Faculty e-Learning Adoption During the COVID-19 Pandemic: A Case Study of Shaqra University

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Abstract—e-Learning can generally be applied by employing learning management system (LMS) platforms designed to support an instructor to develop, manage, and provide online courses to learners. During the COVID-19 pandemic, several LMS platforms were adopted in Saudi Arabian institutions, such as Moodle and Blackboard. However, in order to adopt e-learning and operate LMS platforms, there is a need to investigate factors that influence the capability of faculty to utilize e-learning and its perceived benefits on students. This paper examines how training support and LMS readiness factors influence the capability of faculty to adopt e-learning and student perceived benefits. A quantitative research method was conducted using an online questionnaire survey method. Research data was collected from 274 faculty members, who used Moodle as a main LMS platform, at Shaqra University in the Kingdom of Saudi Arabia (KSA). The results reveal that training support and LMS readiness have a positive influence on the faculty's capability to adopt e-learning, which leads to enhancing students' perceived benefits. By identifying the factors that influence e-learning adoption, universities can provide enhanced e-learning services to students and support faculty through providing adequate training and powerful e-learning platform.

Keywords—e-Learning; Learning Management System (LMS); distance learning; LMS readiness; training

I. INTRODUCTION

The COVID-19 pandemic has affected education worldwide [1]. Universities have adopted e-learning as an alternative to conventional ways of learning as its relevance have never been as significant as during this pandemic. E-learning can generally be implemented by using a learning management system (LMS), which is a web platform to manage all online e-learning processes and course materials for students and faculty [2]. Most of the Saudi universities provide Blackboard LMS for their teaching and learning activities [3], [4], while several other Saudi universities, such as Shaqra University, use open source LMS like Moodle platform.

Given LMS' enormous benefits in education during the COVID-19 pandemic, many researchers have examined the adoption of e-learning systems and investigated the key factors that can increase its adoption at their institutions. These studies focus on varied e-learning perspectives such as student adoption's evaluation. Reference [5] explores a small interpretive case study that finds students realistic and social perceptions.That have impacted positively by habitual activities. It recommends that faculty should engage informal social platforms such as Facebook and WhatsApp in e-learning approaches. Meanwhile, Reference [6] evaluates the student academic performance using organizational aspects and finds

that there are positive relationships between organizational aspects and student's performance during the emergent remote teaching. Reference [7] propose a new adoption framework for e-learning, grouping various characteristics from information system success and diffusion of innovation (DOI). Applying the framework on students' data results in a significant relationship of these characteristics with e-learning adoption. Reference [8] examines four factors from the perspective of students such as ease of use and technical usage of LMS in order to investigate the student's behavior toward using the LMS.

To reach success factors that can affect the e-learning activities, various approaches were used. Theoretical frameworks can be used to analyze the challenges facing e-learning adoption. For example, unified theory of acceptance and use of technology (UTAUT) and diffusion of innovation theory (DOI) are employed to rationalize challenges in e-learning activities [9]. Researchers extend the technology acceptance model (TAM) with factors of knowledge sharing and acquisition, building a new model to assess e-learning adoption [10]. Advanced techniques in artificial intelligence (AI) have also been used to examine the significance of selected factors [11]. Nevertheless, there is limited research investigating several factors, e.g. technical support, relevant to increase the faculty productivity of the LMS benefits [12].

In order to adopt e-learning and operate LMS platforms, it is important to realize the user's perspective toward e-learning adoption [13], so faculty members certainly have major roles in the execution of e-learning activities. There is a need to examine factors that influence the capability of faculty to adopt e-learning and its perceived benefits on students. Thus, this study fills the literature gap by investigating the relationship among faculty training support, LMS readiness, the capability of faculty to adopt e-learning, and students' perceived benefits in the context of one university in Saudi Arabia: Shaqra University.

This paper is organized as follows. Section II provides a literature review, Section III describes a research model, Section IV presents the research methodology, Section V shows the research results, Section VI offers a discussion, and, finally, Section VII concludes the paper.

