Impact of E-Learning Systems on Knowledge Sharing during Covid-19 at Karak University College: a Student's Perspective

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Abstract. The goal of this research was to investigate the influence of e-learning tools on knowledge exchange at Karak University College during Covid-19. A descriptive analytical method was used in the investigation. 200 university students were chosen at random for the study, and questionnaires were distributed to them by e-mail. In Karak University, it was discovered that system quality, service quality, module, university culture, and infrastructure all had a substantial impact on the success of e-learning systems. These elements have an impact on how well knowledge is disseminated via e-learning systems. The study contributes to existing theories of technology-mediated learning by analyzing the particular context of e-learning during the COVID-19 outbreak. It highlights how e-learning technology may help in knowledge transmission. The findings might aid in the adaptation of current learning methodologies to the virtual educational setting, such as constructivism and the idea of social learning. It is also critical to ensure that these components are well-aligned and optimized for the greatest user experience possible. This study is not confined to Karak University College; it may be used to other universities as well.

Keywords: e-learning systems, online learning, System quality, instructors, modules.

1. Introduction

Since the inception of Covid-19, e-learning technologies have proven to be a useful resource for educational institutions. Many schools and colleges have moved to remote learning in response to the epidemic, depending on e-learning platforms to transmit course materials and support virtual instruction. To begin, E-learning systems are online platforms that enable students to access learning resources, engage in virtual classrooms, and complete assignments from a distance (Ruiz et al., 2008). Electronic learning systems may be employed in a variety of ways to support remote training. Instructors can use electronic learning systems to record virtual lectures, organize live classrooms, and provide interactive exercises. Students can access learning materials, participate in class discussions, submit assignments, and take assessments using the platforms (Levy, 2006E-learning systems also include collaborative capabilities such as discussion forums, chat rooms, and virtual whiteboards. Despite the Covid-19 issue, educational institutions have been able to continue giving quality instruction because to e-learning tools. Learners can continue their education from the safety and convenience of their own homes using e-learning platforms (Tagreed Kattoua et al, 2016). These platforms also make it simpler for educational institutions to adapt to changing conditions and provide students with the finest education available. There are several benefits of employing e-learning systems, such as enhanced accessibility, cost-effectiveness, scalability, flexibility, easier evaluation, and so on. E-learning systems can be used from any device with internet access. This means that students can study from any place and any time they want. This lets students learn at times and places that suit them best. Online learning options are often cheaper than learning in a physical classroom (Hassanzadeh et al., 2012) This is because they don't need physical things and a lot of people can use them at once, making it cheaper to teach. E-learning systems can grow really big without much effort. This makes it easy for schools to add more students who want to learn (Sheo et al., 2016) This makes it easy for schools to take more students without needing to buy more things or build more buildings. This means students can learn at their own speed, using the methods and resources that work best for them. E-learning systems allow for an easier and more accurate evaluation of learner performance. This is due the technologies can more readily and effectively assess student engagement, progress, and outcomes than the conventional classroom-based method. Several types of e-learning were utilized during the pandemic, including, computer Managed to learn, Computer Assisted Instruction, Adaptive E-learning, Synchronous Online Learning, Collaborative Learning, Asynchronous Online learning, etc. Computers are used to monitor and evaluate student progress in a method known as computer-managed learning [CML], sometimes called computer-managed instruction [CMI] (Šumak et al., 2011). Databases are the backbone of computer-based learning systems. Each student's preferences may be taken into account when tailoring the system to their needs thanks to the combination of these databases and a set of ranking factors. Two-way interactions between a learner and a computer allow for the evaluation of the student's progress toward learning objectives. If not, the steps may be taken again and until the learner reaches the appropriate level of proficiency (Tirziu, Andreea-Maria, and Cătălin Vrabie, 2015)

Another kind of e-learning that incorporates computers into conventional classroom instruction is known as computer-assisted instruction [CAI] or computer-assisted learning [CAL]. This might refer to teaching software of the type utilized by Stanford University's Patrick Suppes in the 1960s, or it could simply refer to student-friendly, interactive software (Šumak et al., 2011). The goal of computer-assisted training is to improve education by using various media forms [text, images, audio, and video]. The fundamental benefit of CAI is interactivity; using tools like quizzes and other computer-assisted teaching and assessment processes encourage learners to be active learners rather than passive recipients of information (Tirziu, Andreea-Maria, and Cătălin Vrabie, 2015). Adaptive e-learning is a novel approach to online education that allows course content to be customized to each student's needs (Tirziu, Andreea-Maria, and Cătălin Vrabie, 2015). By tailoring lessons to each individual student based on their unique performance, objectives, abilities, skills, and traits, adaptive e-learning solutions are making education more personalized and student-centered than ever before.

Through synchronous online learning, classes of students from all over the globe may work on the same assignment at the same time (Frank, 2008). Online chats and videoconferencing are commonplace in synchronous online learning environments because they provide instantaneous question-and-answer sessions between staff members and instructors (Frank, 2008). One of the most well-liked and rapidly expanding categories of e-learning is the synchronous kind.

