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E-Learning Strategies and Academic Performance during Covid-19 Pandemic

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Abstract:

This research aims to measure the impact of e-learning in its three dimensions (quality of lecturers, quality of information content, and quality of electronic system) on the academic performance of students at Kingdom University in the Kingdom of Bahrain. The main objective of the study is to measure the impact of e-learning on the academic performance of students at Kingdom University in the Kingdom of Bahrain. Getting acquainted with the reality of e-learning and identifying the reality of academic performance. The study population is represented all the students of Kingdom University in the Kingdom of Bahrain, around 1800 male and female students, based on the record of the admission and registration department at the university. The study applied the simple random sampling method, where the link for filling out the survey form was sent to a number of students. Within the University Student Council, which in turn distributed them to 60 male and female students through Google Docs, it was possible to retrieve 53 survey forms with complete responses which qualify for analysis, a response rate of 88.3% . The current research adopted the DeLone and McLean (2003) scale for measuring e-learning, which includes three dimensions: (the quality of the lecturers, the quality of educational content, and the quality of the electronic system), The practical importance is represented in the possibility of making recommendations that may enhance the level of academic performance of students at Kingdom University in the Kingdom of Bahrain.

Keywords: Higher Education; E-Learning Strategies; Academic Performance; Covid-19 Pandemic

Introduction

In the context of higher education, the use of digital technology is an integral part of the contemporary student experience, and as such, relevant literature has focused on the potential use of various digital technologies to enable, extend, and improve educational attainment and, in turn, students' overall academic performance Al-Abdullatif & Gameil, 2021 . In this regard, the general use of current e-learning models can demonstrate the students' grades

and skill level, as well as the handling of course content by expert e-learning academics along with student interaction. Therefore, these requirements must be well considered and respected in the regulations of the Academy (Tawafak, Romli & Arshah, 2019)). The quality of student performance remains a top priority for academics as they aim to make a difference locally, regionally, nationally, and globally. Educators, trainers, and researchers have long been interested in exploring the variables that effectively contribute to the quality of learner performance (Tesfay, 2017)

E-learning facilitated the usage of information and communication technology to lead the students and teachers. E-learning has upgraded the present education system and enhanced students' academic performance (Habes et al., 2021). In light of the COVID-19 pandemic, humanity has become fearful of this epidemic due to its rapid spread, as Coronaviruses have caused two new epidemics. Therefore, e-learning is seen as an innovative approach to providing educational services online in the form of information that enhances academic performance (Ramdani, Mohamed, & Syam, 2021). In light of the pandemic, the educational closure and the practice of e-learning have been adopted as an alternative to keep students safe from the infectious virus (Habes, et al., 2020), here the advantages of e-learning have emerged because of its feasibility, flexibility and better control over the environment. Despite the advantages of e-learning, various studies have shown some disadvantages, such as social isolation, lack of student-teacher interaction, and communication issues. While most countries have adopted this system, many developing and underdeveloped countries do not practice the e-learning approach (Qureshi, Ilyas, Yasmin, & Whitty, 2012). However, during the Covid-19 outbreak, all schools, colleges, and even medical and dental universities have switched to e-learning systems. Recognizing the academic loss caused by the interruption of learning activities, and with the development of internet technology, e-learning has become an encouraging solution to educational concerns. E-learning mainly helped students improve their learning skills and obtain additional curricular materials through various online platforms (Habes et al., 2021). Therefore, the current study aimed to measure the impact of e-learning in its three dimensions (quality of lecturers, quality of information content, and quality of electronic system) on the academic performance of students at Kingdom University in the Kingdom of Bahrain.

In light of the Covid-19 pandemic, the academic performance of students has become one of the most serious challenges faced by educational institutions in all countries of the world (Clark, Nong, Zhu, & Zhu, 2021). Under this hypothetical environment and the presence of students in their homes, which may represent an inappropriate work environment). Students may become

unmotivated to ask questions, and inactive in class discussions, which may cause them to develop undesirable attitudes toward the classroom. This is the opposite of what could be obtained among learners who engage physically with the lecturer and benefit from face-to-face teaching (Zalat et al., 2021).

The problem arises in the academic performance of students in the form of low interaction of students with lecturers or with their colleagues in that virtual environment compared to face-to-face lectures, which allow a greater level of direct interaction. This challenged students on how to adapt to an education model that limits face-to-face interaction (Mandasari, 2020).

