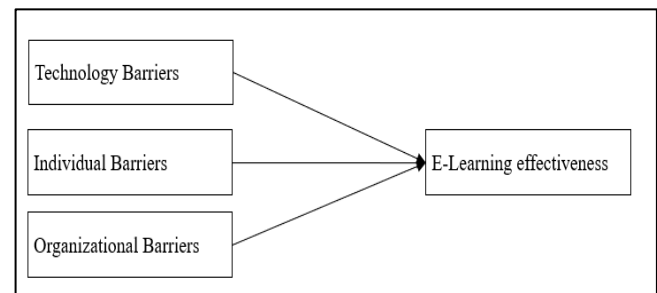


Figure 1. Research Variables and their Relationship

3. METHODOLOGY

The survey questionnaire was prepared based on a comprehensive literature review and studies of definitions. A final set of 25 items was designed for the questionnaire. A pilot study was deployed among 30 respondents to validate the clarity and understand-ability of the survey questions. Given respondent answers, all survey items were validated, thus were retained for the final study. The resulting final questionnaire was divided into five sections, which include questions of the demographics, the individual barriers, the technological barriers, the organizational barriers, and the effectiveness of E-Learning. These were placed on the Likert scale, wherein 1 indicates Strongly Disagree and 5 indicates Strongly Agree. The first section contains three demographic and profile characteristics that include questions regarding participant gender, their affiliate organization (all were universities), and their major area of study. The second section was related to individual barriers (8 items). In the third section, the items were designed to measure technological barriers (7 items). In the fourth section, the items were related to organizational barriers (6 items). The fifth (the last) section in the questionnaire was related to E-learning effectiveness (4 items).

Since the purpose of this research is to investigate the barriers to e-Learning effectiveness in a higher learning institution of Afghanistan, a quantitative approach was conducted via paper questionnaire. In order to give the reader a better understanding of the research's analysis and findings, the demographic breakdown of participants and Pearson Correlation analysis have been visualized using R programming language. The participants were 384 university students chosen randomly from American University of Afghanistan (AUAF), Kabul University, Kateb University, and Ibn-Sina University. Students who responded to the questionnaire were from 11 different majors including: Arts,

Business Administration, Engineering, English Literature, Information Technology, Journalism, Law, Medicine, Political Science, Psychology, and Social Science. Out of the total targeted students, 53% were male and 47% female (see Table 1).

Pie Chart of Genders Distribution

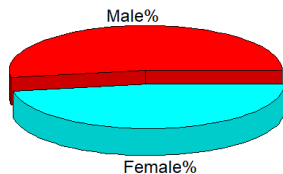


Figure 2. Genders Distribution

Pie Chart of University Distribution

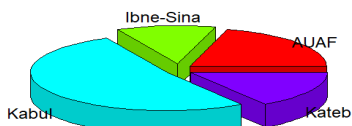


Figure 3. University distribution

Table 1. Demographic Breakdown of Participants

Category		Frequency	Percent
Gender	Male	202	52.6
	Female	182	47.4
	Total	384	100.0
University	AUAF	79	20.6
	Ibn-Sina	45	11.7
	Kabul	199	51.8
	Kateb	61	15.9
	Total	384	100.0
Major	Arts	30	7.8
	Business Adm	73	19.0
	Engineering	52	13.5
	English Literature	19	4.9
	Information Tech	53	13.8
	Journalism	1	.3
	Law	46	12.0
	Medicine	24	6.3

Political Science	41	10.7
Psychology	23	6.0
Social Science	22	5.7
Total	384	100.0

Figure 2 shows that 52.6% of the total respondents were male, while 47.4% were female. The majority of questionnaire respondents were from Kabul University, at 51.8% of the total response as shown in Figure 2. This is followed by AUAF students: 20.6%, then Kateb University: 15.9%, and finally, Ibn-Sina University: 11.7% of the total response. The programs of the study consisted of Arts, Business Administration, Engineering, English Literature, Information Technology, Journalism, Law, Medicine, Political Science, Psychology, and Social Science. Of these major programs, Business Administration respondents comprised 19%, Information Technology 13.8%, Engineering 13.5%, Law 12%, Political Science 10.7%, Arts 7.8%, Medicine 6.3%, psychology 6%, Social Science 5.7%, English Literature 4.9%, and Journalism 0.3%.

