



Impediments to E-Learning Adoption in Public Tertiary Institutions in Sudan
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Abstract:

This paper is an attempt to find out the impediments to E-learning adoption in public tertiary institutions in Sudan. The descriptive and analytic statistic method was followed as it fits the nature of the present study and in the conduct of the data needed the study drew on quantitative and qualitative data retrieved from questionnaires administered to a sample of twenty five (25) Sudanese professors and lecturers who were exposed to this experience during Corona pandemic (2020). Statistical and thematic analysis was conducted for the collected data and the results obtained were to great extent consistent with what had been hypothesized. On this basis, a number of recommendations have been suggested, the most notable of which are: E-learning should be one of the skills of staff members and a part of the development of all those involved in the educational process in colleges and universities. Besides what had been mentioned, infrastructure and software should be adequately cared of as they are the basis for e-learning implementation.

Keywords: E-learning, adoption, public, tertiary institutions, impediments

المستخلص

هذه الورقة محاولة لاستكشاف العوائق التي تواجه تبني التعليم الإلكتروني في مؤسسات التعليم العالي في السودان. لقد أُتُبِعَتْ طريقة التحليل الوصفي و الإحصائي لملائمتها طبيعة الدراسة و لإجراء عملية جمع البيانات المطلوبة اعتمدت الدراسة علي البيانات الكمية والنوعية المستمدة من الاستبانات التي وُزعت علي عينة تتألف من (25) محاضراً واستاذاً جامعياً من من تعرضوا لهذه التجربة خلال جائحة كورونا (2020). قد تم تحليل البيانات التي تم جمعها إحصائياً (كملياً) و موضوعياً (كيفياً) و قد كانت النتائج التي تم الحصول عليها بشكل كبير متوافقة مع ما افترض سابقاً . تأسيساً على ذلك , جاءت الدراسة بعددٍ من التوصيات أبرزها: يجب أن يكون التعليم الإلكتروني إحدى مهارات أعضاء هيئة التدريس وجزءاً من برامج تطويرهم، ولتطوير كل المعنيين بالعملية التعليمية في الكليات والجامعات. بجانب ذلك اوصت الدراسة ايضاً بالاهتمام بالبنية التحتية والبرمجيات بشكل كافٍ لانها اساس تطبيق التعليم الإلكتروني. **الكلمات المفتاحية:** التعليم الإلكتروني ، تبني ، العامة (الحكومية) مؤسسات التعليم العالي, عوائق

Introduction

In fact, education is a renewable process which constantly must accompany in its course the knowledge development and change. Therefore, the knowledge explosion that is being witnessed in the

current era definitely requires clear thinking of adopting and developing more flexible educational system and mechanisms that make the student the focus of the whole educational process.



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For the purpose of reaching advanced intellectual levels in the light of the rapid knowledge growth, employing e-learning system, is regarded as imperative necessity. Many countries have developed this system for many years. Shaikha & Fatma (2017) writes: "The majority of training and educational organizations from different types of local schools to global universities are already accepting e-learning strategies into their educational infrastructure." More recent prediction was made by Heinich (1970), as quoted in Hyer (1972), speculating that "in twenty years, perhaps one third of the teaching profession may be engaged in preparing instructional materials with little, or no, direct face-to-face contact with the students". When the world was badly shocked by the new Corona virus, the pandemic which had not been known before, the adoption of this electronic system has become a must in all countries.

E-learning is defined as learning through internet, in virtual classes where both of the students and instructors communicate through the web which classified as a kind of remote learning. This learning system is described by Khan (2005), as "an innovative approach for delivering well-designed, learner-centered, interactive and facilitated learning environment for everyone, any place, any time by utilizing the attributes and resources various digital technologies along with other forms of e-learning materials suited for open, flexible, and distributed learning environment". From his side, Al-Zamili (2020) defines e-learning as a learning that is undertaken

via web or electronic platforms whereas both the instructor and the students are able to communicate and he adds that this sort of learning requires good internet, a computer and interactive and communicative curricula."