Which prompted researchers and practitioners in all countries of the world to investigate precedents that can predict the academic performance of students in light of the Covid-19 pandemic, which came on top of e-learning, especially since this sudden shift in the education system imposed by that pandemic required educational institutions to adapt quickly from To move from traditional education represented in physical classes to e-learning in the form of virtual classes in light of the lack of readiness of many educational institutions in terms of information infrastructure and e-learning platforms (Zalat et al., 2021). In addition, some educational institutions have not been able to meet the students expectations, especially in terms of the extent to which the design of the course content in terms of teaching activities is compatible with its use in a virtual educational environment, especially considering the difference between the courses in terms of the nature of their educational content. To provide students with the knowledge, while others are practical courses that require laboratory or experimental tests, which means a different treatment in the educational process compared to theoretical courses, which may necessitate modifying practical curricula according to e-learning techniques, which may cause a major obstacle to achieving educational goals. and students' acquisition of specific knowledge and skills as learning outcomes from courses (Paje, Rogayan, & Dantic, 2021). The problem is further complicated by the fact that many students face technical difficulties such as limited Internet connection, Internet coverage, and speed, which may disrupt the functioning of virtual classes (Habes et al., 2021).

As for investigating the problem in the applied context, the researchers organized several unstructured interviews with many students from Kingdom University in the Kingdom of Bahrain and asked several open questions about their academic performance in light of the Covid-19 pandemic. There are individual differences between them in terms of their academic performance; Some of them believe that he has learned a lot through the e-learning model, and was able to get better grades in the courses they studied under e-learning compared to grades in previous classes that depended on traditional education, and the e-learning model is a very interesting experience. While other students

see that the e-learning model did not efficiently allow cooperation between faculty members and students, and they did not have enough opportunity to interact with other learners using the e-learning model and some of the university faculty members found it difficult to improve student learning outcomes through the e-learning model. E-learning, especially in practical courses.

Which motivated the researchers to study the impact of e-learning on the academic performance of students in light of the Covid-19 pandemic at Kingdom University in the Kingdom of Bahrain.

According to (Alameri, et al., 2020) most studies on the use of e-learning during the Covid-19 pandemic have focused on how teachers are incorporating new technologies into education to reach students and teach them at home, but there is very little Research has been conducted to highlight students' view of e-learning in developing countries.

While (Alam, et al., 2021) see that most of the studies that examined the frameworks for the success of e-learning have investigated the intention to use or continue e-learning as one of the measures to deal with the Covid-19 pandemic, only a few Some of them were conducted to measure the impact of e-learning on students' academic performance. This is what (Clark, Nong, Zhu, & Zhu, 2021) agree, that during the shutdown, the introduction of distance education is probably the only option available to mitigate the negative impact of disrupted classroom teaching. However, there is still no empirical evidence of the impact of Online education on student performance when schools were physically closed.

In the same context, (Eyles et al., 2020) stress that there are limited studies that have examined students' interactions with online education activities and their academic performance in light of the Covid-19 pandemic, which prompted Habes et al., (2021) to call to "there is a need to conduct more research to determine the impact of e-learning on the academic performance of students in light of this pandemic".

The problem of the study is summarized by answering the main question, which is:

What is the impact of e-learning on the academic performance of students at Kingdom University in the Kingdom of Bahrain.

The main objective of the study is to measure the impact of e-learning on the academic performance of students at Kingdom University in the Kingdom of Bahrain.

• Getting acquainted with the reality of e-learning and Identifying the reality of academic performance

The importance of the study comes from the lack of research that examined the impact of e-learning on students' academic performance (Alam et al., 2021;

(Clark, Nong, Zhu, & Zhu, 2021); Eyles et al., 2020), so this research is a serious attempt to add and contribute to the cognitive field in the behavioral literature. Organization in general and e-learning in particular. The scientific importance of the research is also reflected in the fact that it is considered a response to one of the recent studies by Habes et al., (2021), in which he stated, "There is a need to conduct more research to determine the impact of e-learning on the academic performance of students in light of this pandemic".

The practical importance is represented in the possibility of making recommendations that may enhance the level of academic performance of students at Kingdom University in the Kingdom of Bahrain.Assisting Kingdom University officials in identifying which dimensions of e-learning have the most impact on the academic performance of students at that university.