The internal consistency of the dependent variable “E-Learning effectiveness” and three independent variables, namely: “Individual barriers,” “Technological barriers,” and “Organizational barriers,” were estimated using Cronbach’s Alpha Index. Variables of Cronbach’s Alpha Index lower than 0.7 were rejected. As shown in Table 2, all the variables of Cronbach’s Alpha are higher than 0.7 (see Table 2).

Table 2. The coefficient of reliability for variables

No	Variables	No. Of Items	Cronbach Alpha
1	Individual Barriers	8	0.818
2	Technological Barriers	7	0.868
3	Organizational Barriers	6	0.765
4	E-Learning Effectiveness	4	0.717

4. DATA ANALYSIS, RESULTS, AND DISCUSSION

The aim of this research was to examine the relationships among barriers to e-learning. More specifically, barriers were categorized by factors: individual barriers, technological barriers, organizational barriers, and barriers to e-learning effectiveness among students in a sample of higher learning institutions of Afghanistan. Data were collected from a simple, random sampling of 384 university students.

Figure 4 shows results using Pearson Correlation Analysis. Pearson Correlation Analysis were determined as correlation between the following factors: individual barriers, organizational barriers, technological barriers, and barriers to e-learning effectiveness. Results shown in Table 3, according to a p value of less than 0.01, were observed in correlation as follows: individual barriers had a positive moderate relationship with technological barriers (0.468) and organizational barriers (0.424), but individual barriers had a negative relationship with E-learning effectiveness (- 0.438). Likewise, technological barriers had a positive moderate relationship with organizational barriers (0.336), yet a negative relationship with e-learning effectiveness (-0.456). Organizational

barriers had a negative relationship with e-learning effectiveness (-0.505). Finally, e-learning effectiveness had a negative moderate relationship with individual barriers (-0.438), technological barriers (-0.456), and organizational barriers (-0.505).

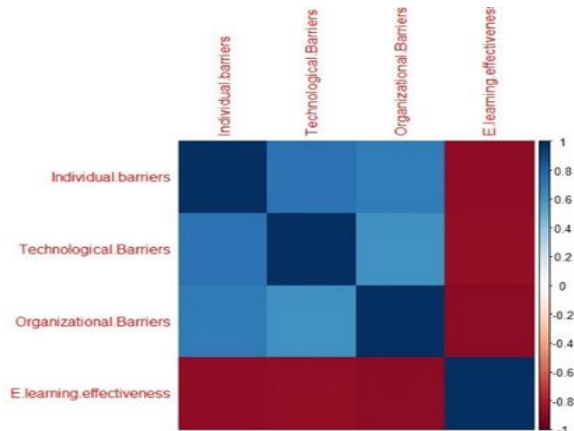


Figure 4. Pearson Correlation Analysis

Table 3: Pearson Correlation Analysis

	Individual Barriers	Technological Barriers	Organizational Barriers
Individual barriers	1		
Technological Barriers	.468**	1	
Organizational Barriers	.424**	.336**	1
E-learning effectiveness	-.438**	-.456**	-.505**

In our current study, the Multiple Regression analysis has been used as a statistical method to analyze the linear relationship between the independent variables (individual barriers, technological barriers, organizational barriers) and the dependent variable (e-learning effectiveness). This method identifies whether there is significant relationship between independent variables and dependent variables. The model adequately explains the variance or coefficient of determination, or the R Squared, in the relational effects of control variables. Based on the study of Hair, Hult [18], this test will be significant if the p-value is less than 0.05. Moreover, a beta coefficient has been used to define the degree to which independent variables influence the dependent variable.

The model summary in Table 4 shows the results of Multiple Regression. In the table, (R) is designated to show the value of Multiple Correlation Coefficient of all the independent variables, which amount is "0.607." That (R) value means there is a strong positive relationship between independent variables and E-learning effectiveness. Furthermore, $R^2=0.368$ suggests that 36.8% of the variance in E-learning effectiveness is explained by the three independent variables. Therefore, it can be concluded that independent variables and E-learning effectiveness have a strong positive relationship.