Speaking about Education systems, many countries find online teaching and learning is the best substitute for traditional one despite the fact that it has merits and demerits. This system with its strategies is accepted worldwide as a means for education and it has been well recognized internationally. "Online education has been flourishing throughout the world since the mid-1990s, particularly in economically prosperous countries like the USA, Canada, and Australia. With the continuous improvement in Internet connectivity and bandwidth, coupled with the decreasing costs of hardware and software, developing countries have joined the world in this growing type of education. Balanko (2010) mentions that "Web-based resources enable education to be provided: in places where there is none, where resources are scarce, at anytime and anywhere"

It is worth mentioning that, recently different papers have been presented discussing e-learning issues for instance in Rawafid's first conference entitled "E-Learning: Today's Challenges and Future Aspirations" which held through zoom platform in Lebanon- Jinan University on 24th. - 25th July, a lot of speakers who are specialized in education and the issues concern it put forth fascinating insights into e-learning.



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Saeed Al-Khateeb in his paper (Obstacles of E-learning and its Technical and Administrative Follow up) addressed the attendants that saying that e-learning is no longer considered as a complimentary tool in education, but it becomes urgent need, merging technology and knowledge is a necessity that should not be ignored). For his side, Professor Hafiz` Al- Alawi from Morocco presented a paper on " Distance E-learning Learning and the Challenges of Interaction" in that paper he has stated that: 'Technology cannot substitute instructors and it can just be a completion, adding technology with no instructors is useless, and blending teaching is the one which proves its feasibility, the attendance of teachers, their voices and movement, have a crucial role in the process of education ". In his paper Al-Hadabi (2020) from Malaysia Islamic University, has suggested model to classify educational objectives from an Islamic perspective, clarifying his point of view by saying that: "we are in need to restructure education and Arab countries should participate in technical support. Political volition should prevail and instead of spending money on wars, it is better to be transferred to education."

Focusing on the public tertiary institutions in Sudan as the body concerned with the study, we find that the education system in these institutions is based on adopting the

traditional system in which students are accustomed to go to classes with black boards, chalks, erasers sitting in organized rows, while the lecture content is being delivered. This has been the way for teaching in schools with their different levels and in high educational institutions including prestigious universities. Education in Sudan has witnessed a lot of changes and modifications and it has faced a lot of challenges throughout its history. Abdelrahman (2010), comments on the situation saying that "there are very few attempts at online education in Sudan, but it is sad to point out that even these attempts are related to non-governmental education, which are Open University of Sudan (OUS) and the experience of the Sudanese Electronic School (SES). Ezza,Y. & etal (2013) write about the history of E-learning in Sudan mentioning that " the history of the Internet public service at the University of Khartoum goes back to 1997 when the Khartoum University Internet Centre was established to provide service and training to the University teaching staff and students." Like the rest of the world, Corona pandemic has spread in the Sudan and accordingly the decision makers had to strive to adopt alternative educational system so the Sudanese ministry of high education has tried to implement e-learning system to ensure the continuity of education process as its counterparts in other countries did .



Sorrowfully, this idea faces a lot of obstacles for being implemented in the country due to many reasons related to the new educational system. Salah (2010) has shed light on some impediments facing e-learning adoption, saying “there is a shortage in qualified administrative staff in the management of e-learning and the faculty members and technicians who know how to deal with information and communication technologies (ICT) are very few and they prefer to work in the private sector “ Al-Awar (2011) goes so far as to posit that ‘very soon traditional universities will be under-rated by higher education seekers who would mostly opt for e-universities’ Also Hashim& etal. (2017) has pointed out that :”with the expansion and the spread of e-learning systems, increasing demand for the use and employ them in learning emerged several problems, including: the absence of direct social contact between the practical components of learning teachers, students and administration which negatively affects the social contact with those components”

The necessity of discussing the impediments to full application of e-learning in Sudan motivate the researchers to conduct this paper trying to find out the essence of the problem and to suggest some recommendations that can contribute to overcoming the barriers impeding the adoption of e-learning in the country ,may Allah render all our efforts fruitful.

