



Faculty Member Perceptions of E-learning in Four Emerging Saudi Universities: A Mixed Methods Study

Submitted by

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Abstract

This study explores the perceptions of faculty members towards e-learning in four emerging universities in the Kingdom of Saudi Arabia. Whether their perceptions are positive, negative, or otherwise, this research also investigates the challenges faced by faculty members in using e-learning in their teaching practices and identifies supports that may help faculty members effectively utilise e-learning in their teaching. Furthermore, this study identifies enablers that enhance and increase the use of e-learning in higher education, and importantly, the research explores the impact that COVID-19 has had on e-learning overall.

This research employs a sequential mixed-methods approach, utilising qualitative and quantitative methods in two phases to achieve distinct research objectives. The first phase involves thematic analysis of semi-structured interviews with 16 experts in e-learning, including the Deans of e-learning in the four universities, and 12 relevant faculty members nominated by those Deans.

The second phase involves an online questionnaire. Thematic analysis is used to analyse open responses and statistical analyses, including Rasch analysis, are used to analyse closed responses. The results from this phase indicate that faculty members have generally positive perceptions of e-learning and its use in their teaching. Additionally, the study reveals a set of challenges identified by faculty members specific to university-level teaching, such as a lack of support in relation to technical, material and moral needs, as well as insufficient training on the use of e-learning technologies. Moreover, the study identifies some of the needs required by faculty members to assist them in effectively utilising e-learning in their teaching, such as strong infrastructure, support, and clear policies. Additionally, the study finds that there are several enablers that enhance and increase the use of e-learning: internal enablers such as incentives, training, and clear policies; and external enablers such as the beliefs and experiences of faculty members, attendance of training courses, and skills development. This study was conducted during the global COVID-19 pandemic

and reveals the impact of government policies, such as lockdowns and social-distancing on e-learning, in particular its increased use and opportunities for knowledge exchange, and importantly the sudden reduction in barriers to effective e-learning utilization.

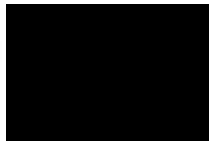
This study concludes with recommendations for stakeholders on how universities can interact with e-learning to provide appropriate and effective needs for the use of e-learning and suggestions for future research.

Certification of Thesis

I certify that the ideas, experimental work, results, analyses, software and conclusions reported in this thesis are entirely my own effort, except where otherwise acknowledged. I also certify that the work is original and has not been previously submitted for any other award, except where otherwise acknowledged.

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Signature of candidate: -



29 /12/2023

Date: -----

Dedication

I would like to dedicate this thesis to

The soul of my dear father, who passed away during my Ph.D. studies and did not see the fruits of
his efforts and support.

Also, my dear mother, who always prayed for me to succeed.

My beloved wife **Laila**

My son Hussain

My daughters Shahad, Maryam and Lamar

For their unfailing love, support, and encouragement throughout my candidature

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In the name of Allah, the Most Gracious, the Most Merciful

All praise is due to Allah alone; I praise Him and seek His help and His forgiveness. I testify that there is no god but Allah and that Mohammed (Peace be upon him) is his slave and messenger.

I thank Allah Almighty for giving me the patience, time, and strength to accomplish this thesis.

Prophet Mohammed (Peace be upon him) said: “He will not be thankful to Allah, he who would not be thankful to people”.

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Chapter 1: Introduction

1.1 Introduction

With the evolution of information and communication technologies (ICT), the world has witnessed rapid changes and developments that have affected many aspects of daily life, including education. ICTs have led to the emergence of new patterns of learning, including e-learning, an important emerging education technology (Al-Harbi, 2011a; Aldhafeeri, Almulla, & Alraqas, 2006; Algahtani, 2011; Williams, 2012; Zalah, 2018). Advances in ICT have led to an abundance of information across all disciplines, increasing the distance between information and learners, and the need for skills, methods, and technologies that have become an integral part of modern-day life (Song, 2010). This has led to an urgent need to develop teaching and learning methods and skills. The goal of education today is the acquisition of not only knowledge but also self-learning skills and the ability to employ information and advanced techniques in various aspects of life. Moreover, the increasing demand for higher education and widespread use of ICTs in the current era have had both positive and negative effects on institutions in general and educational institutions in particular (Husamo & Fawaz, 2011). Alshwaier, Youssef, and Emam (2012) argue that the growth of e-learning is closely related to increased access to ICT; thus, education based on multimedia resources is related to a growing interest in e-learning, which depends on the ability to use ICTs.

Sangrà, Vlachopoulos, and Cabrera (2012) confirm that e-learning can be considered a natural development of distance learning, as it has benefited from the latest technological tools that have emerged to build education.

Friesen (2009) believes that the increased use of information and communication technology (ICT) and the proliferation of network technology have significantly advanced e-learning practices. He emphasizes that technology-based or computer-based learning and training, as well as distance learning, are forms of e-learning.

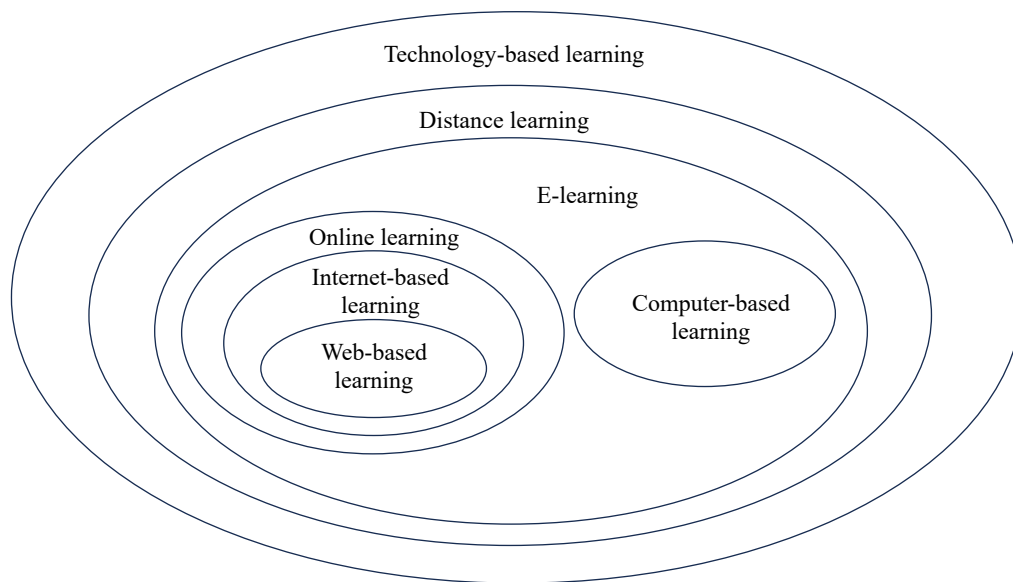


Figure 1-1: The subset relationships between the groups of the terms (Anohina, 2005)

Issues such as new technological and scientific developments, the rapid growth of most fields of knowledge, and staff who lack the ability to use modern technologies have led to the inability of traditional educational institutions to incorporate modern technologies as well as an increased need for staff training.

The abovementioned issues have put increasing pressure on current educational systems to adopt new modes of education, most notably e-learning, a modern method of learning that has arisen this century (Al-Saif, 2009). Similarly, Williams (2012) notes that e-learning appears as ‘a possible response to the transformation in the education sector, incorporating modern technology to provide greater opportunities in learning and teaching’ (p. 5). Moreover, e-learning is pivotal in enhancing academic performance by encompassing a diverse range of modalities, from facilitated instruction to online education and blended learning (Hoq, 2020). Aldhafeeri et al. (2006) argue that a growing interest in e-learning as the future of learning in many countries has prompted ambitious projects in the e-learning field. Ben Rayhan (2010) asserts that e-learning has many advantages, including the implementation of multiple communication tools through which students can communicate with faculty members or other students tools to evaluate students and determine their levels and progress. E-learning also plays an important role in addressing the issues of classroom congestion, student distance, and teacher shortages. Al-Harbi (2011a) notes that many educational institutions globally have adopted e-learning systems, adding that the Saudi government has started

implementing e-learning in all educational institutions, allocating a large proportion of its budget to this goal. However, Algahtani (2011) contends that e-learning in Saudi Arabia is still in its infancy and faces many challenges. Therefore, an exploratory study is warranted to investigate the perceptions of faculty members on the use of e-learning in emerging Saudi universities and the challenges they face during its implementation, and the needs, and enablers that contribute to increasing and improving their use of e-learning. Recommendations based on the findings of the research will be provided.

1.2 Research Aims

With the increasing reliance on new technologies in the learning environment, determining the perceptions of faculty members in educational institutions is a critical factor in the use of these technologies (Hara & Kling, 2001). Understanding faculty members' perceptions and the factors that influence their beliefs about e-learning can help decision-makers and administrators create tools to empower and encourage teachers to become more accepting of and skilled in an e-learning environment. Thus, it is necessary to research the perceptions, challenges, needs, and other enablers that may help to improve and increase the use of e-learning (Koohang & Durante, 2003).

The aims of this mixed-method study are firstly to understand the perceptions of faculty members on the use of e-learning in universities in the southern region of the Kingdom of Saudi Arabia (KSA), including the challenges they face and needs to help them overcome these challenges. Secondly, the study aims to identify how the provision of e-learning could be improved and how the extent of e-learning could be increased. Thirdly, this research aims to investigate how e-learning can be expanded across the university sector in the KSA, in particular since the outbreak of the 2020 global COVID19 pandemic, which has seen a drastic shift in the way teaching can be effectively delivered.

Thus, the overall aim of this research is to understand how e-learning can be improved in emerging Saudi universities. By investigating the perspectives of teaching faculty members, about

their needs the challenges they face, and the needs that may assist them into their teaching, such as using modern technologies and e-learning. Employing both qualitative and quantitative approaches has led to an in-depth understanding of these important issues, which will ultimately help higher education providers in the southern region of KSA to improve their educational programs and contribute to bridging the gaps in the literature evident in this area of research.

1.3 Research Questions

This study aimed to gain deeper insight by exploring faculty members' perceptions of e-learning in Saudi higher education institutions. The main research question is: How do faculty members in four emerging universities in the southern region of KSA perceive the use of e-learning? Based on this question, the research aims to answer the following sub-questions:

1. Sub-RQ1: What challenges do faculty members face to use e-learning?
2. Sub-RQ2: From the perspective of faculty members, what are the needs to help improve the use of e-learning in emerging Saudi universities?
3. Sub-RQ3: What are the enablers that lead to increasing and improving the quality and extent of the use of e-learning in higher education in the Kingdom of Saudi Arabia?
4. Sub-RQ4: How have the educational institutions responded to the global COVID19 pandemic, and to what extent has e-learning been utilised in the higher education sector in KSA?¹

1.4 Research Problems

Scientific and technological advances have significantly affected human life in all fields, including higher education (Al Saif, 2005). Alkhalaf, Nguyen, and Drew (2010) argue that over the past decade, interest in e-learning has increased rapidly in the KSA for several reasons. First, educational institutions have inadequate human resources and facilities to provide traditional

¹ Emerging universities in this study refer to public universities established in Saudi Arabia since 1998.

education for all. Therefore, e-learning has become an appropriate option to overcome these challenges. Second, KSA is a large country consisting of 13 regions; therefore, online education helps provide education to residents in remote locations. Similarly, Al-Asmari and Khan (2014) argue that the need for e-learning in KSA has resulted from the steep population growth along with the shortage of teachers.

Alenezi (2012) argues that more research is needed to understand faculty member perceptions of e-learning in KSA and the challenges and factors preventing them from using it. Many studies conducted on e-learning in KSA have only focused on factors affecting the use of e-learning in Saudi universities, e.g., (Williams, 2012; Zalah, 2018) or the difficulties in implementing e-learning (Al-Asmari & Khan, 2014; Al-Harbi, 2011a; Al-Shehri, 2010; Alrashidi, 2014).

Further, the increasing need for active participation in learning programs has created the need to upgrade learning systems from traditional course-oriented systems with minimal interaction to e-learning systems, which provide the opportunity for interactions with advanced ICTs. E-learning programs may be modelled to suit individual needs as well as enable interactions at individual and group levels for both users and system administrators. However, this type of educational system should be constantly evaluated by identifying factors in the implementation process from the perspective of faculty members to ensure it provides maximum benefits.

1.5 Significance of the Research

Since the advent of ICT in the field of education, major changes have occurred in KSA's academic environment; thus, teachers must adapt to these continual changes. A clear understanding of the perceptions of faculty members of e-learning is useful for building strategies to ensure the smooth implementation of e-learning at universities and other educational institutions in KSA (Alenezi, 2012).

Given the increasing adoption of e-learning in Saudi universities, the government is investing large amounts of money in promoting it. Because KSA's education system is centralised (Zalah, 2018), faculty members across Saudi universities face the same challenges in their use of e-learning (Al Harbi, 2014; Al-Harbi, 2011a; Alhareth, 2014a).

Moreover, the world was facing a period of rapid expansion of knowledge in education, demanding more interactive e-learning platforms. While e-learning has existed for some time in developed countries, there is an increasing demand in Saudi universities to move away from traditional course-oriented learning with minimal interaction to more user-friendly online learning platforms. e-learning has become a requirement for various higher education institutions in KSA. It is no longer appropriate to rely only on traditional means of education in light of the momentum in sophisticated methods of learning in the field of education. Therefore, Saudi universities have realised the importance of electronic education and its role in achieving a qualitative shift in the educational process. Therefore, every university in KSA has been motivated to establish a deanship of e-learning and distance learning. These deanships seek to obtain the most recent global developments in e-learning and benefit from e-learning technologies to become leaders in the distribution of knowledge to the public with the aim of fulfilling their mission of community service through cultural, scientific, and pioneering research excellence.

In addition to the administration of e-learning, universities plan and develop curricula in cooperation with relevant scientific departments and provide continual support to university employees to benefit from e-learning services (Al-Baha University, 2020; Jazan University, 2019; King Khaled University, 2020; Ministry of Education, 2019; Najran University, 2020)

The significance of this study is that understanding faculty members' perceptions of the use of e-learning will be useful in guiding decision-makers at Saudi educational institutions to develop e-learning in a manner that is consistent with their goals and cultural contexts. This research will ask the question if transitioning from traditional learning methods to e-learning methods will

improve education outcomes? The outcomes may be helpful to evaluate the factors affecting the effective use of e-learning in the university sector in the KSA, as well as inform policymakers about the challenges in providing e-learning and how to improve the adoption of e-learning in universities in the KSA. Therefore, recommendations based on the findings of the research will be provided.

Furthermore, on Monday, 9 March 2020, the KSA Ministry of Education announced that face-to-face study at educational institutions at all levels would be suspended, and all learning would be completely transferred to e-learning and distance learning in response to the COVID-19 global pandemic. Therefore, the study would benefit from investigating their perceptions of both teaching faculty members and their Deans, both before and after the COVID-19 global pandemic, and the challenges they experienced and are currently facing with the ongoing implementation of e-learning in Saudi Arabia.

1.6 Context of the Study

1.6.1 Internationalising Saudi education

Universities have always borne the responsibility of knowledge production and transmission, but with the emergence of globalization enhanced by new forms of communication and information technology, universities have found themselves in a competitive position with new systems and networks of knowledge (Abdolhafez, 2016). Strategic internationalization policies are considered one of the outcomes of globalization, and they are necessary imperative of our times. The education sector has been commodified around the world and the internationalization of the curriculum and access to courses has been one of the most important tributaries that turns it into a profitable sector. However, there may be a conflict between local standards and international standards or expectations within the KSA. It is said that what is considered a successful education in Europe /Africa /America /Asia may not be suitable in Saudi Arabia. This is attributed to the traditions and customs based on the Islamic religion, which enforce gender segregation in government workplaces and educational institutions. Thus, the significance of Saudi culture and religion should be duly acknowledged when adopting and implementing e-learning in educational institutions. This is due

to the presence of specific criteria and standards, such as gender segregation, which necessitate careful consideration. This phenomenon may be specific to Saudi Arabia and other Arabic countries, warranting careful consideration, particularly in relation to the successful implementation of e-learning initiatives in these contexts (Mutambik, 2018).

The KSA has realized that education is one of the pillars of developed countries that seek leadership and excellence. KSA directed its interest in education through its policy “Vision 2030” to make education a main pillar of development and to highlight the necessity of developing education and scientific research (Saudi Vision 2030, 2023).

The Vision 2030 included several basic principles to make KSA a leader in education including:

- Providing appropriate education opportunities for all male and female students.
- Providing lifelong learning opportunities.
- Rehabilitation of teachers at the highest level.
- Providing an educational environment that stimulates creativity.
- Developing educational curricula and the methods used in teaching them (Grand & Wolff, 2020; Mitchell & Alfuraih, 2018).

The KSA has actively embraced the global integration of informational and instructional technologies in its education system. Notably, the state has adopted the National Plan for Information Technology , which serves as an effective guide for incorporating e-learning into both public and private educational institutions (Al-Asmari & Khan, 2014). Since its implementation in the 1990s, this initiative has experienced remarkable growth, showcasing the country's commitment to modernizing its educational methods. The expected growth in e-learning in KSA has increased the prospects for educational diversification, and thus short and long-term plans to focus on e-

learning and training programs for all levels of education have been put in place. This move greatly enhanced the government's efforts toward removing barriers to education, most of which were established on the basis of gender and religion (Aljaber, 2018).

A significant number of regional and national officials have posited that the adoption of the E-learning programme will contribute to the enhancement of educational standards in educational institutions. It has also been argued that the presence of a centralised education system facilitates the seamless transfer, monitoring, and evaluation of teaching and learning practises across educational institutions, thereby promoting the adoption of best practises.

1.6.2 Saudi Arabian education system

The Saudi education system aims to build an integrated understanding of Islam by propagating the Islamic creed and inculcating students with the ideals, values and teachings of Islam, supporting students to acquire various skills and knowledge, maintaining societal development in the domains of economy and culture and qualifying individuals as beneficial members of society (Ministry of Education, 2019). Thus, education is highly regarded in KSA. The government spends 25% of its annual budget on education, making education free to all students at all levels (Ministry of Finance, 2019). Moreover, at the tertiary level, all students receive rewards to encourage them to study at universities and colleges. Each student receives a monthly stipend averaging 800–1,000 Saudi riyal (SAR) (AUD230–280) depending on their area of study. For example, science students receive SAR1000 (AUD280), while arts students receive SAR800 (AUD230) (Alamri, 2011; Alebaikan, 2010).

In KSA, the education system is divided into three main categories: general education, technical and vocational education, and higher education. Education in the KSA is under the authority of three main government institutions—the Ministry of Education, the Ministry of Higher Education and the General Organisation for Technical Education and Vocational Training which are responsible for the formulation and implementation of education policies (Alsharif, 2011).

The Ministry of Education monitors higher education at both universities and colleges in KSA. Of the 72 universities and colleges throughout the country, 29 are public universities, 14 are private universities and 29 are private colleges. These institutions have a variety of faculties and departments, and each university has the freedom to design its own curricula and courses (Ministry of Education, 2019). The ministry supervises universities, allocates budgets for all government universities, and supports many private universities.

1.6.3 Higher education in Saudi Arabia and university systems

It is important to point out that there have been two distinct ministries for education in KSA. The first was the Ministry of Knowledge, which was an extension of the Directorate of Knowledge and was established in 1953 during the reign of King Saud bin Abdulaziz Al Saud. It was responsible for the planning and supervision of general education for boys at three levels (primary, intermediate, and secondary). In 1960, during the reign of King Faisal bin Abdulaziz Al Saud, the General Presidency for Girls' Education was established along with 15 primary schools and one intermediate female teacher institution. With the development of education, a royal decree was issued to annex the General Presidency for Girls' Education to the Ministry of Knowledge. One year later, in 2002, the Ministry of Knowledge was renamed the Ministry of Education (Ministry of Education, 2020).

The second ministry is the Ministry of Higher Education, which was established in 1975 to take over the implementation of higher education policies. The Minister of Higher Education is responsible for implementing the government's policy in the field of university education (Ministry of Education, 2020). In 2015, the Ministry of Higher Education and the Ministry of Education were merged into one ministry known as the Ministry of Education (Ministry of Education, 2020).

The first university in KSA was established in 1957 in Riyadh, providing students with the opportunity to obtain a higher education degree in their home country rather than having to travel abroad to study (A. Alharbi, 2013). Although the university was initially open only to men, in 1960

the first school for girls was established in Riyadh. Although today there are many schools and universities for both women and men, the separation of sexes continues for cultural and religious reasons (Alharbi, 2013).

Algahtani (2011) notes that since its establishment in 1975, the Ministry of Higher Education carries out the planning and management of public and private education institutions and oversees the implementation of higher education policies for Saudi students at home and abroad. Higher education has been developed in a similar manner to public education, based on the principles of Islam.

Mutambik (2018) argues that the education system in KSA is under pressure to create educational opportunities to reduce illiteracy and raise education levels. Moreover, almost 50% of the Saudi population is under the age of 20 years; thus, educational institutions should prepare for an increasing number of students. e-learning is an appropriate need to meet these challenges.

The Saudi government has been increasing its expenditure on education, including higher education, at a spectacular rate in recent years. When King Abdullah ascended to the throne in 2005, there were seven public universities. Ten years later, there were 28 public and nine private universities, followed by the opening of more universities. Currently, there are 72 universities and colleges across the country, including 29 public universities, 14 private universities and 29 private colleges. These institutions include a variety of different schools and departments, and each university designs its own curricula and educational courses under the leadership of the Ministry of Education in line with its plans and goals (Ministry of Education, 2020).

1.6.4 E-learning in Saudi Arabia

Scientific and technological advances have significantly affected human life in all fields, including higher education (Al Saif, 2005). Al-Harbi (2011a) notes that many educational institutions globally have adopted e-learning systems. Since the advent of Information

Communication Technologies and their use in the field of education, major changes have occurred in KSA's academic environment. E-learning was introduced in KSA in 2002, gaining a special interest among educational institutions, teachers and students (Al-Asmari & Khan, 2014). Jabli and Qahmash (2013) note that to accommodate the rapid developments in technology, the Saudi government has sought to change the traditional educational system by introducing e-learning systems, especially in higher education institutions, making e-learning valuable in KSA.