Students in an asynchronous online learning environment study at their own pace and in their own places, without the need for constant, real-time interaction (Frank, 2008). Because of the increased freedom they provide, asynchronous e-learning approaches are generally favored above their synchronous counterparts as the most student-centric (Wu et al., 2020). Asynchronous e-learning has become more popular because it enables students to study at their own speed, which is especially helpful for those who have little time to devote to school. They are not expected to study at certain times in conjunction with other students, and they are free to create their own schedules (Arkorful, Valentina, and Nelly Abaidoo ,2015).

Karak university college is an example of an institution which implemented e-learning systems since the onset of Covid-19. This research, therefore, aimed to research the effect of e-learning systems on sharing of knowledge in the institution by considering the perspectives of students. So as to develop a systematic and reliable study, this research is divided into four other sections namely, review of literature, methodological approaches, results and findings, and the discussion and conclusion.

Despite numerous research on the effect of e-learning systems on learning, psychological well-being, and general effects on college students during the pandemic, there is a need to have a narrow focus on its impact on Karak University College. Other research has a global regional viewpoint, but this research specifically focuses on the experiences of Karak University College student.

Karak University College has accelerated the implementation of e-learning schemes due to the onset of Covid-19. With e-learning systems, undergraduates can access course material, lectures, assignments, and tests from their homes or other remote locations (bau 2023). Karak University College currently utilizes several e-learning platforms: Microsoft Teams is a comprehensive chat-based collaboration and communication platform that enables teams to work together securely and effectively. Zoom refers to a cloud-based video conferencing platform that enables students to virtually meet and collaborate with their colleagues, instructors, and partners. Big Blue Button is an accessible web-conferencing system for e-learning. It provides high-quality video and audio, multiple presentation formats, real-time collaboration tools, and a range of interactive features (bau 2023).

Despite implementing this e-learning system, there is still the need to know its impact on knowledge. This research will help in knowing how these systems can be used to facilitate collaboration between students, faculty, and staff and how it will be improved to guarantee that the quality of the learning experience is not conceded throughout the pandemic. Researching the influence of e-learning systems on knowledge sharing during Covid-19 in Karak University College will help to identify the challenges and opportunities that have emerged as a result of the pandemic and to develop effective strategies to ensure the continuity of learning in the virtual environment. This research will also help to identify gaps in the current e-learning schemes and identify ways to improve the system for better knowledge sharing and student engagement. Furthermore, the research can also help to identify effective ways of leveraging technology to facilitate knowledge sharing, collaboration, and communication between students, teachers, and administrators.

E-learning systems have emerged as a replacement and enhancement for conventional classroom-based learning because of the fast growth of technology in education. Even while e-learning has many benefits, like adaptability, accessibility, and scalability, there are still big problems that need to be solved (Hung & Chou, 2015). Effective information sharing inside e-learning systems, which is essential for improving the educational process and encouraging student collaboration, is one such difficulty (Suk Noh et al., 2021). Therefore, the goal of this study's research is to find out how learners can effectively share information using e-learning platforms. The research should answer the following questions "

1- How may knowledge sharing among students be encouraged by e-learning system design?

2- What are the main determinants of knowledge transfer in e-learning systems?

3- What methods and tools may be used to get over obstacles to knowledge exchange in e-learning environments?

4- What effects does efficient information sharing have on student learning outcomes in e-learning systems?

5- How does knowledge sharing change as cultural and cooperative aspects are incorporated into e-learning platforms?

2. Litreture Review

In light of the recent COVID-19 crisis, (Aboagye et al., 2020) present the results of a survey that set out to determine whether or not college students are equipped to study online. The research showed that students need access to both conventional classroom instruction and online resources. In another study, researchers wanted to uncover how learners who are already comfortable with web-based technology might use it to improve their own studying habits and the quality of their coursework (Sathishkumar et al., 2020). The research found that when schools were under lockdown because of the COVID-19 outbreak, students flocked to online schooling. In order to guarantee successful delivery, efficient usage, and good effects on learners, (Al-Fraihat et al., 2020) contend that e-learning -system assessment is essential. In their research seeming fulfilment with an e-learning experience is determined by a number of factors, 71.4% of which may be accounted for by changes in quality of technical system, value of information, service quality, support system excellence, learner quality, teacher excellence, and perceived value. The quality of the technological system, the quality of the content, the quality of the support systems, the quality of the learners, and the quality of the instructors are the primary drivers of perceived usefulness [explaining 54.2% of the variation] (Al-Fraihat et al., 2020). E-learning adoption was shown to be determined by four factors: system quality in instruction, system quality in support, learner quality, and perceived utility. Finally, perceived worth, perceived pleasure, and utilization amounted for 64.7 percent of the variation in e-learning value (Al-Fraihat et al., 2020). Ali (Ali et al., 2018) have developed a study that aimed to analyze the efficacy of e-learning for college and university learners. After administering a survey to a representative cross-section of 700 students, researchers found that almost all [99.1%] make use of some kind of online learning. The findings show that students conted that E-learning is convenient, efficient, and cost-effective (Ali et al., 2018). Research by Maatuk et al. (Maatuk et al., 2021) was to find out the most important determinants of interest in engaging in online education during COVID-19. It was found that learners' insights on the utility and convenience of the utilization of e-learning systems moderated the effects of COVID-19-related characteristics on their intentions. In contrast, the findings demonstrated that students' intentions to engage in COVID-19 e-learning were not significantly influenced by the level of readiness of their educational institution (Maatuk et al., 2021). Students' usage of e-learning systems is affected by students' gender and the amount of time they have used e-learning systems, the findings indicated (Maatuk et al., 2021) Based on the study and evaluation of possible repercussions and societal expectations, Kamysb, (Kamysbayeva et al., 2021) found that the pandemic experience is developing new rules for learning. The study's findings showed that while online education is useful for honing technical skills, it is less effective when it comes to honing interpersonal ones. they also helped us pinpoint key elements of professional personnel coaching that should be considered when formulating a plan to bring on-college and e-education into harmony with the diversification of programs brought about by different pedagogical skills and digital tools (Kamysbayeva et al., 2021). During the COVID-19 epidemic, (Hasan, N., & Bao, Y. 2020) conducted research to determine the effect that students' beliefs that their online courses were being hacked had on their mental health. The results demonstrated that learners' insights on an "e-Learning crack-up" had a +ve and substantial outcome on their psychological anguish and that the distress of losing a school year was the primary cause of this misery during the COVID-19 lockdown (Hasan, N., & Bao, Y. 2020). Alsoud, (Alsoud & Harasis, 2021) points out that many students

