Issues and Challenges of Implementing E-learning in A Public University: Students’ and Instructors’ Perspective

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ABSTRACT
The use of Information Technology (IT) has been growing over decades in many human activities. It has also been accepted in educational institutions for teaching and learning. Several studies have been conducted to evaluate the success and acceptance of E-learning systems and tools by students and teaching staff. In this study, we attempt to acquire students’ and instructor’s perspectives on the use and implementing E-learning systems in a public university. The study targets the society that includes students and teaching staff in the IT faculty at the University of Benghazi. The descriptive-analytical method has been applied along with the analysis of results by the statistical methods. Two types of questionnaires were developed and distributed, i.e., student questionnaire and teaching staff questionnaire. Four dimensions have been highlighted to reach the expected results, i.e., the extent of using E-learning, advantages, disadvantages and obstacles of implementing E-learning in IT faculty. By analyzing the results we have achieved encouraging results that throw light on some issues, challenges and benefits of using E-learning systems in the higher education sector.

Keywords
E-learning; Higher Education; Information Technology.

1. INTRODUCTION
Information and communication technologies (ICTs) offer unique educational and training opportunities as they improve teaching and learning, and innovation and creativity for people and organizations. Furthermore, the use of ICT can promote the development of an educational policy that encourages creative and innovative university environments [13]. Therefore, attention is given widely to efforts and experiences related to this type of education. This technology is commonly used by most universities in several developing countries. E-learning is playing a vital role in the existing educational setting, as it changes the entire education system and becomes one of the greatest preferred topics for academics [12]. It is defined as the use of diverse kinds of ICT and electronic devices in teaching [6]. Most students today want to study online and graduate from universities and colleges around the world, but they cannot go anywhere because they reside in isolated places without good communication services. Because of E-learning, participants can save time and effort for living in distant places from universities where they are registered, so, many scholars support online courses [10].

Web-based education, digital learning, interactive learning, computer-assisted teaching and internet-based learning are known as E-learning [15]. It is mainly a web-based education system that provides learners with information or expertise by means of technology. The use of web-based technology for educational purposes has increased rapidly due to a drastic reduction in the cost of implementing these technologies. Nowadays, many universities have recognized the importance of E-learning as a core element of their learning system and its difficulties, advantages and challenges. These issues have the potential to adversely affect instructors’ quality in the delivery of educational material [15].

Technology-based E-learning requires the use of the internet and other essential tools to generate educational materials, educate learners and administer courses in an organization. E-learning is flexible when considering time and location issues. It increases the effectiveness of knowledge and skills by enabling access to a massive amount of data, and enhances collaboration and also strengthens learning-sustaining relationships. Despite the fact that E-learning can enhance the quality of education, there is an argument about making E-learning materials available, which leads to improving learning outcomes only for specific types of collective evaluation. However, E-learning may result in the heavy use of certain websites. Also, it cannot support domains that require practical studies. The main drawback of using E-learning is the absence of crucial personal interactions, not only between students and teachers but also among fellow students [14].

The aim of this study is to identify major issues and barriers to the use of E-learning programs in a public university by extrapolating the perspectives of students and educators. The research population-representative consisted of students and faculty members at the University of Benghazi, Faculty of IT. Two types of questionnaires have been distributed to students and instructors. In order to achieve the expected results, four dimensions are defined, i.e., the extent to which E-learning is used and the benefits, drawbacks, and obstacles to the implementation of E-learning by the Faculty of IT. The descriptive-analytical method is used in the statistical analysis of the results. By evaluating the results, we have obtained promising findings that demonstrate some of the higher education sector's problems, obstacles, and advantages of using the E-learning method.
Students believe that based on the study's results, E-learning contributes to their learning. This reduces the instructor workload, however, and raises it for students. The teaching staff agrees that E-learning is beneficial in enhancing the skills of students, although it needs financial resources and the cost of implementing them is high. Despite the advantages of using E-learning, some of the obstacles to its implementation in Libya include the degradation of the Internet infrastructure that supports these education systems in Libya in general. The high cost of buying the electronic equipment needed and maintaining the equipment, which is unemployed.