For over a decade the Saudi Government has for example, been implementing e-learning in all educational institutions, and given the increasing adoption of e-learning in Saudi universities, the government is investing large amounts of money in promoting it. Today, countries compete to provide higher education to all members of society by different methods. As a result, most universities in KSA have significantly increased their focus on e-learning aiming to transfer all their curricula to e-learning platforms. Given its effect on education systems in KSA and globally, the adoption of e-learning technologies is inevitable. E-learning is entirely reshaping education systems in KSA by equipping students with new and exciting ways of learning, teachers with new ways of communicating and administrators with new ways of organising the education system (Almohaisen, 2007). Al-Asmari and Khan (2014) argue that the recent emergence of educational ICTs has made significant changes to learning and education in KSA, making it necessary to provide teachers with the skills necessary to overcome new challenges.

The introduction of e-learning has altered most educational processes in KSA, changing their focus from traditional learning to interactive e-learning, and ongoing technological advancements have made e-learning increasingly attractive (Alenezi, 2012). E-learning has become a common means of providing education; thus it is beneficial for both education and all types of learners and educational institutions (Hussein, 2011).

Alenezi (2012) maintains that understanding the perceptions and opinions of faculty members on the use of e-learning in KSA is a decisive step in its successful adoption. E-learning is a new

method of enhancing the educational environment and makes learning more exciting and interesting compared with traditional education.

In the Saudi context, many e-learning initiatives are already underway. According to Al-Shehri (2010); Alasmari (2014); Unnisa (2014), KSA has recently witnessed remarkable growth in higher education and e-learning. At the end of 2006, the National centre for e-learning and Distance Learning was established (Al Gamdi & Samarji, 2016). According to Weber and Hamlaoui (2018), one of the reasons for establishing this centre was the growth in population and the need for more trained and skilled teaching faculty members. The objectives of the centre are to:

- encourage educational institutions to adopt e-learning in line with educational quality standards;
- support educational institutions to research in the field of e-learning;
- encourage and coordinate projects of distinction in the field of e-learning.

However, since its infancy establishing e-learning in Saudi Arabia has also faced many challenges, so teachers need to adapt to these constant changes (Algahtani (2011). Thus, a clear understanding of the perceptions of faculty members on the use of e-learning is useful for building strategies to ensure the smooth implementation of e-learning at universities and other educational institutions in KSA (Alenezi, 2012).

Alkhalaf et al. (2010) argue that over the past decade, interest in e-learning has increased rapidly in the KSA for several reasons. First, educational institutions have inadequate human resources and facilities to provide traditional education for all. Therefore, e-learning has become an appropriate option to overcome these challenges. Second, KSA is a large country consisting of 13 regions; therefore, online education helps provide education to residents in remote locations. Similarly, Al-Asmari and Khan (2014) argue that the need for e-learning in KSA has resulted from the steep population growth along with the shortage of teachers.

Further, the increasing need for active participation in learning programs has created the need to upgrade learning systems from traditional course-oriented systems with minimal interaction to e-learning systems, which provide the opportunity for interactions with advanced ICTs. E-learning programs may be modelled to suit individual needs as well as enable interactions at individual and group levels for both users and system administrators. However, this type of educational system should be constantly evaluated by identifying factors in the implementation process from the perspective of faculty members to ensure it provides maximum benefits.

1.6.5 Southern region universities of Saudi Arabia

E-learning has become a requirement for various higher education institutions in KSA. It is no longer appropriate to rely only on traditional means of education in light of the momentum in sophisticated methods of learning in the field of education. Therefore, Saudi universities have realised the importance of electronic education and its role in achieving a qualitative shift in the educational process, and thus, each university has a deanship for e-learning and distance learning.

Emerging universities in this study refer to all newly established public universities in Saudi Arabia. According to Alotaibi (2017), emerging public universities are those that have been established from 1998 to the present day. Table 1-1 below shows the emerging public universities in KSA. Thirteen of the emerging universities shown in Table 1-1 were established to serve remote communities, and to alleviate some pressure on universities in the major regions (Aldosemani, Shepherd, & Bolliger, 2019).

Table 1-1: Emerging Public Universities

University Name	Year Established
King Khalid University	1998
Qassim University, Taif University, Taibah University	2003
Princess Nourah Bint Abdulrahman University	2004
University of Hail, Jazan University , Al-Jouf University, King Saud bin Abdulaziz University for Health Sciences	2005
Al-Baha University , University of Tabuk, Najran University	2006
Northern Border University	2007
Imam Abdulrahman Bin Faisal University, Prince Sattam Bin Abdulaziz University, Majmaah University, Shaqra University	2009
Jeddah University, University of Bisha	2013
University of Hafr Al Batin	2014

(The universities shown in bold are the four emerging universities participating in the study).

The following sections below provide some information about the four target universities to briefly illustrate where this study is going to take a place. The following description will give a snapshot on their main campus, and the location of each university.

below illustrates the location of these universities where the study was take place.



Figure 1-2: Location of King Khalid, Jazan, Al-Baha and Najran Universities in

(Adapted from: https://www.123rf.com/photo_122618060_stock-vector-colorful-saudi-arabia-political-map-with-clearly-labeled-separated-layers-vector-illustration-.html)

1.6.5.1 King Khalid University:

King Khalid University is located in the Asir region in the south of the Kingdom of Saudi Arabia. The university started with three colleges, namely the College of Sharia and Fundamentals of Religion, the College of Medicine, and the College of Education. Then the existing colleges were restructured, and a number of new colleges were created and the colleges for girls and colleges of teachers and colleges of health sciences were brought to the university, where the total reached 29 male and female colleges in all of their branches in the Asir region. The number of faculty members is about 2,791 males and females (King Khaled University, 2020). This study was focus on the main campus of the university.

1.6.5.2 Jazan University:

Jazan University is located in the southwest of the Kingdom. Jazan University witnessed a tremendous expansion in the number of its colleges because of the large area of the Jazan region and a large number of villages, and because of the political conditions that the region is going through. The colleges of Medicine, Engineering, Computer, Information Systems, and Society were the nucleus of the university. Later, the university included the Teachers College and the Colleges of Education for Girls located in the region, and then other colleges were added to it until the number of its colleges reached 24 colleges. The number of faculty members is about 1,819 males and females (Jazan University, 2019).

1.6.5.3 Al-Baha University

Al-Baha University is a nascent public university in southern Saudi Arabia, established in 2007. It aims to meet the needs of society and the requirements of development plans and the labor market. It also focuses on the diversity of study programs that give students opportunities to balance their academic experiences and career goals. It includes 16 colleges in various scientific and human specialties in all of their branches in the region. The number of faculty members is about 1,112 males and females (Al-Baha University, 2020).

1.6.5.4 Najran University

Under the guidance of King Abdullah bin Abdul Aziz, the University of Najran was established on November 1, 2006, when the college complex that was affiliated with King Khalid University in Asir was converted into a university under the name of Najran University. The university is located on the eastern stretch of the city of Najran on an area of 18 million square meters south of the Kingdom of Saudi Arabia and is thus the largest university city in the Kingdom of Saudi Arabia in terms of area. The university has 14 colleges. The number of faculty members is about 1,174 males and females (Najran University, 2020).

1.7 E-learning in Southern Region Universities

Each university in the southern region of the Kingdom has a deanship for e-learning and distance learning, as these deanships seek to obtain the most recent global developments in e-learning and benefit from e-learning technologies to become leaders in the distribution of knowledge to the public with the aim of fulfilling their mission of community service through cultural, scientific, and pioneering research excellence.

In addition to the administration of e-learning, universities plan and develop curricula in cooperation with relevant scientific departments and provide continual support to university employees to benefit from e-learning services (Al-Baha University, 2020; Jazan University, 2019; King Khaled University, 2020; Ministry of Education, 2019; Najran University, 2020).

1.8 Structure of the Thesis

This thesis consists of Seven chapters (**Error! Reference source not found.**).

This first chapter has provided a brief introduction to the study. The research aims, questions, and a statement of the problem have all been detailed above. In addition, the significance of the research and the context of the study were described.

The second chapter will present a review of the literature related to e-learning, including the definitions, types, advantages, and disadvantages of e-learning. The challenges of using e-learning and the technologies used in e-learning will also be discussed. Moreover, literature related to the studies that examine the needs of faculty members in their use of e-learning will be discussed, as well as the perceptions of e-learning in higher education settings. Furthermore, the literature that reviews flexible learning, formal and informal learning, emerging technologies, and their definitions and characteristics will be discussed. Importantly, this chapter will also review the more recent literature that examines e-learning during the COVID-19 pandemic and discuss the advantages and disadvantages of the integration of learning and technology, including flipped learning in the tertiary education setting. In addition, ERG (Existence, Relatedness, and Growth) theory will be discussed with particular attention to the elements of the proposed and revised ERG theory as appropriate for Saudi society.

Chapter Three details the methodology used in this study and research design. The two stages of the study will be described: the first qualitative stage and then the second quantitative stage of the study will be justified. Details of the study sample, semi-structured interviews, online questionnaires, and data collection and analysis techniques will be explained.

Chapter Four presents the results of the semi-structured interviews of the participants and the qualitative component of the study. Response rates are shown with the corresponding protocol. In addition, transcription and coding schedules for the interviews are shown. This chapter reports on the themes and sub-themes that emerged from the thematic analysis of the interviews.

Chapter Five presents the results of the web-based questionnaire, the quantitative component of the study. The chapter presents the characteristics of the sample, in addition to an analysis of the Rasch model and then an analysis of the levels of agreement of faculty members reported with statements concerning to the challenges, needs, and enablers that contribute to increasing and improving the use of e-learning, and the impact of the COVID-19 pandemic on e-learning, and The

level of faculty members' perceptions of e-learning. In conclusion, analyse the path of the conceptual framework.

Chapter Six discusses the qualitative and quantitative findings and provides an analysis of the results as they relate to the overall research questions. This chapter discusses the challenges, needs, enablers, the impact of COVID-19, and faculty members' perceptions of e-learning, as the results demonstrate that perceptions are generally positive for e-learning.

Chapter Seven provides an overall conclusion to this study and lists a series of recommendations. In addition, the limitations of the research and what this means for future research in the region will be highlighted.



Figure 1-3: Structure of the Thesis

Chapter 2: Literature review

2.1 Introduction

The past three decades have witnessed the rapid development of technological innovation in many aspects of life, particularly education, not only in developed countries but also in developing and emerging countries. Not so long ago, it would have been difficult to imagine that students would be able to attend lectures or complete entire courses from either their home or work, rather than in a classroom. New technologies have enabled this to occur. However, just as in the traditional classroom teaching context, there are various elements in the teaching process can influence the achievement of high-quality learning outcomes through the use of these new technologies. These elements encompass the personality of the teacher, which can be impacted by factors such as their age, gender, level of education, specialization, and teaching experience. Additionally, other critical factors include the teacher's technical and pedagogic competencies, their proficiency in ICT skills, and the extent to which they have received training in the field of educational technology (Alzahrani, 2019, p. 176).

E-learning and its use in the service of the educational process have become a reality, especially in higher education. This chapter focuses on the relevant literature related to e-learning, beginning with a definition of e-learning, its types, and the advantages and disadvantages of e-learning. This will be followed by a review of the relevant studies related to e-learning in the Saudi context.

2.2 Emerging Technologies

Sosa, Salinas, and De Benito (2017) defined technology as a set of systems designed for a particular job in a specific place at a specific time — in short, a set of tools used to facilitate daily life. Ahalt and Fecho (2015) claims that universities and colleges today face many challenges especially with high tuition costs and pressures to provide education for all. They add that many approaches and technologies have appeared, which have partially helped to face these challenges.

These include electronic textbooks, computerized grading, simulation technology, flipped classrooms, gamification, active learning classrooms, collaborative distance learning environments, massive open online courses, learning management systems, and the active learning forumTM platform. The increasing pace of educational technological development presents faculty members with two important challenges: (i) the use of new technologies ways that engage learners in constructive communications, and (ii) the effective integration of these technologies into course delivery to meet the needs of learners (Aljohani, 2016). Technologies can take many forms, including those that are known as emerging technologies (ETs) — technologies that have emerged in the field of ICT amid rapid technological growth. Elaborating on this, Al-Najar (2009) described educational ETs as integrated systems containing new technologies such as applications, educational devices, software or educational environments that are used to improve the learning process and increase its efficiency and effectiveness from a scientific perspective.

Artificial intelligence (AI) represents a qualitative leap across various fields of life in the present era, with education being one of these domains. AI plays a significant and prominent role in education, particularly in e-learning, where it is considered one of the most important emerging applications. According to Potode and Manjare (2015), artificial intelligence and its various applications are crucial in advancing intelligence within e-learning, including its technologies and tools.

Tang, Chang, and Hwang (2023) indicated that many researchers have noted that integrating emerging technologies into e-learning systems helps provide high-quality educational content for learners. He adds that artificial intelligence is one of the promising emerging technologies for enhancing and diversifying learners' performance in e-learning.

2.2.1 Definition of Emerging Technologies

According to Halaweh (2013), there is no clear and agreed definition of ETs. Some researchers view ETs as scientific innovations that may be developed for already existing industries. The term is widely used among academics and ICT users, yet little research has shed light on this term, including its definition and characteristics (Halaweh, 2013). Veletsianos (2010) asserts that the term is often used without a clear meaning or definition but combines existing conceptualisations to define ETs as tools, concepts, innovations, and advancements utilised in diverse educational settings to serve various educational purposes.

ETs can generally be defined as technologies developed in the last 1–5 years (Aljohani, 2016). Bozalek (2011) defines ETs as technologies that may have a broad influence on learning, teaching or creative inquiry in colleges and universities over the next 5 years or those that have entered widespread use. Nilsen and Puro (2005) define ETs as “innovations and improvisations that have the potential to significantly change work practices ... [and that may change] the creation, storage, manipulation or transmission of information, and in the process, creation or transformation of industry or markets” (p. 282).

2.2.2 Characteristics of emerging technologies

The characteristics of ETs enable them to be used as new methods for addressing inequities in access to knowledge as well as creating flexible, easy and safe interactive learning spaces in a variety of contexts (Bozalek, 2011). Litvinski and Litvinski (2018) have described five characteristics of ETs:

1. radical novelty, meaning that ETs display a new function or previously unknown principle for a new or existing technological operation;
2. fast growth, meaning that compared with similar technologies, ETs exhibit a relatively high rate of growth and diffusion;

3. coherence, meaning that ETs gain recognition among practitioners and researchers;
4. prominent impact, meaning that ETs display tangible effects within specific domains;
and
5. uncertainty and ambiguity, meaning that the future uses of ETs are yet to be defined and established.

Halaweh (2013) on the other hand has suggested six categories of ET:

1. Biotechnology
2. Artificial intelligence (AI)
3. Machine learning technology,
4. Advanced computing technology,
5. Quantum information and sensing technology,
6. Advanced materials and advanced surveillance.

Consequently, there are a variety of characteristics of these emerging technologies that need to be considered when examining e-learning.

2.3 Definition of E-learning

E-learning is a term frequently used across the literature focusing on online, remote, or external learning models utilising information communication technologies (ICTs), and researchers have provided many definitions. However, to date, there is no consensus on a specific definition of e-learning.

Although ‘e-learning’ is a common practice in education, it is difficult to define precisely. There is considerable controversy and disagreement regarding a comprehensive definition of e-learning because many current definitions are intended to reflect the specialisations, interests and purposes of different stakeholders (Algahtani, 2011). According to Zalah (2018), the origin of the term is unclear, but it is believed to have arisen in the 1980s with the initial development of online learning. Zalah (2018) adds that “several terms are utilized to depict this mode of learning and teaching; they involve web-based and network learning, distributed learning, virtual learning, and online learning” (p. 4). Furthermore, Zalah (2018) states that e-learning includes “every educational activity that is performed by groups or individuals working offline or online, asynchronously or synchronously via standalone or networked computers and every electronic tool” (p. 4). This definition is similar to that of, for example Al-Qahtani and Higgins (2013); Alasmari (2014); Alenezi (2012); Algahtani (2011); Unnisa (2014), who have all defined e-learning as a variety of educational methods, including campus-based learning, distance learning, network learning, distributed learning and all other forms of learning that are supported or supplemented by any form of ICT.

According to Naidu (2006, p. 1):

The term e-learning comprises a lot more than online learning, virtual learning, distributed learning, networked or web-based learning. As the letter “e” in e-learning stands for the word “electronic”, e-learning would incorporate all educational activities that are carried out by individuals or groups working online or offline, and synchronously or asynchronously via networked or standalone computers and other electronic devices.

Meyen et al., (2002, cited in Al-Qahtani & Higgins, 2013) define e-learning as the process of acquiring and using information that is gathered and delivered using electronic tools. Thus, the difference between traditional learning and e-learning is the medium used to convey knowledge. The advent of innovative multimedia tools and the development of the internet have increased the quality and prevalence of e-learning, especially in higher education. Arkorful and Abaidoo (2015);

Tucker and Gentry (2009) have defined e-learning according to its characteristics, therefore, e-learning can have many different definitions. However, all definitions reflect the connection to electronic media.

E-learning is a key modality that has led to significant changes in the educational environment. Indeed, it facilitates interactions and the interchange of knowledge and experiences. The communication between teachers and students, as well as educational institutions and students in e-learning, is dependent on the utilization of electronic methods. E-learning is also defined as the process of obtaining and utilizing knowledge through electronic methods that are primarily distributed and facilitated by technology. While this type of learning currently relies on computer systems and networks, it is expected to progress towards more diverse channels in the future. (Al-Soraiey-Alqahtani, 2010). According to Al-Qahtani and Higgins (2013) and Zalah (2018), e-learning can be defined as the delivery of instructional content via electronic media, including CD-ROMs, interactive televisions, satellite broadcasting, and audio or video tapes. Their list of media is restricted by the date of their writing, as now, in 2021, there are so many other options of e-media available to use cheaply and efficiently. The interactive e-media for e-learning includes university platforms, podcasts, educational channels, and tutorials. Hence for the purposes of this study, e-learning is defined as the presentation of electronic instructional content via computer- or network-based multimedia in such a way that enables learners to interact with the content, whether synchronously or asynchronously, and is available at the time, place and speed that suits learners' circumstances and abilities.

2.4 Types of E-learning

Arkorful and Abaidoo (2015) divide e-learning into computer-based and internet-based systems (see Figure 2-1). Al-Gahtani (2011, cited in Arkorful & Abaidoo, 2015, p. 31) further categorises computer-based e-learning into software-based (computer-assisted) and hardware-based (computer-managed) instruction and learning. In computer-assisted instruction, traditional tools are

replaced with electronic tools such as computers that are connected to an organisation's central database. In internet-based learning, content is not only connected to a database but is also available online, accessible anytime from anywhere. By contrast, Al-Soraiey-Alqahtani (2010) classifies e-learning as either synchronous, with recipients given live feedback, or asynchronous, with students able to choose when to access educational materials. Similarly, Nedeva and Dimova (2010) equate synchronous learning with live communication, such as video conferencing and online chat applications (such Zoom and Skype etc), whereas asynchronous learning does not require real-time communication, instead relying on emails, blogs, online forums, etc.

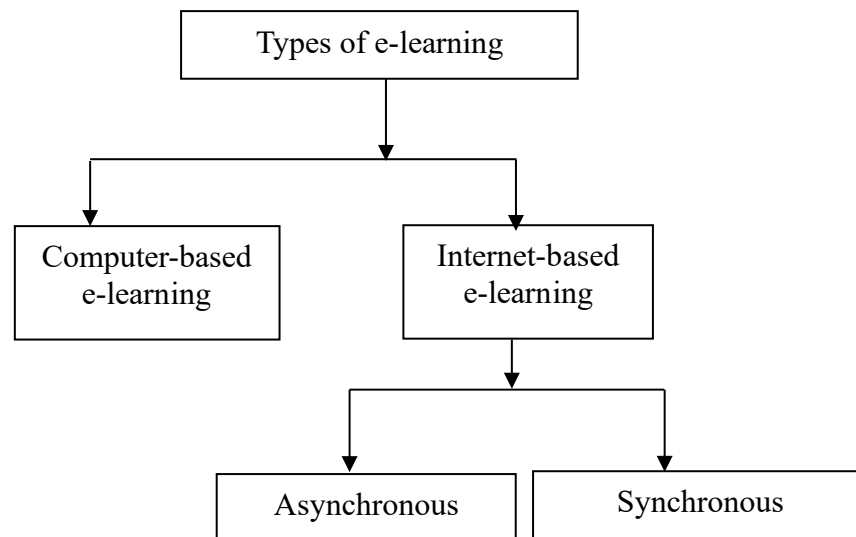


Figure 2-1: Types of e-Learning

2.5 The advantages and disadvantages of e-learning

2.5.1 E-Learning: The advantages

Given its benefits, e-learning is considered one of the most advantageous means of education (Al-Qahtani & Higgins, 2013; Babu & Sridevi, 2018). The use of e-learning in higher education will enhance the learning process for both teachers and students (Al-Soraiey-Alqahtani, 2010).

Research has identified the advantages of e-learning for a wide range of stakeholders, including institutions, teachers/faculty, students, and researchers. For example, Becta ICT Research (2004) notes that e-learning helps preserve learners' privacy, allowing them to study in their own

homes without feeling self-conscious or revealing their level of knowledge. Al-Soraiey-Alqahtani (2010) lists a wide array of e-learning benefits, such as the ability to focus on learners' needs, flexibility of time and place, efficient knowledge delivery, reductions in educational expenses and the introduction of new interactions between learners and instructors. These benefits are not associated with traditional face-to-face learning systems. Further, from the perspective of service providers, e-learning can alleviate physical pressures on higher education facilities, allowing teachers to present materials and to administer examinations online (Alasmari, 2014). Moreover, universities can extend their reach beyond their physical locations while reducing the overheads associated with teaching and training by using e-learning systems in their educational programs (Taylor, 2002, cited in Alasmari, 2014).

