Students' Views of E-learning Usage in Higher Education: An Explanatory Sequential Study

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ABSTRACT:

This paper analyses student views of e-learning usage in higher education. To fully explain e-learning usage, an explanatory sequential mixed methods design was utilised. Consequently, both qualitative and quantitative data were obtained to address the research problem. First, an online survey was developed based on the concept of Technological Acceptance Model (TAM) and validated prior to use. One hundred and thirty-five students from Sharourah College of Arts and Science, Najran University in the KSA, participated in the survey. Later, eleven students participated in focus-group interviews. Types of e-learning activities and factors influencing students' usage and satisfaction were examined. The research found students' perception of service quality to be the most significant factor influencing e-learning usage. A need to resolve IT infrastructure problems in order to better meet students' needs and improve learning outcomes was identified.

Keywords: e-learning, higher education, service quality, TAM, blended learning

تصورات الطلاب حول استخدام التعلم الإلكتروني في مؤسسات التعليم العالي: دراسة استكشافية تتابعية

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الملخص:

يتناول البحث الحالي آراء وتصورات الطلاب حول استخدام التعلم الإلكتروني في مؤسسات التعليم العالي، ولقد اعتمد الباحث على تصميم استكشافي متتابع كأحد صور المناهج المختلطة لشرح استخدام التعلم الإلكتروني بشكل كامل، ومن ثم فلقد اعتمد الباحث على البيانات النوعية والكمية لمعالجة مشكلة البحث، كما قام الباحث بإجراء مسح عبر الانترنت اعتماداً على "نموذج القبول التكنولوجي "(TAM) بعد التحقق من صدقه وثباته قبل الاستخدام، ولقد شارك في المسح مائة وخمسة وثلاثون طالبًا من كلية شرورة للآداب والعلوم بجامعة نجران في المملكة العربية السعودية، وفي وقت لاحق ، شارك أحد عشر طالبًا في مقابلات بؤرية، قام الباحث بفحص أنواع أنشطة التعلم الإلكتروني والعوامل التي تؤثر على استخدام الطلاب وتقبلهم للتعلم الإلكتروني؛ حيث وجد البحث أن تصور الطلاب لجودة الخدمة هو العامل الأكثر أهمية وتأثيراً على استخدام التعلم الإلكتروني، كما أكد الباحث على ضرورة حل مشاكل البنية التحتية لتكنولوجيا المعلومات من أجل تلبية احتياجات الطلاب بشكل أفضل من أجل تحسين نتائج عملية التعليم والتعلم.

الكلمات المفتاحية: التعليم الإلكتروني، التعليم العالي، جودة الخدمة، TAM، التعلم المدمج.

Introduction:

E-learning is seen as an important learning approach to improve teaching and learning in higher education (HE) since it can provide open access to rich information and facilitate learning anytime and anywhere (Liaw, 2008; Mason & Rennie, 2006). Furthermore, it can be used to increase students' motivation, self-learning, discussion and dialogue skills; decrease individual differences between students; and increase students' learning and achievement (Cubeles & Riu, 2018; Englund, Olofsson & Price, 2017; Waha & Davis, 2014). Consequently, many educational institutions have begun adopting and implementing it in the education system in order to meet twenty-first century skill requirements (Cheng, Guan & Chau, 2016). Basically, the purpose of using e-Learning is to create a learning platform that combines traditional learning (face-to-face) and online learning (Pham, Limbu, Bui, Nguyen & Pham, 2019; Selim, 2007). In this study, the term e-learning will be used specifically to describe the learning environment/approach where information and communication technology (ICT) tools are being used to support students' learning, ranging from teaching some courses without face-to-face contact with the course professor (e.g. teaching via the virtual classroom), to using such tools to support teaching and learning in the university classroom (blended learning).

Evidently, to gain the benefits of using e-learning, the integrated learning environment needs to be designed according to the educational institution's specific educational objectives and its ability to do so (Cubeles & Riu, 2018). Essentially, the educational institution should have a clear strategic plan and vision that guarantees continuity of using the e-learning approach and, at the same time, makes it easy to assess (Hossain, Xi, Nurunnabi & Anwar, 2019). This, of course, requires choosing the learning management system (LMS) best suited to the vision of the educational institution and integrating it in a way that enables students to easily access learning materials and information (Mottus et al., 2018). In addition, the success of e-learning integration depends on the extent to which the educational institution has built a common culture among faculty teachers, students and staff (Eichelberger & Leong, 2019). This will occur when both teachers and students have a positive attitude towards ICT tools' usage in the teaching and learning processes and the confidence and competencies to use them (Englund et al., 2017; Hakami, 2014). Consequently, the more technological interactive activities performed by faculty teachers, the more the common culture level of e-learning usage (Selim, 2007).