Related Studies

The aforementioned prompted many countries to adopt the online education approach in light of this pandemic and students are forced to spend more time with their computers, which has had a severe impact on their academic motivations (Çevik & Bakioğlu, 2022). With the outbreak of the Covid-19 epidemic, education has been affected as one of the important aspects of human activity, especially universities, as universities are required to be able to provide distance education services and meet all the needs of students in a virtual environment, although many universities do not have the willingness to conduct Distance lectures, both in terms of human resources, technological infrastructure, and education systems (e-learning management systems.(

E-learning is a modern method of the educational process in the age of technology that engages lecturers and students in different locations other than the classroom to conduct educational activities (Adisurya, Santoso, Fadhilah, & Lawanto, 2020), and distance education is via platform room channels, through the use of tools Electronic and software such as laptop computers and e-learning websites are effective for both learners in terms of providing a flexible environment and the possibility of intensive teaching, and also for lecturers who provide scientific content briefly (Guterres, Laksitowening & Sthevanie, 2022). Therefore, the integration of digital technology has gradually replaced the traditional learning environment in educational circles (Al-Abdullatif & (Gameil, 2021.(

E-learning is one of the fastest-growing sectors of education and is becoming increasingly popular in higher education institutions. The word e-learning is now generally used to refer to education that is conducted or made possible at any rate over the Internet. Since Internet access has increased exponentially, e-learning has evolved into a large-scale and effective approach

to providing distance learning solutions (Dada, Alkali, & Oyewola, 2019).

DeLone and Mclean proposed a model for measuring e-learning success in 1992 based on a comprehensive literature review. Their proposed model was based on six variables: information quality, system quality, service quality, usage, intent to use, user satisfaction, and net benefits. Later their proposed model was experimentally tested by some researchers where Surendran (2012) suggested adding QoS to the existing model. While Venkatesh and Davis (2000) suggested replacing 'system use' with 'perceived benefit' and 'use' with 'intention to use'. Given the researchers' suggestions, DeLone and Mclean updated their model in 2002 with "quality of service" as a new architecture and incorporating "individual and organizational impact" into "benefits." Their model became popular and was used by researchers Abdullah and Ward (2016) to measure the success of the e-learning system. There is no doubt about the reliability and validity of the model, but it has been shown to provide contradictory results. More precisely, there were discrepancies based on some unexplained overlapping variables in the model. Therefore, some researchers Abdullah and Ward (2016) critically evaluated the DeLone and Mcleans model and suggested further research to know the quality factors to improve the explanatory power of the current model (Alam et al., 2021.(

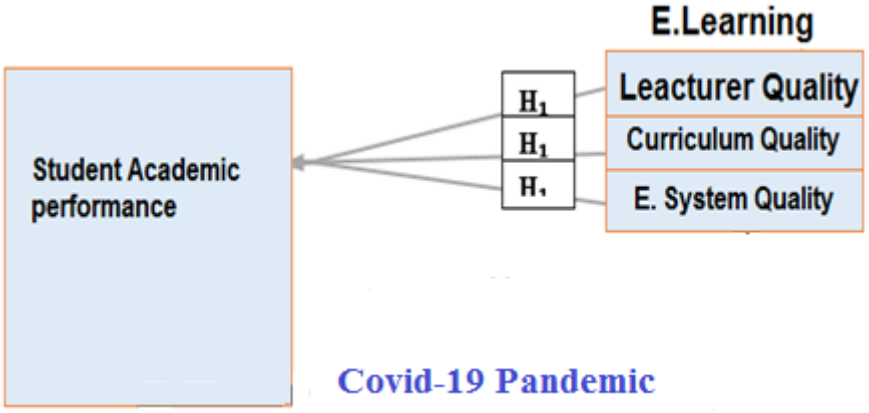
This model aims to investigate the factors that influence the success of a data system. Delone and Mclean's (1992) model is a well-known model in the academic literature, which is very suitable for organizing studies on the success of the information system as it focuses on higher education having a good, equitable, and high-quality education for society. Thus, the knowledge system has a significant impact on the implementation of the education sector. Successful use of data systems in higher education institutions will provide beneficial undergraduates, such as students, lecturers, higher education institutions, and community organizers. User satisfaction is the user's response and feedback after using an information system (Petter, DeLone, & McLean, 2008). The feeling of user satisfaction with the information system will affect its performance. Satisfaction has a positive and significant impact on customer loyalty. There are three main factors in determining the characteristics of an information system: “system quality, service quality, and information quality” (Delone & Mclean, 2003). These three factors are necessary to influence user satisfaction (Salim, Alfansi, Anggarawati, Saputra, & Afandy, 2021).