II. LITERATURE REVIEW

This research reviews four key research areas: training support, readiness of the LMS, capability to adopt e-learning, and students' perceived benefits. These research areas are used

to develop the theoretical base for the research's hypotheses and model in the following subsections.

A. Training Support

Training support that is provided by institutions, such as readable guides and training videos, definitely enhance faculty's capability to interact with e-learning tools and apply course design standards. Researchers have found the importance of supporting faculty in teaching online by, for example, providing online education resources and training, especially on ICT skills, e-learning tools, and course design abilities.

Authors in [14] identify the lack of technical support systems as one of the main barriers an instructor may experience. Teo and others [15] also show that the quality and the accessibility of online education resources have shaped the effectiveness of e-learning, which encourage users to adopt and utilize e-learning systems. Furthermore, researchers on [12] found that the more the institution provides support, the higher the confidence and capability of faculty is in using LMS to accomplish their work. March and Lee in [16] find that a university faculty have gained technical knowledge after going thorough a training program. The LMS capability test, for instance, shows that post-test correct responses have increased nearly 160% than pre-test. Adequate training from institution as well as institutional encouragement and support have been suggested in [17] as a factor to raise faculty motivation towards the use of e-learning systems.

B. Readiness of the LMS

The LMS readiness presents the readiness of all aspects that are part of the e-learning environment. There are number of factors might affect the readiness of LMS adoption in various dimensions e.g. technology, user proficiency, motivations, organization support. Factors can be based on behavioral patterns studying multiple constructors of readiness to accept changes, to change beliefs and to resist changing [18]. Successfully preparing the technological requirements of LMS is essential in increasing its adoption [19]. Researchers have discussed the technical factors from different perspectives. A theoretical base based on the technology acceptance model (TAM) in [20], [21], where others from analyzing perceptive such as [19] focusing on the importance of user-support technical. Several characteristics can be considered to measure the quality of readiness software systems, especially in open-source systems such as the LMS Moodle system used for this case study [22]. However, we found that the usability characteristic as defined by [22] covers several important factors such as learnability, operability, accessibility, and user interface. Thus, we tailored our survey specifically to the usability factors that match our requirements.

C. Capability to Adopt e-Learning

Many studies discuss how the desire and technical capability of faculty members impact their successful adoption of e-learning. [14] identified faculty resistance to change, lack of time to develop e-courses, lack of e-learning knowledge, and lack of motivation as main barriers in adopting e-learning. Also, the acceptance to change and the adoption of Blackboard platform in [18] is affected by various variable, such as resistance to change and individual differences. Moreover, [12] identified the ability to use LMS for teaching as LMS self-efficacy. The paper showed that the higher LMS self-efficacy the higher faculty perceived benefits. [23] also reveal that unwillingness, disinterest, and demotivation are main internal challenges that hinder e-learning uptake.

Adopting LMS and e-learning tools has a positive influence on students' perceived benefits and satisfaction. Engaging students with e-learning tools has a positive impact on their performance and score [24], [25]. [26] revealed the positive impact of adopting blogs for learning on students perceived satisfaction. Also, providing students with supported e-learning apps through their own tablet devices found to be useful for students in the learning scenario [27].

The level of development of e-learning in an educational institution helps overcome faculty challenges in adopting e-learning. Al Gamdi and Samarji [28] found that the most-cited barriers in adopting e-learning is the external barriers such as lack of technical support in the university, training on e-learning, institutional policy for e-learning, and Internet access in universities. The author in [29] evaluated e-learning readiness and showed that improvement in the field of e-learning, like arranging workshops and resetting the infrastructure of the organization create a positive attitude towards adopting e-learning.

D. Students' Perceived Benefits

1) Cognitive Skills: Cognitive skills (CS) is an important concept, which refers to the level of the knowledge a student gains [30]. The level of the gained knowledge indicates the improvement of a student's skills and the effectiveness of the teaching methods used. Researchers have considered a number of factors affecting CN. These factors varied from basic factors e.g. student's learning behaviors [31], students' duties [32] to advance factors, e.g. travel schedule and outing schedule [30]. Current research in the field of CN that studies e-learning adoption shows adequate contributions. However, we believe that there are more CN factors to be investigated. In our research, we focus on four CN factors: student's IT skills, student's self-learning, student's effective communication with faculty, and student's effective communication with classmates.