Still, what makes the adoption of e-learning useful for students and encourages their continued usage of it? Moreover, although e-learning has been widely adopted by higher education institutions and universities in many countries, it is considered an emerging technology in Saudi Arabia (Aldiab, Chowdhury, Kootsookos, & Alam, 2017). Najran University is one of several universities that have integrated technologies into their learning

approach through using the LMS and other technologies to deliver the learning content and contact with students. Specifically, in order to achieve successful implementation of e-learning in the HE system, there is a need for more research on its usefulness as a learning approach and students' level of satisfaction with using it.

Literature review and theoretical framework

To investigate user attitude towards the integration of new technologies into the education system, different theories and models have been used. One of the most common models is the Technologies Acceptance Model (TAM) proposed by (Davis, 1989). The TAM emphasises the perceived ease of use and usefulness as an ultimate barometer to measure the extent to which users accept and use a new technology (Benbasat & Barki, 2007). Although the TAM has been criticised on a number of grounds, several studies have used it as a grounding framework in its original version to measure the adaptation of e-learning adoption in the education system (Ozkan & Koseler, 2009). Some researchers have used its concept and extended it based on valuable criticism and the type of research problem (Farhan, Razmak, Demers & Laflamme, 2019). Accordingly, several versions of the model have been developed, e.g. TAM2 by Venkatesh and Davis (2000); TAM3 by Venkatesh and Bala (2008); the Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh et al. (2012); General Extended Technology Acceptance Model (GETAMEL) by Abdullah, Ward & Ahmed (2016). However, some researchers have argued that the original and developed versions of the TAM are less useful to predict the relationship between user satisfaction and learning outcomes (Kamal, Shafiq & Kakria, 2020). Moreover, some researchers have claimed that the multi versions of the model have increased confusion about the TAM and do not, in fact, enable researchers to comprehensively measure the successful adoption of technologies (Benbasat & Barki, 2007). Yet, the model has been successfully used to explore the usefulness and usage of e-learning (Al-Fraihat, Joy, Masa'deh & Sinclair, 2020). Practically, it serves as a useful general framework to explore students' intention to use new technologies and the factors affecting their satisfaction with using them (Scherer, Siddiq & Tondeur, 2019). Moreover, the model is being used in the Arabian context where an understanding of users' acceptance of e-learning adoption is critical and complex (Al-Gahtani, 2016). Ozkan & Koseler (2009) argued that e-learning adoption requires both the consideration of technical issues and social issues. They proposed a model named the Hexagonal e-learning Assessment Model (HELAM). The model was developed to evaluate e-learning adoption utilising six dimensions, namely: student perspective; teaching staff attitude; technical issues; system quality; information quality; and service quality and supporting factors.

Evidently, several factors play a fundamental role in the adoption and integration of e-learning in HE, the most prominent of which are: students' and faculties' attitudes; self-efficacy; technological tools/applications being used; pedagogies; training provided; and the surrounding teaching and learning environment (Al-Samarraie, Teng, Alzahrani & Alalwan, 2018; Sun et al., 2008). Fundamentally, based on the harmony and complementarily between these factors, e-learning usage level can be promoted. Importantly, there is a need to verify these factors prior to implementing e-learning in the teaching and learning processes. As a result, the level of students' acceptance of using the e-learning approach in their learning is more likely to be increased (Keržič, Tomaževič, Aristovnik & Umek, 2019). However, it has been reported that there is a lack of students' acceptance of using e-learning to create a learning platform, especially in developing countries (Kim & Park, 2018).

In the KSA, several studies have been conducted to explore and examine e-learning integration into HE and the extent of acceptance of such usage. In this context, Alharbi (2013) investigated the level of integrating the e-learning approach into the HE learning system by reviewing published academic and industry literature. The results showed there was an acceleration in implementing the e-learning approach into the education system in all of the 43 universities under investigation. Specifically, the integration of e-learning into science-based courses was greater than the integration of e-learning into social science and art courses. Later, in a study that evaluated students' perceptions of the integration of e-learning into traditional learning systems at Tabuk University, Al-Juda (2017) found that the majority of the 500 participants in the study used and benefited from e-learning in both science-based and social science and art courses.

In a study examining the most effective educational approach on student achievement, Al-Qahtani & Higgins (2013), compared three types of educational approach, i.e. traditional teaching and learning (face-to-face), blended-learning, and e-learning (the virtual classroom) at Umm Al-Qura University in the KSA. A pre- and post-test was applied to three randomly selected groups. The study results showed a statistically significant difference between the three groups. Students who learnt using the blended learning approach performed significantly higher than those taught in traditional teaching and e-learning environments.