The remainder of this paper is organized as follows. Section 2 gives some background and related work about E-learning. Section 3 describes the methodology. Statistical analysis presented in Section 4. 5 explains the study outcomes. Finally, Section 6 discusses the conclusion of this work and provides some recommendations.

2. RELATED WORK

A study that aims to investigate the characteristics, benefits, drawbacks and the features that impact E-learning has been presented in [10]. Some of the demographic features such as behaviors and cultural background impact student education in the E-learning domain. Therefore, for lecturers to design significant educational activities to make learning more effective and pleasing for students, they should understand these features. The study is applied to students in Lebanon and England to assist instructors to understand what the scholars expect from the learning management systems.

Analyzing the effectiveness of E-learning for students at the university level has been introduced in [1]. A developmental questionnaire was applied to a sample consisting of 700 students. 667 students were given back the questionnaire and 94.9% of them are utilizing different E-learning techniques and tools. To measure the effectiveness of E-learning, some variables have been used. Also, to measure the reliability and internal consistency of the factors, Cronbach’s alpha test is applied. To take out the variables and to calculate the factors loading in the study, the exploratory feature analysis is applied. The result of the research demonstrates that students support that E-learning is easy to use, save time and affordable.

Various predictions about the future of E-learning for educational purposes have been illustrated in [12]. The study aims to show how to keep students motivated in the E-learning. The evaluation of student motivations for online learning can be challenging because of the lack of face-to-face contact between learners and teachers. The study shows that one way to increase student’s motivation is by allowing them to complete an online assessment form on motivation. The study suggests five research hypotheses to be inspected to identify which hypothesis should be accepted and which should not. A Moodle E-learning platform, which is an open-source, has been applied at many universities in Egypt.

The strength of the relationship between students’ motivation and electronic learning is illustrated in [9]. Data was gathered from students at Tehran Alzahra University using a development questionnaire; and Pearson's correlation coefficient which is the statistical method utilized for data analysis. The outcomes of this study revealed that there are some points that should be carefully considered before using E-learning in education. The limitation of the study was the generalization because the examination was performed in an only country.

The study in [11] showed that electronic learning is a new learning atmosphere for scholars. Also, it illustrates how to make E-learning more effective in the educational field and the advantages of using E-learning. The outcome of the study showed that the students were willing to learn more with less social communication with other students or lecturers.

The background and advantages of using E-learning at universities and companies were studied in [4]. The cost of productivity is one of the benefits gained from using E-learning. Generating an online course in Metropolia edX platform using the resources created by two dental hygiene students was also introduced. The aim of the study is to write a report explaining the clarification of online course to help new dental hygiene students to comprehend the online material.

A study that aims to highlight and measure the four Critical Success Factors from student insights is described in [13]. These factors are instructor characteristics, student characteristics, technology structure, and university support. To examine the impact of these factors in E-learning, a sample of 37 class sections with 538 answers was used. The outcomes of the study showed that instructor characteristics factor is the most critical one followed by IT infrastructure and university support in E-learning success. The least critical factor to the success of E-learning was student characteristics.

The work described in [8] has tried to emphasize the importance of E-learning in modern teaching and illustrates its advantages and disadvantages. Also, the comparison with Instructor Led Training (ILT) and the probability of applying E-learning instead of old classroom teaching were discussed. In addition, the study showed the major drawbacks of ILT in institutions and how using E-learning can assist in overcoming these problems.

The purpose of the study in [6] is to conduct a survey on the varieties of E-learning organizations, skills and their anticipations for the forthcoming. Blended and online learning are taken into account in different forms. Some of the questions related to intra-institutional management, arrangements and services, and quality assurance are also presented in the survey. The outcomes of the survey showed that from 38 diverse countries and systems, there are 249 organizations of various types and with different aims broadly conceived the same causes for increasing use of E-learning.