still struggle with the demands of online courses due to factors including lack of reliable Internet, unavailability of a quiet place to study, the inability to utilize their preferred computer, or the presence of anxiety. Most of the students polled had never taken any online classes before the epidemic (Alsoud & Harasis, 2021). Incredibly, over half of the students polled had utilized few time learning than they did before the pandemic. Since the relative importance of e-learning success criteria varies depending on the situation, many approaches have been developed to deal with them. It is well acknowledged that social elements [such as the student and the instructor] play an essential role in education, yet in poor nations, such aspects often get less attention than they deserve. Developed nations, on the other hand, place a greater emphasis on promoting lifelong learning, improving information quality and utility, and incorporating ethical and legal issues into policymaking (Alsoud & Harasis, 2021, Bhuasiri et al., 2012). COVID-19 presents various difficulties for the field of online learning. Throughout the 2019 COVID-19 crisis, for example, Almaiah (Almaiah et al., 2020) analyzed the key aspects and obstacles related with the use of online learning arrangements. All of the factors mentioned in the literature as having the possibility to affect the frequency of e-learning acceptance were addressed by the authors of the study. These included the quality of the e-learning systems, confidence, culture, self-efficacy, issues of financial backing, change managing, and technical upkeep. They additionally contend that the pandemic poses a threat to the way in which e-learning is approached, calling for creative solutions from the academic community. Teachers' perspectives on the effects of the pandemic and the community quarantine on remote schooling have been reviewed by Alea (Lapada et al., 2020), who discovered several obstacles associated with it and individual concerns with readiness for providing distant-learning. Abbasi (Abbasi et al., 2020) said that learners did not choose e-teaching over face-to-face instruction throughout the lockdown scenario, thus administrators and teachers should take steps to enhance e-learning during the lockdown. In light of 80-90% of the Italian population remaining at home during the quarantine, Favale (Favale et al., 2020) reported a surge in remote work and online cooperation at a university in Italy. Therefore, the research of e-learning engagement in the situation of the pandemic is both urgent and important. The digital gap and unequal access to information and the internet are highlighted in a number of studies (Fuchs, 2022; Al-Gharabawi & Al-Taii, 2023), which makes it difficult to deploy e-learning effectively during the pandemic. Researchers ((Ruiz Estrada, 2020; Almaiah et al., 2020) stress the requirement for instructors and students to swiftly adapt to online learning platforms and gain the requisite technology abilities for successful participation. A rapid switch to e-learning called for a pedagogical revolution. According to studies (Ghazali, 2021; Belhaj et al., 2020), instructors must use learner-centered strategies, interacting tools, and multimedia materials to increase participation and information exchange. In order to encourage knowledge sharing and active participation among learners, researchers (Irshad et al., 2023; Singh et al., 2020) underlines the significance of fostering collaborative learning through virtual group discussions, peer feedback, and collaborative tasks. Utilizing social media platforms to promote knowledge sharing, peer engagement, and building relationships in e-learning settings has been suggested by studies (Purwati et al., 2021; De, 2020). The challenge of evaluating student learning in online settings is highlighted by researchers (Hassanzadeh et al., 2012; Wu et al., 2020), who also highlight the necessity for creative assessment methodologies and tools to gauge knowledge sharing and understanding of the learning goals.

3. Research Model and Hypotheses

3.1 E-learning and knowledge sharing

E-learning, often known as electronic learning, refers to the use of digital technology to facilitate teaching and learning. The practice of transferring information, ideas, and skills among individuals or groups is referred to as knowledge sharing. The link between e-learning and information sharing is complex and multifaceted. On the one hand, e-learning may help learners communicate their knowledge by giving them access to and sharing knowledge and concepts (Hamilton, 2016Sharing knowledge is important for learning online. When people share their ideas and skills with each other, it helps everyone

to understand the topic better. This is why effective knowledge sharing is important in e-learning. In simple words: Online learning and sharing information go hand in hand and help each other. Online learning helps people share what they know, and when people share what they know, online learning becomes better. Karak University will look into this relationship.