However, the focus of this project is on the advantages for faculty/teachers. E-learning can significantly assist faculty members in teaching or tutoring their students. According to several studies (Al-Shboul & Alsmadi, 2010; Alajmi, 2010; Gerasimova, Melamud, Tutaeva, Romanova, & Zhenova, 2018; Hoq, 2020), faculty members, in particular, may obtain the following benefits by implementing e-learning, which:

1. enables faculty members to reach their students more effectively through video meetings and chats;
2. helps faculty members to access the latest updates in the curriculum;
3. is powerful for preparing and evaluating tests and homework, and for communicating with students through academic forums wherein students can submit their assigned work and
4. is effective in terms of its low cost and flexibility.

Alasmari (2014) adds that e-learning enables teachers to develop professionally, to present their materials over the Internet and to examine their students remotely, as well as entailing flexibility, resource sharing, accessibility, and communication. Similarly, Becta ICT Research (2004) notes that e-learning may be used by teachers to provide feedback and support via a range of

methods, including email, web cameras and fax. In addition, e-learning can increase the efficiency of access to knowledge and educational resources for faculty members and researchers because of the accessibility of large amounts of information (Al-Qahtani & Higgins, 2013; Alasmari, 2014).

2.5.2 E-Learning: The disadvantages

Although e-learning has many advantages when it is adopted in education, it also has some disadvantages. A number of studies have identified negative aspects of e-learning (Al Rawashdeh, Mohammed, Al Arab, Alara, & Al-Rawashdeh, 2021; Al-Soraiey-Alqahtani, 2010; Alasmari, 2014; Algahtani, 2011; Almosa, 2002; Arkorful & Abaidoo, 2015; Lewis & Orton, 2000; Srivastava, 2019; Williams, 2012). The most cited disadvantages include:

1. E-learning may neglect the emotional and physical aspects of learning for students, as the focus is on the cognitive aspects.
2. The lack of social relations, which makes the learner suffer from feeling isolation and introversion, (which are less evident when learning face to face).
3. Excessive cheating and impersonation during exams and not being certain that those who perform the tasks and duties are the learners themselves.
4. The length of time in the preparation and design of educational content by teachers or instructional designers.
5. The effects on the health of the teacher and the learner by sitting in front of the screens of educational devices for long periods.
6. Exposing education systems to illicit hacking and downloading of viruses onto either personal computers or education-provider computer systems that may impede learning and expose information stored in the system to risks.
7. The possibility of infringing the rights of authors.

8. The need for e-learning systems to undergo periodic maintenance, regular upgrades, and continuous technical support, which may require higher budgets for service providers.
9. E-learning may not be as effective in some scientific disciplines such as medicine and sciences that require specific scientific skills.
10. Limiting the role of the teacher to guidance and counselling, due to the absence of other aspects of communications and interactions between the teachers and the learners.

2.6 Challenges to the Use of E-learning

Despite some of the deficiencies and disadvantages listed above, the literature has sought to explain the roles and benefits of e-learning, in particular how e-learning can have a powerful impact on teaching and learning; how it can motivate students to interact with each other and to exchange and respect different viewpoints; and how it can facilitate communication and improve relationships that support learning. However, there are many challenges to the use of e-learning, in particular the availability of infrastructure and issues around the use of it.

Along with the many advantages to e-learning, there are also a number of challenges. Firstly, reliable infrastructure is needed to shift to an e-learning system (Uppal, 2017). Changing from traditional means of providing education may initially appear costly because of the lack of support; however, when organisations gather the equipment and experts needed, e-learning becomes a useful strategy in the long term.

Second, the most common medium of e-learning today is over the internet (Alasmari, 2014; Uppal, 2017). The participation of many end-users, perhaps numbering in the millions, will increase internet traffic, making access to information difficult without a high-speed internet connection that can satisfy end-users' needs. Consequently, the provision of education could be worse if high-speed internet is not available, rendering the switch to e-learning unworkable.

Third, as Islam, Beer, and Slack (2015) have described, there are usually various technical problems to deal with such as errors, and other tasks and features that may not work as planned. As a result, academics and students, being the main intended beneficiaries of e-learning, should be involved in establishing these operations. Islam et al. (2015) warn that these challenges may affect the whole process, which should proceed smoothly for all parties, both internal and external.

Fourth, in many cases, challenges arise from a lack of technical training among both students and teachers (Islam et al., 2015). Alasmari (2014) adds that a lack of computer literacy reduces e-learning engagement and increases educational difficulties for students as well as instructors. To overcome these challenges, it is important to offer orientation courses that instruct users in the use of new systems and inform them of its benefits.

Fifth, Tarus, Gichoya, and Muumbo (2015) have observed that there is a shortage of policies for organising and controlling the implementation of e-learning processes in higher educational institutions. To govern the process, reliable policies and regulations are needed that establish the rights of all parties in the e-learning process.

Sixth, language barriers are a critical challenge, which can threaten the entire e-learning process (Uppal, 2017). Because e-learning is a global system, no single language is suitable for all interactions. Service providers must find ways of reaching speakers of other languages (Uppal, 2017) so that non-native language speakers can take advantage of the e-learning materials.

Finally, computer literacy is a critical challenge, especially in developing countries, but evident across all countries, where people must firstly learn to use the technology as it is intended (Alasmari, 2014).

On the other hand, faculty members may encounter some challenges that may hinder them from making the most of e-learning. Challenges include:

1. The need for institutional support (Al-Shboul & Alsmadi, 2010) such as continuous professional training and development to take advantage of advanced technologies in their teaching (Aljaber, 2018); and
2. The heavy workload related to e-learning results in a lack of time for teachers, which then results in some of them not investing more time in discovering and working with further e-learning technologies; moreover, the inadequate level of available course materials and the lack of moral encouragement can all be considered major challenges in the e-learning field (Al-Shboul & Alsmadi, 2010). Figure 2-2 Challenges of using e-learning below summarises the challenges of using e-learning.



Figure 2-2: Challenges of using e-learning.

2.7 Technologies Used for E-learning.

According to Sife, Lwoga, and Sanga (2007), e-learning includes a wide range of ICT applications, including television and radio, video conferencing, mobile technologies, web-based technologies, and can include the use of other methods and e-learning platforms such as using CDs and DVDs, all of which are effective learning strategies through which knowledge, understanding,

and skills can be acquired. Information technologies such as computers, the internet and associated multimedia are highly effective means of providing education. They facilitate cooperation between schools and universities and allow learners to develop knowledge, understanding and/or skills on the topic of interest by connecting with colleagues and experts who share their interests. Learning leaders are responsible for seeking and formulating information, which develops thinking skills (Alasmari (2014).

Various learning management systems are available, including open-source (e.g., Moodle) and commercial systems (e.g., Blackboard) are integrated programs used to disseminate and evaluate courses, store learners' academic records, distribute follow-up activities, manage educational resources through the collection, classification and indexing of design processes and facilitate communication between teachers and learners through discussion forums (Barakat, 2014). E-content, including educational materials and information relevant to a specific curriculum, is transmitted through activities and interactions involving a range of tools.

Recently, social media and other online tools have spread across the globe on a large scale, and many learners and teachers use them constantly. For example, Facebook, Twitter, bulletin boards, LinkedIn, Blogs, Wiki, and YouTube. These technologies appear to meet the needs of Internet users, especially the new generation. There are several reasons for using social media (compared to the other e-tools), including the speed of feedback, relationship building, social engagement, and direct communication (Liu, 2010).

Many 'Millennials' or younger students born into the digital, social-media and electronic age, have grown up using computers, mobile-phones, video games, digital players, and other online devices (Mutambik, 2018). Social media is one of the effective tools for communicating with others, especially when it is intelligently integrated into the learning processes because it enhances the technological learning skills of learners and reduces the burden of technical support for learners by teachers and educational institutions (Jovanovic, Chiong, & Weise, 2012).

The semantic or intelligent web is web 3.0 (e-Learning 3.0). It includes technologies like 3D visualization, augmented reality, big data, linked data, and cloud computing, so in the learning process, it can transform the passive learner into an active learner. However, web 3.0 is still in its formative years (Dominic, Francis, & Pilomenraj, 2014) and it will involve the technologies illustrated in Figure 2-3.

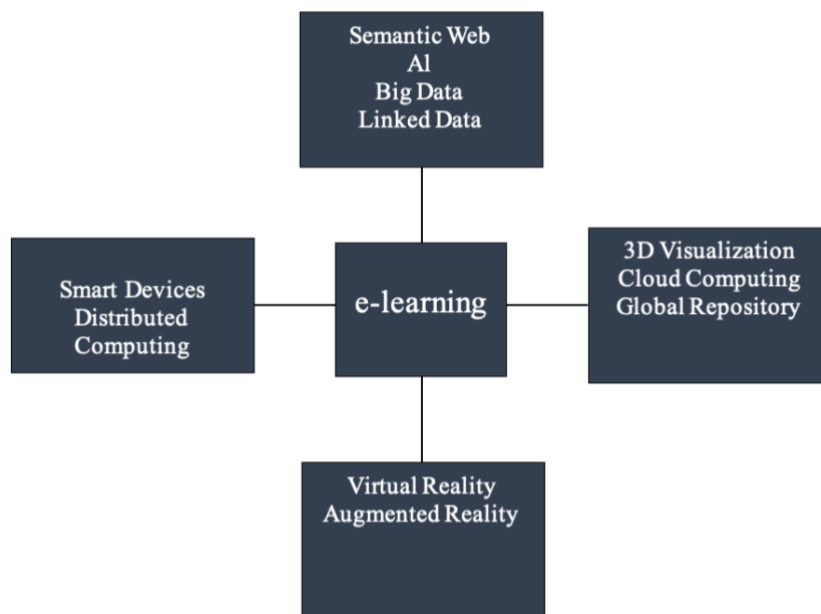


Figure 2-3: Technologies in E-learning 3.0

2.8 Faculty Members' Major Needs to Use E-learning.

This section presents some themes associated with faculty members' needs and e-learning. Several investigations of e-learning have identified major themes that can be beneficial to build on in this research. The studies listed in Table 2-1 clearly identify the major themes in the area of e-learning and faculty members' needs.

Table 2-1: Summary of studies of the needs of faculty members

Study	Sample	Design	Major themes	Comments
Sadik (2007)	219	Quantitative	• Training and development • Equipment to use e-learning • Encouragement and motivation • Institutional support	This study found that made faculty members reluctant to use e-learning: • lack of experience and skills in using technology • lack of knowledge and lack of training • lack of hardware and software • shortage of time • lack of technical support
Judge and O'Bannon (2008)	42	Quantitative and qualitative	• Training and development • Accessibility to resources • Technology support • Incentives	This study found that faculty members: • became confident users of technology • realised its ability to improve and change education
Ali et al. (2005)	65	Quantitative	• Encouragement and motivation • Cooperating • Organize and develop programs • Training and development • Technological support • The availability of resources and tools.	This study found that faculty members: • need to learn technology and how to use it effectively • desire to use e-learning. • address the problems facing a faculty member • want to benefit from other faculty members and to share experience.
Mohr and Shelton (n.d)	-	Report	• Training and development • Technology support • Institutional support • Faculty roles	This study found that the development of a faculty member when switching from traditional teaching to e-learning is going to provide: • opportunity for the faculty members to know their roles.
Ocak (2011)	117	Qualitative	• Institutional support • Training and development • Encouragement and motivation	This study found some challenges that made implementation of this type of education difficult. These challenges included the following:

Study	Sample	Design	Major themes	Comments
			• The availability of resources and tools • Effective communication.	• lack of organisation and planning • lack of electronic means • lack of clarity of instructions • lack of institutional support • insufficient training and development.
Alaa (2019)	270	Quantitative	• Training and development • Technology support • Availability of resources and tools • Institutional support	This study found that there are a set of challenges such as: • technological problems • lack of training programs • insufficient time to learn new technology • lack of financial support
Panda and Mishra (2007)	78	Quantitative	• Clear policies • Training and development • Easy access to electronic tools and resources • Continuous maintenance of programs and devices • Encouragement and motivation • On time support	This study found some challenges that prevent the effectiveness of e-learning. These challenges are: • lack of training and development • internet weakness • lack of technical support • lack of clarity of an educational policy towards e-learning • lack of devices and tools • increased teaching load • lack of incentives to use e-learning

2.9 Perceptions of E-learning in Higher Education

The widespread acceptance of the Internet and its availability indicates that e-learning removes barriers of time, and distance in both developed and developing countries. Saudi universities have embraced this form of e-learning and found that it provides needs to many of the problems that the traditional university education models were facing (Khan & Setiawan, 2019). Almohaisen (2007) argues that e-learning will completely transform the teaching process, while the rate at which this will occur is dependent on the perceptions of the faculty members. A. Alharbi (2013) maintains that e-learning is one of the useful options that should be adopted in teaching; thus, the perceptions of faculty members are important for the implementation of e-learning. However, they should not ignore the risks associated with e-learning despite its many benefits in teaching.

According to Akbarilakeh, Razzaghi, and Moghaddam (2019), the attitude of faculty members is a critical factor influencing the effectiveness and success of e-learning. Understanding teachers' perspectives on e-learning can lead to a more suitable learning environment. Similarly, Jamlan (2004) stated that understanding faculty members' attitudes towards e-learning represents a critical initial step in ensuring its successful adoption. Dalton Hebert Kisanga (2016) argues that the effective implementation of e-learning in education is highly dependent on faculty members' attitudes towards its use.

Most studies (Algahtani, 2011; Nassoura, 2020) have considered e-learning in higher education as a learning tool which utilises various electronic services including telephone, voice recordings, video recordings, and/or the broadcast of voice and/or video via satellite or through streaming over the internet and received via computers. Online (Internet-based) learning can be used as an intermediary between teachers and students. This type of learning makes it easier for both parties, because the delivery of educational materials is faster, easier and can be more efficient compared to other traditional methods of education (Nassoura, 2020).

Despite these perceived efficiencies, one study conducted by Al Meajel and Sharadgah (2018), investigated 117 faculty members' perceptions of barriers to using the online system of e-learning at King Saud University in the KSA. In this study the software program called '*Blackboard*' was being utilised. The results indicated that a person's academic experience, rank, training, and gender all had an effect on their perceptions regarding any barriers or difficulties students and staff had in using this e-learning program. This particular study revealed that there is a set of challenges that can affect e-learning experiences, hence this present research will investigate these further and they will thus be discussed below.

2.10 Flexible Learning

In recent years, technological advances have impacted people's lives to a vast extent, especially in relation to computer technologies, electronics and manufacturing which have enabled access to Virtual Reality (VR), Artificial Intelligence (AI) and Machine Learning, Big Data, and Wearable Devices. These advances have had benefits for areas such as medicine and, of importance to this thesis, education. For example, in the past, no one could have imagined that learners could study their academic courses or even attend short training lectures from their homes or work, and at a time that suits them. This flexible learning delivery of education has been both revolutionary and rapid.

It is important to define the flexible learning phenomenon as clearly as possible, as it is a relatively new term in the lexicon of education providers. According to Joan (2013) "Flexible Learning is a set of educational philosophies and systems, concerned with providing learners with increased choice, convenience, and personalisation to suit the learner. In particular, flexible learning provides learners with choices about where, when, and how learning occurs" (p. 37). In addition, Irvine and Cossham (2011) indicate that flexible learning uses the practices and principles of e-learning widely, providing learners with access to learning in the place, time and speed appropriate for them. A. Hammersley, Tallantyre, and Le Cornu (2013) note that the motive to offer flexible

learning such as e-learning experiences meets the needs of the students as it provides them with alternative pathways that suit their personal circumstances, such as being able to choose the time and place of their learning, and even cutting the cost of their educational expenses, such as travel and accommodation.

Flexible learning, without a doubt, makes students' lives easier and provides numerous benefits, because it can utilise both formal and informal methods of delivery to achieve the learning outcomes. Formal teaching and learning are methodical and well-organized, while informal methods can be more casual and unstructured.

2.11 Formal and Informal Learning

Due to the advancements and improvements of information and communication technology that can be utilised for e-learning, many more people are able to continue their personal education and development of their knowledge base and academic skills. This continuous education, or life-long learning, of a person benefits the whole community. According to Jagušt, Botički, and So (2018), it is difficult to express specific definitions of formal and informal learning. However, formal learning can be described as structured and intentional, as it usually takes place through a school or university under the formal supervision of a trained teacher. In contrast, informal learning can be defined as the learning which occurs automatically in life situations, through interaction with the environment, society, or workplace. Non-formal learning is learning that is not explicitly identified as learning but that takes place through planned activities such as the employee's skills acquired in work environments (Laal, Laal, & Aliramaei, 2014). Thus, learning includes different kinds of formal and informal and non-formal learning.

Jagušt et al. (2018) has indicated that the integration of various technologies led to the improvement of e-learning experiences, which thus led to increased motivation, interest, and participation of students in their formal and informal learning, and subsequently improved their academic performance. Moreover, the use of computers and other electronic devices for games and

entertainment can increase the opportunities for formal and informal learning and improved learning among the learners. Similarly, Czerkowski (2016) stated that the advancement of web-based technologies and the emergence of abundant social-media software for online learning has provided invaluable formal, informal and non-formal learning opportunities. For instance, as a kind of informal learning, today's students use instant messaging, visit websites and other online platforms, and download resources and materials, and all of these ways are important for social interaction. Learners will have the opportunity to interact with tools, resources, and collaborators while learning and working inside significant socio-technical networks within single educational institutions.

2.12 E-learning During the COVID-19 Pandemic

In response to the COVID-19 pandemic, Saudi universities halted their traditional classes and switched to online learning to ensure the continuity of education. The pace at which this transition occurred was remarkable and unprecedented. Despite the convenience of e-learning needs, educators had to make do with less-than-ideal conditions and experiment with various e-learning methods. Consequently, many educators experienced stress during the shift to online learning.

While flexible learning and e-learning were designed to support and supplement traditional educational models, the 2020 COVID-19 global pandemic precipitated the use of established and emergent technologies to continue the formal learning needs around the world. When many faculty members and their students were forced to 'lock-down' and 'stay at home', and university campuses were closed, the e-learning environment flourished. According to Bozkurt and Sharma (2020, p. ii):

We have now seen that the education system, in general, is unprepared and vulnerable to external threats. As a response to the global educational crisis, online emergency remote teaching has been put into practice. However, we stumble into defining what we are desperately trying to accomplish. Online distance education involves more than simply

uploading educational content, rather, it is a learning process that provides learners agency, responsibility, flexibility, and choice. It is a complex process that requires careful planning, designing and determination of aims to create an effective learning ecology. In appearance, we are currently engaged in seems like online distance education, however, in essence, this is rather a temporary solution, one that would be more properly named emergency remote teaching. In other words, online distance education is one thing and emergency remote teaching is another thing. Such a distinction is important, because the degree to which educators believe in distance education these days will play a significant role in the prosperity of distance education in a post-COVID world.

In this regard, when we consider online distance education, we should go beyond sharing simple tools, tips and tricks and instead focus on the changing learners' needs, learning contexts, and the availability and accessibility of the tools. Another significant distinction we have to highlight is how learners are involved in the process. Apparently, while distance education has always been an alternative and flexible option for learners, emergency remote teaching is an obligation, which means that we have to use different strategies and approach the case with different priorities.

Hodges, Moore, Lockee, Trust, and Bond (2020) have illustrated how, unlike experiences that were planned from the start and designed to be online, emergency remote teaching (ERT) refers to the temporary transition of educational delivery to an alternative format in response to a crisis. This involves implementing fully remote teaching methods for courses that would normally be delivered in-person or in a blended/hybrid format, with the intention of returning to the original format once the crisis has passed. The main aim of ERT is not to replicate a complete educational environment but rather to provide quick and reliable access to instruction and support during emergencies or crises.

Hoq (2020), has also argued that with the massive increase in e-learning, teaching methods and education generally have changed dramatically around the world with the emergence of the global pandemic. For example, Hoq (2020) noted that the Kingdom of Saudi Arabia has moved rapidly and unprecedentedly towards e-learning in all sectors of education, and that e-learning will become an even more essential part of education into the future.

During the COVID-19 pandemic, most countries of the world closed educational institutions and switched to e-learning and distance education temporarily in order to limit the spread of this deadly virus. As a result, there has been a significant impact on student learning because of this pandemic (Di Pietro, Biagi, Costa, Karpiński, & Mazza, 2020).

A study by Moralista and Oducado (2020) of 27 faculty members in a State College in the Philippines, which aimed to investigate faculty perceptions toward online education in higher education during the COVID-19 pandemic, found that most of the faculty members lacked training in e-learning. There was also an inefficiency in dealing with computers, in addition to the lack of a stable connection to the Internet. Therefore, they needed ongoing training to adapt to new events and to face the educational challenges that emerged due to COVID19, and to prepare for any other challenges that may appear in the future. In addition, this study found that e-learning was the best option for continuing education because it reduced the risk of contracting COVID19 by ensuring social-distancing and physical isolation was maintained (at the time, the only prevention method).

There are virtual teaching tools for every type of educational technique, as well as for a wide range of ages, requirements, and skills. Zoom, Google Classroom, Microsoft Teams, Blackboard, and Slack are just a few examples. They include elements like virtual whiteboards, chat rooms, polls, quizzes, discussion forums, and surveys that allow instructors and students to communicate online while also sharing course content. These can be useful and convenient tools for achieving learning objectives (Mukhtar, Javed, Arooj, & Sethi, 2020).

The results of a study by Di Pietro et al. (2020) showed that there were many potential impacts of the COVID19 global pandemic on education. For example, there were negative effects on students who suffered from lack of motivation, and thus they spent less time learning, and this was exacerbated by the changes to the way of learning through online technologies. As a result, students experienced a decrease in learning compared to those who received face-to-face learning. However, the long-term implications the global COVID19 pandemic in relation to social, cognitive, and emotional aspects of student's lives are yet to be empirically determined.

A study on the online teaching and learning methods utilized by Mizoram University in India found that only 11% of students used the new technological tool of Swayam Prabha educational 'Direct-to-Home' DTH channels/Zone Cable TV for the teaching-learning process and subsequent semester examinations. However, 27% of students found this digital tool for online learning to be somewhat impressive. Swayam Prabha is a government sponsored educational DTH. In addition to Swayam Prabha, teachers and students at Mizoram University employed various online teaching techniques such as Google Classroom, Zoom/Cisco WebEx/Google Meet, webinars, telephonic conversation, and YouTube videos (Mishra, Gupta, & Shree, 2020).