The study in [15] illustrated that the most vital role in the E-learning design outlook is online lecturers. As a result, considering the issues impacting lecturers’ performance should be taken into the account. One of the features that impact the usability of the system and Lecturers’ presentation is Satisfaction. The results showed, to produce a simple model called the “E-learning Success Model for Instructors’ Satisfactions” that is related to public, logical and technical communications of instructors in the entire E-learning system, the features associated with teachers’ satisfaction in E-learning systems have been examined. The model can be used as an escort for E-learning designers, online lecturers and governmental to comprehend communication and usability results related to satisfaction of lecturers.

The comparison between different E-learning tools, for instance, Blackboard and MOODLE (Modular Object-Oriented Dynamic Learning Environment) in terms of their goals, benefits and drawbacks are presented in [2]. The comparison assists in providing when to use each tool in the classroom. The outcomes show that instructors and students prefer to use MOODLE over Blackboard in the E-learning environment. Conversely, MOODLE does not support social networks. One of the major challenges that face the E-learning environment is security issues since security is not combined into the active learning development process.

The work on E-learning was carried out in different disciplines such as Mass Communication, Information, and Technology (IT), Education, and Distance Education described in [7]. Researchers are studying different features of active learning. To find out different research trends in this area, the study examined the different E-learning research work.
The effect of E-learning at the Payame Noor University of Hamedan, Iran on the innovation and material awareness of chemistry students was examined in [16]. The research used a control group's pre-test/post-test experimental design. The study's included the demographic population was 100 pure students in chemistry who practiced two distinct classes. Forty students from this group were chosen and put in the experimental group (n = 20) and the control group (n = 20). For data gathering, two tools were used; a specifically designed test for creativity evaluation on the Introduction to Chemistry course and the Abedi Inventory. Data analysis findings using the independent t-test showed statistically significantly better scores on calculated variables, information, and innovation for the experimental group. Consequently, E-learning is beneficial for the acquisition of knowledge and innovation among chemistry students and that a larger chance for E-learning should be given for broader audiences.

A study in [3] aimed to explore literature and provide the study with a theoretical context by reviewing some publications made by different academics and universities on the definition of E-learning; its use in education and learning in institutions of higher education. The general literature described the pros and cons of E-learning, which showed that it needs to be enforced in higher education for teachers, supervisors, and students to experience the full advantages of acceptance and implementation.

The effect of electronic learning on Saudi Arabia's academic performance is examined in [5]. The researchers assessed the web-based learning impact on academic staff at King Khalid University using a survey of 163 respondents as their research group. Structural equation modeling (SEM) was used to measure the impact of explanatory variables on existing variables. In addition, the hypothesized template was evaluated using SEM. The study reported that the adoption of online teaching (AFOT), technical skills (TC) and synchronous (SYNC) lectures have an indirect effect on university staff performance. Furthermore, acceptance for online teaching (AFOT) and Technical competency (TC) have a significant effect on the performance of academic staff. The consequence of the hypotheses points to the creation of the empirical model and suggest that the model direct KKU's management in the layout of its E-learning programs.

Assessing the learning effectiveness of electronic learning was studied in [14]. This analysis study conducted using the databases of Medline and CINAHL and the search engine of Google. The research used covered review articles and English language meta-analysis. 38 papers including journals, books, and websites are investigated and categorized from the results obtained. The general advantages of E-learning such as the promotion of learning and speed and process of learning due to individual needs were discussed. Study results indicated positive effects of E-learning on learning, so it is proposed that more use should be made of this method in education, which needs the requisite grounds to be established.

3. THE METHODOLOGY

The descriptive-analytical method has been applied for this study along with the analysis of results using a statistical application named Statistical Package for the Social Sciences (SPSS).

3.1. Study Population

The study targets the sample society that includes teaching staff and undergraduate students of all departments in the IT Faculty at the University of Benghazi.