However, even though Saudi students welcome the use of modern technology in teaching and learning, they are not fully satisfied with its integration into the traditional learning system (Alshahrani, Saudagar & Alkhattabi, 2018). This, of course, will not contribute to achieving the desired goal of integrating technology into the HE traditional learning system. In general, almost 90% of Saudi universities use the Blackboard system to manage e-learning integration and provide students with learning materials (Aldiab, Chowdhury, Kootsookos, Alam & Allhibi, 2019). However, Saudi

universities are not always satisfied with the Learning Management System (LMS) being used to deliver and manage learning content (Binyamin, Rutter & Smith, 2019). Moreover, e-learning integration does not rely on using the learning management system (LMS) alone, since a variety of computer applications, social media and so on can be used as means to deliver and manage e-content and communication in/outside the classroom. However, it has been reported that service quality is one of the most critical factors affecting individual performance, technology acceptance, and actual use of technology to successfully integrate e-learning in Saudi universities (Al-Juda, 2017; Alhabeeb & Rowley, 2018).

In a study to examine the effectiveness of online presence on student performance in a blended e-learning course, Sharma et al. (2019) found a positive relationship between frequency and duration usage on students' final marks. The study's findings supported those reported in a number of studies that integrating technologies into the traditional learning system is more likely to have a positive impact on developing the educational learning environment and students' learning outcomes (Alharbi, 2013; Ashour, 2019). Specifically, when the affordances of the learning tools are integrated with an appropriate teaching approach (Hakami, 2013; Murillo-Zamorano et al., 2019). This offers an opportunity to use several tools to deliver and manage learning contents and activities.

One of the main challenges to the successful integration of technology into the education system is the significant role students' beliefs play in the degree of acceptance and success of its implementation (Rodrigues, Almeida, Figueiredo & Lopes, 2019). Therefore, it is very important to analyse students' perceptions towards their usage of e-learning. Alqahtani & Issa (2018) conducted a study to investigate students' views regarding the barriers that might hinder social networking adoption in HE in the KSA. The study found that students' attitude towards social networking usage in teaching and learning was not a main hindrance factor. Also, as reported by (Al-Juda, 2017; Alharbi, 2013), student attitude towards e-learning usage is not a main factor influencing e-learning integration into teaching and learning practices.

Based on the study results presented above, factors that affect student usage of e-learning can be divided into two main groups: factors related to the ways in which students are directed to use e-learning and its tools, and factors related to the technological tools/ applications provided to support e-learning integration. Research in this field is ongoing and, as indicated above, some study results have shown high satisfaction with using e-learning in the HE system while others have revealed several factors which affect students level of satisfaction with e-learning to support traditional teaching and learning

in Saudi universities (Alamri, 2019; Alhabeeb & Rowley, 2018; Alzahrani, 2017).

The study aims and target population

This study aimed to enrich the research output on factors related to students' usage of e-learning and its tools in the Saudi context. More specifically, based on students' point of view, the study sought to explore factors that may influence e-learning satisfaction level at Sharourah College of Arts and Science. This study therefore seeks to answer the following research questions: "At Sharourah College of Arts and Science, how is e-learning being used as a learning approach to support students' learning and what are the critical factors influencing its usage?" The target population was male and female students (n=2468) who studying at the Sharourah College of Arts and Science during the first semester of the academic year 2019.

Research design and data collection

To gain a detailed understanding of the research problem, mixed-methods were used to provide in-depth data relating to factors influencing students' satisfaction with the adoption of e-learning in the HE learning system, and how this learning approach can be improved to meet their expectations. Specifically, an explanatory sequential design was utilised to fully explain e-learning usage and to increase the validity of the study results (Creswell, 2014). First, the quantitative method (a survey utilising open and closed questions) was used to elicit students' point of view from a wide-ranging student population. In contrast, the second method (a focus group) was used to elicit significant details not captured by the survey and to explain in depth the quantitative results (Miles & Huberman, 1994).

Based on the literature review, specifically the work of (Kim & Park, 2018; Ozkan & Koseler, 2009), and the concept of the TAM (Davis, 1989), a detailed questionnaire was developed to create a better understanding of students' perceptions of their e-learning usage as a learning approach. The questionnaire consisted of 29 items in six sections namely: general information about students and their level of computer experience (CSE), actual weekly usage (AAU), the quality of service (SQ), perceived ease of use (PEU), perceived usefulness (PU), and behaviour intention to use e-learning (BI). A Likert-type scale ranging from 1 to 4 (never, rarely, sometimes, always) was used to measure students' usage (section two), while a Likert-type scale ranging from 1 to 5 (strongly disagree, disagree, neither agree nor disagree, agree, strongly agree) was used to elicit students' responses in other sections (sections 3 to 6). To validate the questionnaire's effectiveness, two professors were asked to evaluate it and a pilot study was carried out with 15 students. Based on the professors' comments and questionnaires collected from the pilot study, 4 statements were dropped due to similar measurement and adjustments

were made to the content of several other questions. The questionnaire was translated into Arabic by the researcher. The translation was reviewed and compared with the original version by other Arabic researchers who were experts in English. Afterwards, the questionnaire was designed in an online format and the link was sent to students. The questionnaire was available online for one month and the researcher encouraged students to participate.