Relative research has defined the concept of student's IT skills and self-learning under the term self-efficacy, which refers broadly to the efforts and capabilities of a student toward executing and organizing successfully required course tasks [12], [33], [34], [35]. In this research, student's IT skills (SITS) factor refers to the student's technical ability to use the LMS software effectively. The student's self-learning (SSL) factor represents the motivation of the student in using the course 's learning resource' to learn from the faculty's perspective. Effective communication is the volume of two-way electronic communication between one or more parties. Lastly, student's effective communication with faculty (SECF) refers to announcements, audio/video message and comments, online discussions, and e-mail exchanged between students and faculty [36].

There are several studies in the field of exploring students' adoption of e-learning systems. These studies have investigated
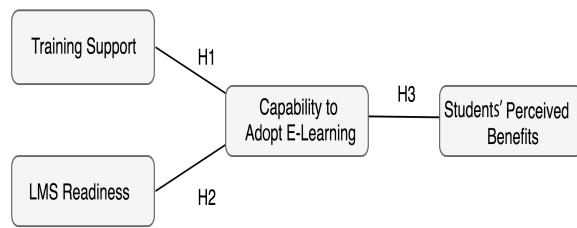
Fig. 1. Research Model.

students' adoption from different perspectives such as knowledge sharing [10], [37], [19] qualitative [19], and quantitative [36], [38]. [10] studies the results of acquisition and sharing of the knowledge on the students' behavioral intention to adopt e-learning systems. It employs the acquisition and sharing of the knowledge as extensions of the technology acceptance model (TAM). The results show that the factors considered on the studies have significant effects on the student's e-learning adoption. [38] focus on studying students' intention to use LMS and the element of attitude strength.

These studies have applied their experiments and surveys on data sets that have been collected from students' feedback. In contrast, in this research, we have evaluated the students based on specific factors collected from faculty's perspective.

2) Academic Achievements: The factors that might measure the student academic achievements (SAA) are classified into three domains: traditional, psychological, and students' demographic characteristics [31]. In this research, we define three traditional and two psychological factors: student's remote attendance (SRA), student's completed assignments (SCA), student's grade-average (SGA), student's e-interactions with lectures (SEIL), and student's e-interactions with resources (SEIR). This research has derived these factors as the most frequently used factors in recent literature [39], [40]. Although the traditional factors are numerically accurate, we adopt a scale-base in order to unify measurements.

The SRA presents actual attendance of registered students in a course from the point of view of the faculty at scale base. The SCA is the total of completed assignments in a specific due date for all registered students in a course. The SGA refers to the average final grade achieved by students in a course. The SEIL is the communications among registered students and course's faculty, while the SEIR is registered students' utilization of the online resources of a course.

III. RESEARCH MODEL

The proposed research model examines the impact of training support and faculty LMS readiness on the capability of faculty to adopt LMS. It also examines students' perceived benefits, as described in Fig. 1.

Training support is defined as the training provided to faculty by organization, which includes technical, instructional, and pedagogical training. Many educational institutions provide various training programs, digital guides, and awareness publications to, for example, support the capability of faculty to deal with e-learning tools, course design, and teaching strategies.

Although LMS is widely considered in institutions, some educational institutions, especially before the COVID-19 pandemic, did not offer enough training programs and instructions on using LMS tools and course design. However, faculty embers who utilize e-learning tools depend significantly on the support from technicians in employing different e-learning tools and course design [12], [16]. The faculty's capability to adopt e-learning is defined as the extent to which faculty members believe that they have enough efficiency and intention to adopt e-learning and its technical tools in education. Accordingly, a sufficient training support provided by an organization can better aid the faculty members capability and aspiration to adopt e-learning in education. Thus, the following hypothesis is proposed:

Hypothesis 1 (H1). Training support provided by an institution has a positive effect on faculty capability to adaopt e-learning.