In a study conducted by Almaiah, Al-Khasawneh, and Althunibat (2020b) with 30 students and 31 experts in e-learning from six universities in both Saudi Arabia and Jordan, which explored the factors and challenges that affected the use of e-learning during the COVID-19 pandemic, the results indicated that there were a number of factors that affected the use of e-learning. These factors included technology, culture, self-efficacy, quality of e-learning systems, and trust. In addition, the study concluded that there are a number of main challenges that hinder the use of e-learning, for example, technical issues of e-learning, financial support, and change management issues.

2.13 Integration of Learning and Technologies in Tertiary Education

Salmi (2001) has asked us to imagine a university without buildings, a library, or even classrooms; a university that is hundreds of miles away from its students and has enrolments from all over the world; and a university that is open 24 hours a day. This may have once been considered a fiction but recent technological advances have made this a reality (Salmi, 2001).

However, this change in technology has put additional demands on the faculty. There is a demand in tertiary education for lectures to use technology in order to deal with 21st-century competencies like critical and creative thinking, communication, teamwork, and conflict resolution. As a result, the lecturer must not only have the needed topic matter knowledge and teaching skills, but now must also be familiar with these changing technologies, and be able to turn that into an active tool for meaningful learning (Kriek & Coetzee, 2016).

E-learning is interactional learning, allowing the learner to interact with the content, with classmates and the teacher, whether synchronously, for example, in chat rooms and video conferencing or asynchronously, through group news and email. The main feature of e-learning can be as an electronic interaction between the learner and content, learner and instructor, and learner and learner (Algahtani, 2011).

According to Al-Harbi (2011a), technological advances have had enormous impacts on various aspects of society, including education. Therefore, education facilitated by technology can transform learning and teaching paradigms. For this reason, many educational institutions globally have adopted e-learning systems. Universities in KSA have also intensified their focus on e-learning, replacing traditional methods of instruction, with the aim of competing globally for the delivery of higher education via the internet (Al-Asmari & Khan, 2014).

Manuguerra and Petocz (2011) claim that these new technologies have changed learning in higher education; thus, higher education teachers need to create appealing teaching methods to

communicate with the new generation of students. They also argue that new methods and appealing strategies should be implemented with modern technology, including the introduction of e-learning systems that allow students to access materials and participate anytime from anywhere. Learning theories provide broad principles for constructing specific instructional and learning procedures, and pedagogical approaches are derived from them. They serve as a link between theory and practice. Among the strategies and methods, are the learners' ability to construct knowledge through communication with their peers. This is referred to as cognitive presence (Gros & García-Peñalvo, 2016). In an e-learning environment, learners' capacity to portray their own qualities and identities is referred to as social presence, and the design, facilitation and direction of cognitive and social processes for the purpose of achieving personally meaningful and educationally worthwhile learning outcomes are defined as teaching presence (Gros & García-Peñalvo, 2016). The application of ICTs in higher education in the form of e-learning can bring changes to learning and teaching processes in response to many social and educational factors (e.g., greater information access, greater communication, synchronous and asynchronous learning and increased cooperation and collaboration), driving higher education institutions to introduce e-learning (Sife et al., 2007).

Given that the use of modern technology has become popular in education and gives students access to knowledge and learning, an important way for universities to assist faculty members to accept it is to integrate it (Newman, Miller, & Grover, 2015). Al-Asmari and Khan (2014) examined the current technological integration practices at 25 universities worldwide, concluding that a radical approach was needed for managing technologies in higher education.

2.14 Flipped Learning and Flipped Classrooms.

The flipped learning strategy, which is one of the most effective student-centred teaching approaches, flips the learning process from the typical classroom by having students study learning materials before going to class. Teachers will then lead students through homework assignments, problem-solving activities, and peer interaction sessions in order to foster individualized instruction,

personalized learning, and high-order learning throughout a class session (Halasa et al., 2020). Indeed, students are exposed to new content outside of the classroom through flipped learning, which usually takes place in an online context. This frees up class time for student-centered activities, allowing students to collaborate, develop interpersonal skills, think creatively, and communicate creatively (Baharum et al., 2020).

Inverted classrooms have recently become a favoured approach in instructional technology, especially when employing technology in higher education. Online videos, for example, have become common—rather than listening to lectures delivered in classrooms, students can access learning through online video lectures (Hao, 2016). Using this approach, digital technologies can be integrated into inverted classrooms so that teachers can restructure and organise instructional materials for both synchronous and asynchronous learning (Prodromou, 2017)

Jong (2019) notes that flipped learning in the higher education sector has become an important educational innovation that is improved with technology. Flipped learning is a method of integrated learning in which technology is activated during the learning process in such a way that enables learners to receive conceptual knowledge using different learning styles and sources, such as by replaying a video several times or accelerating the pace of certain materials to bypass parts of their experience, with the possibility of taking notes (Bishop, 2013).

2.14.1 Defining flipped learning and flipped classrooms.

According to Bishop (2013), the simplest definition of the inverted classroom is “events that have traditionally taken place inside the classroom now take place outside the classroom and vice versa” (p. 3), with an ensuing rearrangement of classroom and at-home activities. Halili and Zainuddin (2015) define flipped learning as that which enables students to achieve self-efficacy by learning at home to make space for other activities during class, such as problem-solving, discussions, interactive activities, and teaching of skills. According to Jong (2019), the flipped classroom “moves the learning and teaching activities conventionally carried out ‘inside the

classroom’ to ‘outside the classroom’ and vice versa” (p. 392). Some researchers, such as Uzunboyulu and Karagozlu (2015), describe the flipped (or inverted) classroom as personal learning, meaning that students have a responsibility to teach themselves, with the teacher being a facilitator who encourages interactions among students and teachers. Halili and Zainuddin (2015) view flipped classrooms as an element of mixed learning because students access lectures from outside the classroom via online video lectures recorded by the teachers and uploaded to online forums such as YouTube.

According to Brewer and Movahedazarhouli (2019), flipped learning is a "pedagogical approach" in which direct instruction moves from the group learning space to the individual learning space, transforming the group space into a dynamic, interactive learning environment in which the educator guides students as they apply concepts and engage creatively in the subject matter. Unlike a traditional lecture, flipping the classroom is about pedagogy. Technology is regarded as a facilitator, enriching the flipped classroom in the same way it might enhance a lecture. Students participate in learning activities both in the face-to-face and online components of a flipped classroom. The online component (pre-class learning activities in the case of flipped classrooms) is crucial for the success of any technology-mediated instruction since students must be appropriately prepared for prolific engagement in the face-to-face session. Students are usually obliged to watch the prescribed online videos before attending face-to-face classes, where they participate in group activities and conversations with their classmates and the teacher (Rasheed et al., 2020).

2.14.2 Advantages of flipped learning

In the past decade, teaching techniques have changed dramatically (Bishop, 2013). New technologies have led to so-called flipped classrooms, in which ‘flipping’ refers to teachers’ ability to record lectures for students to view before they attend class, reserving classroom time for student questions, clarification of points from recordings and the engagement of students in active learning

(Stone, 2012). Bergmann and Sams (2012) argue that the flipped classroom offers many benefits, including students having greater accessibility to help with difficult topics, enhanced teacher–student interactions and mitigating the effects of student absences. Halili and Zainuddin (2015) list several advantages of the upside-down classroom:

1. lifelong learner development, with students learning the content with the aid of technology before physically attending classes;
2. increased participation with the materials; and
3. increased interactions among students and faculty.

Consequently, inverted classrooms offer many advantages that help students become more confident and enthusiastic during classroom discussions, having encountered lessons at home prior to attending. Thus, study activities are focused more on students than on the teacher, with the teacher acting as a facilitator in the educational process.

Any future studies must focus more on the efficacy and quality of flipped learning.

Both during the COVID-19 crisis and in the post COVID-19 era, flipped-classroom learning with its blended learning, was and is commonly employed in the teaching and learning process, and is thus an important aspect of e-learning in general. Thus, research on students' perceptions of online learning, especially flipped classroom learning is important in understanding its efficacy and impact.

2.15 Perceptions of E-learning in Higher Education

Academic research on the topic of Education and Higher Education remains relatively new in the Saudi context because of the relatively recent establishment of new universities across Saudi in the last decade. Nonetheless, the field of research and investigation into the context and discipline of education is growing, and this research is testimony to that. There have been a few recent studies which have examined the perceptions, attitudes and needs of faculty members towards e-learning in

the Kingdom of Saudi Arabia, as these perceptions and needs have a direct impact on the readiness of faculty members and/or universities to meet the needs of learners. Table 2-2 summarises these studies on faculty members' perceptions and use of e-learning. To identify research gaps, studies from 2005 to 2020 were obtained using the keywords perceptions of faculty, e-learning and Saudi Arabia, resulting in 112 studies. After eliminating non-Saudi studies, only 10 studies remained. Reviewing these studies provided insights that are discussed in the following sections.

Table 2-2: Summary of Studies in the Saudi Context

Study	Method	Sample	The main results
Alenezi (2012)	Quantitative	442 faculty members	Positive perception of e-learning, it was also found that personal characteristics (gender, age, type of qualification, experience) have an impact on faculty members' perceptions of e-learning.
Alshangeeti, Alsaghier, and Nguyen (2009)	Quantitative	20 faculty members	The faculty member's teaching area (or discipline), experience, and gender have an impact on their attitude to this form of teaching. They also had a positive attitude towards online education in general.
Alkhalaf, Drew, Alghamdi, and Alfarraj (2012)	Quantitative	38 faculty members	There are positive trends towards e-learning systems and that these systems helped faculty members to improve their education and helped educational institutions to provide better services to learners.
Alsuwailam (2018)	Quantitative	219 faculty members	The teaching experiences of faculty members are among the most influential demographic characteristics on their use of e-learning. In addition, security factors have a significant impact on their use of e-learning.
Ibrahim, Mohamed, Aldhafeeri, and Alqadah (2019)	Quantitative	174 faculty members	There is a positive attitude towards the Blackboard system however experience, age and gender had an impact on the use of this type of education. However, there were a set of challenges that made this type of education difficult to implement and that had an impact on the success of this type of education. These challenges included the following: namely that there is no motivation that leads to an increase in the teaching efficiency of the faculty member, which hinders meeting the learning needs of learners, the faculty member's lack of experience and training, the weakness of the Internet, and the students were also one of the important challenges for not paying attention to using this type of education, due to the students' lack of interest in what is being offered, in addition to the fact that the faculty members consider that this type of education does not encourage the improvement of their teaching skills, but rather cares about technical and technical skills. Finally, the lack of motivation and time constraints made them unwilling to use this kind of education.
Al Meajel and Sharadgah (2018)	Quantitative	117 faculty members	The findings of the study showed that experience, academic rank, training, and gender had effects on faculty perceptions regarding barricades to using Blackboard in learning and teaching. The study indicated that there are a set of challenges that a faculty member faces when using Blackboard teaching, the most important of which are: technical difficulties, lack of training programs, the Internet disconnects repeatedly, insufficient time, and lack of support, increased teaching load. The results stated that the most important needs of faculty members centered around: the need for development and training in the use and design of e-learning courses, also the need to provide adequate technical support, and the need for different ways of communicating with students other than Blackboard, in addition to their need for strong internet speed to present their programs over the Internet.
A. Albalawi and Badawi (2008)	Quantitative	116 faculty members	The results of the study indicated negative to uncertain perceptions of 62.9% of the responses. As for experience and specialization, there are some differences in their perceptions about e-learning. The study showed the urgent need for faculty members for training in e-learning.

Study	Method	Sample	The main results
Al-Dosari (2011)	Quantitative	20 faculty members	There are positive perceptions of both faculty members and students towards the use of e-learning. The study also indicated that there were some challenges faced by faculty members, for example, lack of technological skills, study overload, and problems in designing, coordinating, and delivering teaching courses offered to students through e-learning. In addition to other regulatory challenges related to quality assurance and accreditation procedures. There was a need to solve these problems and challenges to ensure the delivery of effective e-learning in the future.
El Zawaidy (2014)	Quantitative	360 faculty members	The weakness of the Internet, lack of training and experience in using technology, restrictive rules, and lack of encouragement, in addition to lack of knowledge in producing electronic materials and downloading educational content were among the main challenges faced by faculty members in using e-learning. In addition to that, the study found that one of the most important needs that a faculty member needs to implement and develop e-learning are: training courses in designing and managing e-learning systems and the ability to deal with the technical problems they face during the implementation of e-learning, and the need for encouragement, motivation, and institutional support.
Alahmari and Amirault (2017)	Quantitative	102 faculty members	There are a set of challenges that made this type of education difficult to implement and that had an impact on the success of the use of e-learning. There were some challenges to the use of e-learning, including poor infrastructure, the most important of which was the low internet speed, the university's rules and policy restricting the use of e-learning, in addition to the lack of technical support and the lack of enough computer laboratories for everyone. One of the most important needs was to provide a strong infrastructure of technical support, high-speed Internet, training programs, in addition to providing computers.
Hussein (2011)	Quantitative	90 faculty members	There are positive trends towards e-learning management system JUSUR, although it has not been sufficiently activated, in addition to the fact that there are no differences in terms of gender or type of colleges towards the use of this type of system, there is a difference in terms of scientific ranking towards this type of system. The study concluded with a set of recommendations and needs to implement this type of system effectively, the most important of which are: technical support, training, and incentives.

Table 2-2 clearly shows that all studies were conducted using a quantitative research design. In the Saudi Arabian context, however, using a quantitative approach alone could be considered inadequate because of the novelty of the e-learning phenomenon. Therefore, some researchers for example (Alshangeeti et al., 2009; Alsuwailem, 2018) have recommend future qualitative research to obtain an in-depth understanding of e-learning and faculty members' perceptions. The proposed research responds to these recommendations by using a mixed methods approach to take advantage of both qualitative and quantitative methods. Therefore, these studies (as detailed in Table 2-2) have provided important insights into why we need to study more universities in the Saudi context. Studying emerging universities in the southern region of Saudi Arabia will contribute to the

literature, not only in the context of Saudi Arabia but also in the context of other countries that share similar features.

Following a review of the abovementioned studies, common factors were identified that may have been used as an initial base to develop the research framework. Factors such as age, gender and experience were common independent variables in many studies. However, Alsuwailem (2018) and Ibrahim et al. (2019) also added type of college as an independent variable, and academic rank was included as an independent variable by Alsuwailem (2018), Al Meajel and Sharadgah (2018) and El Zawaidy (2014).

On the topic of the perceptions of e-learning in high education, the related studies did not discuss the needs influencing the quality of e-learning, such as administrative support, course content, course design, instructor characteristics, learner characteristics, social support, and technological support. Thus, the findings of such a study could assist higher education administrators and senior management in improving their actions to improve the quality of e-learning.

2.16 Literature Review on the Theory of Existence Needs, Relatedness Needs, and Growth Needs (ERG)

2.16.1 ERG Theory

ERG theory is a needs-based theory of motivation coined by Clayton Alderfer in the late 1960s (Kessler, 2013). ERG Theory (Alderfer, 1972) builds upon and diverges from Maslow's theory of motivation, which identifies five categories of needs that determine human behaviour (Maslow, 1943). According to Caulton (2012) that ERG is a motivational concept that seeks to comprehend the factors that influence each person's individual behaviour.

Therefore, ERG theory can be considered as an alternative theory to Maslow's hierarchy of human needs theory. ERG theory reclassifies human needs into three categories - Existence (E), Relatedness (R), and Growth (G) (Table 2-3) (Alderfer, 1969). In contrast to the hierarchical

structure of Maslow's theory of motivation, ERG theory not sequential. Therefore, it is not necessary to satisfy the first need in order to satisfy the second need, etc. People's needs differ (Diep et al., 2019; Yang, Hwang, & Chen, 2011).

Table 2-3: Alderfer's ERG needs

Need	Description.
Existence needs	Are synonymous with the physiological and safety needs in Maslow's theory. These include the basic necessities for the survival of individuals (material elements/security / psychological), such as benefits, pay, security and safety.
Relatedness needs	Are synonymous with social needs in Maslow's theory, which is individuals' search for building personal relationships with people considered by this individual to be important or significant.
Growth needs	Are synonymous with the needs of appreciation and self-realization in Maslow's theory. That is, a person needs to feel his personal growth and involved with achievement, recognition, which is the wish for personally develop and improve.

According to Paavola (2020, p. 12), "ERG Theory is a need theory of motivation and is a new version of Maslow's Theory. It proposes three needs that must be satisfied in order for an individual to be motivated".

There are some differences between Maslow's theory and ERG theory; the main differences are:

1. Satisfaction/Progression, as the fulfilment of one category of needs continues to the next level.
2. Frustration/regression, if a person fails to meet higher-level needs, then they regress to meet lower-level needs. For example, if the employee does not get the chance of growth, then the motivation, in this case, will be less, and the frustration changes (Kessler, 2013; Paavola, 2020).

Based on the review of the above literature of e-learning and the multiple needs of an individual, and without meeting the needs of users for e-learning, there will be no effective use of it

because every user is looking to meet his/her needs by stimulating him/her within the work environment. Therefore, when these users find appreciation from their institutions to meet their needs for using e-learning, they will adopt it in teaching to achieve the required goals. Moreover, the three dimensions of needs (Existence, Relatedness, and Growth) affect individuals' perceptions of e-learning. Furthermore, the results of this study may add some additional factors that may affect faculty members' perceptions of e-learning.

2.16.2 The Revised ERG Model for E-learning and its Suggested Major Elements

Determining and meeting the needs of faculty members is critical to their use of e-learning and their perceptions of it. The aim is to enhance and improve faculty members use of e-learning and enable them to adopt it in their teaching methods. When reviewing the different theories about the needs and perceptions of teachers about their use of e-learning, it is worth noting that there is no previous or current comprehensive framework which can explain the needs and perceptions of faculty members in their use of e-learning, which is supported by multiple theories, including motivational theories and technological acceptance models. In this regard, the Alderfer's (1972) ERG Theory is applicable, in that it can explain different types of needs to sustain the motivation for the use of e-learning by teachers. Using ERG theory as a comprehensive framework, we can capture the needs of faculty members. In other words, the specific needs are to help faculty members perform optimally for the use of e-learning and their perceptions towards it on the one hand, and to maintain their motivation during the process of using e-learning on the other hand. Furthermore, this study provides new insights and addresses gaps in the existing literature.

After examining the existing research and conducting initial investigations in Saudi Arabia, a modified version of the ERG model is suggested for this study. This revised model will include definitions of each construct and explanations for their inclusion.

The following dimensions: Existence Needs, Relatedness Needs, and Growth Needs, are the main dimensions of the ERG theory. Clear policies, support, and expertise are the key elements of Existence needs; communication, collaboration, and conviction are the main elements of Relatedness needs; and skills, training, and infrastructure are the main elements of Growth needs

Figure 2-4.

The revised ERG model proposed here includes the above major elements as a result of the results of the present research which has also determined its suitability for the Saudi context. The modified model proposed here has been designed to allow a more comprehensive analysis of faculty members' perceptions of e-learning in the emerging Saudi universities.

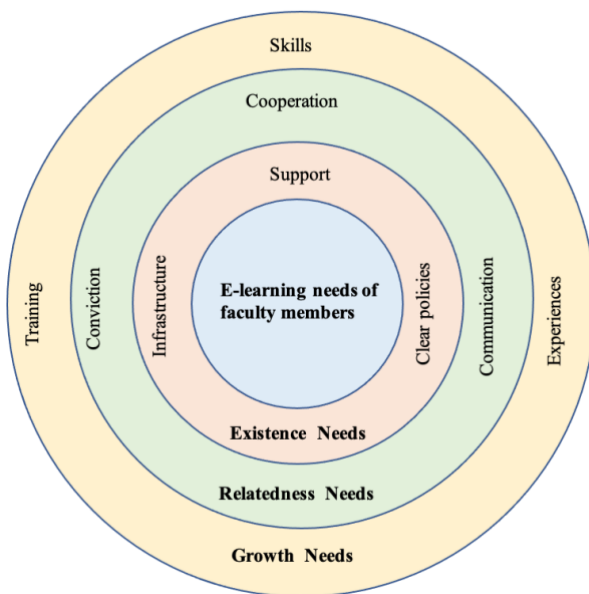


Figure 2-4: Faculty members' needs in E-learning based on the ERG theory.

2.16.2.1 Existence Needs

Existence needs can be defined as the basic physiological and material requirements that are essential for a faculty member to effectively use e-learning. These needs include clear policies, technical support, material and moral support, and exchange of experiences.

2.16.2.1.1 Clear policies

One of the Existence needs is that there should be clear policies. Education Policy is widely regarded as a crucial component of a government's agenda. Given the immense importance placed on education, most governments focus on the outcomes of their education policies and their impact on social citizenship and economic prosperity. Education policy covers a wide range of topics, including cultural, technical, political, and organizational issues. This encompasses policies related to the integration and utilization of information and communication technology.

Similar to other nations, Saudi Arabia has implemented regulations and established strategies to embrace e-learning and new technologies as a response to the economic, cultural, and social challenges that arise in an interconnected digital world (Bell & Stevenson, 2006). In the domain of education, policies are necessary to address various aspects such as computer networks, acceptable use of computers, dissemination, and creation of electronic content, copyright of courses, and encryption.

Clear policies enhance faculty members' sense of safety when using e-learning, enables them to obtain clear information, and reduces any confusion when using e-learning.

2.16.2.1.2 Support

Support includes all types, such as technical support, financial support, and material and moral support, in addition to the incentives provided to e-learning users in order to encourage them to increase their use. Providing technical support helps faculty members reduce anxiety levels when using technology for e-learning. This is especially useful for those who are hesitant or afraid to use technology and can help them achieve their desired educational outcomes. According to Almaghlouth (2008), the lack of technical support in educational institutions increases the challenges and difficulties facing the use of e-learning.

2.16.2.1.3 Infrastructure

A strong infrastructure is one of the most important needs for the use of e-learning in educational institutions, which includes the availability of e-learning devices and tools, a strong Internet, and regularly updated hardware and software as required.

In general, infrastructure in educational institutions plays a prominent role in providing teachers and students with the necessary resources and facilities to support their learning. A well-developed and maintained infrastructure is essential to providing quality education and ensuring student success.