H1: The success of e-learning systems has a significant effect on knowledge sharing

3.2 System quality and e-learning systems

A system is considered good if it satisfies the requirements and expectations of the people who use it and those who are affected by it. This checks if a system can do what it is supposed to do well, stay safe, grow with demand, be easily taken care of, and be easy to use (Hassanzadeh et al., 2012). The quality of a system depends on how well it performs, how dependable it is, how safe it is, how easy it is to use and maintain, and other similar things. System quality is judged based on how much it costs to own and whether the system does what the users need it to do. Good quality systems are important in e-learning because they make users happy and satisfied with the platform, which helps the system succeed (Hassanzadeh et al., 2012). People prefer to use a system that is easy, safe, and has all the functions they need. The text means that when a system is hard to use, unsafe, or missing important features, students won't use it or get much benefit from it (Cidral et al., 2018). The quality of the e-learning system used by students in Karak University College is very important for their performance.

H2: system quality has a significant effect on the success of e-learning systems

3.3 Service quality and e-learning systems

Good services are important for students to be happy. Quality services are services that are really good and make customers very happy. To give good services, we need to be polite, work quickly, and use good materials. We should also offer different services that students wantCidral et al., 2018). The better the e-learning system's services are, the better results it will have. The way a website teaches people can affect how well it works by affecting the user's experience (Holsapple & Lee-Post, 2006). Poor quality services can lead to frustration and dissatisfaction which can lead to lower engagement, lower grades, and lower performance (Cidral et al., 2018). On the other hand, high-quality services can lead to higher engagement, better grades, and better performance.

H3: services quality has a significant effect on the success of e-learning systems

3.4 Module and e-learning systems

The association amid modules and the performance of e-learning systems is an important one. Microsoft Teams, Zoom, and Big Blue Module are all necessary components for successful e-learning systems. Each module offers different features that can be beneficial to e-learning systems. Microsoft Teams is a comprehensive chat-based collaboration and communication platform that enables teams to work together securely and effectively (sheo et al., 2016Zoom is a cloud-based video conferencing platform that allows students to meet and communicate online with their colleagues, teachers, and partners. Big Blue Button is a web-conferencing tool designed for e-learning. It provides high-quality video and audio, several presentation designs, real-time communication capabilities, and a number of interactive elements (sheo et al., 2016). The efficacy with which these modules are employed impacts how well e-learning systems operate. If instructors employ the skills provided by these modules correctly, they will be able to create an effective and engaging learning environment for their students. The e-learning system may suffer from low user engagement and poor performance if its parts are not used effectively.

H4: The module has a substantial impact on the success of e-learning systems.

3.5 University cluture and e-learning systems

The shared concepts, beliefs, and values that comprise the instructional environment of the college are

referred to as university culture. Among the topics discussed are traditions, student life, teacher expectations, and academic standards (Aparicio et al., 2016). University culture is defined by a commitment to academic curiosity, tolerance for diversity, and a collaborative attitude. The culture of a university is impacted by its faculty, students, and instructors, as well as its natural location, history, and geography. The efficiency of e-learning systems is significantly influenced by university culture (Aparicio et al., 2016). A university's culture can influence lecturers, staff, and students' acceptance and usage of an e-learning system. Universities that focus on technology and innovation are more likely to use e-learning tools. A university that doesn't want to change might hurt how well e-learning tools work. (Kipkurui et al., 2014).

H5: university culture has a significant impact on the success of e-learning systems

3.6 Infrastructure and e-learning systems

The system that supports online learning is crucial for it to work well. University infrastructure is the buildings and equipment that help teachers, researchers, and staff do their jobs. School resources like buildings, equipment, technology and systems help teachers and staff do their jobs. And there are rules and procedures that explain how to use them (Alsabawy et al., 2013) To give good online lessons, e-learning sites need a strong and reliable system. E-learning systems can help students learn by giving them access to tools and resources. This works because the system is reliable and you can trust it (Alsabawy et al., 2013). Having a good infrastructure can help students work together and communicate better with their teachers and classmates. Having strong technology and systems can keep information safe and protect from future attacks. For an e-learning system to work well, it needs to have a strong and reliable structure (Alsabawy, 2014).