LMS readiness is defined as the extent to which faculty members believe that the LMS in their institution is sufficiently prepared, accessible, effective, and has a friendly interface to support future use. In other words, the higher quality of LMS in terms of availability, system efficiency, and ease of use is a main motivation for faculty to adopt e-learning. It has been identified that quality of system services have a positive influence on users perceived value, which also has a positive influence on users intention and adoption of e-learning [41]. This study is intended to examine the effect of LMS readiness on the capability of faculty members to adopt e-learning. Thus, the following hypothesis is proposed:

Hypothesis 2 (H2). The LMS readiness has a positive effect on faculty capability to adopt e-learning.

Authors in [42] have found that engaging students in the e-learning process with developed e-learning teaching strategies is has a statistically significant impact on students' performance and satisfaction by comparing with traditional learning. Students' perceived benefits is defined as the extent to which a student is expected to benefit from the faculty's capability to apply e-learning regarding academic achievement and cognitive skills. This study is intended to examine the capability of faculty members to adopt e-learning on students' perceived benefits from the point of view of faculty members. Thus, the following hypothesis is proposed:

Hypothesis 3 (H3). The faculty capability to adopt e-learning has a positive effect on students' perceived benefits from the point of view of faculty members.

IV. RESEARCH METHODOLOGY

This paper shows how training support and LMS readiness influence the capability of faculty to adopt e-learning, which influence the students' perceived benefits. This study was carried out to measure the variables and test the hypothesis. The survey structure and its constructs will be presented in Section IV-A, then data collection and the demographic factors of the survey respondents will be discussed in Section IV-B.

TABLE I. RESULTS OF THE DESCRIPTIVE STATISTICS OF ALL ITEMS IN THE CONSTRUCTS (N = 274).

Construct	Item	Mean	Std.Dev
Training Support (TS)	What is your assessment of training support in terms of:		
	- TS1: Your knowledge of accessing it	3.34	1.09
	- TS2: Your Knowledge of it	3.61	1.08
	- TS3: Its Quality	3.37	1.10
	- TS4: Its Diversity	3.38	1.16
LMS Readiness (LMS-R)	How do you evaluate LMS in terms of:		
	- LMS-R1: Accessibility	3.79	1.05
	- LMS-R2: Efficiency	3.85	0.98
	- LMS-R3: Friendly interface	3.62	1.06
	- LMS-R4: Continuous use	3.61	1.02
Capability to adopt e-learning (CA-EL)	How do you rate e-learning in terms of your:		
	- CA-EL1: Satisfaction level	3.53	0.99
	- CA-EL2: Desire to use	3.87	1.08
	- CA-EL3: Technical capability	4.09	0.92
	- CA-EL4: Level of development	3.78	1.05
Students' Perceived Benefits (SPB)	How would you evaluate e-learning in terms of supporting students in the following:		
	- SPB1: Self-learning	3.38	1.04
	- SPB2: Communication with classmates	3.62	1.03
	- SPB3: Communication with faculty	3.68	1.04
	- SPB4: Technical capability	3.18	1.09
	How do you rate students' discipline when applying e-learning in terms of:		
	- SPB5: Commitment to attend	3.70	0.94
	- SPB6: Interaction in lectures	3.14	0.99
	- SPB7: Interaction with e-resources	3.15	1.04
	- SPB8: Completion of assignments	3.66	0.90
	- SPB9: Students' grade	3.80	0.91

A. Survey Structure

An online questionnaire survey has been prepared and distributed among Shaqra University faculty members. The first part of the survey collected some personal data from the participants, such as their gender, department, and college. The second section of the online survey contains four constructs that are broken down by items and is shown in Table I.