For the focus group, purposive sampling was used to select participants based on their experience, educational background, and interest in e-learning. No female students were selected due to cultural constraints. A sample of eleven male students (n=11) were invited to attend focus group discussions. The focus group questions were drafted based on a review of the literature and initial analysis of the questionnaire responses. Questions were used to focus discussions and conversation, rather than as structured questions (Miles and Huberman, 1984). The aim was to stimulate participants to express and explain their opinions in more detail based on their learning practices in order to ascertain why, when and how best to implement educational technologies in the education system. Three focus group discussions were carried out. Three students participated in the first and 5 in the second, for around half an hour. The final focus group with three students lasted for 48 minutes and was digitally audio-recorded and transcribed to help in the analysis process.

Ethical approval was obtained from Sharourah College of Arts and Science to conduct the study and collect the data required. Participants were informed about the nature of the study and their right to access the results. They were also assured of the confidentiality of the information they gave and that their name and other identifying information would be withheld when using direct quotes. Focus group participants were informed about their right to terminate their participation in the focus group discussion or withdraw from the study at any time. In order to anonymize participants, a letter and number was used to denote the number of the focus group and a second letter and number to indicate the student in the focus group, e.g. "F1S1" indicated the first focus group and the first student in it.

Data analyses

SPSS Statistics 26 Fixpack 1 was used to analyse the quantitative data obtained from the survey. Content analysis was used to analyse qualitative data obtained from the three focus group discussions. Coding was guided by a coding scheme derived from the literature review. Initially, a list of codes was developed, and new codes were added to the list. Then, codes with similar concepts were merged into one category. The categories were used to cross-check quantitative

results in order to increase the rigor of the investigation and reach accurate conclusions (Creswell, 2014).

Findings & Discussion Error! Reference source not found. presents the distribution of respondents by gender, age, subject, type of computer they mostly used, and type of Internet they mostly used outside the College. Of the 135 respondents, 51.1% (n=69) were female and 48.9% (n=66) were male. Almost 83% (n=112) of participants studied Arabic, Computer Science, Islamic Studies, and English. This may have been due to the fact that at the time of the study, a few students at the College were studying Chemistry, Childhood Studies, and Mathematics. The results also indicated that almost three-quarters (n=93) of students using their own Smartphone to learn through the e-learning system whereas only six used their own personal computer. At the same time, 5.2% (n=7) did not use any type of computer outside the College. Further, 80.75% (n=109) usually used 3G or 4G to access the Internet outside the college.   Whereas, only one student reported he/she do not have skills to use computer.

Table 1: Demographic background of students

Gender	Male	Female				
Frequencies	66	69				
Percentage	48.9	51.1				

Subject	Islamic Studies	Arabic	Computer Science	English	Chemistry	Childhood Studies	Mathematics
Frequencies	25	34	30	23	12	6	5
Percentage	18.5	25.2	22.2	17.0	8.9	4.4	3.7

Type of computer	Notebook	Personal computer	Smartphone	I do not have
Frequencies	29	6	93	7
Percentage	21.5	4.4	68.9	5.2

Type of Internet outside the college	DSL	3G or 4G	I do not have
Frequencies	22	109	4
Percentage	16.3	80.7	3.0

Computer self-efficacy	I do not have skills to use computer	Fundamental skills	Basic computing and application skills	Advanced computing and application skills
Frequencies	1	23	58	53
Percentage	0.7	17.0	43.0	39.3

Reliability was evaluated by assessing the internal consistency of the items representing each factor using Cronbach's alpha. Table 2

shows that the value of Cronbach's alpha was greater than 0.7 for all five questionnaire sections, thereby confirming the reliability of the questionnaire items. Table 2 also shows a sample of questionnaire items used as measures in each section and the number of items in each section.