The ANOVA in the table shows that the Regression Model explains a statistically significant proportion of the variance. According to the results, the value of F is 73.721, p-value is 0.000 which is below

the 0.05 level. This shows that the dependent variable, e-learning effectiveness, is both significantly influenced and predicted by the independent variables. The results of ANOVA accept the alternate hypothesis.

Table 4 shows the coefficient value of each independent variable on behalf of an estimate of the average change in the dependent variable for a one-unit change when the independent variable remains constant. This study examined the effect of individual barriers, technological barriers, and organizational barriers on E-learning effectiveness. The results showed that these three independent variables statistically affect E-learning effectiveness. The results of this study reveal that the individual barriers had a significant and strong influence on E-learning effectiveness ($\beta = -.172$, t-value = -3.492, $p = 0.001$); the technological barriers had a significant and strong influence on E-learning effectiveness ($\beta = -.250$, t-value = -5.548, $p = 0.000$); and the organizational barriers had a significant and strong influence on E-learning effectiveness ($\beta = -.347$, t-value = -7.568, $p = 0.000$). This means that whenever there is a 1 point increase in independent variables, factors will influence E-learning effectiveness to decrease by -.172, -.250, and -.347 points, respectively. Furthermore, a beta coefficient has been used to examine which independent variable has more influence on the dependent variable [18]. In Table 4 the beta for the organizational barriers (Beta -.347) is highest, revealing that it is the most significant variable contributing to effectiveness in e-learning within a higher learning institution Afghanistan.

Table 4. Results of Multiple Regression Analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate		
1	.607 ^a	.368	.363	.69299		
ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	106.210	3	35.403	73.721	.000 ^b
	Residual	182.488	380	.480		
	Total	288.697	383			
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.987	.164		30.442	.000
	IB	-.172	.049	-.170	-3.492	.001
	TB	-.250	.045	-.260	-5.548	.000
	OB	-.347	.046	-.346	-7.568	.000

a. Dependent Variable: E-learning effectiveness (ELE)
 b. Predictors: (Constant), individual barriers (IB), technological barriers (TB), organizational barriers (OB)

The table below shows the results of hypotheses in the research, as based on multiple regression analysis:

Table 5. Results of Hypothesis

Hypothesis		Significant	Result
H1	There is a direct relationship between Individual Barriers and E-Learning Effectiveness.	0.001	Supported
H2	There is a direct relationship between Technological Barriers and E-Learning Effectiveness.	0.000	Supported
H3	There is a direct relationship between Organizational Barriers and E-Learning Effectiveness.	0.000	Supported

5. IMPLICATIONS, Recommendation & Conclusion

Based on the present study, it is important for the sector of higher education in Afghanistan to become aware of and understand the factors affecting e-learning effectiveness. This information may assist Afghan institutions of higher learning to overcome the barriers that influence e-learning effectiveness. The implication of this finding is that managers and leaders need to pay more attention to organizational barriers since these show the highest influence on E-learning effectiveness. Moreover, the results of the present study are also expected to provide implications for support of the potential development of an effective e-learning model, which will aim to assist management in higher learning institutions to increase the overall level of performance in education.

However, the present study has several limitations which nonetheless can be the basis for providing valuable recommendations and suggestions for future work in this research area. The first limitation of the current study is that, investigation of the factors affecting e-learning effectiveness in the present study was limited to 384 students from four universities in Afghanistan, which shows this investigation gives results from some students, but in future more can be included from other universities in Afghanistan. Therefore, future studies should be expanded to include a larger sampling both of respondents and from the higher learning institutions of Afghanistan.

Finally, the data collected was analyzed using cross-sectional study, where the data has been collected in one point of time. Therefore, the quantitative method may be adequate for a comprehensive investigation of factors affecting E-learning effectiveness. By extension, then, the study can be enlarged upon using qualitative methods which will incorporate focus groups; primary sources such as interviews are also recommended.