The first construct has four items to assess the level of training support from the university to faculty. The second construct has four items that allow faculty to evaluate LMS readiness. The third structure also contains four components that give the opportunity for faculty members to assess e-learning. Finally, the fourth construct has four items that faculty members answer to assess the extent to which a student is expected to benefit from the faculty's capability to adopt e-learning. The survey consists of a five-point Likert scale with very satisfied (5), satisfied (4), moderately satisfied (3), dissatisfied (2), and very dissatisfied (1).

B. Data Collection

The questionnaire was administered to faculty members of Shaqra University. First, a cross-sectional online questionnaire was distributed among all faculty members of Shaqra University on January 2021 through their formal emails. Shaqra University has only provided Moodle as the main LMS since the beginning of 2019 and did not provide any other LMS, such as blackboard, before it. The study was conducted on faculty members who completed the online questionnaire also on January 2021. The faculty members officially used Moodle as the main LMS during the first year of the COVID-19 pandemic. They used it to manage virtual classes, discussions, assignments, and exams among others. The Moodle LMS has

been used at Shaqra University limitedly before the COVID-19 pandemic, but the number of users increased remarkably right when the COVID-19 pandemic started. As a result, the questionnaire was distributed after a year of using e-learning in the university. All survey respondents were considered because they were able to finish the questionnaire successfully.

V. RESULTS

In this section, the frequency of respondents and a descriptive statistics is explained to show if variables are normally distributed and have adequate reliability.

The study collected data from faculty members of Shaqra University. The collected data was analyzed and examined using statistical analysis system (SAS) program. Among 274 faculty members that participated, 151 (55.1%) were males and 123 (44.9%) were females. Table II shows the demographic for respondents based on their professional fields. The table shows that most of the respondents, 98 (35.8%), were from science and engineering fields, and among respondents in these fields, 53 (54.1%) were males and 45 (45.9%) were females.

Table I shows the mean and standard deviation of all constructs' items. Among the four items of the training support assessments, faculty knowledge about training support materials gained the highest mean among assessment items of training support (3.61 ±1.08), while the knowledge of how to access materials gained the lowest mean (3.34 ± 1.09). The last three items have very close means. Among items related to LMS readiness, efficiency of LMS Moodle (3.85 ±0.98) and accessibility (3.79 ±1.05) rated as the most important factors determining LMS readiness, according to faculty members, while the friendly interface (3.62 ±1.06) and continues use items(3.61 ±1.02) were rated as the lowest

TABLE II. DEMOGRAPHIC DATA OF RESPONDENTS' PROFESSIONAL FIELDS

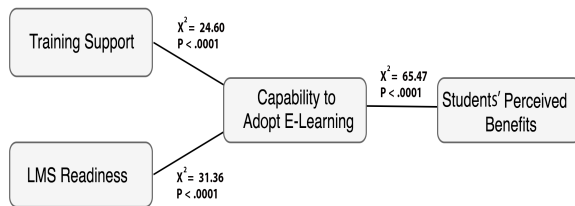| Fields	Female	Male	Total
Science and Engineering	45	53	98
	45.9%	54.1%	35.8%
Humanities	27	29	56
	48.2%	51.8%	20.4%
Business Administration	21	34	55
	38.2%	61.8%	20.1%
Medicine and Applied Medicine	11	22	33
	33.3%	66.7%	12%
Others	19	13	32
	59.4%	40.6%	11.7%
Total	123	151	274
	44.9%	55.1%	100%

Fig. 2. The Research Model with Significant Results.

factors for LMS readiness. The technical capability item within the faculty capability to adopt e-learning construct was rated as the highest value among all items in the survey (3.09 ±0.92), while satisfaction level is the lowest within the construct (3.53 ±0.99). Finally, the students' grade items of the students' perceived benefits construct had the highest mean value from the faculty's point of view (3.80 ±0.91) in the academic achievement category, while communication with faculty had the highest mean value in the cognitive skills category (3.68 ±1.04).

The results of the descriptive analysis of the four constructs, including the constructs' mean and standard deviation, are shown in Table III. The mean values of the four variables are from 3.42 to 3.82, where the highest value is the mean of the capability to adopt e-learning. Also, the standard deviations of the four variables range from 0.76 to 0.95, where the highest value is the standard deviations of training support. The statistics together indicate that all variables are normally distributed.