To be more specific about the purpose of the study, a precise objective was set to find out: the barriers to e-learning adoption in Sudanese public tertiary institutions.

The study seeks to find answers to the following question:

1) To what extent is e-learning adoption in Sudanese public tertiary institutions impeded by some barriers?

In pursuit of the research problem and to realize the objective of this paper, the following hypothesis was put forth.

1) There are a number of impediments to applying e-learning in Sudanese public tertiary institutions.

2- Methodology

2.1 Research Methods

This study is conducted through the descriptive and analytical statistic method which is appropriate for finding out the impediments to e-learning adoption in public tertiary institutions in Sudan.

2.2 Tools

For data collection, the researchers developed a questionnaire which served to verify the main objective of this study by exploring the possible impediments to e-learning adoption in public tertiary institutions in Sudan. After dispersing the questionnaire to a panel of experts, whose participation was requested for establishing its content validity, the questionnaire was handed out to the participants in order to be answered. It should be noted that the data collection process was applied during the first two weeks of August (2nd. - 16th.), 2020.

2-3 Participants

The study sample was drawn on purpose and consisted of 25 professors and lecturers whom randomly selected from different public Sudanese universities and colleges in Khartoum State to respond to the questionnaire.

3- Data Analysis and Results

The data collected from the questionnaire have been subjected to a statistical analysis which done by Microsoft Excel (for closed statements) and a thematic analysis for the open statement which was mainly structured to elicit information and opinions about the impediments to e-learning which the study sought to explore. Then, the results obtained were presented in statistical tables and in words for being interpreted and discussed in the light of the study question.

3.1 Results and Discussion:

The researchers analyzed the data and discussed the results related to the research question: To what extent is e-learning adoption in Sudanese public

tertiary institutions impeded by some barriers?

3.1.1 Results of Questionnaire (Part One)

Each of the (7) items in part one of the questionnaire has been analyzed and displayed separately by means of tabulation for clarifying and giving full information about the item analysis, noting that the tabulated data have only been subjected to frequency counts and percentage.

Item [1]: A number of low-income students do not possess high quality smart devices.

Table (1) below for item 1, shows that, 17 of the respondents by (68%) reported that they strongly agreed and agreed to the item: "A number of low-income students do not possess high quality smart devices". However, only 8 of them by (32%) have been either undecided, disagreed or strongly disagreed with the item. Therefore the result obtained is strongly accepted as it supports the line of the study.

Table [1]: Impediments to applying e-learning system in Sudanese public tertiary institutions:

Questionnaire Item (1)	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
1- A number of low-income students do not possess high quality smart devices	8 - 32%	9 - 36%	3 - 12%	2 - 8%	3 - 12%
Total	68%			32%	

Item [2]: Insufficient universities budget is the biggest barrier to e-learning adoption

Table (2) below explores participants views on the item 2 of the questionnaire. 15 of the respondents by (60%) strongly agreed and agreed that insufficient universities budget

represents a barrier to e-learning adoption. However, 10 of them by (40%) were rather undecided, disagreed or strongly disagreed with the item. Hence the result obtained is also consistent with what had been assumed.

Table [2]: Insufficient universities budget is the biggest barrier to e-learning adoption

Questionnaire Item (2)	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
2- Insufficient universities budget is the biggest barrier to e-learning adoption	4 - 16%	11- 44%	5 - 20%	4 - 16%	1 - 4%
Total	60%			40%	

Item [3]: Electricity instability impedes e-learning process

Table (3) below for the third item, indicates that, the majority of the respondents 13 by (52%), perceived that "*electricity instability impedes e-learning process*" while 12 of them by

(48%) were undecided, disagreed or strongly disagreed with this item. Thus, it can be said that this result is also in favour of the study assumption.