The concept of academic performance

According to (Narad & Abdullah, 2016), academic performance is the knowledge gained which is assessed through marks by the lecturer and/or the educational goals that students and lecturers have set to achieve within a specified time period. Again, (Martha, 2009)asserts that students' academic performance is determined by a student's performance in exams and tests and in

course work. Similarly, Yusuf, Onifade, and Bello (2016) see academic performance as the measurable and observable behavior of a student over a specified period. He added that it consists of the grades obtained by the student in the assessment, such as the semester exercise, the semester test, the mid-term exam, and the end-of-semester exam (Abaidoo, 2018). Academic performance is also defined as the level or extent to which learners achieve educational or curriculum objectives (Chikendu, 2022). According to (Marić & Sakač, 2014), the importance of academic performance is that it involves factors that influence the academic performance of students. Similarly, Kpolovie, Joe, and Okoto (2014) assert that a student's attitude towards an educational institution and their interest in education influence their academic performance (Abaidoo, 2018). Learners' academic achievement is measured by their ability to demonstrate their competence by completing an exam after exposure to content under the supervision of lecturers. Learners experience anxiety, fear, and frustration when preparing for a test or exam. This does not prevent students from demonstrating their academic competence and performance. An educational institution is then seen as an institution in which students are exposed to content to assess their level of intelligence and academic achievement as they progress in education (Chikendu, 2022).

The study model that was adopted by DeLone and McLean (2003) below shows the relationships and effects of e-learning in its three dimensions, which are addressed by the research, which are the quality of the lecturers, the quality of educational content, and the quality of the electronic system, and this is what is shown in Figure (1).



The hypotheses of the study were formulated in light of the results of the literature that studied the relationship between e-learning and academic performance as follows:

The first main hypothesis:

H1: There is a positive and statistically significant effect of e-learning on the

academic performance of Kingdom University students in the Kingdom of Bahrain.

The demand for online education has never been greater. For faculty, teaching in the virtual classroom requires a new set of skills and practices. Online lecturers should prepare for the increased written communication demands that accompany online education, such as the significant amount of time required to respond to student inquiries and provide feedback on assignments (Gallien & Oomen-Early, (2008.(

In another study, Vrasidas and McIsaac (1999) examined the nature of interaction in an online course from the point of view of the lecturer and students. The researchers concluded that students need ongoing and frequent support and feedback, especially from lecturers. Similarly, Lorenzo and Moore (2002), in a study that investigated the level of effectiveness in facilitating student collaboration and interaction, found that online environments that effectively facilitate high levels of interaction and collaboration among learners typically lead to successful online programs. . As lecturers communicate with their students, they may choose to use 'group' notes (messages addressed and sent to the whole group) or personalized notes (individual messages sent to each student) that have been shown to enhance the academic performance of these students.

“ In another context, researchers see that lecturers, the educational institution, parents and society, in general, are consistently interested in students’ academic performance (Lydiah & Nasongo, 2009). According to Adeyemi (2010), lecturers play an important role in determining students’ academic achievement (Rivkin, Hanushek, & Kain, 2005). Some studies have found that lecturers’ experience and educational qualifications have a significant impact on student’s academic performance (Musau & Abere, 2015)

Based on the above, it has been assumed:

H 1.1: There is a positive and statistically significant effect of lecturer quality on the academic performance of Kingdom University students in the Kingdom of Bahrain.

"In this context, many researchers have concluded that the success of the e-learning system is determined by the extent of the use of the e-learning system and its effects on learners, as the various studies that have been conducted to evaluate the success of the e-learning system, especially adapting to the success model of the information system that it has developed. DeLone and McLean (2003) that there is a positive and statistically significant effect of satisfaction with the electronic system on the use of e-learning and the academic performance of students (Cidral, Oliveira, Di Felice & Aparicio, 2017; (Seta, Kukulska-Hulme, & Arrigo, 2014).