3.2. Study Boundaries

- Scientific restrictions: Assessment of the extent of application of E-learning in higher education.
- Administrative Field: Faculty of IT, University of Benghazi, Libya.
- Human Resources: Teaching staff and students in the faculty.

3.3. Study Tool

Due to the fact that the training study based on two essential elements, i.e. student and teaching staff, for each element, a different two quantitative questionnaires are created to collect the data needed for the analysis.

3.4. Study Sample

The study involves two types of questionnaires to be prepared and developed: a questionnaire for students and a questionnaire for educators. The following details were obtained after the questionnaires were distributed and collected individually. The study sample was selected based on the awareness of the size of the population:

- Student Questionnaire: The total number of distributed questionnaires was 140 copies, without invalid copies, and 5 copies were missing. Therefore, the copies being analyzed are 135.
- Teaching Staff Questionnaire: The total number of distributed questionnaires was 20 copies, while 20 legitimate copies were returned without invalid or missing copies.

3.5. Study Dimensions

The study has emphasized on four dimensions to achieve the expected results as follows:

1) The extent of using E-learning in the faculty of IT.
2) Advantages of E-learning.
3) Disadvantages of E-learning.
4) Obstacles to implementing E-learning.

4. STATISTICAL ANALYSIS

4.1. Data Analysis

To analyze data, we use Means, Standard Deviations and Materiality as a statistical relationship. By analyzing the results, we acquire vital details according to the rank of inquires based on their materiality as given in Tables 1-8.

4.1.1. The Students' Perspective

Dimension 1: The extent of using E-learning in IT faculty

As shown in Table 1, the inquiries (9) and (10) are of similar materiality and the inquiry (10) is chosen because it has the lower standard deviation, which states that "you have a copy of the scientific method you are studying on a CD or PDF" with a materiality of 82.6 % and a mean 4.13 followed by the inquiry (9), which states that "you have your own email" with a materiality of 82.2 % and a mean 2.27. However, the inquiry (2), which states that "the Internet is available to students at the faculty" has the lowest materiality of 40% and a mean 2.
Dimension 2: Advantages of E-learning

As can be seen in Table 2, the inquiry(1) states that "E-learning contributes to raising your educational level" has the highest materiality of 88.2% and a mean of 4.41 Preceded by the inquiry(4), which states that "E-learning increases your computer skills" with a materiality of 87.8% and a mean of 4.39. However, the inquiry (7), which claims that "E-learning reduces your burdens as learning becomes a dialog between teaching staff and students rather than traditional learning", has the lowest materiality of 77.8% and a mean of 3.79.

Dimension 3: Disadvantages of E-learning

As seen in Table 3, the inquiries (5) and (6) are of identical materiality and the inquiry (5) is chosen since it has the lower standard deviation, which states that "E-learning reduces the burden of teaching staff and increases the burden of students" with a materiality of 75.4% and a mean of 3.77 preceded by the inquiry (6), which claims that "E-learning eliminates the use of traditional teaching methods such as books" with a materiality of 75.4% and a mean of 3.77. Nevertheless, the inquiry (1), which states that "E-learning isolates you from the community by connecting you to your computer for long periods of time", was the lowest materiality of 72.6% and a mean of 3.63.

4.1.2. Teaching Staff Perspective

Dimension 1: The extent of using E-learning in IT faculty

As shown in Table 5, the inquiry (10), which notes that "Use email to communicate with colleagues", has the highest materiality of 91% and a mean of 4.55%. However, the inquiry (2), which states that "There is always an internet available to teaching staff in the faculty", has the least materiality as 41.8% and the mean is 2.09.

Dimension 2: Advantages of E-learning

As shown in Table 6, the inquiry (4) which states that "E-learning contributes to increasing students’ skills in using computers" has the highest materiality of 84.6% and a mean of 4.23. However, the inquiry (7), which states that "E-learning reduces your burdens as learning becomes a dialog between teaching staff and students rather than traditional learning" with the lowest materiality of 68.2% and a mean of 3.41.