Table [3]: Electricity instability impedes e-learning process

Questionnaire Item (3)	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
3- Electricity instability impedes e-learning process	3 - 12%	10- 40%	5 - 20%	4 - 16%	3 - 12%
Total	52%			48%	

Item [4]: The poor infrastructure impedes keeping pace with e-learning

Based on the statistics shown in table (4) below, the responses to the fourth item show that 64% of the respondents strongly agreed and agreed that the poor infrastructure impedes keeping pace with e-learning in Sudanese tertiary

institutions. In contrast, 36% of the students were either undecided, disagreed or strongly disagreed with the item. Hence, the result obtained, of course, supports the study trend.

Table [4]: The poor infrastructure impedes keeping pace with e-learning

Questionnaire Item (4)	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
4- The poor infrastructure impedes keeping pace with e-learning.	9 - 36%	7- 28%	4 - 16%	3 - 12%	2 - 8%
Total	64%			36%	

Item [5]: Lack of ICT experts in the public sector

Referring to the fifth item, the tabulated information shows equality in responses percentages which were by (50%) for the strong agreement and

agreement versus (50%) for the uncertainty, disagreement and strong disagreement.

Table [5]: Lack of ICT experts in the public sector

Questionnaire Item (5)	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
5- Lack of ICT experts in the public sector.	6 - 24%	9- 28%	5 - 20%	6 - 24%	4 - 16%
Total	50%			50%	

Item [6]: Lack of adequate training is also added to e-learning challenges in Sudanese tertiary institutions

With accordance to the obtained result of item (6), the statistics tabulated below show participants' perception about lack of adequate training impeding e-learning in Sudanese

tertiary institutions .17 by (68%) of the respondents expressed positive attitudes towards the item. Yet, 8 by (32%) of them were undecided, strongly agreed and disagreed.

Table [6]: Lack of adequate training is also added to e-learning challenges in Sudanese tertiary institutions

Questionnaire Item (6)	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
6- Lack of adequate training is also added to e-learning challenges in Sudanese tertiary institutions	5 - 20%	12- 48%	3 - 12%	4 - 16%	1 - 4%
Total	68%			32%	

Item [7]: Technological illiteracy is regarded as one of e-learning adoption barriers in Sudan

The responses to the last questionnaire item as tabulated below show that 80% of the respondents strongly agreed and agreed with the item that: technological illiteracy is regarded as one of e-learning adoption barriers in Sudan while, 20% of the respondents

were either undecided, disagreed or strongly disagreed with this idea. The result obtained with no doubt is in favour of the study which aims to explore the impediments to e-learning adoption in public tertiary institutions in Sudan.

Table [7]: Technological illiteracy is regarded as one of e-learning adoption barriers in Sudan

Questionnaire Item (7)	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
7- Technological illiteracy is regarded as one of e-learning adoption barriers in Sudan	7 - 28%	13- 52%	1 - 4%	3 - 12%	1 - 4%
Total	80%			20%	

Overall Results of Teachers' Questionnaire (Part One):