The reliability and validity test in Table III reports the values of Cronbach Alpha α and Pearson's correlation coefficient (Corr). A Cronbach Alpha value of 0.70 or higher suggests that the measurement scale performs consistently when it is tested repeatedly [43]. Thus, the measurement scale is viewed as reliable. The α value of all four variables ranged from 0.81 and 0.83, implying that their measurement scales have suitable reliability. Pearson correlation showed a positive correlation among all variables[44]. These correlations were separated into strong and moderate correlations. The strong positive correlations were found between training support and LMS readiness and between capability to adopt e-learning and student perceived benefits (> 0.70). While moderate positive correlation was found between all the remaining variables (>0.5).

Table IV showed the result of the study logistic regression analysis, which examined the study hypothesis. First, the logistic regression significantly rejects the first null hypothesis and conclude there was a statistically significant association between an exogenous variable training support and an endogenous variable capability to adopt e-learning ($x^2 = 24.60$ and p $< .0001$ as shown in Fig. 2). As the score of training support increased by one unit, the odds ratio of faculty capability to adopt e-learning increased by 7.87 (OR = 7.87, 95% CI = 3.36 – 18.42, p < 0.0001), supporting hypothesis H1 (Training support provided by institution has a positive effect on faculty capability to adopt e-learning).

Next, the logistic regression significantly rejects the second null hypothesis and concludes that there was a statistically significant association between LMS readiness and the faculty's capability to adopt e-learning ($x^2 = 31.36$ and p < .0001 as shown in Fig. 2). The score for LMS readiness increased by one unit and the odds of faculty's capability to adopt e-learning increased by 11.78 (OR = 11.78, 95% CI = 5.01 – 27.72, p < 0.0001), suggesting that hypothesis H2 (The LMS readiness has a positive effect on faculty capability to adopt e-learning) is supported.

Finally, the logistic regression significantly rejects the third null hypothesis and conclude that there was a statistically significant association between an endogenous variable capability to adopt e-learning and another endogenous variable students' perceived benefits ($x^2 = 65.47$ and p < .0001 as shown in Fig. 2). The score for faculty capability to adopt e-learning increased by one unit and the odds of students' perceived benefits increased by 41.61 (OR = 41.61, 95% CI = 13.53 – 127.98, p < 0.0001), which supports hypothesis H3 (The faculty capability to adopt e-learning has a positive effect on Students' Perceived Benefits from faculty point of view).

VI. DISCUSSION

This research examined factors influencing the adoption of e-learning and student perceived benefits from the perspective of faculty members at Shaqra University, Saudi Arabia. By applying simple and multivariate logistic regression analyses, the findings indicate that the proposed research model demonstrates the significance of selected factors on e-learning adoption. The results evidently support positive effects for our hypotheses (H1, H2, and H3).

The study size is similar to comparable studies, but the study sample socio-demographics are slightly different. The proportion of female to male participants was approximately half the proportion of female to male participants in a similar study [12] and different from what was found in earlier Saudi studies [28], [14], [45]. More than third of the participants in our survey were from science and engineering fields, most likely because of their strong e-learning knowledge and ICT background. Also, the fewest respondents in the survey came from the Other category, such as Arabic language sciences and Islamic studies sciences, most likely because of their lack of e-learning knowledge and ICT backgrounds [14], [45], [46].