Dimension 3: Disadvantages of E-learning

As seen in Table 7, the inquiry (6) which states that "E-learning needs financial capability compared to traditional education" has the maximum materiality of 79% and a mean 3.95. Nevertheless, the inquiry (3) reports that "students face a greater burden during the earning reduces your burdens as learning isolates you from the community by connecting you to your computer for long periods of time", was the lowest materiality of 72.6% and a mean of 3.63.
Dimension 4: Obstacles to E-learning

As can be seen in Table 8, the inquiries (4) and (7) of similar materiality of 82.8% and a mean of 4.14. Yet, the inquiry (6) which states that "Lack of experience of students with E-learning techniques" has the lowest materiality of 71.8% and a mean of 3.59.

### Table 5. Analysis of Dimension 1

<table>
<thead>
<tr>
<th>Inquiry</th>
<th>Strong</th>
<th>Disagree</th>
<th>Undecided</th>
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<th>Strong Agree</th>
<th>Mean</th>
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### 4.2. Results and Discussion

#### 4.2.1. Students' Perspective

As shown in Table 9, we found the T-Test value = 8.733 and the P-Value = 0.00 to the extent of using E-learning. T-Test value = 22.86 and P-Value = 0.00 for the advantages of E-learning. The T-Test value = 12.786 and P-Value = 0.00 for the disadvantages of E-learning. The obstacles to E-learning in the last dimension are the T-Test value = 11.961 and the P-Value = 0.00. Consequently, all T-Test values are larger than the T table value = 1.96 and on the other side, all P-Values are lower than the level of significance = 0.05. There were statistically significant differences from the perspectives of students in each dimension of the study's four dimensions.

<table>
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<td>3.753</td>
<td>0.732</td>
<td>11.961</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Based on what was explained in Table 9, the following findings were obtained with respect to the study's four dimensions:

1) The first dimension of the study data, which provided for the extent of the use of E-learning, indicates that acceptance of the use of E-learning from the student perspective was (Agreement) where the mean was (3.443).

2) The second dimension of the study data, which provided the advantages of E-learning, shows that approval of the advantages of E-learning from the perspective of students, was (Strong Agreement) where the mean was (4.131).

3) The third dimension of the study data, which accounted for the drawbacks of E-learning, indicates that acceptance disadvantages of E-learning from the student point of view are (Agreement) where the average was (3.773).

4) The fourth dimension of the study data, which identified barriers to E-learning, shows that approval barriers to E-learning from the student perspective were (Agreement) where the average was (3.753).

#### 4.2.2. Teaching Staff Perspective

As shown in Table 10, the extent to which E-learning is used are T-Test = 6.021 and P-Value = 0.00, the advantages of E-learning are T-
Learning and teaching in an electronic atmosphere is still a great challenge in public universities for several issues and challenges. The aim of this study is to identify major issues and challenges by extrapolating the opinions of students and faculty instructors on the use of E-learning systems in a public university. The study society sample consists of students and faculty members at the Faculty of IT, University of Benghazi. The descriptive-analytical approach has been applied with statistical analysis of the results. Two types of questionnaires have been distributed for students and instructors.

Four dimensions have been determined to reach the expected results: i.e., the extent to which E-learning is used and the advantages, disadvantages and obstacles to the implementation of E-learning in the Faculty of IT. By analyzing the results, we have achieved encouraging results to highlight some of the issues, challenges and benefits of using the E-learning system in the higher education sector.