Al-Soraiey-Alqahtani (2010) has indicated that for the success of e-learning in Saudi universities, decision-makers in those universities must provide the necessary resources for teachers, including a strong infrastructure.

2.16.2.2 Relatedness Needs

Relatedness needs refers to the fundamental needs of a faculty member for communication, belonging, and intimacy with the educational institution and its members. The need for social relationships and interpersonal connections is important when it comes to the faculty members using e-learning. These ‘relatedness needs’ include communication and cooperation with others to build knowledge that can help them to make the best use of e-learning and adopt it in their teaching methods and also involves a personal conviction for this type of education.

2.16.2.2.1 Communication

Effective communication between faculty members enhances the use of e-learning and also changes negative attitudes to positive ones. Effective educational communication requires a deep understanding of the needs, interests, and backgrounds of the teachers and learners, as well as an ability to adapt communication strategies to different learning styles and contexts.

2.16.2.2.2 Cooperation

Cooperation is an effective tool for exchanging positive experiences which can enhance the use of e-learning. Cooperation requires ongoing collaboration and dialogue among all stakeholders, including educators, policymakers, and learners, to ensure that the benefits of cooperation are realised and sustained over the long term.

2.16.2.2.3 Conviction

Personal conviction plays a prominent role in the use of e-learning. Personal convictions can influence an individual's thoughts, behaviours, and feelings, and can guide their decision-making and actions in various areas of life, such as relationships, career, and educational or social issues.

2.16.2.3 Growth Needs

Growth needs refer to the fundamental human needs for personal development, self-improvement, and the pursuit of meaningful goals. Growth needs include the availability of a range of skills, continuous training, and the availability of a strong infrastructure, all in order to develop the growth needs for the use of effective e-learning.

2.16.2.3.1 Skills

Faculty members need a set of skills that must be continually developed in order for them to advance professionally, including computer skills, instructional design, use of e-learning tools, and dealing with modern technologies. The more recent and continuous development of technology requires teachers to have the basic skills required to use the constantly changing technologies in education (Almaghlouth, 2008).

Al-Soraiey-Alqahtani (2010) has indicated that educational institutions should meet the needs of teachers to develop their skills to use technology in education in response to the continuous development of technology. Furthermore, Walabe (2020), has pointed out that teachers need to

develop their technical skills in order to use e-learning and its tools that enable them provide e-content effectively.

2.16.2.3.2 Training

Training is crucial for both new and experienced educators, as it allows them to keep up with the latest developments in education and adapt to the changing needs of learners. It can also help educators to meet the requirements of educational institutions. According to Hennessy et al. (2010), the government's policy objectives concerning the acceptance of e-learning can be achieved by addressing the needs of faculty members through comprehensive training at both pre-service and in-service levels, and this training is crucial to the success of the government's efforts. By providing such training, teachers can gain confidence in using e-learning, which in turn can promote its adoption (Torkzadeh & Van Dyke, 2002). The main goal of the training is to improve the quality of education by equipping educators with the necessary tools and techniques to facilitate learning effectively.

Faculty members need to keep pace with the technological advances, technical developments, and training available on the use of anything and everything new and useful. Training is an ongoing process that plays a vital role in ensuring the quality of education and enhancing the learning outcomes of students.

2.16.2.3.3 Experiences

Donnelly and McSweeney (2008) suggest that Teacher Educational Experience (TEE) plays a crucial role in the perception, acceptance, and planning of e-learning systems. By experiencing various educational technologies, teachers gain valuable insights into the learning process, which can inform their use of e-learning tools. Thoughtful training that explores strategies for supporting e-learning systems can further enhance teachers' understanding and encourage them to draw on

their educational experiences to promote their positive perceptions of e-learning and its acceptance and adoption among their students.

Donnelly and McSweeney (2008); (Jimoyiannis & Komis, 2007) have proposed that a teacher's educational experience plays a critical role in shaping their perceptions and attitudes toward e-learning. Lack of such experience, along with other factors, can contribute to a hesitancy to accept and utilize e-learning tools.

Therefore, educational institutions should strive to develop and recognize teachers' expertise in order to help faculty members benefit from e-learning to its fullest potential. Table 2-4 summarizes the needs of faculty members based on ERG theory.

Table 2-4: Theoretical framework for the e-learning needs of faculty.

Dimension	Element	Description
Existence Needs	Clear policies	One of the needs for a sense of safety is the clarity of policies, especially the clarity of the e-learning use policy. Such policies seek to establish a framework for guaranteeing that everyone has access to a high-quality education that satisfies their requirements and prepares them for success in society.
	Support	Support refers to the assistance and resources provided to individuals or groups to help them achieve their educational goals. In addition, support here refers to helping faculty members and students to overcome challenges to their education, such as learning difficulties, financial hardship, or personal challenges. Ensuring that each person has access to the opportunity and resources they need to thrive academically and realize their full potential is the ultimate goal of support.
	Infrastructure	Infrastructure refers to the physical and technological resources and facilities necessary to support teaching and learning activities in educational institutions. This includes buildings, classrooms, laboratories, libraries, technology tools, internet connection, and other resources required for effective education delivery.
Relatedness Needs	Communication	Communication here refers to the process of exchanging information, ideas, and knowledge between educators and learners or between educational institutions and the community. It involves the use of various forms of communication, such as nonverbal and verbal communication, written materials, digital technologies, and multimedia resources, to facilitate learning and teaching.
	Cooperation	Cooperation here refers to sharing of resources, knowledge, and expertise among educational institutions, and individuals to improve the quality and effectiveness of teaching and learning. It involves working together to identify common goals, develop joint programs, and share resources and expertise to achieve those goals.

Dimension	Element	Description
	Conviction	Conviction here refers to a strong belief regarding the importance of e-learning use or educational practices related to it. For example, someone might have a "conviction" that traditional learning is more effective than e-learning. This conviction can be based on personal experiences or beliefs and other factors that shape an individual's view of e-learning.
Growth Needs	Skills	Skills here refer to the broad range of knowledge, abilities, and competencies required for the effective teaching of e-learning. For instance, instructional design, the use of computer software, and the use of technology in e-learning and its tools. In general, skills are essential needs for effective teaching and learning and are constantly being developed.
	Training	Training refers to the process of providing individuals with the knowledge, skills, and competencies necessary to become effective teachers or to enhance their existing teaching skills. Training can take many forms, including academic programs, workshops, seminars, and webinars.
	Experiences	Experience here refers to the knowledge and skills acquired by individuals during their scientific and educational journey. These experiences can take many forms, including classroom instruction, internships, extracurricular activities, work-study programs, and other types.

2.17 Chapter Summary

This literature review has focused on previous studies relevant to the topic of the thesis. The studies presented all emphasize that information technology has become a prominent feature of modern society, resulting in a significant reliance on it. The emergence of e-learning is a notable development in this era, and researchers have varied in their definitions of this type of education.

The advantages and disadvantages of using e-learning were presented in this chapter. This chapter also identified challenges affecting e-learning, such as motivation, technological support, competence, strong infrastructure, continuous training, experience, and more. In addition, issues of accessibility, ICT infrastructure, educational policies, and institutional support were all noted as potential barriers to e-learning education.

In order for faculty members to fully benefit from the benefits e-learning provides, educational institutions must meet their needs and overcome these challenges. In addition, this chapter discussed the perceptions of e-learning in higher education, flexible learning, formal and

informal learning, emerging technologies, e-learning during the COVID-19 pandemic, integration of learning and technologies in tertiary education, and flipped learning and flipped classrooms. The review enabled the adaptation of ERG Theory to suit the specific context of e-learning in higher education in Saudi Arabia. This literature review has, in terms of ERG theory in general and in terms of the current situation regarding teachers' perceptions of e-learning in Saudi Arabia, identified the need to implement a revised version of ERG to explore the perceptions and needs of higher education faculty in their effective use of this type of education.

Chapter 3: Conceptual Framework and Methodology

3.1 Introduction

This chapter presents the conceptual framework drawn from the literature review and explains the research methodology used in this study. Research methodology is the systematic process by which studies are conducted and includes the methods of data collection and interpretation (Kothari, 2004). The methodology used in this research involves a combination of both quantitative and qualitative data, which is also known as a mixed-methods study.

This chapter describes the research methodology used in this study to identify faculty member perceptions of e-learning in four emerging Saudi universities. To achieve the study aims, to answer the research questions, and provide a comprehensive approach to these, an exploratory sequential mixed methods approach was adopted, and the study was conducted in two phases. The first phase of this study involved a qualitative approach using semi-structured interviews with the Deans of e-learning and 12 members of faculty in those universities who were recommended by the Deans. While the second phase of the study involved a quantitative approach and depended upon the results of the first phase, using an online questionnaire to explore the perceptions of faculty members on their use of e-learning in emerging Saudi universities and the difficulties they face.

In addition, this chapter presents sampling methods, data collection and analysis, and research design, with an indication of the types of research methods used here and an overview of the study site. This chapter also outlines the ethical considerations that this research encountered and incorporated.

3.2 Conceptual Framework

According to Joseph A Maxwell and Loomis (2003), the conceptual framework of a study includes the theory or theories that are pertinent to the phenomena under investigation, and which serve to inform and shape the research. A conceptual framework typically represents the key

concepts or variables in a graphical or narrative format, illustrating their presumed relationship with each other (Punch, 2005).

The advantages of having a conceptual framework include “bringing clarity and focus to the research questions, making explicit what we [researchers] already know and think about the area and topic, and aiding considerably in communicating ideas about the research” (Punch, 2005, pp. 53-54). Moreover, according to Wisker (2005), a conceptual framework plays a crucial role in facilitating the cohesive progression of a research problem and its procedures.

One of the important factors identified in the literature as necessary and influential in the use of e-learning in educational institutions is the perceptions of faculty members of e-learning in those institutions (Al-Dosari, 2011; Alenezi, 2012). Faculty members' perceptions of e-learning refer to their attitudes, beliefs, and opinions regarding the use of electronic learning methods and technologies in educational settings.

Faculty members' perceptions of e-learning can influence their willingness to adopt and integrate e-learning strategies into their teaching practices. Positive perceptions may lead to increased enthusiasm, motivation, and innovation in utilising e-learning tools, while negative perceptions may result in resistance or hesitation towards e-learning implementation (Alenezi, 2012; Hamdan, 2014).

Additionally, among the various factors identified in the literature as necessary for the successful implementation of e-learning, are overcoming challenges faced by e-learning users (AL-Shammari, 2016; Alenezi, 2012), and providing the needs that motivate users to use e-learning in their educational institutions (Alaa, 2019; Alanazi & Alshaalan, 2020; Alenezi, 2012; Algahtani, 2011). Furthermore, identifying enablers that enhance the improvement and increased utilization of e-learning has a significant impact on faculty members' perceptions and encourages their effective use of e-learning in their teaching practices (Mutambik, 2018; Zalah, 2018). Recently, the spread of the COVID-19 virus and the global shift of educational institutions towards e-learning, have had a

noticeable impact on the utilisation of e-learning, especially in Saudi Arabia. COVID-19 has played a significant role in shaping faculty members' perceptions towards e-learning (Al-Anezi, 2021; Alammery, Alshaikh, & Alhogail, 2021; Alanazi & Alshaalan, 2020; Sastre-Merino, Núñez-Del-Río, Caravantes, & Bravo-Ramos, 2021).

Faculty members' perceptions of e-learning refer to their attitudes, beliefs, and opinions regarding the use of electronic learning methods and technologies in educational settings. Understanding faculty members' perceptions of e-learning is crucial for educational institutions and policymakers, as it helps in designing effective training programmes, providing adequate support, and addressing concerns to promote successful integration and utilisation of e-learning in the academic environment (Abdelmola, Makeen, Hanafi, & Ageeli, 2021; Alenezi, 2012).

Nonetheless, previous research has not elucidated how these primary factors interact to achieve outcomes, which is the overarching objective of the current research. To guide this study, it is crucial to postulate empirically explorable relationships among the major factors. Hence, the following conceptual framework has been developed to guide the study's design (Figure 3-1).

Within this conceptual framework, the direction of causality is shown as flowing from the left to the right.

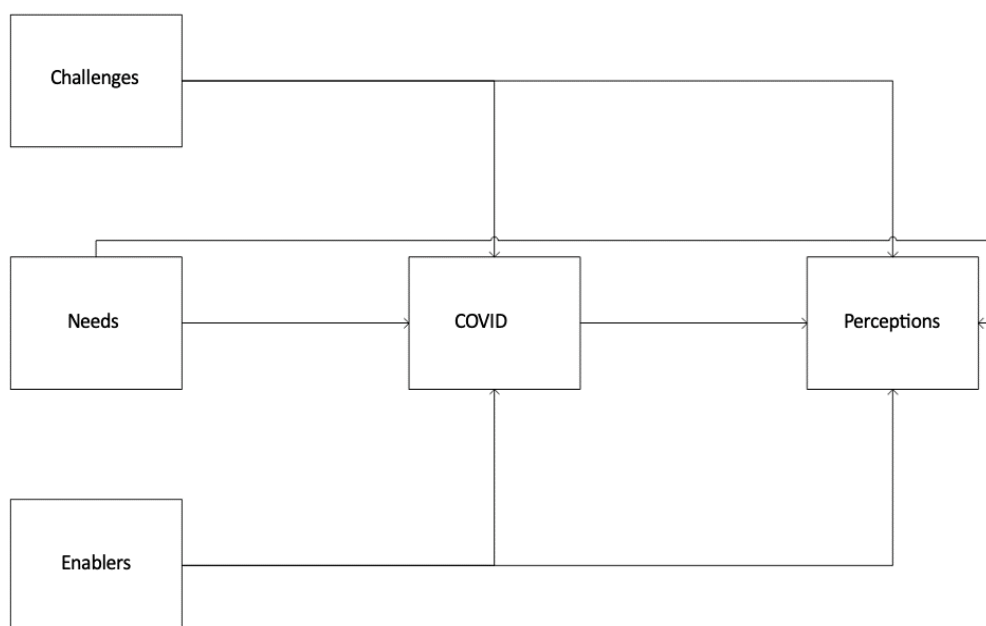


Figure 3-1: Conceptual framework

As shown in Figure 3-1, the framework guiding this study identifies the implicit factors influencing faculty perceptions of e-learning. These factors are Challenges, Needs, Enablers, and COVID-19. The factors are enumerated as follows.

Challenges refers to internal or external conditions that may deter or hinder faculty members from implementing or utilising e-learning. They may include: weak infrastructure, which includes (weak internet, lack of availability of devices, etc.); weak technical, material, and moral support; and lack of clarity in policies, etc., which hinders effective use of e-learning in educational practices and impedes the achievement of educational goals or desired outcomes.

Needs refers to faculty members' requirements to adopt e-learning effectively in their teaching practices. They may include technical and financial requirements, as well as moral support, training and skill development, infrastructure, etc. Meeting faculty members' needs fosters their motivation towards the use of e-learning in order to achieve the goals of the educational institutions to which they belong to.

Enablers refer to internal and external conditions that enhance the motivation of faculty members to use e-learning and help them increase and improve their use of e-learning in their educational institutions. They may include incentives, support, infrastructure, training, clarity of policies, attendance at training courses, and development skills.

COVID-19 refers to the extent to which the pandemic has affected the utilisation of e-learning by faculty members in educational institutions, their perceptions towards it, and the extent of educational institutions' ability to demonstrate 'readiness' for the pandemic.

The framework is a structural representation and a flow of process. Structural aspects are the supposed relationships between factors and process aspects are the dynamic interaction of these relationships. There are linkages and interactions between Challenges, Needs, Enablers, and COVID-19. The interactions between factors are likely to lead to different impacts. It is expected

that the provision of needs, which in turn reduces challenges, will lead to positive perceptions among faculty members and thus further improve and increase the use of e-learning, which should ultimately have a greater impact on the perceptions of e-learning faculty members in a positive manner. Likewise, it is expected that an absence or a low level of enablers would lead to negative perceptions among faculty members.

Furthermore, it is expected that the COVID-19 pandemic had a significant and direct impact on the perceptions of faculty members, as it appeared to have turned all the standards around and forced educational institutions to resort to e-learning, which had a direct effect on changing many concepts towards e-learning. COVID-19 came and changed everything.

It is recognised that the effects of the factors will be determined by intervening factors such as training, educational policies, infrastructure, teaching expertise, and support of all kinds, among others, which have not been directly examined in this study.

For example, strong infrastructure and the provision of technical, financial, and moral support, as well as clear policies, are expected to address the constraints faced by faculty members during the use of e-learning, as well as to provide for their needs and identify the factors that influence their use of e-education. In addition, it is expected that those impediments will be addressed and that those needs will be met to address negative perceptions among e-learning faculty members. However, in order to make research manageable, it was necessary to set limits around the study and focus attention on the factors mentioned, which are considered to have the most impact on the perceptions of e-learning faculty members based on the findings of prior studies presented in the literature review.

3.3 Research Design

Creswell (2009, p. 4) defines mixed methods research as a combination of both qualitative and quantitative research with the aim that it will be greater than the sum of its parts. Creswell stated that:

It involves philosophical assumptions, the use of qualitative and quantitative approaches, and the mixing of both approaches in a study. Thus, it is more than simply collecting and analyzing both kinds of data; it also involves the use of both approaches in tandem so that the overall strength of a study is greater than either qualitative or quantitative research.

Creswell (2009) mentioned that there are three general types of mixed methods strategies, as follows:

1. **Concurrent mixed methods:** This strategy provides overall analysis of the research problem. To collect data, the researcher conducts both qualitative and quantitative phases at the same time.
2. **Transformative mixed methods:** The researcher conducts both qualitative and quantitative research using a theoretical lens that provides overarching perspective as a guide or framework for research procedures. The method of data collection within this lens could be the sequential or the concurrent approach.
3. **Sequential mixed methods:** The researcher seeks to expand the findings by conducting two phases of the study. The researcher may start with the qualitative method for exploratory purposes and then the quantitative method, or vice versa, and the second phase depends on the results of the first phase.

A sequential exploratory mixed methods research design was used for this study. It was appropriate for this study because it enabled a detailed, in-depth understanding of technological and social phenomena and allowed for appropriate deductions useful in developing the quantitative tool. Beginning with a qualitative design helped the researcher to understand the context of the phenomenon being studied, namely the use of e-learning in Saudi higher education, and thus design

a high-quality quantitative instrument that included all of the important variables to investigate and find comprehensive answers to the research questions.

The exploratory design comprised a Qualitative First Phase followed by a Quantitative Second Phase (Figure 3-2). Detailed descriptions of these two phases are presented in Sections 3.7 and 3.8

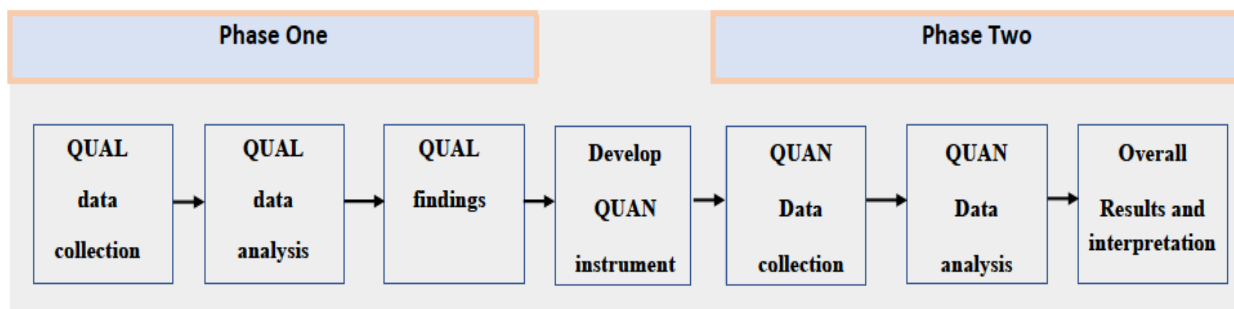


Figure 3-2: Sequential Exploratory Mixed Methods
Source: Adapted from (J. Creswell, W & V. Clark, L, P, 2007)

3.4 Research Population

Universities in KSA vary widely in terms of their facilities, buildings, and faculty members. For example, King Saud University has greater technology infrastructure and internet speeds than the emerging universities in KSA. The following universities were chosen as study sites for this research: King Khalid University, Jazan University, Al-Baha University and Najran University, all of which are in the southern region of KSA. These universities were chosen for several reasons. First, the selected universities are all emerging and have similar capabilities and conditions; thus, the findings of the research may be applicable to other emerging Saudi universities and universities with similar conditions. Second, no prior studies of faculty members' perceptions of using e-learning have been conducted at these universities, therefore reducing the risk of research participant fatigue (i.e., being over-researched). Third, the researcher had access to these universities (through his employment), and thus was able to make initial contact with relevant people to share the research goals and invite them to participate in the study.

3.5 Sampling

A sample is a small part or subgroup that represents an entire study population (Cohen, Manion, & Morrison, 2018). According to these authors sampling can be divided into two major methods: probability and non-probability sampling. Figure 3-3 illustrates the diverse kinds of sampling that can be used in research. According to Cohen, Manion and Morrison (2018) a probability sample can be defined by each member of the study population having the same opportunity to be a member of the study, meaning that all individuals have equal opportunities to be selected as individuals in the study sample. On the other hand, in the non-probability sample, the selection of individuals will be intentional, meaning that the exclusion of some individuals and the inclusion of others is certain; therefore, there are not equal opportunities to choose the study sample members from the study population (Cohen et al., 2018).

In this study, the non-probability sample (purposive and snowball sample) was used in the qualitative phase and random sampling was used in the quantitative phase. The aim of using purposeful samples in Phase 1 was to obtain data from those with experience and deep knowledge in e-learning by virtue of their status, and professional roles. The probability sample (random sample) was used in Phase 2 to obtain an unbiased representation of the population, and a representative sample of the characteristics of the entire study population.