H6: Infrastructure has a significant impact on the success of e-learning systems (**see figure 1**)
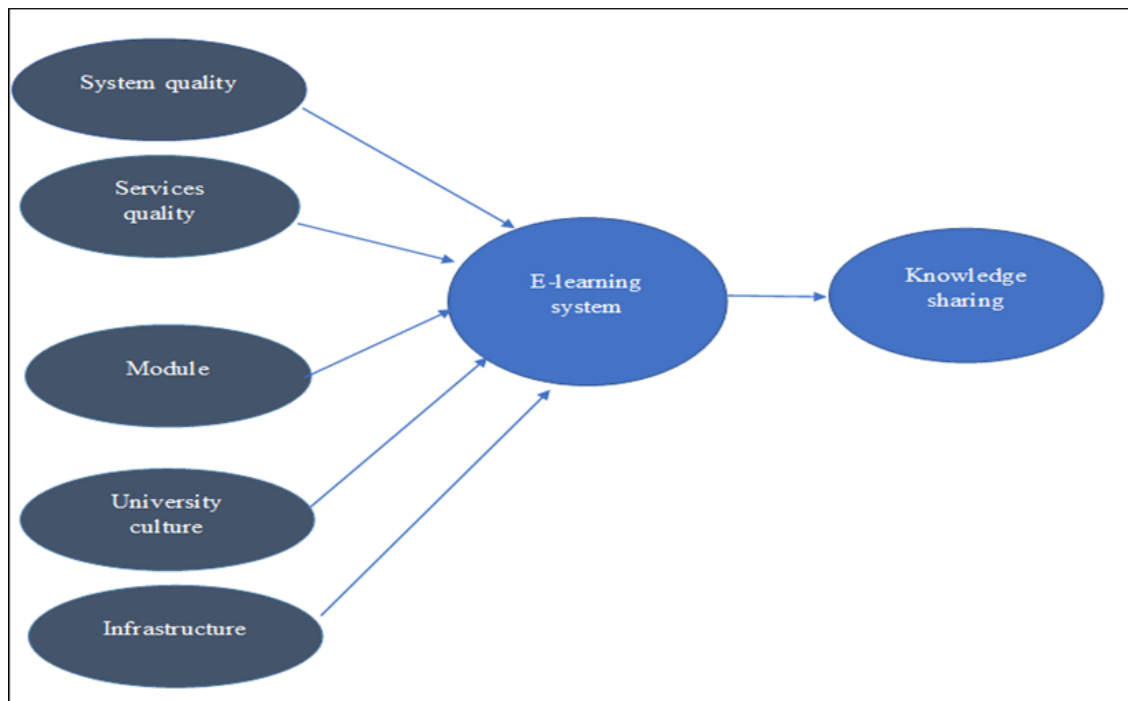

Fig. 1: Conceptual framework

4. Research Methodology

This research used a descriptive-analytic method. A descriptive-analytic technique is a research strategy that includes both analytical and descriptive components. It is a sort of mixed-methods study in which qualitative and quantitative data are combined to better understand a phenomenon or answer a research question (Gates et al., 2018). It entails first describing a condition using data, then analyzing the data to detect patterns, draw conclusions, and make predictions. As a sort of data analysis, descriptive analytics is among the most fundamental techniques. To do this, the data must be parsed [or broken down] so that its most salient features may be isolated and summarized. In this respect, descriptive analytics only recounts what has happened without investigating why or how (Hillier et al., 2023).

The descriptive analytical technique will give useful insights into the effects of e-learning technologies on knowledge transfer during the COVID period, using a questionnaire survey of 200 students. The data will help researchers better understand students' attitudes on e-learning effectiveness, engagement, satisfaction, and learning achievements. The findings of the study will assist educational organizations, legislators, and e-learning providers in improving the design and delivery of successful virtual learning environments. A descriptive analytical strategy, in general, provides a solid basis for comprehending data, making informed decisions, increasing performance, maximizing resources, understanding customers, controlling risks, and benchmarking against industry standards. It is a useful tool for firms looking to acquire thoughts and actionable knowledge from their data (Joshi et al., 2015).

Simple descriptive statistics are used in descriptive analytics since their purpose is purely explanatory. Descriptive statistics are useful for summarizing almost any kind of data and are often the starting point for data analysis (O'Brien, 1970). This is because, while descriptive statistics might throw light on broad tendencies or patterns, they cannot give causal explanations. Presentations, pivot tables, and visualizations like as histograms, line graphs, and pie charts are frequently used to show descriptive analytics findings (O'Brien, 1970). There are several advantages of descriptive analytics: It enables the analysis and understanding of massive amounts of data. It can identify data movement and patterns. It may be used to compare various data sets. It may be used to find correlations between variables. Finally, it may be used to examine the correctness and trustworthiness of data (O'Brien, 1970).

4.1 Data collection

As one of the primary sources of data for this study, online questionnaires were employed. The questionnaire questions were designed to answer the study's research questions. To eliminate any uncertainty, the questions were simple to grasp. The questions were not prejudiced and did not direct pupils to a specific answer. The questions were concise and not very complex. Again, the questions were left open-ended in order to allow for a variety of replies from the kids. The questionnaire was then mailed to the selected sample of students. Students were required to email back their replies using the same route. Emailing a questionnaire to a big number of individuals is frequently the most cost-effective approach to survey a large group of people. Email surveys are often cheap, as they do not require mailing or printing (Vannette & Krosnick, 2019) It is far more convenient to submit an email questionnaire than a printed one. Sending an email to a big number of individuals is also lot easier than sending personal paper surveys. Because respondents do not have to wait for the survey to arrive in the mail or take the time to fill it out and mail it back, email surveys may be finished considerably faster than paper surveys. Email surveys may be constructed in a variety of ways to gather data, including single-answer questions, multiple-choice questions, and even open-ended questions. This enables data collection from respondents easier and faster than it would be with printed surveys.