Table 2: Sample of questionnaire items with Cronbach's alpha for each section

Questionnaire section	No. of items	A sample of questionnaire items	Cronbach's alpha
Average weekly usage (AAU)	**8**	**Download information** **Live discussion with my tutor**	**.822**
Service- quality (SQ)	**4**	**The information available on the Deanship of e-learning website helps me to use the e-learning system** **The Internet speed does not hinder my learning at the college**	**.701**
Perceived ease of use (PEU)	**3**	**The e-learning system interface (the blackboard) is easy to use** **I can easily use the virtual classroom system through the Blackboard**	
Perceived usefulness (PU)	**3**	**The e-learning system is useful to communicate with the course lecturer** **The e-learning courses' contents are useful to support my learning**	**.747**
Behaviour intention to use e-learning (BI)	**4**	**I would like to share my experience learning with an e-learning system with others** **I hope that all courses are given through the blended e-learning system**	**.800**

Table 3 shows that the mode of different types of usage was 3, indicating that students used e-learning to perform different learning activities sometimes during a week. Students mostly participated in a course topic discussion and sent homework to their tutor. These items had a mean of 3.7 and 3.27; and Std. deviation of .848 and .704, respectively. The lowest average weekly usage of the e-learning system was to "take exams" followed by "live discussion with my tutor." These items had a mean of 2.59 and 2.84; and Std. deviation .832 and .948, respectively. Although these last two activities had the lowest average usage per week, it was nevertheless a high usage level when compared with their usage in the traditional learning system

where live discussions with tutors and taking exams do not usually take place on a weekly basis. This, of course, could affect the overall mean of the AAU section. However, the activities' usage level was still high when looking at the mean and mode of all activities and actual weekly average wage.

Table 3: Descriptive Statistics for Weekly average usage of different types of e-learning

Type of usage	Weekly average usage	Never	Rarely	Sometimes	Always	Mean	Std. deviation	Mode
Download information	N	3	22	74	36	3.06	.720	3
	%	2.2	16.3	54.8	26.7			
Communicate with the tutor	N	10	31	48	46	2.96	.934	3
	%	7.4	23.0	35.6	34.1			
Contact colleagues on the course	N	9	24	55	47	3.04	.893	3
	%	6.7	17.8	40.7	34.8			
Participate in a course topic discussion	N	8	20	62	45	3.7	.848	3
	%	5.9	14.8	45.9	33.3			
Take exams	N	9	59	46	21	2.59	.832	2
	%	6.7	43.7	34.1	15.6			
Send homework to the tutor	N	1	17	62	55	3.27	.704	3
	%	.7	12.6	45.9	40.7			
Participate in a virtual classroom with the tutor	N	5	16	65	49	3.17	.778	3
	%	3.7	11.9	48.1	36.3			
Live discussion with my tutor	N	17	22	62	34	2.84	.948	3
	%	12.6	16.3	45.9	25.2			

Weighted mean for all items in this section =2.99 with Std. deviation=.558.

To undertake further descriptive statistical analysis, bivariate correlation analysis was carried out to examine correlations between SQ, PU, PEU, BI and AAU. The analysis found a significant correlation between all the factors, with a Pearson correlation value not less than .436 at the 0.01 level (2-tailed). The significant relationships can be seen in Table 4. The table also shows that service quality (SQ) had the greatest influence on both perceived usefulness (PU) and average actual usage (AAU) with .798 and .536 at the 0.01 level (2-tailed), respectively. The table also reveals a significant correlation between PU and PEU with a value of .528. A significant correlation between PU and average actual usage (AAU) is also revealed with a value of .446 at the 0.01 level (2-tailed).

Table 4: Correlations between SQ, PU, PEU, BI and AAU

Pearson Correlation	SQ	PEU	PU	BI	AAU
SQ	1	.506**	.798**	.436**	.536**
Sig. (2-tailed)		.000	.000	.000	.000
N	135	135	135	135	135
PU	.798**	.528**	1	.477**	.446**
Sig. (2-tailed)	.000	.000		.000	.000
N	135	135	135	135	135

**. Correlation significant at the 0.01 level (2-tailed).

Results from analysing the qualitative data were grouped into three categories, namely: Lack of content resources, IT infrastructure & support, and Usage & Teaching pedagogy. These findings along with descriptive findings are presented below.

Lack of content resources
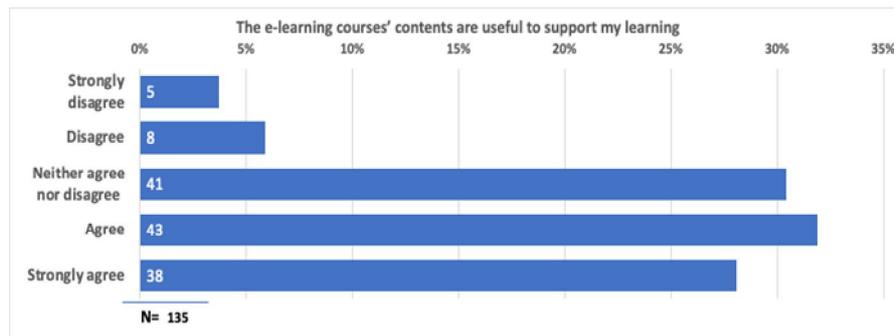
Figure 1: Students perceptions of the usefulness of e-learning courses' content