Student's academic performance is also associated with improved work

quality while using the system (Li, Yu, Liu, Shieh,& Yang, 2014.) These improvements include helping to complete assignments quickly, improving teaching performance, reducing errors, and improving workplace efficiency) (Isaac, Masoud, Samad & Abdullah, 2016), especially since the good interaction between the computer and the learners will enhance their academic achievement. Therefore, academic performance is related to the quality of the system which affects user satisfaction. As an end user of the e-learning system, the performance of the students becomes the main criterion for measuring the success of the system. Thus, providing resources and efficiency through the electronic system will enhance the student's ability and academic achievement (Isaac et al., 2016; (Riandi, Respati, & Hidayatullah, 2021)

Based on the above, it has been assumed:

:H 1.3 There is a positive and statistically significant effect of the quality of the educational system on the academic performance of students at Kingdom University in the Kingdom of Bahrain.

The second main hypothesis

H2: "There are statistically significant differences between the opinions of Kingdom University students in the Kingdom of Bahrain about e-learning and the students' academic performance due to demographic variables (gender, level of e-learning knowledge, number of years of e-learning use, academic specialization".(

Study Methodology

"The study population is represented in all the students of Kingdom University in the Kingdom of Bahrain, who number about 1800 male and female students, based on the record of the admission and registration department at the university. The study applied the simple random sampling method, where the link for filling out the survey form was sent to several students. Within the University Student Council, which in turn distributed them to 60 male and female students through Google Docs, and it was possible to retrieve 53 survey forms with complete responses valid for analysis, a response rate of 88.3%.

The current research adopted the DeLone and McLean (2003) scale for measuring e-learning, which includes three dimensions: (the quality of the lecturers, the quality of educational content, and the quality of the electronic system), which included 21 phrases, and it is the most common measure for measuring e-learning in the literature. Which was applied by the study to measure the nature and size of the impact of e-learning on the academic performance of students at the Kingdom University in the Kingdom of Bahrain, while the reference standards adopted in constructing statements of the dependent variable (academic performance) were based on Tawafak et al., (2019), which included 11 statements to measure Academic performance. The

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following table summarizes the general structure of the scale of the main variables adopted in the study.

جدول (3-1)
the structure of the study variables

viriables	sub-viriables	items no.	Refernce
e learning	Lecturere quality	**12**	DeLone and McLean (2003)
	content	**8**	
	e system	**8**	
student performance		**10**	Tawafak et al., (2019)

While statement No. (10) had the lowest arithmetic average of (2.98), which states: "The lecturers respond very efficiently to the students individually," which may explain that a large number of students lack interaction with the lecturer individually, This is illustrated by Figure (1-4).**جدول (1-4)**
Demographic statistics

Demographic variables		Frequency	Percentage
Gender	m	39	%73.6
	f	14	%26.4
level of elearning skills	Excellent	2	%3.8
	Good	9	%17
	Medium	37	%69.8
	Weak	5	%9.4
using elearning - years	2	47	%88.7
	3-4	6	%11.3
Speciality	humanities	49	%92.5
	Engineering	4	%7.5

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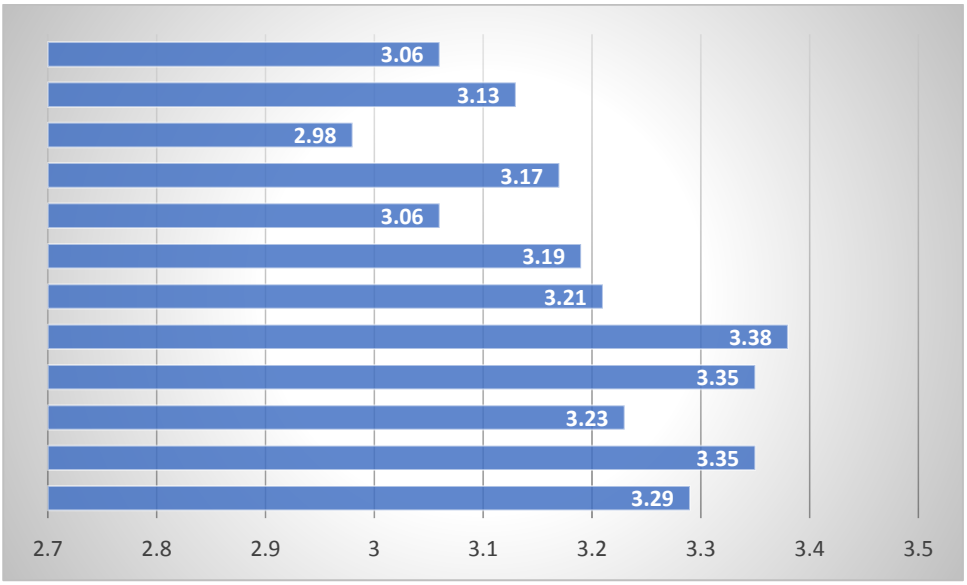