4.2 Questionnaire

The research used a five-choice Likert scale, with one indicating entirely disagree, two indicating disagree, three indicating no idea, four indicating agree, and five indicating completely agree. A Linkert scale is ideal for this study. Because the Likert scale is simple to use and comprehend, it is a common

choice for survey research. The Likert scale may be used to assess everything from basic yes/no responses to sophisticated attitudes and beliefs (Joshi et al., 2015). Because the scale is numerical, reactions may be readily measured and studied. The scale is easily adaptable to the researcher's individual requirements. For example, to better capture the range of responses, the number of answer alternatives might be raised or lowered. For example, to better capture the range of replies, the number of possible responses might be raised or lowered (Joshi et al., 2015). The Likert scale is frequently used in research to evaluate attitudes, views, or beliefs, making data interpretation and drawing significant inferences simple.

4.3 Sample

For the two-year study levels, 200 college students were picked at random. Only 160 of the 200 surveys were successful. The students chosen were from the first and second levels.

5. Finding/analysis

The following is a description of the respondents' demographic information that was gathered throughout the data-collecting process [table 1]: the number of male respondents was 68, which represented 42.5% of the entire successfully returned questionnaires. In this method of data collecting, there were a significant number of female respondents, specifically 92 of them, which represented 57.5% of the entire number of respondents. Out of the entire number of questionnaires that were generated, there were a total of 200, however, only 160 of the respondents were able to successfully complete the surveys. The questionnaires were separated into two levels: level one had 102 respondents, which constituted 63.75% of the total successful questionnaires returned; level two had 58 respondents, which constituted 36.25% of the total successful questionnaires returned. Those who participated in level one of the questionnaires were counted as level one respondents. The ages of the students who took part in the data collection were as follows: those between the ages of 18 and 24 were 114, which constituted 71.25%; those between the ages of 25 and 31, were 24 which constituted 15% of the total returned questionnaires; and those above the age of 31 years were only 22 of them, which constituted to 13.75% of the total successful questionnaires.

Table 1. Demographic characteristics

Sample		
Gender	Frequency	%
Male	68	42.5
Female	92	57.5
Total	160	100
Level	Frequency	
1	102	63.75
2	58	36.25
Total	160	100
Age	Frequency	
18-24	114	71.25
25- 31	24	15
Above 31	22	13.75
Total	160	100

Cronbach's alpha [table 2] measures the degree of internal consistency, or the degree to which individual items in a collection are correlated with one another (Silverman, 2011). It's used as a yardstick to evaluate the accuracy of the scale. Because the metric has a "high" alpha value doesn't mean it has to have a "high" dimensionality. If you want to show that the scale at hand is unidimensional in addition to assessing the extent that it is internally consistent, you may do further investigations. Exploratory factor analysis is one method that may be used to probe dimensionality (Kirk & Miller, 2005). Cronbach's alpha is not a statistical tool, but rather a measure of the consistency [or similarity] between two data sets (Silverman, 2011).

Table 2. Validity and reliability for the proposed model

Variable	AVE	CR	R^2	Cronbach alpha
Knowledge-sharing	0.68	0.88	0.56	0.86
e-learning system	0.59	0.88	0.67	0.87
Systems-quality	0.61	0.90		0.90
Services quality	0.60	0.90		0.88
Module	0.57	0.88		0.87
University culture	0.62	0.90		0.89
Infrastructure	0.67	0.92		0.91

In this particular analysis, the dependent variables, where the dependent variables in the model were knowledge sharing and e-learning systems, while the independent factors were as follows: system quality, services quality, module quality, university culture, and infrastructure technology. Cronbach's alpha is utilized so that the suggested model may be evaluated for its validity and dependability. The following are the values of Cronbach's alpha for the dependent variables: knowledge-sharing systems had a value of 0.86, and e-learning systems had a value of 0.87. Cronbach's alpha is a coefficient of consistency that measures how sound the model's variables correlate with one another. If the score is high enough, 0.70 or above, it suggests that the variables in the model are consistent and reliable in their capacity to clarify the link between the variables in the approach. The fact that our dependent variables have a Cronbach's alpha of 0.86 and 0.87 implies that they are valid and dependable to explain the connection in the proposed model. The following are the independent variables: All of the independent variables exhibited a positive and a high Cronbach's alpha, which indicates that the items in the model are reliable since they are above 0.65, which indicates a good level of reliability in the items of each variable measured. System quality has a Cronbach's alpha of 0.90, service quality has 0.88, the module has 0.87, university culture has 0.89, and infrastructure has 0.91. Cronbach's alpha does not test the validity of the dimensionality of the items that are involved; rather, it measures the reliability of the items measured by the scale in order to explain the link between the items in the model.