Students reported that teachers in most lectures uploaded content in PDF format to the Blackboard system. Although they found it useful to obtain course materials, they were struggling to obtain them through the LMS. Student F3S1 said, *"It's difficult to use my smartphone all the time to read the PDF files, so, I download and print them"*. His action did not replicate that of most students who participated in the focus group discussions. Almost three quarters of students reported they mostly used their smartphones to learn (see Table above). They contended that it would be useful if lesson material was uploaded in

several forms e.g. a video explained the content in detail and was followed by learning assessment through the LMS. Student F3S2 stated, "...*we need feedback for our understanding of the lesson. If a teacher sends us an assessment with no mark through the Blackboard system this will be more than useful*". Students also indicated that although the LMS allowed tutors to record virtual lessons, a few of them uploaded to the Blackboard system. F1S2 said, "*At home I always had an Internet disconnection when I logged into the virtual classroom, so I misses some part of the lesson.*" Figure 1 shows that most students (60%) agreed that e-learning courses are useful to support" their learning.

However, the lack of resources affected their attitude to using e-learning. As reported by F2S2, "The *LMS helps us to easily find a lesson's material. But it helps us to learn and study better, when all the tutors use it to upload lessons' materials*". This comment might also explain why, as can be seen in Figure 1, 30.4% of students were neither agree nor disagree as to the usefulness of courses' contents using e-learning.

IT infrastructure & support

Most students participating in focus group discussions indicated that IT infrastructure was one of the most important issues affecting e-learning usage when at the college campus. While as seen in Figure 2, most students (N=94 out of 135) did not view the Internet speed as an obstacle to their learning at the college, they reported several other issues related to IT infrastructure as hindrances to it. F3S1 said, "*The College provides a great Internet service with high speed, but we only use it through our smartphones. There is a place where there is a computer available for us to use, but only in our free time between classes*". F3S3 added, "*The only place available is library and there are only a few computers*". To tackle this problem, students suggested that more devices should be provided and made accessible to students. F2S4 stated, "*The Internet speed at Sharourah is very low in most places although we come to the college to use the Internet to fulfil our learning tasks*". Students reported they sometimes used the computer labs to access their account. However, most of the time the computers were not working efficiently, and they did not get support from IT staff to get them working.

As reported by students, support from the IT or e-learning deanship is essential to solve technical problems with the Blackboard system. Students claimed that they missed several virtual classes because of technical problems with the system. F3S1 reported, "*Many times I've had to drive to the college to meet the IT manager or person delaying the Blackboard system to help me log into it*". From Figure 2 it is clear that technical problems was the factor most affecting students' usage of e-learning since more than half of students (N=76

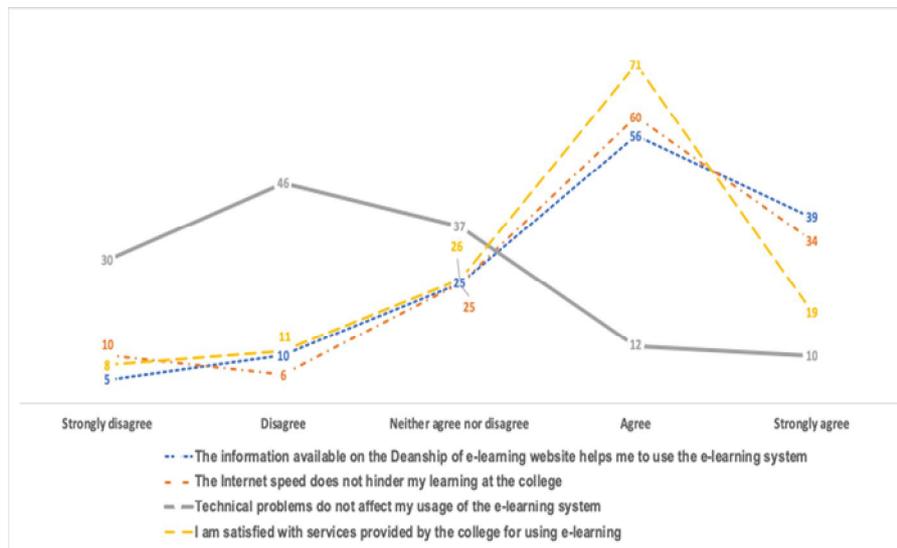out of 135) concurred that technical problems impacted negatively on their e-learning usage.