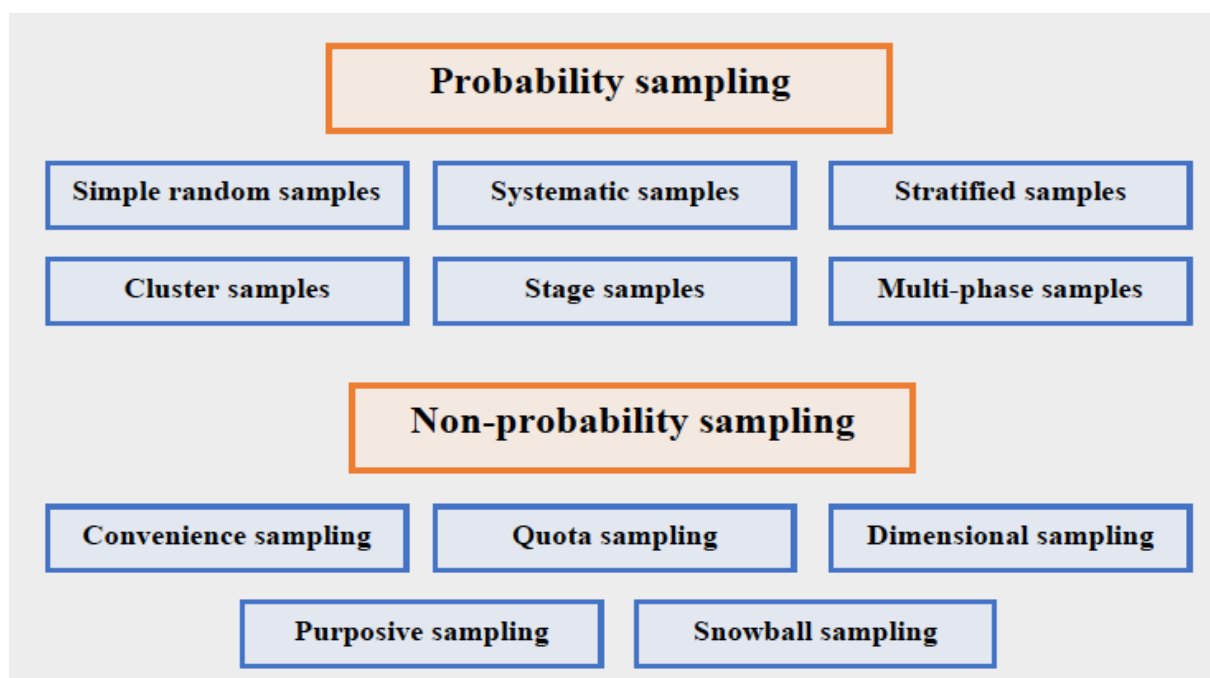


Figure 3-3: Types of sampling strategy

3.6 Translations of the Interview Questions and Questionnaire

This study is being undertaken at an Australian university where English is the official language. Therefore, the interview questions and the online questionnaire were originally formulated in English for the purpose of review and ethical considerations. However, Arabic is the official language spoken by the participants in this study and as such it was important to translate everything into Arabic. While many of the study participants may have been proficient in English, to ensure that respondents understood the consent process as outlined in the ethical conduct of research, all of the study documents were translated into Arabic prior to being distributed to potential participants.

As Saunders, Thornhill, and Lewis (2012) have emphasised, the translation procedure requires skill and care to ensure that the intended meaning of the original questionnaire is not altered in any way. According to Chen and Boore (2010), it is essential that the translation is guided by a translator who is multi-lingual and who is adequately educated to have knowledge of the notions and the comparatively formal language offered in the source materials. Furthermore, Francis et al. (2004) have also recommended that the translation of study instruments, such as

interview questions and questionnaires, must ideally be carried out by native speakers of the language in which the interview questions and questionnaire are being translated. Therefore, the questions used in this study were firstly conceived in English and approved by the researcher's supervisors, then translated by the researcher and subsequently sent to two certified translators specialising in English–Arabic translation for confirmation. This step was taken to confirm that each item kept its English meaning but would be understood in the study location. Following translation, this study used the process of back-translation, which is the translation from the target language (Arabic) back to the source language (English) to meet the purposes of the study. Furthermore, and in particular, care was taken to consider the use of gendered terminology because, in Arabic, different words are used to address males and females.

3.7 The First Phase: Qualitative Study

A qualitative approach was employed in the first phase of the study to gain an in-depth understanding of the context and the perceptions of the participants (Alabdali, 2019; M. Hammersley, 2011; Yin, 2009). Methodologists usually describe a qualitative approach as a strategy for studying and understanding the meaning people or groups attach to a social or human topics, practices, states of affairs, etc. Qualitative methods also enable researchers to use different types of methods to collect their data, such as, questionnaires, surveys, observation methods, telephone interviews, and personal interviews. Beginning with a qualitative design helps the researcher to understand the context and design a high-quality quantitative instrument that includes important variables to find comprehensive answers for the research questions (Creswell, 2009). Sixteen e-learning experts were selected. These experts were the Deans of e-learning in the four universities for the target of the study, in addition to 12 members of faculty in those universities who were recommended by the Deans.

3.7.1 Sampling

Purposive sampling is common in qualitative studies (J. Creswell & V. Clark, 2007). It involves researchers intentionally selecting participants with expertise and knowledge in the field. Purposive sampling is considered a feature of qualitative research and often results in small sample sizes (Cohen, Manion, & Morrison, 2011). There is no definitive means of determining the correct sample size in qualitative studies, which depend on the heterogeneity or homogeneity of the potential sample. Snowball sampling is a method carried out by the researcher after they have selected a small sample of individuals who have the same characteristics under study (Cohen et al., 2018). The researcher then asks the members of this sample to recommend or identify other participants who are qualified for inclusion, or participation, in the study. This research utilised both purposive and snowball sampling.

Purposive sampling was used to generate the first cohort of participants that were invited to be involved in the research. They were the Deans of e-learning. They in turn, using snowball sampling, were invited to recommend other potential participants that were invited to participate in the online semi-structured interviews. Snowball sampling is useful when researchers do not have access to an adequate number of participants in the first cohort. Thus, the Deans of e-learning were chosen as the first cohort because they have much experience and knowledge in education and training and the successful employment of e-learning technologies. They also play a key role in e-learning operations at their universities. The interviews were conducted with 16 e-learning experts in e-learning. These experts were the deans of e-learning at the four universities included in the study, in addition to 12 faculty members who were selected equally, 3 from each university, who were recommended by the deans and possessed sufficient experience (i.e., they specialised or had at least 10 to 20 years of experience in practice) in e-learning. In this study, participants were homogeneous and worked in the same field; therefore, a small sample generated rich in-depth information that informed the second phase of the research.

Furthermore, because the researcher did not have full access to all of the key people at the study universities, the ‘snowball’ recommendations of the participants allowed a sufficient number of interviewees to be eventually obtained (Cohen et al., 2011). Although there is little consensus on how many interviewees are sufficient Guest, Bunce, and Johnson (2006) have argued that when there is a homogenous sample sharing the same experience, the researcher only needs a small sample to reach the data saturation. Given that there is no clear rule for the size of the sample in qualitative research, the sample size was calculated according to suitability for the purpose, and samples were added until saturation was reached.

3.7.2 Pilot study

Connelly Connelly (2008) defines a pilot study as a mini-sample of a full-sample study. As with an experimental study, the pilot contains procedures and methods like a comprehensive study. It is, therefore, a miniature exploratory study. Corbetta (2003) indicates that the pilot study is a critical component of any study before the researcher collects the main data, and Sarantakos (2005) claims that the pilot study helps researchers prevent problems that may arise while collecting the main data.

Thus, a pilot study was conducted prior to the main interviews to validate the interview questions. Piloting the interview questions was important because it helped the researcher to find out if there were any errors and/or unclear wordings and inform the researcher of the time required to complete the interview questions with the participants.

The pilot study was conducted with two Deans of e-learning and two faculty members from two emerging universities in Saudi Arabia, other than the target universities of the main study. They have similar characteristics to the study sample and are experts in e-learning. The aim of this pilot study was to ensure that any unforeseeable problems in the main data collection were avoided and to assist with the development and testing of the quality of the study tools being used.

The steps of the pilot study were as follows:

1. The participants were contacted and agreed on the time of the interview due to the time difference between Australia and Saudi Arabia.
2. The interviews were conducted online.
3. At the agreed time of the interview, the participants submitted their consent and recorded the interview.
4. The researcher asked the participants to identify any ambiguity or provide observations about the interview questions.
5. The time required to complete the interview was noted.

After conducting the pilot study, the researcher started collecting qualitative data as discussed in the section below.

3.7.3 Qualitative data collection

Qualitative data were collected through semi-structured interviews. Interviews are considered an essential qualitative data collection method (Qu & Dumay, 2011) which involves experts or people knowledgeable in the field, and they can ensure that relevant information can be obtained about the phenomenon under investigation (Kvale, 1996). Interviews may be structured, semi-structured, or unstructured (Qu & Dumay, 2011). Prior to the interviews being conducted a review of the literature related to e-learning in emerging Saudi universities and other similar studies was undertaken, and this assisted in the development of the interview questions to satisfy the aims of the study.

This qualitative first phase provided the foundations for the quantitative second phase of the study and the subsequent data analysis; thus, the qualitative research required careful preparation. According to (Qu & Dumay, 2011), inadequate preparation may drive the study in the wrong

direction and generate misleading results. Therefore, an interview protocol was developed to ensure that the interviews with targeted participants followed the same procedure. Some researchers have argued that the time needed to conduct interviews ranges from 40 to 60 minutes (Mutambik, 2018), while others have suggested that the best duration is around 90 minutes (Knapik, 2006). Duration depends on the number of questions and the depth of the desired responses. In this research, a total of 45 to 60 minutes was allocated for conducting the interviews, which was sufficient for coverage of the interview questions.

The First Phase qualitative study collected the primary data using semi-structured interviews with open-ended questions which explored the perceptions of faculty members of e-learning in four emerging Saudi universities among the Deans e-learning at four emerging universities in Saudi Arabia. According to J. A Maxwell (2005), Minichiello, Aroni, and Hays (2008); and Creswell (2009), the researcher needs to lead the interview sessions by supporting and guiding participants to ensure that they stay on-topic. The order of questions was adapted and changed during the semi-structured interviews as required. Further, additional questions were asked when required to promote understanding of specific phenomena (Kajornboon, 2005). J. Creswell and V. Clark (2007) recommended that the researcher write notes during the interview, because devices may malfunction during recording. Therefore, the researcher recorded the interviews and also took notes as a back-up.

Prior permission was obtained for the interviews, and participants' confidentiality was assured; furthermore, the researcher made sure that they were comfortable with the interviews being recorded and reminded them that they could stop the interview at any time without consequences and did not need to provide any explanation if they decided not to participate or withdrew (as noted in Appendix A, Informaiton Sheets and Consent form).

The online semi-structured interviews were conducted using videoconferencing (via the Zoom application) due to the COVID-19 pandemic and related travel restrictions (Appendix B, Interview

Questions). Notes were also taken during the interviews to identify and correct any ambiguity in the data and to document any non-linguistic data such as tone, body language, etc (Creswell, 2009).

Once the qualitative data were collected, they were analysed. The process and analysis are discussed below.

3.7.4 Qualitative data analysis

Data analysis is “the interplay between researchers and data” (Strauss & Corbin, 1998, p. 14). The interviews were conducted with 16 experts in e-learning. These experts are the Deans of e-learning in the four universities for the target of the study, in addition to 12 members of faculty in those universities who were recommended by the Deans. For the Phase One data analysis, which was obtained in this research from two sources: semi-structured interviews and open questions in the questionnaire, the method implemented was a thematic analysis which assisted in “identifying, analysing, and reporting patterns (themes) within data” (Braun & Clarke, 2006, p. 97). Although this approach has the benefit of being very flexible, careful planning and execution are necessary. In addition, the ‘themes’ must not be perceived as simply coming from the data because the researcher’s role is crucial in how these themes are chosen (Braun & Clarke, 2006).

Thematic analysis can be approached through either deduction or induction. In the deductive approach, the adapted ERG model theory (as mentioned in Chapter Two, Section 2.7) is utilised in this study to derive the propositions that need to be tested, as explained by (Saunders et al., 2009) and Yin, (2003). This method involves determining the crucial patterns and themes in the data before analysis, and actively generating them through the nature of the interview questions.

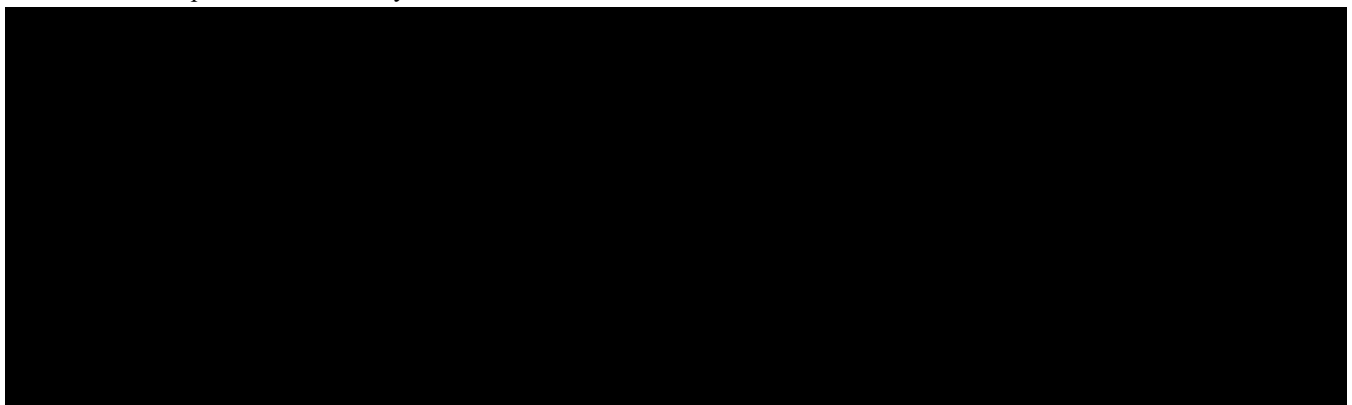
The inductive approach to thematic analysis involves identifying themes in the data without initially selecting key patterns and themes. The inductive approach is a systematic method for analysing qualitative data in which the analysis is directed toward specific goals (Braun & Clarke, 2006; Thomas, 2006; Thomas 2003). The main purpose of the inductive approach is “to allow

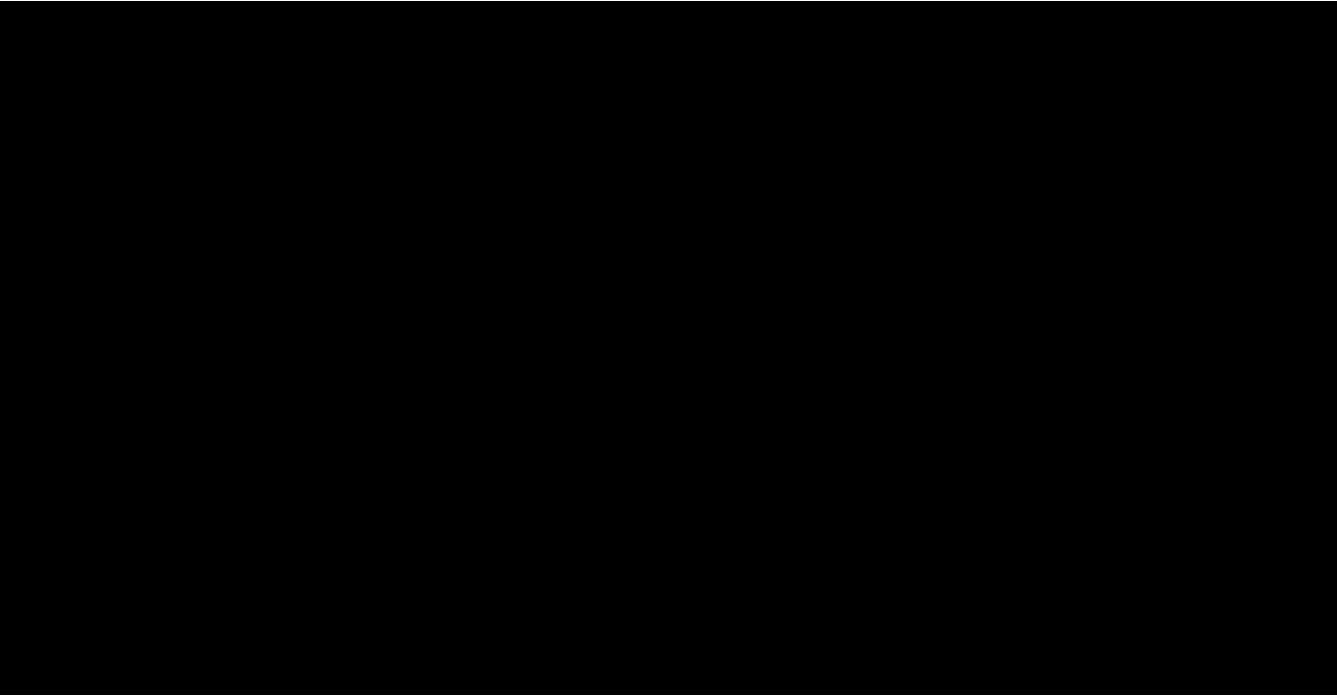
research findings to emerge from the frequent, dominant or significant themes inherent in raw data, without the restraints imposed by structured methodologies”(Thomas, 2006, p. 238). Braun and Clarke (2006) explain that in inductive data-driven coding, data should be coded without attempting to fit them into pre-existing coding frameworks or the researcher's analytic biases. The coding process involved three key phases: (1) reading and rereading the raw transcribed data, (2) finding preliminary codes, and (3) refining the preliminary codes to derive the final codes.

Some argue that this method allows for a better alignment between the social reality of the interviewees and the theory that emerges. Deductive and inductive approaches can both be employed in single study (Saunders et al., 2009), which was the case in the phase one of this study, where both inductive and deductive methods are used.

Thematic analysis was appropriate for this research because of its versatility in assessing data for emergent concepts or ideas pertinent to the research questions (Bryman 2012), so qualitative data were analysed using thematic analysis to identify themes in Faculty Member Perceptions of e-learning. The process of data analysis commenced after all of the interviews were transcribed. Thematic analysis focuses on finding, examining, and recording themes within the data. Here, a thematic analysis was conducted according to the six stages proposed by Braun and Clarke, (2006) to extract meaningful themes: 1) Acquaintance with data; 2) creating initial codes; 3) finding themes; 4) reviewing the themes again; 5) defining and naming themes; and 6) compilation of the final report (Table 3-1).

Table 3-1: Steps of thematic analysis





Source: Braun and Clarke (2006, p. 87)

3.7.4.1 Acquaintance with the data

The first step is for the researcher to become familiar with the data. As Frith and Gleeson (2004) explain, this stage is common in all forms of qualitative analysis, where the researcher becomes immersed in the data by reading and rereading textual data.

The audio data of the recorded interviews were listened to, transcribed, translated verbatim into English, and transcribed by a professional transcription service provider. Microsoft Word was also used to translate and transcribe the data.

Since transcription is the step that precedes data analysis, the researcher has given this step a great deal of importance. Recorded interviews were converted into a written version in order to facilitate the analysis process, active listening was then used so as not to miss any important data. The analysis also included summarizing the responses from the open-ended questions of the interviews.

After that, each answer was examined, and then the data were organized according to the research questions. An inductive (bottom-up) approach was used in this style of analysis because the themes were allowed to arise from participant replies - also known as data-driven themes.

Furthermore, the recorded interviews were listened to again, and compared with the written version, and revised as necessary, to ensure the accuracy of the transcript. After completing this thorough transcription process, the transcript was read and re-read several times. Initial notes and ideas about the data were documented during the iterative reading process.

3.7.4.2 Creating initial codes

The second step was to create the initial codes after transcribing the data. The codes represent the building blocks of the analysis. The coding process is considered a data-driven approach where the codes/categories are selected through a detailed analysis of all the textual data (Liamputtong & Serry, 2013). Thus, codes for important responses and repeated data were documented. Upon completing the coding of this data, the codes were arranged into in possible themes. After that, the the emerging themes were checked whether they were in line with the retrieved codes and the completed data sets.

Coding involved the detailed estimation of the textual data and identification of words or short phrases that had special meaning or offered insight into the study. All identified features that may be relevant to the research questions were given an identity and a label. In coding, the semantic level of meaning can be used to generate codes (Braun & Clark, 2013), which was done in this study (Braun & Clarke, 2013). As a result, more emphasis was placed on systematically working through all data to give full and equal attention to each data element. This process allowed identification of elements of interest that formed the basis for patterns/themes throughout the data set. The coding process involved tagging and naming selected text within each data element. This involved coding as many potential themes as possible and ensuring that code excerpts were comprehensive.

In addition, narratives that deviated from the dominant story were included in the analysis. This ensured that any tensions or inconsistencies that appeared in the data were also accounted for.

This was considered a crucial step in ensuring that the researcher did not present a biased account of the findings.

3.7.4.3 Finding themes

The third step was to search for and capture themes of relative importance. Braun and Clarke (2006) argue that themes can be either semantic or latent. Semantic themes are superficial in terms of understanding the meaning of the data. Therefore, the researcher is not looking for anything beyond what the participant said or wrote. Latent themes, on the other hand, go beyond what is said. That is, they involve identifying and examining the underlying ideas, assumptions, and conceptualizations that serve as the basis for the semantic content of the data (Braun & Clarke, 2006). In this research, both semantic and latent themes were considered to provide a more robust interpretation of the semantic codes. In searching for themes, the researcher attempted to identify some level of ‘patterned’ responses represented by a particular theme (Braun & Clarke, 2006).

There were many recurring themes that were similar in meaning, so the researcher reviewed the coded data to find areas of similarity. For example, the researcher found that the code ('Lack of support') is similar to the code ('The challenges lie in the lack of sufficient support to adopt and implement e-learning, whether from the Deans or heads of departments'). A theme may have emerged from these areas of similarity. Thus, the penultimate stage was the identification and naming of the themes, where the researcher removed any repetitive themes and merged the content with the same or similar themes. These final themes were then divided into main themes, and sub-themes were assigned to them where necessary.