The concept of divergent validity refers to the fact that the findings produced by a survey instrument do not correlate substantially with measures of a comparable but unique attribute (Koning & Franses, 2006). This type of validity suggests that the results acquired by the instrument are reliable. The concept of divergent validity refers to the determination of whether or not a test that is intended to evaluate a certain construct correlates with other tests that measure distinct constructs. This is predicated on the premise that we would not expect to receive the same results from two tests that are supposed to assess distinct things since we would not expect them to measure the same thing (Koning & Franses, 2006). In this portion of our research, we analyze the divergent validity of both the independent variables [system quality, service quality, module, university culture, and infrastructure] and the dependent

variables [knowledge sharing and e-learning system] [table 3]. The divergent validity coefficient for system quality is 0.79, and the divergent validity coefficient for service quality against system quality is 0.69. This indicates that there is a correlation between the construct in the model designed to measure system quality and the construct designed to measure service quality. There is no correlation between the constructs designed to measure the validity of the module and those designed to measure system quality [0.66], as well as service quality, according to the module's divergent validity coefficient, which is 0.81. This indicates that there is no correlation between the constructs designed to measure the validity of the module and those designed to measure system quality [0.64]. Since 0.78 is greater than 0.7, this finding shows that there is no link between the constructs developed to evaluate university culture and those designed to measure system quality [0.72], service quality [0.62], and module quality [0.60]. [0.73]. The score for divergence validity associated with university culture is much higher than the scores associated with the model's other explanatory variables. There is no correlation between the constructs and questions designed to measure system quality, service quality, module, university culture, and infrastructure because the divergent validity coefficient of the technology infrastructure is 0.80, which is high enough. This indicates that there is no correlation between the constructs and questions. The fact that the divergent validity coefficient for the dependent variables, e-learning system, and knowledge sharing, is 0.79 and 0.81, respectively, indicates that there are no significant correlations between the two items in the quest to measure the validity of the proposed model, indicates that the divergent validity coefficient for the dependent variables is 0.79. Comparing the findings of an evaluation that measures one thing with those of a test that measures something entirely different allows us to conduct an analysis of a phenomenon known as divergent validity. If there is no correlation between the results, then the test is considered to have high divergent validity; however, if there is a substantial correlation between the scores, then the test is considered to have poor divergent validity (Hinton, et al, 2014]. In our particular instance, all of the variables have a high divergent validity score, which normally means that there is no link between the results.

Table 3. Divergence validity for the proposed model

Variables	System quality	Service quality	Module	University culture	Infrastructure	e-learning system	knowledge sharing
System quality	0.79						
Service quality	0.69	0.76					
Module	0.66	0.64	0.81				
University culture	0.72	0.62	0.73	0.78			
Infrastructure	0.73	0.59	0.75	0.73	0.80		
e-learning system	0.74	0.62	0.71	0.68	0.69	0.79	
knowledge sharing	0.67	0.64	0.63	0.67	0.66	0.72	0.81

The result analysis showed that E-learning platforms enabled 74% of the students who participated in the surveyed to agree or strongly agree that they facilitated peer knowledge sharing.Regarding the effect of e-learning on knowledge exchange, 26% of students had indifferent or negative sentiments. 83% of the students who responded to the survey agreed or strongly agreed that the effectiveness of

their learning experience was influenced by the general system quality of e-learning platforms. 17% of students indicated neutral or unfavorable views on the impact of system quality on the success of e-learning. 79% of the students who responded to the survey agreed or strongly agreed that the effectiveness of their learning experience was influenced by the general service quality of e-learning platforms. 21% of students indicated neutral or unfavorable views on the impact of service quality on the success of e-learning. 71% of students who replied to the study agreed or strongly agreed that the general module f e-learning platforms affected the efficacy of their learning experience. 29% of students had neutral or unfavorable opinions about the influence of module on the achievement of e-learning. The university culture e-learning platforms influenced the efficacy of 64% of students who responded to the survey. 36% of students expressed neutral or negative feelings regarding the impact of university culture on e-learning achievement. 68% of students who responded to the poll said the general infrastructure of e-learning platforms affected their efficacy. Concerning the influence of infrastructure on e-learning achievement, 32% of students had neutral or unfavorable sentiments.

6. Discussion

During the process of putting the hypotheses to the test, it was found that the coefficients of all of the independent variables were +ve, which suggests that these factors had a positive influence on the efficacy of e-learning schemes and the transfer of information. The square root of the coefficient of determination, or R-squared, is a statistical degree that indicates what fraction of the total variation in the dependent variables can be attributed to the effects of the independent variables (Hinton et al,. 2014). In this particular instance, the R-squared value for the e-learning system is 0.67, which indicates that 67% of the variation in e-learning system can be attributed to the independent variables. On the other hand, the R-squared value for knowledge sharing is 0.56, which indicates that 56% of the variations can be attributed to the independent variables. The model's null hypotheses were all found to be true, which demonstrates that the independent factors [system-quality, service quality, module, university culture, and infrastructure] all have a substantial effect on the accomplishments of e-learning system and the dissemination of information

Table 4: hypotheses test

Hypothesis	β	t-statistics	Sig
H1	0.79	16.9	0.001
H2	0.33	2.9	0.001
H3	0.36	2.7	0.001
H4	0.31	2.8	0.001
H5	0.42	3.3	0.005
H6	0.44	3.6	0.005