Issues such as technical and financial support, training, improved working conditions, technological background, skills, copyright protection and professional development are always important in the implementation of E-learning in public universities. Based on the study results, students believe that E-learning contributes to their learning. However, it reduces the workload on faculty and increases it on students. The main obstacle to E-learning is the lack of Internet services at the university. Faculty members agree that E-learning is useful in increasing students’ computer skills, although it requires significant financial resources. We can claim that it is important to highlight many of the recommendations, which could have a positive impact on the possibility of implementing E-learning in the Faculty of IT. The university has to provide internet service to students and teaching staff members with enough computer devices to apply E-learning. A modern electronic library and dedicated classrooms with all types of equipment and tools needed are also necessary in order to apply E-learning. Conducting training and seminars on a regular basis is important to support the application of E-learning, in addition to constant attention to IT infrastructure and periodic maintenance of computers and supporting equipment.

### Table 10. Statistical Tests (Teaching Staff Perspective)

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Mean</th>
<th>STDev</th>
<th>T-Test</th>
<th>P-Value</th>
</tr>
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<tbody>
<tr>
<td>The extent of using E-learning</td>
<td>3.59</td>
<td>0.466</td>
<td>6.021</td>
<td>0.00</td>
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<td>Advantages of e-learning</td>
<td>3.99</td>
<td>0.516</td>
<td>9.015</td>
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<td>Disadvantages of E-learning</td>
<td>3.35</td>
<td>0.431</td>
<td>3.813</td>
<td>0.001</td>
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<tr>
<td>Obstacles to E-learning</td>
<td>3.82</td>
<td>0.594</td>
<td>6.505</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Based on what was explained in Table 10, the following results could be achieved:

1) The first dimension of the study data, which provided for the extent of use of E-learning, demonstrates that approval of the use of E-learning from the perspective of the teaching staff was (Agreement) where the mean was (3.59).

2) The second dimension of the study data, which provided the advantages of E-learning, shows that approval of the benefits of E-learning from the perspective of the teaching staff was (Agreement) where the mean was (3.99).

3) The third dimension of the study data, which accounted for the drawbacks of E-learning, indicates that acceptance disadvantages of E-learning from the viewpoint of teaching staff are (Agreement) where the mean was (3.35).

4) The fourth dimension of the study data, which established obstacles to E-learning, indicates that approval obstacles to E-learning from the viewpoint of teaching staff are (Agreement) where the mean was (3.82).

### 5. STUDY OUTCOMES

The study outcomes could by summaries as follows:

- Students believe that E-learning is used and that a copy of the scientific method studied on CD or pdf is one of the most important uses for the student.
- Students believe that E-learning is beneficial and, most critically, that it helps raise their academic standard.
- Students reveal that E-learning has disadvantages and that the major drawback is that it reduces the workload on faculty members and increases the burden on students.
- The students indicate that the implementation of E-learning is challenging and that the main obstacle to the application is the lack of university internet services.
- Teaching staff believes that the use of E-learning is widespread and that the most important uses are the possession of faculty members by e-mail.
- The teaching staff agrees that E-learning is useful and that one of the most significant positive aspects is to help improve the computer skills of the students.
- The teaching staff agrees that E-learning has drawbacks and that the key disadvantage is that it needs financial resources compared to traditional learning.
- The teaching staff agrees that there are obstacles to the application of E-learning that one of the key difficulties is the high cost of implementation.

### 6. CONCLUSION AND RECOMMENDATIONS

Learning and teaching in an electronic atmosphere is still a great challenge in public universities for several issues and challenges. The aim of this study is to identify major issues and challenges by extrapolating the opinions of students and faculty instructors on the use of E-learning systems in a public university. The study society sample consists of students and faculty members at the Faculty of IT, University of Benghazi. The descriptive-analytical approach has been applied with statistical analysis of the results. Two types of questionnaires have been distributed for students and instructors. Four dimensions have been determined to reach the expected results: i.e., the extent to which E-learning is used and the advantages, disadvantages and obstacles to the implementation of E-learning in the Faculty of IT. By analyzing the results, we have achieved encouraging results to highlight some of the issues, challenges and benefits of using the E-learning system in the higher education sector.

### 7. REFERENCES


## Authors’ background

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<th>Research Field</th>
<th>Personal website</th>
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