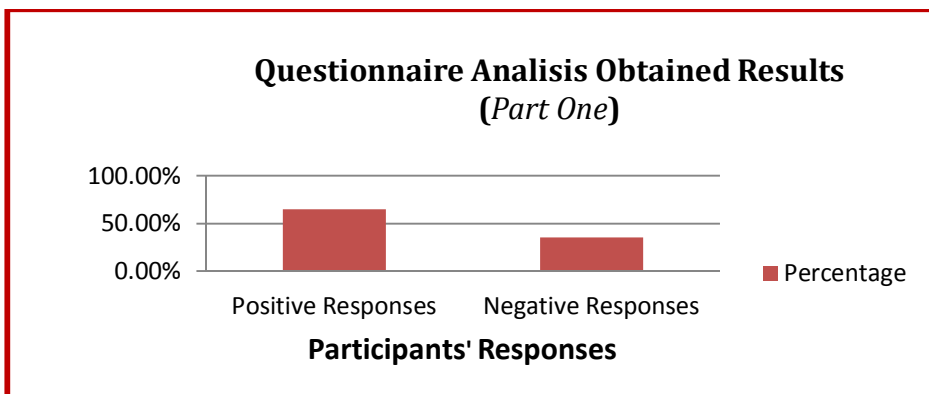


Figure (1) : Teachers' Questionnaire (Part one) Summary

As shown in figure (1) above, the general responses of the participants to the impediments affecting e-learning adoption in public tertiary institutions in Sudan were positive by about (64.6%). An attention can be drawn to the fact that the positive responses used in the above statistical graph refers to the two degrees of agreement (strongly agree and agree) while undecided, disagree and strongly disagree has been classified under the category negative responses. Based on the statistical information shown it can be said that the overall result is to great extent confirms the hypothesis of the study assuming: there are a number of impediments to applying e-learning in Sudanese public tertiary institutions.

3.1.2 Results of Questionnaire (Part Two)

In this section a thematic analysis to the questionnaire open statement is presented. It is worth mentioning that, this item has been structured in order to obtain qualitative data that may contribute to interpreting the problem clearly , providing the study with precious insights as well as finding out

some impediments to e-learning that the researchers did not consider.

Here is an overview of participants' responses based on the open item raised in part two of the teachers' questionnaire.

Question: *"In your opinion, what are the other possible challenges that deserve being highlighted in relation to e-learning adoption in Sudanese public tertiary institutions?"*

It is interesting to note that, all of the teachers almost confirmed the points that have already been stated in the questionnaire as they considered that they are the major impediments that faced by in adopting e-learning system. Some of the respondents introduced some extra challenges which are regarded to be as a precious contribution to the study.

One of them mentions that: *"One of adopting e-learning challenges in Sudanese governmental tertiary institutions and colleges is that these institutions have not provided the teaching staff with an adequate preparation to facilitate the teaching by methods and techniques of online learning"*.



Moreover, three teachers emphasize that:
"There are no learning platforms, separated e-learning administrations and technical support in the universities to result in stability and reliability of e-education.

From his side one of participants sees that:
"E-learning depends on accurate educational planning and design which use a systematic model through which the planning-design process is carried out. According to this methodical model, decisions can be based on and certainly that would affect the quality of e-learning. Unfortunately, this methodology and planning is currently absent in our high educational institutions."

Another participant has reported that:
"Unfortunately, our universities have not invested in e-learning as other universities in the continent and the region that support and apply e-learning in a proper way, taking into account the theories, requirements and the needs of learners who receive the scientific content via their devices. With referring to Sudanese tertiary institutions, only some of them adopt this electronic system in teaching during the Corona pandemic. However, even those institutions adopting e-education, they only use it as a means to upload files and deliver them to students or they consider e-learning as a platform for viewing mini lectures."

4- Conclusions

1) Drawing on the analysis process of the quantitative data, we can conclude that most if not all of the results obtained from the questionnaire items are completely consistent with the study assumption except item (5), which its obtained result was 50/50 between positive and negative participants' attitudes.

2) With regard to the analysis of the qualitative question of the questionnaire, it can be conducted that supporting universities' budgets enables them to establish a good e-learning infrastructure and spend adequately on staffs' training in order to qualify them to cope with e-learning system professionally.

On the bases of the results of this study, the researchers recommend four points hoping to be taken into consideration by the concern authorities:

1) E-learning should be one of the skills of staff or faculty members and a part of the development of all those involved in the educational process in colleges and universities.

2) Infrastructure and software should be adequately cared of as it is the basis for e-learning implementation.

3) Scientific research in the field of e-education should be highly encouraged and supported in order to play a primary role in promoting learning technology.

4) The government should pay due attention and adhere to increasing the budget of higher education because that helps in establishing a good e-education infrastructure.

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