A t-test is a statistical tool for comparison on the means of two sets. It is commonly utilized in testing hypotheses to inspect whether a procedure or handling actually has an outcome on the target populace or if the two sets are diverse. The hypothesis that e-learning has a substantial effect on information sharing is supported by the evidence. The t-test result of 16.9 is statistically significant, indicating that system-quality has a considerable effect on the success of the e-learning system. Electronic learning system success is greatly influenced by the quality of the system. The service quality coefficient [0.33] implies that system quality has a +ve consequence on the dependent variables. The t-test value of 2.90 designates that there is a statistically significant variance between the mean of system quality and electronic learning systems, indicating that service quality has a substantial effect on the

success of electronic learning systems. The quality of services has a substantial impact on the success of electronic learning systems. The positive coefficient designates that service quality has a favorable result on the achievement of e-learning systems. The success of e-learning systems is significantly affected by module H4. The module's coefficient of 0.31 suggests that the module, as an independent variable, has a +ve influence on the success of electronic learning systems. The Sig level is 0.001, which is less than 0.05, indicating that the module has a significant influence on the success of electronic learning system. H5: the culture of universities has a substantial outcome on the success of e-learning system. The coefficient for university culture is 0.42, indicating that university culture has a favorable result on the success of e-learning systems. The p-value is less than 0.05, therefore the effect of university culture on the success of e-learning systems is statistically weighty.

The success of e-learning systems is significantly impacted by infrastructure. The infrastructure coefficient in the model is 0.44, indicating that it has a favorable effect on the success of e-learning. The t-p-value statistics suggest that the influence and link between infrastructure and e-learning systems are statistically significant (Cassidy, 2004 Based on the study findings and literature review e-learning has made education available to a wide spectrum of people, including those who would not have had access to traditional in-person schooling. The flexibility and ease of e-learning have helped students from rural places, persons with impairments, and those with time or mobility restrictions. E-learning enables students to learn at their own speed and on their own schedule, allowing a variety of learning styles and preferences. It allows you to manage other responsibilities, such as employment or family obligations, while continuing your education. Students with a web connection can access course materials and engage in conversations from anywhere. E-learning enables students to work through course content at their own pace. Individuals can use this time to study ideas they find difficult, spend more time on areas of interest, and speed their development if they absorb the information fast. It encourages individualized learning experiences while avoiding the constraints of a predetermined class timetable. On the other side, not all students have equivalent access to dependable internet connections, laptops, or e-learning equipment. These technical restrictions can impede effective participation, resulting in educational results that differ. Furthermore, technological concerns such as network troubles or software faults can disrupt and frustrate learners. E-learning frequently lacks the chances for direct interaction and socializing that traditional classroom environments provide. In the lack of personal relationships with classmates and teachers, feelings of isolation, restricted cooperation, and fewer possibilities for group work or conversations may arise. This has the potential to have an influence on student's behavioral and emotional growth. During the epidemic, e-learning has brought both positive and bad aspects to the forefront. While it has increased access to education and given learners more freedom, it has also presented obstacles in terms of technology, social contact, diversions, and hands-on experiences. Recognizing these elements is critical for establishing strategies that leverage the benefits of e-learning while addressing the limits to provide a well-rounded and successful education for all learners.

Based on the discussion above, system quality, service quality, modules, university culture, and infrastructure significantly influence the success of e-learning systems. This implies that in order for Karak university college to ensure the success of electronic learning systems, it is imperative to pay attention to various of issues, including system quality, service quality, module, university culture, and infrastructure. It is also important to ensure that these components are well-aligned and optimized for the best possible user experience. This research was carried out considering the case of Karak university college only. However, the results of this research can be generalized and applied to other universities of the same status in the region. There is a room for future research to determine which e-learning systems are more effective than others and under what circumstances they should be used. Moreover, research should explore how to best use e-learning systems to support diverse populations of learners, such as learners with disabilities, or those from non-English speaking backgrounds.

7. Conclusion

This research aimed to research the impact of e-learning systems on knowledge sharing during Covid-19 in the university by considering the perspectives of Karak university college students. With

consideration of the existing literature in this area, a conceptual framework was developed. The factors under consideration were system quality, service quality, module, university culture, and infrastructure and their influence on the success of e-learning schemes. Using questionnaires, a sample of 160 students was considered for the study. The results demonstrate that the independent factors [system-quality, service quality, module, university culture, and infrastructure] all have a substantial influence on the accomplishments of e-learning systems and the dissemination of information. The t-test result of 16.9 is statistically significant, indicating that system quality has a considerable outcome on the success of the e-learning system. The service quality coefficient [0.33] implies that system quality has a +ve influence on the dependent variables. The coefficient for university culture is 0.42, indicating that university culture has a favorable effect on the success of e-learning systems (Greene, 2010). The p-value is less than 0.05, therefore the effect of university culture on the effectiveness of e-learning systems is statistically significant. The infrastructure coefficient in the model is 0.44, indicating that it has a favorable effect on the success of e-learning. The t-p-value statistics suggest that the influence and link between infrastructure and e-learning systems are statistically significant. Therefore, the success of electronic learning systems is significantly influenced by system quality, service quality, module, university culture, and infrastructure. This implies that in order for Karak university college to ensure the success of electronic learning systems, it is important to pay attention to various of aspects, including system quality, service quality, module, university culture, and infrastructure. There is room for future research to determine which electronic learning systems are more effective than others are and under what circumstances they should be used. During the epidemic, e-learning has brought both positive and bad aspects to the forefront. While it has increased access to education and given learners more freedom, it has also presented obstacles in terms of technology, social contact, diversions, and hands-on experiences. Recognizing these elements is critical for establishing strategies that leverage the benefits of e-learning while addressing the limits to provide a well-rounded and successful education for all learners

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