3.7.4.4 Reviewing the themes again

The researcher analysed potential themes in relation to the coded data as well as the complete dataset in this fourth step. The researcher was able to determine whether the themes reflected a coherent pattern by comparing them to the coded information. This method also allowed for the evaluation of difficult subjects that lacked a logical pattern. The problematic themes could then be

altered, potentially resulting in new ones. The validity of the themes and how they were linked to the complete dataset were the focus of the examination of the themes against the entire dataset. As a result, the researcher had to determine whether the discovered themes were related to the dataset (Braun & Clarke, 2006).

3.7.4.5 Defining and naming themes

The fifth stage entailed defining and labelling the themes that had been identified. As per Braun and Clarke (2006) recommendations, it is crucial to ensure that the definitions of themes are concise and accurately convey the core idea behind them. At this step, I analysed the data, then defined and filtered the themes, and then determined the aspect of the data that each theme contained. Each theme had to have a clear scope and purpose that explained why it was significant in regard to the research question, the story it told, and why it was interesting with respect to the larger overall picture that the data as a whole depicted.

3.7.4.6 Compilation of the final report

The researcher summarized the selected themes and was thus able to complete the final report as evidenced by this thesis. This final sixth step allowed the researcher to review all themes and categorize them into main themes and sub-themes.

3.7.5 Coding software

NVivo 12 software was used to facilitate the coding process in the first stage of the qualitative study. All data were transcribed using Microsoft Office Word and then imported into the NVivo software. The coding process was then done manually in addition to using the NVivo 12 software to organise, store and facilitate data analysis. The NVivo 12 software was central in managing and sorting the large amounts of data that resulted from the interviews. The software helped increase the effectiveness of the analysis, so it did not affect the researcher's interaction with the data. NVivo 12 software facilitated the coding process, as well as the use of the program's tools, for example, the process of repeating words, text search, and others. In addition, the researcher used the maps feature

in the program to make mental maps to clarify the perception and relationships between themes, sub-themes, and codes. Therefore, the use of the NVivo software complemented the analysis process ensuring that the research was rigorous (Bazeley & Jackson, 2013).

Two main aspects of qualitative and quantitative studies are validity and reliability. However, in qualitative studies, different strategies are used to measure validity and reliability. The next section explains the validity and reliability of the qualitative studies in this study.

3.7.6 Validity and reliability of qualitative studies

Validity and reliability are major aspects in qualitative and quantitative approaches, and different strategies are employed to them. According to Cohen et al. (2018) reliability can be defined when the data collection procedures can be repeated by another researcher with the potential to get the same results. In contrast, validity refers to whether an instrument or procedure measures that which is intended to be measured.

Ghauri and Grønhaug (2005) emphasise that identifying a clear research design helps the researcher to formulate an accurate research instrument to gather the best research data to answer the research questions. Therefore, the process of validating the qualitative instrument, that is ensuring that the instrument measures what it was designed to measure through a pilot test, will increase the reliability of the data collected from the qualitative study and thus promote the validity of the subsequent quantitative instrument. In qualitative studies, researchers are considered as the main actors during both the data collection and the data analysis (Creswell, 2009; Onwuegbuzie, Leech, & Collins, 2010). Therefore, qualitative studies usually require more effort from the researchers to ensure that the data collected and analysed will produce valid results that satisfy the research aims (Golafshani, 2003).

The present research relied on the expert judgment of the researcher in the field of e-learning to assess the validity of the content. Although some scholars have stated that the ideal number of

expert reviews is to be at least three, there is no definite consensus in this field (Rubio, Berg-Weger, Tebb, Lee, & Rauch, 2003), so, to achieve a high level of validity, during the different stages of this study, the researcher sent the interview questions to four experts in the field of e-learning from different universities.

The selected experts in the field of e-learning were contacted by e-mail and asked to participate. Those who agreed were sent an introductory letter about the research, and interview questions. The participating experts were asked to include and identify repetition, errors, ambiguities, or areas of misunderstanding in the interview questions, in addition to providing any recommendations or changes to the interview questions such as amending, removing, or/and clarifying them. All participating experts confirmed that there were no comments on the interview questions.

3.7.7 Intercoder reliability (ICR)

One beneficial way to avoid bias in coding the major pattern after conducting interviews is to conduct intercoder reliability (ICR). A formal intercoder reliability test was performed, following on from the general development of the coding process above. According to Creswell and Poth (2018), reliability in qualitative research studies often refers to the stability of responses with multiple programmers to a set of data. ICR is “a numerical measure of the agreement between different coders regarding how the same data should be coded” (O’Connor & Joffe, 2020, p. 2). Campbell, Quincy, Osserman, and Pedersen (2013) indicated that there are three types of reliability: reproducibility or ICR, accuracy, and stability. Reproducibility or ICR refers to a group of different coders coding the same data in the same way. Accuracy is a type of reliability that indicates the standard coding scheme for encoding with high reliability, and then as other schemes are developed, they are compared with the standard coding scheme. Stability as a type of reliability refers to whether or not the coder’s use of codes changes over time (Campbell et al., 2013).

Intercoder stability indicates consistency in encoding data by the same person at several different times (O'Connor & Joffe, 2020).

Different strategies can be used to calculate the ICR. One popular strategy is the percentage agreement. However, there is no consensus on an acceptable level of percentage agreement. Factual coding is more likely to achieve a higher level of percentage agreement than interpretive coding. Therefore, acceptable levels are usually presented as ranges. For example, Graham, Milanowski and Miller (Graham, Milanowski, & Miller, 2012, p. 9), contend that: “75% to 90% demonstrate an acceptable level of agreement” (2012, p. 9). Similarly, Miles and Huberman (cited in O'Connor & Joffe, 2020, p. 9) “suggest a standard of 80% agreement on 95% of the codes”. For the reliability of this present study, the agreement percentage amongst the coders was 87% after the coders tested 10% of the interviews. The coders then sat down to work out the 13% disagreement. Therefore, the coders examined the problematic codes, discussed possible causes, and then came to an agreement among themselves.

The findings of the ICR activity informed the subsequent coding of the data. After the researcher finished analysing the data for the first stage of the study and determined the results, the researcher proceeded to the second stage of the research.

3.8 The Second Phase: Quantitative Study

The second stage of this mixed methods study was predominantly quantitative component. Quantitative research is defined “as a means for testing objective theories by examining the relationship among variables. These variables, in turn, can be measured, typically on instruments, so that numbered data can be analyzed using statistical procedures” (Creswell, 2009, p. 4).

3.8.1 Quantitative study samples

Sampling plays a vital role in research (J. Creswell & V. Clark, 2007). Quantitative sampling is different from qualitative sampling because it is measured statistically. The sample size in

quantitative studies is usually larger than the sample size in qualitative studies (Tashakkori & Teddlie, 2003). Given that there are 7000 faculty members in the four targeted emerging universities (Ministry of Education, 2019), it was impossible to test them all. Therefore, a sample was selected to represent this population. Random sampling was employed for this purpose, therefore all potential participants had the same chance of selection, and the possibility of choosing a member of the population was not affected by the selection of any other individual (Cohen et al., 2011). Cohen et al. (2018) argue that the ideal sample size for a population size of 7500 is 365.

Among the total responses of 390, inappropriate answers and incomplete answers were separated. Ultimately, 385 of the participants' responses continued to be analysed. Assuming a 65% response rate, 385 respondents were sufficient to represent the whole population with 95% confidence and error of 5%. Cohen et al. (2018) refer to the estimation of the sample size in the research, the confidence level, and the margin of error for each population size (Table 3-2).

Table 3-2: Sample Size, confidence levels and confidence intervals for random samples.

Population size	Confidence level 95%		
	Confidence Interval 5%	Confidence Interval 4%	Confidence Interval 3%
5,000	357	536	879
7,500	365	556	934
10,000	370	566	964

Source: Adapted from (Cohen et al., 2018, p. 206)

3.8.2 Data collection process

The questionnaire is the most widely used and common means of data collection in quantitative studies, and it is used when the number of participants is relatively large (Algahtani, 2011; S. Alghamdi, Parkes, & Reyes, 2018). According to Choudrie and Dwivedi (2005), questionnaires are the most commonly used quantitative research tool, especially if they relate to

the use of technology. In addition, the use of a questionnaire in studies that involve a large number of participants allows researchers to generalise the collected data to the wider population Mutambik (2018). Moreover, according to Cohen, Manion, and Morrison (2007), questionnaires can offer options for both open and standardised responses on a topic from a large sample of the population. They can also be simple and quick to complete.

Online questionnaires are popular research tools for collecting quantitative data, as an online questionnaire has the advantage of the ability to retrieve data for analysis in a digital and automated manner, resulting in time and cost savings (Creswell, 2013). An online questionnaire was used to collect data for the research. Questionnaires are useful for measuring perceptions, knowledge, behaviours, attitudes, beliefs, and opinions (Cohen et al., 2007).

3.8.2.1 Questionnaire design

The second phase of this study involved the development of a questionnaire aimed at further exploring faculty perceptions of e-learning in the four emerging Saudi universities.

The literature review revealed that further research was needed on the use of e-learning in Saudi Arabia (Alenezi, 2012; Creswell, 2013; Mutambik, 2018; Zalah, 2018), and that conducting interviews with relevant stakeholders was an important first step. These interviews were conducted and the results from this phase provided data to assist in the design of a quantitative instrument which would capture data from a wider selection of study participants aimed at exploring the overall research questions as posed above. For example, the interview participants mentioned that one of the advantages of e-learning is the diversity of activities and tasks. One of the questionnaire's items in the perceptions dimension was (A variety of activities can be offered to students when using e-learning). In addition, the participants in the interviews mentioned that one of the difficulties that faculty members face when using e-learning is the lack of training, and if it exists, the university does not encourage its attendance. One of the questionnaire items in the dimension of

the challenge was (My university does not encourage faculty members to attend e-learning training courses).

According to Bourque, Clark, and Clark (1992); Saunders, Thornhill, and Lewis (2012), researchers can design appropriate questionnaires for their research and data collection by either: 1) adopting questions from existing questionnaires; 2) adapting questions from previous questionnaires and/or 3) constructing their own questions. For the purposes of the present research, all three of the above approaches were utilised in developing the questionnaire. Based on the results of the literature review, questions in pre-existing questionnaires relevant to this research were: 1) adopted; and 2) adapted as required to suit the cultural context. In the case where project-specific questions were not available to adopt or adapt from pre-existing questionnaire instruments, then 3) new questionnaire questions were constructed based on the literature review, the pilot study, and the results of the qualitative phase of the study.

Based on the results of the qualitative interviews, the participants referred to a set of challenges facing faculty members when they use e-learning, as well as a set of needs that must be provided and met to overcome those challenges to use e-learning effectively. Identifying these challenges was important for this research because it helped in the design of relevant questions for the quantitative phase – the questionnaire – which included the advantages and disadvantages of e-learning and the enabling factors that contribute to improving the use of e-learning in educational institutions. The impact of the COVID-19 global pandemic was also discussed, and the data indicated that the use of e-learning in these educational institutions was needed as a result of the need to teach remotely and stay isolated from others.

Saunders (2011, p. 292) outlined two types of questions: closed questions, “which provide a number of alternative answers from which the respondent is instructed to choose” and open questions “which allow respondents to give answers in their way”. Open questions allow respondents to provide more information related to the topic and formulate their own response in

their own words (Murray, 1999), while closed questions require the participant to choose from a set of options, and that option represents her/his point of view (Siniscalco & Auriat, 2005). The open-ended questions helped the researcher gather more in-depth answers by the participants. This provided the researcher with additional information about the phenomenon of the study because it gave the participants an opportunity to add to their responses more freely, unlike closed questions that direct the participant towards specific answers. Therefore, the quantitative survey instrument used in this research contains both open and closed questions which allows for the collection of individually expressed responses for some questions and uniform responses for others (Table 2).

Thus, based on the findings from the qualitative first phase of the study an original online questionnaire was then developed by adopting/adapting questions from pre-existing questionnaires. Potential participants in this study were invited to complete a web-based 5-point Likert-type scale questionnaire ranging from “strongly disagree” to “strongly agree” with a neutral point (neither disagree nor agree) at the centre. Open questions were also included to gain greater detail from the participants and to gather more in-depth information about their perceptions and opinions towards e-learning, including the challenges that can hinder the use of e-learning and their needs, and enabling factors that help them to improve and increase the use of e-learning in their institutions.

Finally, the questionnaire was also presented to a group of experts in the field of e-learning, and they were invited to provide feedback and any comments in terms of the likely effectiveness and usefulness of each question or group of questions in terms of the research aims. This feedback was then used to evaluate the efficacy of each question. Based on this feedback, items in the questionnaire were changed or adapted. A pilot study was then conducted to assess the overall effectiveness of the survey questions, and also to determine the estimated time it would take to complete the questionnaire (Section 2.4). In conclusion, the final number of questions included in the questionnaire under each theme was determined, and an effective survey instrument was designed and implemented (Appendix C).

The final online questionnaire contained two parts. The first part addressed ethical requirements, and the second part involved data collection, which consisted of six parts containing 73 items in total (Appendix C). Part 1 contained items requesting personal details about participants. Part 2 contained 16 items and looked at faculty members' perceptions about their use of e-learning. Part 3 contained items that explored the challenges facing faculty members when they use e-learning. Part 4 contained 13 items and examined the needs that must be provided for faculty members to use e-learning effectively. Part 5 contained 12 items to explore the enablers that contribute to increasing and improving the use of e-learning. Part 6 contained 15 items and explored the level of impact of the COVID-19 global pandemic on the use of e-learning. At the end of the questionnaire, each participants who submitted the survey was asked if they would like to receive a copy of the results of this study. This only required a 'yes' or 'no' answer. However, in order to ensure anonymity in the responses to the questionnaire, the email contact addresses of all participants who wanted to receive a copy were kept on a separate file from their responses.

When participants entered the first part, they were presented an Information Sheet (Appendix A) and an online implied consent section (Appendix D). The informed consent process outlined the purpose of the questionnaire and the participants' rights, as well as the other details of the study, such as approval from UNE's Human Research Ethics Committee. Potential participants were also given the contact details and email address of the researcher in case of any questions, and they were also advised that they could request a copy of the final results of the study.

If a potential participant agreed to participate, s/he would choose "Agree" and then "next" to move to the second part. If s/he did not agree, all s/he had to do was choose "I disagree" and press "Next" to exit the questionnaire. The second part of the of the questionnaire contained blocks of questions related to the research.

3.8.1.1.1 Faculty members' perceptions regarding e-learning in higher education

Overall, the first aim of this study was to examine the perceptions of e-learning in higher education among faculty members in four emerging universities in the Kingdom of Saudi Arabia (KSA) —specifically, the main research question. (See section 1.3).

The research literature suggests that there are a range of factors that influence individuals' perceptions about the use of e-learning (Zalah, 2018). Moreover, these perceptions and beliefs change through experiences (Jonsson, 2013; Lee, 2010). Therefore, it is important to bear in mind that this research investigates the perceptions of faculty members in Saudi universities at the time of the questionnaire. Also, the perceptions of Faculty members towards using e-learning and its tools as part of their pedagogy is a vital factor for the successful use of e-learning and its tools, for example, it is unlikely that faculty members will want to use e-learning and its tools if their attitudes towards them are negative (Zalah, 2018).

In the qualitative phase of the study (Section 5.8), participants articulated advantages and/or disadvantages of e-learning, which were encoded as either 1) positive – if they mentioned the advantages of e-learning, or 2) negative if they mentioned the disadvantages of e-learning. Therefore, the design of the questionnaire needed to consider whether the participants' general perceptions of e-learning were positive or negative. Following a section on demographic information, the questionnaire contained a block of questions aimed at gathering further information on the participants' perceptions of e-learning. The questions in this block were designed specifically to identify the faculty members' perceptions (positive or negative) towards their use of e-learning and tools (Table 3-3).

Table 3-3: Survey questions about faculty members' perceptions of their use of e-learning and tools

Perceptions	
CLOSED QUESTIONS	SOURCE
Using e-learning allows me to complete tasks more quickly.	Venkatesh, Morris, Davis, and Davis (2003); Zalah (2018)
Using e-learning helps me to present the course content with ease	Venkatesh et al. (2003); Zalah (2018)
I have the necessary pedagogical skills (e.g., instructional planning, presentation, virtual classroom management, instructional design, and assessment.... etc) needed to use e-learning in my teaching.	Self-developed
E-learning enables the design and production of high-quality educational content.	Afzal, Safdar, and Ambreen (2015)
A variety of activities can be offered to students when using e-learning.	Self-developed
E-learning results in weaker learning outcomes for students.	Self-developed
E-learning is useful for teaching and learning.	Venkatesh et al. (2003); Zalah (2018)
I prefer to use more traditional ways of teaching rather than using e-learning. .	Joshi, Jamadar, and Dixit (2020); Zalah (2018)
Using e-learning improves the quality of my work.	Dalton H Kisanga (2015); Mutambik (2018)
I find it difficult to use e-learning in my teaching.	Self-developed
E-learning is more tiring than traditional teaching because it requires more time on computer screens.	Dalton H Kisanga (2015)
E-learning is a threat to faculty members' employment.	Dalton H Kisanga (2015)
E-learning offers me flexibility in teaching with respect to time and place.	Husamo and Fawaz (2011); Mutambik (2018)
Developing an e-learning course takes more time than developing a traditional course.	Alajmi (2010)
OPEN QUESTIONS	
In your own words, please write a response to the following questions:	
From your point of view, do you see that there is an active promotion of the use of e-learning systems at your university? -----	
From your point of view, do faculty members' use these e-learning systems enough to justify their expense? -----	

3.8.1.1.2 The challenges regarding the use of e-learning

Faculty members may initially encounter challenges when they adopt and use e-learning. However, many challenges may be overcome as faculty members use e-learning and the associated tools. The research literature documents that there are some challenges that teachers face when using e-learning (Al-Asmari & Khan, 2014; Al-Shboul & Alsmadi, 2010; Uppal, 2017), and this was also supported by the results of the qualitative phase one of this research study. The data collected from the initial interviews demonstrated that the challenges facing faculty members related to access to support and infrastructure, resistance to change, incentives, levels of motivation, skills and experience, physical location, and university policies which either created challenges or enablers to the use of e-learning.

The questions presented in Table 3-4 are designed to explore the challenges that faculty members face when using e-learning and its tools. Table 3-4 lists the closed and open-ended questions that address the Sub-RQ1.(See section 1.3).

The questions were either adopted/adapted from pre-existing questionnaires (AL-Shammari (2016); Almaiah, Al-Khasawneh, and Althunibat (2020a); Mutambik, 2018, Venkatesh et al., 2003; Zalah, 2018), or self-developed based on the results of the interview data collection.

Table 3-4: Survey questions about challenges do faculty members face to use e-learning.

Challenges affecting the use of e-learning~	
CLOSED QUESTIONS	SOURCE
I lack the necessary technology skills (for example, the ability to use a computer using software applications, such as Word, PowerPoint, Excel, email, etc.) to use e-learning in my teaching.	Alenezi (2012); Mutambik (2018); Venkatesh et al. (2003); Zalah (2018)
The devices needed for e-learning in the classroom (e.g., computers, data projector, etc.) are not always available.	AL-Shammari (2016); Mutambik (2018); Venkatesh et al. (2003); Zalah (2018)
There are not sufficient computer laboratories available at my university available to use for e-learning.	Venkatesh et al. (2003); Zalah (2018); Mutambik (2018)
Weak access to adequate internet services at my university does not allow the use of e-learning.	AL-Shammari (2016); Mutambik (2018); Venkatesh et al. (2003); Zalah (2018)

Challenges affecting the use of e-learning~	
CLOSED QUESTIONS	SOURCE
Sufficient support is not available when problems occur during the use of e-learning	Mutambik (2018)
My university does not provide computers to faculty members.	Zalah (2018)
Computerized educational programs are not available for faculty members to use.	AL-Shammari (2016); Mutambik (2018)
Most of the training courses offered in e-learning are theoretical, not practical.	AL-Shammari (2016); Zalah (2018)
My university does not encourage faculty members to attend e-learning training courses.	Self-developed
I do not have sufficient technical knowledge to solve any problems that occur while using e-learning.	Mutambik (2018)
I do not have enough time to attend training courses.	Alajmi (2010); Alenezi (2012); Zalah (2018)
E-learning increases my workload.	AL-SHAMMARI (2016); Husamo and Fawaz (2011)
I do not have enough experience to use e-learning in my teaching.	Alenezi (2012)
It is difficult for me to manage an e-learning course.	Venkatesh et al. (2003); Zalah (2018); Alenezi (2012)
OPEN QUESTIONS	
Please provide any additional comments that may negatively affect the application of e-learning at your university. -----	

3.8.1.1.3 The needs of a faculty member for the use of e-learning

One aspect in the promotion of the use of e-learning is to motivating the users to engage with e-learning and help them to use the e-learning tools. Therefore it is important to identify and understand faculty members' e-learning needs (Schulz, Isabwe, & Reichert, 2014). From a human-centered design approach, user needs have a critical role in the usage process. Thus, it is important to be able to build a usable system that provides a satisfactory user experience by. Teachers who use traditional education methods may have needs that differ from those who already use more modern methods such as using digital technology or e-learning.

Teachers influence students through their teaching style, motivation, attitudes, and behaviour, and, as such, they are an important stakeholder group in the education process. There is an assumption that improving teachers' motivation will improve students' motivation (Schulz et al., 2014). Therefore, the needs of teachers must be considered and provided for in order to obtain better use of e-learning among faculty staff and students.

The results from the qualitative interviews demonstrated faculty members' needs that affect their perceptions of the use of e-learning, e.g., clear policies; training; support; and experience. Meeting these needs may help faculty members to make optimal use of e-learning, which, in turn, would benefit the educational process, achieve learning goals, and maintain the motivation of the end-use learners. For example, interviewees mentioned that their perceptions of e-learning were affected by technical support, education and training policy, cooperation, conviction in the importance of e-learning, the availability of strong infrastructure (such as fast internet, computers, e-learning tools, hardware, software, etc.) and the necessary skills to use e-learning. Therefore, the questionnaire was designed to further explore the needs of faculty members in their use of e-learning in the higher education sector in the KSA (Table 3-5).

The questions were adopted, adapted, or written to address the sub-RQ2. (See section 1.3).

Table 3-5: Needs of a faculty member for the use of e-learning.