Figure 2 : Students' Perceptions of Service Quality

Usage & Teaching Pedagogy

As indicated in

Table 3 above, students reported different types of weekly usage which suggested they were utilising e-learning based on the learning strategies of using e-learning at the university. One of these strategies is to make some courses available online only with no face-to-face interaction (E-learning Deanship, 2020). This might be a reason for the frequent weekly usage of e-learning since several e-courses were being run at the time of the study. However, students did not provide examples of e-learning usage different from those included in the survey. Yet, students participating in the focus group pointed to other types of learning activities and applications being used to support learning in an e-learning environment. WhatsApp was the most common tool mentioned by students. It was mainly used for sending learning materials and as a means for further discussion about lessons. Student F1S1 stated, "WhatsApp is helpful to communicate with tutors and students". A Telegram app and learning platform, e.g. Rwag, was also being used by some tutors to support students' learning as reported by students. However, several students indicated that they found WhatsApp and Telegram much easier to use than the blackboard system. This might explain why only 40% of the students agreed that they could easily use Blackboard to learn and 33% of students were
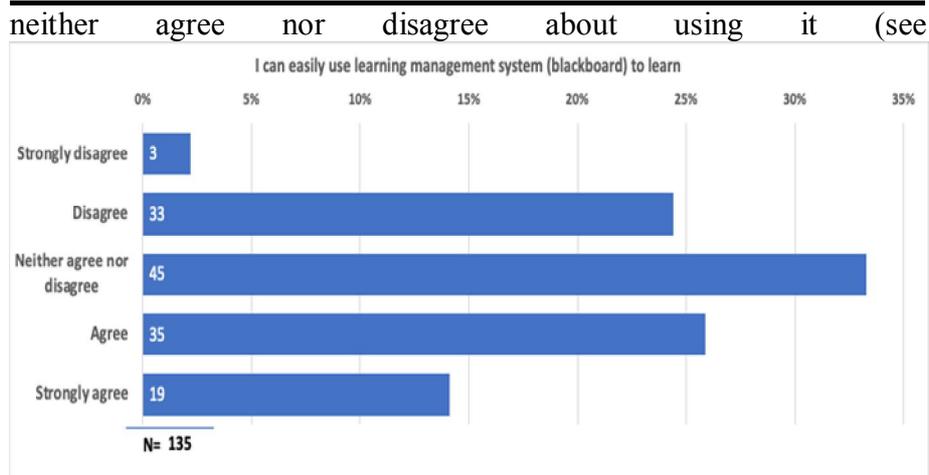
neither agree nor disagree about using it (see

Figure 3). According to F3S2, "*The Blackboard system is not a good tool to support our learning since it takes time to log on …… Using WhatsApp, you just click on the file and download it*". Based on most students' views, they found WhatsApp more helpful for communicating with their colleagues and tutors. Nevertheless, students seemed to prefer to attend the face-to-face classroom rather than take e-courses. In their view, the latter made it difficult to understand scientific topics. Most agreed that "*In the face-to-face class it is faster to ask a question and get the answer*". In their view, the potential of e-learning to support them to learn was more likely to be achieved when attending a theoretical e-course not a scientific one.
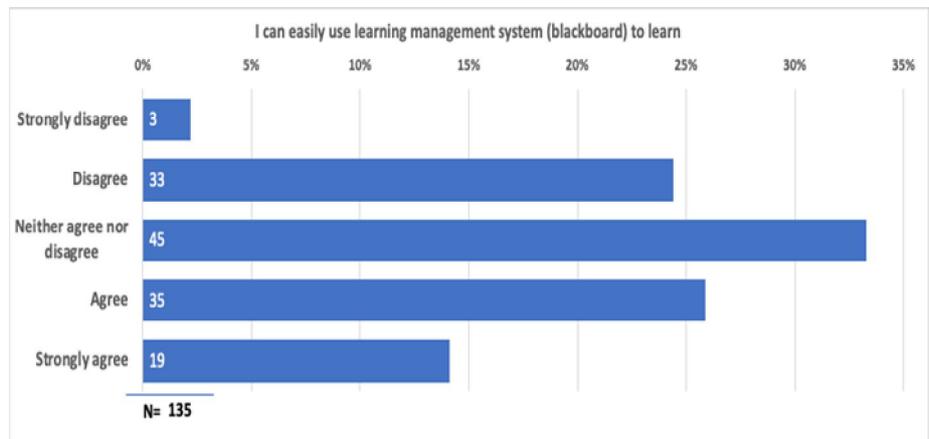

Figure 3 : Students' Perceptions of using Blackboard for learning

Students suggested some ways in which tutors should improve the e-learning environment. In their view, the more tutors used it to increase the interaction between students and tutors, the more they would see it as helpful for them to be involved in e-courses in the future. Student F2S3 reported, "*In the absence of physical interaction in the class, tutors need to use more learning tools to support our*

learning…. the Blackboard alone will not help us to learn". In other words, in their view the usefulness of e-learning's tools was dependent on how they were implemented in the learning system and used to support learning tasks. This supported the result obtained from analysing the quantitative data. From Table 5 it can be seen that behavioural intention to use the e-learning approach was affected by perceived usefulness (PU) with a value .477 at the 0.01 level (2-tailed).