2.2.4 "Descriptive Statistics of Academic Performance Variable Phrases"

The results of Table (4-5) show that the general average of the expressions of the academic performance variable was (3.02) and with a standard deviation of (1.00), which is a mean value that lies between (2.65-3.49) based on the analysis scale adopted in the research. The existence of an average level of the quality of the electronic system according to the point of view of the research sample members. Statement No. (4) obtained the highest arithmetic average of (3.79), which states: "It is worth recommending e-learning to other learners," which may reflect a level of student satisfaction with the e-learning system. While statement No. (2) obtained the lowest arithmetic average, which was (1.98), which states: "The e-learning model achieves efficiency in cooperation between faculty members and students," which may explain why many students do not allow to learn Electronic education provides the amount of cooperation provided by traditional education, and this is illustrated by Figure (4-4).

Table (4-5)"Descriptive Statistics for Academic Performance Variable Expressions" (n =

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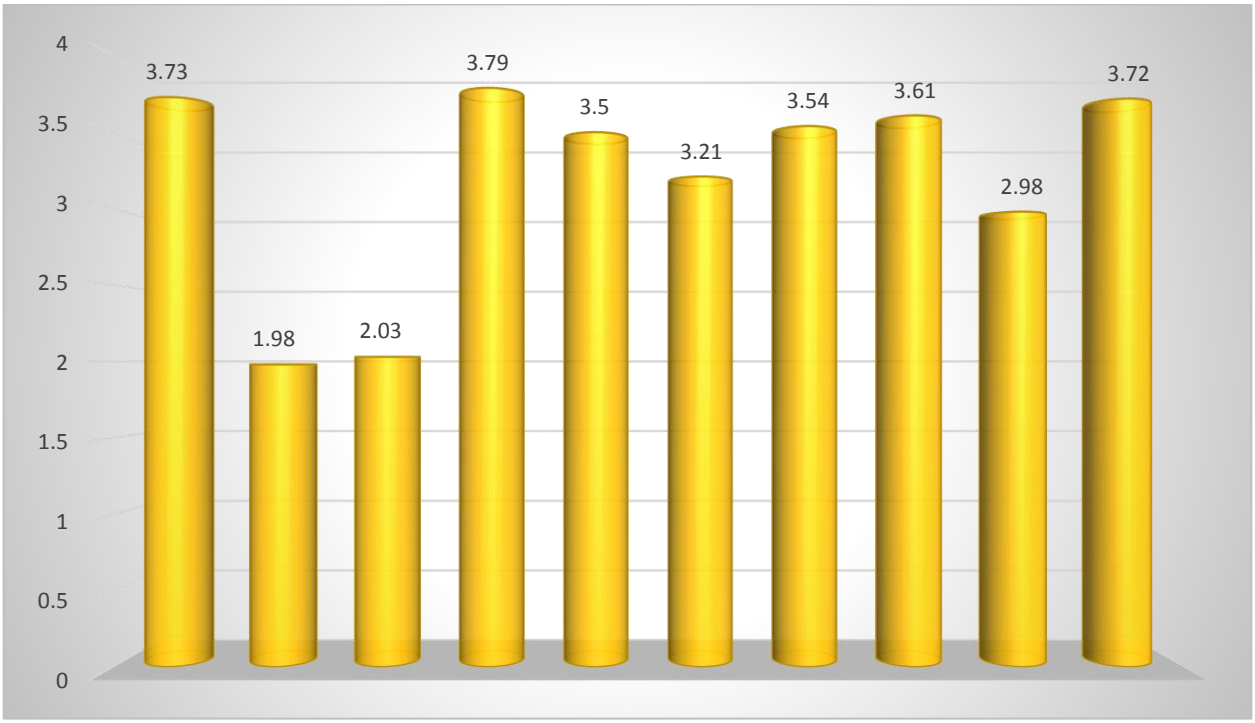