This study contributes to the existing body of literature by investigating the effect of barriers on e-learning success, which are: individual barriers, technological barriers, organizational barriers, and hindrances to e-learning effectiveness within the context of Afghanistan, particularly in the Higher Education sector. Factors that affect the effectiveness of E-learning in higher education of

Afghanistan are explored and analyzed as individual barriers, technological barriers, organizational barriers, and e-learning effectiveness. The research findings confirm that independent variables, namely individual barriers, technological barriers, and organizational barriers have a major impact on the effectiveness of e-learning systems. The research results indicate that individual barriers, technological barriers, and organizational barriers are important factors that can affect the benefits from which students learn via e-learning, at least in Afghanistan. After analyzing the hypotheses which were imposed after considering the independent variables, all three hypotheses, which investigated the relationship between independent variables and e-learning effectiveness, were supported. In all, it is useful to note that while having a variety of respondents could give a better understanding of e-learning issues in Afghanistan, this project has yielded significant results, even if only covering a limited student sample -- surveyed as selected randomly -- so it is a valuable beginning that indicates noteworthy problems faced in use of e-learning.

6. REFERENCES

- [1] Subramanian, R.M.J.C.b.H.P., Tirunelveli-627010, *The role of e-learning, the advantages and disadvantages of its adoption in Higher Education*. 2016: p. 271.
- [2] Koohang, A. and K.J.I.S. Harman, *Open source: A metaphor for e-learning*. 2005. **8**.
- [3] Kidd, T.T., *A brief history of eLearning*, in *Web-based education: Concepts, methodologies, tools and applications*. 2010, IGI Global. p. 1-8.
- [4] Alkharang, M.M. and G.J.E.-I. Ghinea, *E-learning in higher educational institutions in Kuwait: Experiences and challenges*. 2013. **4**(4): p. 1-6.
- [5] Arkorful, V., N.J.I.J.o.I.T. Abaidoo, and D. Learning, *The role of e-learning, advantages and disadvantages of its adoption in higher education*. 2015. **12**(1): p. 29-42.
- [6] Mouzakitis, G.S.J.P.-S. and B. Sciences, *e-Learning: The six important "Wh...?"*. 2009. **1**(1): p. 2595-2599.
- [7] Behera, S.K.J.I.J.o.N.T.i.E. and T. Implications, *E-and M-Learning: A comparative study*. 2013. **4**(3): p. 65-78.
- [8] Esterhuyse, M. and B. Scholtz. *Barriers to E-Learning in a Developing Country: An Explorative Study*. in *Proceedings of the 9th IDIA conference*. 2015.
- [9] Al-Azawei, A., et al., *Barriers and opportunities of e-learning implementation in Iraq: A case of public universities*. 2016. **17**(5).
- [10] King, E. and R.J.B.J.o.E.T. Boyatt, *Exploring factors that influence adoption of e-learning within higher education*. 2015. **46**(6): p. 1272-1280.
- [11] Alkharang, M.M., *Factors that influence the adoption of e-learning: an empirical study in Kuwait*. 2014, Brunel University London.
- [12] Vencatachellum, I. and V.J.R.A. Munusami, *Barriers to effective corporate e-learning in Mauritius*. 2006. **4**: p. 2013.
- [13] Fahad, A., Z. Hassan, and Z. Salman, *Barriers of adopting E-Learning in developing countries*. 2016.
- [14] Navimipour, N.J. and B.J.C.i.H.B. Zareie, *A model for assessing the impact of e-learning systems on employees' satisfaction*. 2015. **53**: p. 475-485.

- [15] Ali, S., et al., *A conceptual framework highlighting e-learning implementation barriers*. 2018. **31**(1): p. 156-180.
- [16] Rahrouh, M., et al., *Evaluating the usefulness of e-learning management system delivery in higher education*. 2018. **16**(2): p. 162-181.
- [17] Stoffregen, J., J.M. Pawlowski, and H.J.C.i.H.B. Pirkkalainen, *A Barrier Framework for open E-Learning in public administrations*. 2015. **51**: p. 674-684.
- [18] Hair, J.F., et al., *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*. 2nd ed. 2017, London: Thousand Oaks: SAGE.