Table 5: Correlation between SQ, PEU, PU, BI and AAU

Pearson Correlation	SQ	PEU	PU	BI	AAU
BI	.436**	.226**	.477**	1	.264**
Sig. (2-tailed)	.000	.008	.000		.002
N	135	135	135		135

**. Correlation is significant at the 0.01 level (2-tailed).

This research sought to examine the constructs of e-learning as a learning approach utilising a survey instrument and focus group interviews to investigate critical factors influencing its adoption. The results showed a significant relationship between SQ, PEU, PU, BI and AAU. However, students' perception of service quality (SQ) was the most significant factor influencing their e-learning usage. Although students were satisfied with SQ in general, technical problems with the LMS was one of the obstacles hindering their usage of the e-learning system. This finding supports that reported in previous research studies, e.g. (Alhabeeb & Rowley, 2018; Al-Juda, 2017; Alsabawy, Cater-Steel, & Soar, 2016; Binyamin et al., 2019; Keržič et al., 2019; Kim & Park, 2018). Pham, Limbu, Bui, Nguyen & Pham, (2019) found service quality to be one of the main factors positively influencing student satisfaction with e-learning and, in turn, leading them to use it in daily learning practice.

The study showed students were using the e-learning approach to perform some learning activities. However, they were using e-learning only to fulfil the tasks being set by their tutors. Moreover, it seemed that students did not view e-learning as a better learning approach to support their learning in all topics. This, of course, would affect their willingness to use e-learning as a learning approach in the future. According to Fredricks (2011), willingness to use e-learning can be increased when students develop strong relationships with their teachers; teachers support students; autonomy; teachers give clear feedback to students; and learning activities and tasks are challenging and interesting.

Further, to successfully implement e-learning and increase students' satisfaction with it, there is a need to pay more attention to the quality of e-course technological tools, and reduce the lack of interaction when compared with that in the face-to-face classroom (Sharma et al., 2019). There is also a need to develop coherent and structured learning materials that stimulate students' desire to learn. The more learners interact with others, the higher the perception of e-learning satisfaction (Tawafak, Romli, & Arshah, 2019).

Based on qualitative analysis results, students reported a direct impact of IT infrastructure on their e-learning usage in the college. Alsabawy et al. (2016) found reliable IT infrastructure to be a basic construct to enhance perceived usefulness. They concluded that the quality of the e-learning approach and how it is implemented in the traditional learning system are major factors influencing learners' usage of e-learning to support their learning practice. Thus, the IT and e-learning Deanship needs to pay more attention to IT infrastructure in order to increase the adoption of e-learning in the learning system.

Implications of the Study Findings

The aim of this study was to understand how e-learning is being used by students as a learning approach to support their learning. Factors that might affect their usage and satisfaction with its integration were also explored based on the concept of Technologies Acceptance Model and utilising a survey questionnaire developed by other researchers incorporating items related to the scope of this study. The survey instrument was validated prior to applying it.

The results corresponded with those reported in other related research that service quality significantly influences students' perceptions of the usefulness of e-learning and its frequency of usage. Hence, although students were satisfied with service quality in general, there is a need to resolve IT infrastructure problems and thereby increase support for e-learning at the college, e-learning systems can then offer students more opportunities to positively engage in e-learning activities and thereby better obtain knowledge and improve learning outcomes.

This study provides important information regarding students' usage of the e-learning approach in a broad context and identifies factors that lead students to use it and their intention towards its future usage. Thus, the reported findings of this study may help those who develop technical tools to improve learning systems and develop the context of using these tools and applications in practice.

Study Limitations and Recommendations for Further Study

This study was conducted to examine students' e-learning usage within a certain context using a mixed research methodology. It provided new knowledge within this context. However, the results cannot be generalised to another context. Nevertheless, the study findings and the developed questionnaire can be used by other researchers as a basis for examining e-learning usage in other institutions.

Further research is needed to provide insight into users' adoption of e-learning and to gain new insight into how this learning approach can be improved to meet students' needs and improve their learning outcome. It would also be valuable to investigate the extent to which this study's findings are replicated in other learning contexts, bearing in mind the aim of this study was not to test or develop a new model of factors predicted to measure the usefulness of, or satisfaction with the e-learning system.

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