1.3.4Results of the verification of the first main hypothesis

The statistical data in Table (4-7) for the analysis of multiple linear regression indicate that there is a statistically significant effect at the significance level of (0.01) for e-learning on the academic performance of Kingdom University students, as evidenced by the high value of the calculated (F) amounting to (165.69), At the level of statistical significance (0.000), which is less than the significance level (0.01 α ≤), and this enhances the value of the adjusted determination coefficient (Adj. R2), which amounted to .705), and therefore it can be said that e-learning explains the percentage of (70.5%).) of the discrepancy or changes in the academic performance of Kingdom University students. Accordingly; The first main hypothesis (H1) is accepted, which states: "There is a positive and statistically significant effect of e-learning on the academic performance of Kingdom University students" ".

Thus, the results of the current research agree with the results of studies conducted by (Adeyeye, et al., 2022); Zolochevskaya et al., 2021; (Ramdani, Mohamed, & Syam, 2021); (Clark, Nong, Zhu, & Zhu, 2021); Alam et al., 2021; (Mandasari, 2020); Alameri et al., 2020; Aldholay et al., 2018; Yeboah & Smith, 2016; Tegegne, 2014(

Table (4-8: The results of the analysis of variance of multiple linear regression to test the size of the effect of e-learning on academic performanceFor students of Kingdom University in the Kingdom of Bahrain

Dim.	*β*	T- value	Sig.	Sig.

(Constant)		6.299		
Lecturer Q	.493	5.441	.000 **	0.000
content Q	.349	6.058	.000**	0.000
e system	.303	5.178	.000**	0.000

The above table shows that the most explanatory and influential dimension of e-learning on academic performance is the quality of the lecturer, based on the value of (β). The above table shows that there are no statistically significant differences in e-learning, whether in the total degree or in its three dimensions, as well as the absence of differences in academic performance due to the years of using e-learning, and therefore it can be said that the results are inconsistent with what was stipulated The second hypothesis regarding the existence of differences due to the variable years of using e-learning, and accordingly, this hypothesis is rejected**.**

Results Discussion

Concerning the dimensions of e-learning and their impact on academic performance, the results concluded that the quality of the lecturers ranked first in terms of affecting the academic performance of students, and thus it agreed with the results of the studies conducted by him (Adeyeye, et al., 2022); Alam et al. Aldholay et al., 2018, followed by the quality of the information content, where the result of the current study agrees with the studies conducted by Zolochevskaya et al., 2021; Alam et al., 2021; Alameri et al., 2020; Aldholay et al., 2018 Yeboah & Smith, 2016), then finally the quality of the electronic system, and thus it agreed with the results of the studies conducted by it (Adeyeye, et al., 2022); Alam et al., 2021; (Mandasari, 2020); Tegegne, 2014), although it differs with them. In that, the current study found that the quality of the electronic system had the least impact on the academic performance of students,

Conclusions and Recommendations

Concerning the quality of the information content, it came in second place in terms of the impact of e-learning on academic performance, which may be since the learning management system provides information related to the course, which concludes that the structure of this system is designed based on the privacy of each course, including what it includes. From learning objectives and outcomes within the course specifications, educational resources, and class work identified as requirements for this course as well as the timelines for all

assessments, as well as their delivery links, while on the other hand, it was found that the university's learning management system does not provide the correct feedback to students, Which concludes from the students' lack of faculty member's opinions and comments on what they submit, whether in class work or from mid-exam, which prevents them from realizing their shortcomings and then improving them.

Concerning academic performance, it became clear that most of the study sample believed that it is worth recommending e-learning to other learners, which infers that students realize the advantages included in e-learning in terms of shortening time and providing the information included in educational materials to learners who are in various geographical areas. In addition to the possibility of retrieval of this information easily, while on the other hand, the majority of the study sample showed that the e-learning model does not achieve efficiency in cooperation between faculty members and students, which concludes that there is a shortcoming in achieving the required communication between faculty members and students. This represents an obstacle to achieving the desired cooperation between the student and the faculty member.

About academic performance, it is recommended to encourage students to put forward new ideas to achieve more cooperation between the faculty member and students through a questionnaire distributed to students, provided that this questionnaire is not specified with any evidence through which the student's identity can be inferred to Grant a space of freedom to list his proposals, then organizing a discussion session between the faculty member and students to review those proposals and discuss their feasibility, and then review the technical support department at the university to work on their implementation.

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