The findings of this study show a positive association between training support and the faculty's capability to adopt e-learning. Previous studies validated our results by finding that a lack of e-learning knowledge and skills will impact its

TABLE III. DESCRIPTIVE STATISTICS, RELIABILITY, AND DISCRIMINANT VALIDITY TEST (N = 274)

Construct	Mean	Std.Dev	Cronbach's Alpha (α)	Pearson correlation coefficient (Corr)			
				1	2	3	4
Training Support (TS)	3.42	0.95	0.84	1	0.71565	0.63197	0.54697
LMS Readiness (LMS-R)	3.72	0.92	0.83	0.71565	1	0.60942	0.57849
Capability to Adopt e-learning (CA-EL)	3.82	0.87	0.82	0.63197	0.60942	1	0.70880
Students' Perceived Benefits (SPB)	3.48	0.77	0.81	0.54697	0.57849	0.70880	1

TABLE IV. RESULTS OF RESEARCH MODEL

Independent Variables	P-Value[a]	Odds Ratio (OR)	95% Confidence Interval (CI)
First Hypothesis (Dependent variable = Capability to Adopt E-learning (CA-EL))[b]			
Training Support (TS)	<0.0001	7.87	3.36 – 18.42
Second Hypothesis (Dependent variable = Capability to Adopt E-learning (CA-EL))[c]			
LMS Readiness (LMS-R)	<0.0001	11.79	5.01 -27.72
Third Hypothesis (Dependent variable = Students' Perceived Benefits (SPB))[d]			
Capability to Adopt E-learning (CA-EL)	<0.0001	41.61	13.53-127.98

[a] Significant at $p < 0.05$
[b] Model $x^2 = 24.60$, df = 1, $p < 0.001$
[c] Model $x^2 = 31.36$, df = 1, $p < 0.001$
[d] Model $x^2 = 65.47$, df = 1, $p < 0.001$

successful implementation in Saudi Arabia, Iraq, and Libya [14], [23], [46]. Shaqra University is an emerging university in Saudi Arabia that had limited training support before the COVID-19 pandemic and intense training support after it. Training support is a necessary factor for all universities regardless of their rank, size, or country. [23], who conducted a survey on four medium-size universities in the United States, found that the higher the organizational support, through training programs, the higher the faculty member's confidence in adopting LMS, which is also emphasizes the importance of the training support factor.

As shown in Table IV, the faculty's capability to adopt e-learning has the strongest association with the e-learning adoption (OR = 41.61) as compared to the association between training support and capability to adopt e-learning (OR = 7.87) and between LMS readiness and capability to adopt e-learning (OR = 11.787). Interestingly, this association is uncertain with a wider interval (13.53-172.98), which might indicate the need to study further the capability to adopt the e-learning factor and consider more sub-factors. Unlike some previous studies, such as [10], [19], [38], this study was conducted in the context of a pandemic, traditional learning was necessarily replaced by e-learning methods. Therefore, it is recommended to reconduct this study in more regular circumstances and compare results to better comprehend e-learning adoption.

It is worth mentioning that Shaqra University is only providing Moodle system, unlike most other Saudi government universities that use officially Blackboard system. As result, the LMS readiness findings could be slightly different if they are applied in other universities that use different LMS platforms, such as Blackboard or Canvas. It is advisable to apply our research model with faculty from different universities who use different LMS platforms. This will help in revealing the suitable LMS platform and e-learning tools that fit e-learning environment. Also, it might consequently change the significant association with other factors such as the capability to adapt e-learning.

VII. CONCLUSION

In the current study, the proposed research model describes a set of constructors that could impact e-learning adoption from faculty's perspective. The selected constructors are defined from four relevant factors based on the available literature, i.e. training support, readiness of the LMS, capability to Adopt e-learning, and students perceived benefits. These factors basically present the essential dimensions of the e-learning processes.

The findings demonstrate the statistical significance association among the selected constructs in the space problem, supporting our hypotheses. The results reveal the importance of providing the adequate training to faculty and LMS readiness in order to increase e-learning adoption. It confirms that the faculty's capabilities play a major role not only in provoking students' perceived benefits but also in overcoming challenges in LMS readiness. Although faculty members' capabilities were an essential factor that significantly affects all e-learning processes, some statistical uncertainties were found that might affect the reliability of the results. Indeed, the results of this study can be used to increase e-learning adoption specifically in Shaqra University and other universities in the region. For future work, further detailed and reliable analysis, such as sensitive analysis, is required to understand faculty's capabilities.

VIII. ACKNOWLEDGMENT

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