Needs to help improve the use of e-learning in emerging Saudi universities	
CLOSED QUESTIONS	SOURCE
I find it easy to use e-learning systems and tools at my university.	Schulz et al. (2014; Venkatesh et al. (2003); Zalah (2018)
I find it easy to communicate with the e-learning support team.	Self-developed
I participate in designing e-learning course content.	A. Albalawi and Badawi (2008)
The use of e-learning is enhanced when faculty members are able to share their successful experiences.	Self-developed
Faculty members are involved in e-learning teamwork projects.	Schulz et al. (2014)

Needs to help improve the use of e-learning in emerging Saudi universities	
There is clear guidance available to novice faculty members in the use of e-learning.	A. Albalawi and Badawi (2008); Windiarti, Fadilah, Dhermawati, and Pratolo (2019)
Attending e-learning training courses is beneficial to my teaching.	AL-Shammari (2016); Afzal et al. (2015); Alajmi (2010); Cheok, Wong, Ayub, and Mahmud (2017)
It is important to exchange experiences in the use of e-learning.	A. Albalawi and Badawi (2008)
I need to develop my skills in the use of e-learning	Cheok et al. (2017); Windiarti et al. (2019)
E-learning provides individual learners with access to high-quality materials that meets their different needs.	Self-developed
My university benefits from faculty members with previous experiences in designing and producing electronic educational content.	Self-developed
E-learning helps improve learning outcomes.	Akçayır and Akçayır (2018)
OPEN QUESTIONS	
In your own words, please write a response to the following questions: What resources and/or support do you need while using e-learning? -----	

3.8.1.1.4 Enablers contributing to increasing and improving the use of e-learning.

Factors that contribute to increasing and improving the use of e-learning are regarded here as ‘enablers’. Thus, enablers should help to increase the uptake of e-learning and improve the use of e-learning and its tools in completing daily teaching efficiently and quickly so the faculty members are likely to use these tools. This is crucial, as there is a rising expectation that faculty members will flawlessly integrate digital technology into their pedagogy (Zalah, 2018).

The results of the first phase qualitative interviews showed that a number of enablers help improve and increase the use of e-learning, including: incentives, support, infrastructure, training, policy clarity, conviction in the importance and benefits of e-learning, specialisation, and experience, among other enablers. The questions listed in Table 3-6 have been designed to explore

enablers that contribute to increasing and improving the use of e-learning. The questions were designed to specifically to address the sub-RQ3. (See section 1.3).

The questions listed in Table 6 are designed to elicit positive views about e-learning which aim to counterbalance the data collected on challenges in Part 3.

Table 3-6: Enablers contributing to increasing and improving the use of e-learning.

Enablers contributing to increasing and improving the use of e-learning	
CLOSED QUESTIONS	SOURCE
My university provides quick and timely technical support when I am using e-learning.	AL-Shammari (2016); Almaiah et al. (2020a); Cheok et al. (2017); Mutambik (2018); Schulz et al. (2014)
My university encourages faculty members by providing material or moral incentives to use e-learning (i.e., rewards, or certificates of thanks, etc.)	Zalah (2018)
Strong infrastructure (such as fast internet, computers, e-learning tools, hardware, software, etc.) is available for the use of e-learning.	Self-developed
There are clear and easy to understand policies in the use of e-learning at my university	AL-Shammari (2016); Aljaber (2018); Zalah (2018)
The university's leaders and decision makers emphasise the importance of using e-learning.	Self-developed
The software and hardware needed for e-learning is available at my university.	Zalah (2018)
It is easy to access the software and hardware needed for e-learning at my university.	Zalah (2018)
Faculty colleagues from my university and other universities exchange experiences in relation to the use of e-learning.	Self-developed
E-learning requires a specialisation or expertise to use it in teaching.	Self-developed
The university leaders and deans support the use of e-learning	Mutambik (2018)
There are resources available (i.e., a guide) on how to use e-learning educational materials for students.	Self-developed
My university offers training courses on the use of the e-learning technologies.	Williams (2012); Zalah (2018)
OPEN QUESTIONS	
In your own words, please write a response to the following questions: What activities have been conducted in or by your university to help improve and increase the use of e-learning in higher education? -----	

3.8.1.1.5 COVID-19 pandemic and its impact on the use of e-learning in the higher education sector in KSA

In recent years, the world has witnessed technological developments and openness to different cultures. In light of global trends and education development policies that took various forms, including e-learning and distance learning, it is imperative for leaders in educational institutions to adapt quickly to these global changes, and to keep pace with those changes, developments and challenges (Ahmed, 2022).

A shift to remote teaching and learning was necessary across the world. Therefore, the COVID-19 pandemic has required a change to teaching and learning methods, and there has been a massive expansion in the use of e-learning. Thus, both teaching and learning models have undergone tremendous change as educational institutions suddenly needed to switch to alternative means of teaching and learning delivery to ensure the continuity of the teaching and learning process (Alsoud & Harasis, 2021).

However, the availability of the necessary technologies within households varies greatly between and within nations. While many people in high-income nations utilise the Internet in their daily lives, for work, pleasure, or learning, this has not been the case for the majority of low- and middle-income countries (Dreesen et al., 2020). Consequently, the use of e-learning was only on a small scale in many countries including the KSA and was not compulsory. This meant that many teachers had not used e-learning in their teaching at all prior to the pandemic (Alammary et al., 2021). The KSA, however, moved quickly to adopt e-learning to ensure the continuity of teaching and learning across its educational institutions. Plans were put in place to maintain the continuity of the educational process and reduce the effects of the corona crisis (A. A. Alghamdi, 2021). The COVID 19 pandemic marked the beginning of a new era in teaching and learning in KSA.

However, there were immediate differences and disadvantages to students across the KSA in relation to the availability of the Internet, the fundamental key to e-learning. For example, in the regions of the KSA, especially in the southern region, many students live in rural areas where the internet is weak. The government has thus sought to improve those services and increase the speed of the Internet in those places. In addition, there were difficulties in the availability of the equipment and tools necessary for e-learning in some families. Therefore, there was a need for the government to provide the necessary electronic and communication devices to those individuals, families or groups who did not have access to the equipment. Through the social responsibility of the private sector and donor institutions and in partnership with the non-profit sector this equipment was provided free of charge to those families.

There were also implications for faculty members. Before the pandemic, most faculty members were using basic e-learning, for example, to communicate with their students via email and upload course materials and content to web-based platforms. Thus, prior to the pandemic traditional teaching methods were the dominant methods of teaching in KSA (Alammary et al., 2021). Also, with the increase in online training courses and workload, there has been a corresponding increase in teaching load in most countries of the world and an expectation that teachers are thus available 24 hours a day to respond to their e-learners' inquiries (Taylor & Frechette, 2022).

The questions listed in Table 3-7 have been designed to further explore the responses of faculty and Deans in four emerging universities in KSA to the COVID-19 pandemic and to gauge the extent of e-learning. The questions were designed to examine the extent to which e-learning has been utilised in the higher education sector in KSA. The questions thus sought to address the sub-RQ4. (See section 1.3).

Table 3-7: Survey questions about the response of educational institutions to the global COVID 19 pandemic.

The COVID pandemic and its impact on the use of e-learning in the higher education sector in KSA	
CLOSED QUESTIONS	SOURCE
During the COVID-19 global pandemic, my university provided a clear plan to faculty members on how to use e-learning to deliver their course content.	Alodan (2021); Kazem (2021)
During the COVID-19 global pandemic, it was easy to use e-learning and its tools	Self-developed
During the COVID-19 global pandemic, high-quality educational content was provided through the use of e-learning	Kazem (2021)
During the COVID-19 global pandemic, the university and faculty members, were positive about the use of e-learning.	Alammary et al. (2021)
During the COVID-19 global pandemic, there was an increase in the use of e-learning.	Alammary et al. (2021); Sastre-Merino et al. (2021)
During the COVID-19 global pandemic, there was a change in the convictions of leaders and/or teachers towards the use of e-learning	Alammary et al. (2021) ; Sastre-Merino et al. (2021)
During the COVID-19 global pandemic, there were more opportunities for exchanging experiences among faculty members in relation to e-learning.	Self-developed
During the COVID-19 global pandemic, the barriers (i.e., a fear of failure in using the new technologies) in the uptake of e-learning among faculty members were reduced.	Self-developed
During the COVID-19 global pandemic, there was an increase in faculty members attending e-learning training courses.	Self-developed
During the COVID-19 global pandemic, the transition from using traditional education to using e-learning methods was not easy.	Alsobai (2022); Sims and Baker (2021)
During the COVID-19 global pandemic, there were adequate training courses held to prepare teachers to use e-learning.	Alodan (2021); Sims and Baker (2021)
During the COVID-19 global pandemic, my university provided adequate technical support when faculty members experienced technical issues when delivering e-learning.	Alsobai (2022); Sims and Baker (2021); Kazem (2021)
During the COVID-19 global pandemic, a guide in the use of e-learning educational materials was provided to faculty members.	Almahasees, Mohsen, and Amin (2021); Alsobai (2022); Kazem (2021)
During the COVID-19 global pandemic, my university administration regularly evaluated e-learning mechanisms.	Kazem (2021)
During the COVID-19 global pandemic, my university was able to continuously answer the inquiries of faculty members and students in relation to e-learning.	Kazem (2021)

3.8.3 Online questionnaire and data collection

After completing the collection and analysis of the qualitative data, the second stage of the research involved an online questionnaire to explore the perceptions of faculty members in emerging Saudi universities on their current use of e-learning and the difficulties they face. The online survey also explored the effects of age, gender, experience, and type of college on the perceptions of faculty members.

The use of online questionnaires as a method of data collection is easier and more convenient than the traditional hard copy method which requires physical distribution and collection, and manual data entry. Online questionnaires enable an immediate analysis of the collected data Wyatt (2000). (Cohen et al., 2018) list several advantages of using an online or web-based questionnaire over paper questionnaires:

1. Less costly
2. Less time required for distribution and collection
3. Easier access to larger samples
4. Easier access to hard-to-reach populations while overcoming spatial and temporal constraints
5. More convenient because survey participants can complete it at any time that suits them.

Therefore, for the purposes of this research, the online questionnaire was considered one of the most efficient and economical ways of collecting data from the participants in this study – the university faculty members. Inviting the faculty members to participate in the study was done via email because almost all faculty members and students use email as a primary source of communication in and out of the classroom. In addition, most university announcements and events are either sent via the web or email.

An email was sent to the Vice-Rectors for Graduate Studies and Scientific Research at the universities targeted by the study (Appendix J), including the study's aims and a link to the survey,

as well as a letter from the researcher's main supervisor and a facilitation letter from the Saudi Cultural Attaché (Appendix F). The Vice-Rectors for Graduate Studies and Scientific Research sent the questionnaire link to the Deans of colleges in those universities, who in turn sent the questionnaire link to all faculty members in each college. Additionally, a list of faculty members' emails was created from public records on university websites. This information was publicly available for anyone to be able to access, and the researcher subsequently sent invitations via email to faculty members at those universities. The email invitation included a link to an online opinion survey for participants, directing them to follow the online survey link. To increase the response rate, a reminder was sent via email two weeks later. In the third week, another reminder was sent via email. In the sixth week, a final reminder was sent via email, along with a hyperlink to the online questionnaire for participants.

Moreover, additional emails were sent to the Vice-Rectors for Graduate Studies and Scientific Research at the universities requesting that they ask faculty members to complete the survey, as these measures helped to increase the number of responses to the questionnaires.

Despite the benefits of online communications and methods for research, there are some disadvantages to using online questionnaires. For example, they are not appropriate if the target group includes people who do not have access to the internet. However, in this study, this was not a consideration because the prospective participants were all Saudi university faculty members, thus it was presumed that the vast majority of the population would have internet access at work, at home, or both. The most significant disadvantage of online surveys is questionnaire fraud, which occurs when people fill out questionnaires for the purpose of receiving a reward (Sincero, 2012). This was not applicable in this study because no rewards or incentives were offered or provided, and all potential study participants were provided with a covering letter (Appendix E) and information sheet (Appendix A) which explained the purpose of the study. Covering letters should be given to all potential study participants so that they are informed about the nature of the study they may choose to participate in and the value of their input (Cohen et al., 2007). The letter should

also reassure potential participants that their participation is confidential and anonymous, and thus encourage them to respond. The participants also need to be informed about the number of sections in the questionnaire, and an estimation of the time needed to complete it, and then of course thanked for their participation. Accordingly, a cover letter was included with the online survey distributed for this study.

The questionnaire was thus designed to be implemented online. Participants were asked to complete a web-based 5-point Likert-type scale questionnaire. When the potential participants clicked on the survey link, they received a message detailing the process of informed consent which stated the purpose of the questionnaire and their rights as a participant as well as the other details of the study as approved by the university human research ethics committee. Participants were also given the contact details and email address of the researcher in case of any questions, and to request a copy of the final results of the study.

For the purposes of this research and the data collection, it was important for the researcher to include a cover letter with the questionnaire as recommended by Cohen et al. (2007). This brief letter provides the title of the research, explains the project clearly, how long the questionnaires would take to complete, introduces the researcher, clarifies the importance and purpose of the research, and reassures the participants of confidentiality. Finally, the letter invites the recipient to respond to the questionnaire attached. For this research, consent for participating in the research was implied by its completion. This is described as tacit Online Implied Consent for Participants.

The respondents completed the questionnaire on their own to ensure that their privacy was not breached, and that confidentiality was maintained (Creswell, 2009).

Qualtrics, a widely recognised online system for data collection and analysis in academic research, was employed as the platform for distributing the questionnaire. The selection of Qualtrics was based on its esteemed reputation as a global leader in the field. This survey tool offers

numerous advantages, including a user-friendly interface for participants and instant accessibility of results for researchers. It provides extensive flexibility with the inclusion of over 85 different question types and supports survey composition in Arabic. Furthermore, Qualtrics simplifies the scoring process necessary for quantitative analysis by offering an automated scoring option during data entry by participants (Qualtrics, 2022). The collected data can be exported directly to various formats, such as CSV, SPSS, Word, PDF, PowerPoint, and Excel. This eliminates the need for extensive data cleaning prior to analysis, as Qualtrics includes a feature that prevents participants from leaving questions unanswered (Munn & Drever, 1990).

3.8.4 Quantitative instrument development

Once the qualitative phase was complete, the researcher developed the questionnaire items, which consisted of six parts (as mentioned above in Section 3.8.1.1) and presented them to the study supervisors in addition to a group of faculty members with experience in the field of study for discussion and approval. This is known as content validity, which is done to ensure that questionnaire items relate to the study purpose and are relevant to the study context (Babbie, 2013, 2014). Faculty members with experience in the field of e-learning were asked to thoroughly review the first version of the online questionnaire and provide feedback and comments, which were evaluated by the researcher and supervisors. Following the content validity process, ‘researchers may then modify and/or reorder the questions according to the critical feedback provided by acknowledged experts’ (Alharbi, Tolchard, & Isouard, 2019, p. 3).

Following content validation, a certified translator translated both the interview and survey questions into Arabic, the official language of KSA, then back again to English to ensure that they continue to meet the purposes of the study. Known as ‘back-translation’, this process allows “the research team to see how closely the translation corresponds to the source items” (insert citation) (Ozolins, Hale, Cheng, Hyatt, & Schofield, 2020). Several researchers have recommended this

method of validation of proposed questionnaires, including Alharbi et al. (2019), who recommend that the original version of the questionnaire should be similar to the final retranslated version.

Finally, the researcher tested the reliability of items grouped under specific factors. According to Eagly and Chaiken (1993, p. 79), questionnaire reliability is defined as “the extent to which a questionnaire yields consistent results over repeated observations”. Consistency indicates ‘how well the items measuring a concept hang together as a set’ (Rumbay, 2014, p. 397).

3.8.5 Piloting the survey

Connelly (2008) defines a pilot study as a mini-sample of a full-sample study, similar to an experimental study. The pilot contains procedures and methods like a comprehensive study, meaning it is a miniature exploratory study. Corbetta (2003) indicates that the pilot study is a critical component of any study before the researcher collects the main data, and Sarantakos (2005) contends that a pilot study helps researchers prevent problems that may arise while collecting the main data. It has been recommended that the sample size of a pilot test represents approximately 10% of that of the final study (Hertzog, 2008; Lackey & Wingate, 1997).

Thus, in addition to the expert advice, a pilot study was conducted prior to the main study and data collection to validate the questionnaire items. Piloting the questionnaire items was important because it helped the researcher to find out if there were any errors and/or unclear wordings and informed the researcher of the time required for participants to complete the questionnaire. This can then assist the researcher to make the required adjustments to the final survey instrument. In addition, the pilot study can help the researcher to ascertain how long the survey takes to complete.

The pilot study conducted for this research involved 42 faculty from two emerging Saudi Arabian universities other than the target universities, which have similar characteristics to those that participated in the main study. Potential participants, both male and female, were contacted via email and invited them to participate in the pilot study. The cover letter and questionnaire were then

sent to the participants. Those who agreed to participate were then asked to express their opinions and answer a few more additional questions.

The participants reported the time taken to complete the questionnaire ranged between 15-20 minutes. They also stated that the formulation of the questionnaire items was clear and understandable and there was no ambiguity. These pilot participants reported that there were no problems in completing the questionnaire.

3.8.6 Validity of questionnaire instrument

According to Cohen et al. (2018), validity refers to whether an instrument or procedure measures that which is intended to be measured. Further, Creswell (2009) identifies four categories of validity: content, criteria, face validity, and construct. The assessment of the survey instrument's validity in the current research included both face validity and construct validity. Face validity refers to the extent to which a measurement instrument seems to adequately address the necessary enquiries at first glance, i.e., “How a measure appears on the surface-does it seem to ask all the needed questions? Does it use the appropriate language and language level to do so?” (Fink, 1995, p. 50).

Two previously mentioned processes were involved in assessing face validity of the survey instrument. The first was pilot testing of the survey instrument. The researcher tested the reliability of the survey by conducting a pilot study with 42 participants at Saudi universities. Pilot studies can adopt statistical techniques such as factor analysis and internal consistency reliability to test the feasibility and validity of the final draft of the quantitative tool. The absence of comments, suggestions, or feedback for revisions of the overall design of the survey instrument or individual items was an indicator of the face validity of the instrument. Secondly, the survey instrument was presented to the study supervisors and a group of faculty members with experience in the field of study to discuss it and provide suggestions and comments that were incorporated into the survey

tool. The purpose of enhancing the face validity of the survey instrument was to demonstrate the ease of use and clarity of the instrument.

The primary goal of assessing construct validity was to ascertain the instrument's capacity to accurately assess the construct for which it was specifically designed (Burton & Mazerolle, 2011). The construct validity of the survey instrument was evaluated using the Item Response Theory (IRT) technique, especially using the one-parameter Rasch model. Item Response Theory (IRT) models are statistical models that mathematically represent the likelihood of different response levels by considering both the aptitude of individuals and the complexity of the items being assessed.

According to Bond and Fox (2001), Item Response Theory (IRT) is a relatively new advancement in psychometric theory. It addresses the limitations of classical test theory by introducing a range of models that enable the assessment of model-data fit and the evaluation of educational and psychological assessments. The fundamental proposition of Item reaction Theory (IRT) posits that the likelihood of an individual's anticipated reaction to an item is contingent upon the combined influence of the individual's latent trait aptitude or location, as well as one or more factors that describe the item. The likelihood of response is graphically represented by an item characteristic curve, which is plotted against the latent feature.

Item Response Theory (IRT) is a statistical framework that examines the connection between assessment items and an individual's proficiency in a certain skill area, attitude, value, or belief. Proficiency is considered a latent feature that is indirectly measured by analysing a person's performance on test items. The present research used the Rasch model to assess the construct validity of the items for the five factors: perceptions, challenges, enablers, and the impact of COVID on the use of e-learning in the four target universities of the study. The evaluation of the correspondence between items and the model was conducted by analysing the calculated infit mean

square parameters for each item. The researcher's evaluation of the construct's validity instilled trust in the survey's ability to accurately measure its intended construct.

3.8.7 Data analysis

As mentioned previously, in a mixed-methods design, an analysis method appropriate for both quantitative and qualitative data is used (J. Creswell & V. Clark, 2007). Phase Two of this study involved an online questionnaire containing open-ended and closed-ended questions.

The survey items were grouped into five factors: perceptions, challenges, needs, enablers, and the impact of COVID-19 on the use of e-learning in those four universities, the target of the study.

The data from this phase were exported from the Qualtrics software in an Excel file. Next, the data were imported into QUEST, a Rasch measurement model software, to validate and clean the data to detect any anomalous responses (Widhiarso & Sumintono, 2016). None of the participants provided outlier responses. The second phase was to detect inappropriate answers, where two of the participants' responses were deleted because their answers were really different from the rest.

In addition, any missing data was noted. According to Creswell (2014), data may be missed due to an error in data entry, the participants' choice to not to respond to some items, or the participant's lack of knowledge related to the item. Although the researcher designed the questionnaire to prevent a participant from proceeding without first completing the preceding survey question, there were nonetheless three incomplete responses and two responses that had inappropriate answers. Among the total responses of 390, inappropriate answers and incomplete answers were separated. Ultimately, 385 of the participants' responses continued to be analysed.

A one-parameter Rasch measurement model (Bond & Fox, 2001) was used to analyse survey responses. In Rasch analysis, the score can estimate the difficulty level of an item with an accurate measure, reveal item fit, and determine item bias and respondent ability on a shared, underlying

scale that is equal interval in nature (Rasch, 1980). In addition, this characteristic enables the application of robust, parametric statistical techniques to examine the relationships between item difficulty and respondent ability. The analyses in this research were conducted using the statistical suite for the Social Sciences (SPSS) software suite. The Rasch model produces estimates of item difficulty and respondent ability in units of measurement called ‘logits’. The difficulty (logits) value indicates the difficulty associated with each item, with negative values indicating lower difficulty and positive values indicating higher difficulty. That is, items that are placed on the negative end of the scale in terms of difficulty are considered relatively easy, while those that are placed on the positive end of the scale are considered very difficult.

The next step of the analysis involved the utilisation of inferential statistics. Additionally, the case logit scores were entered into the SPSS software to conduct multivariate analysis of variance tests (MANOVA). This test was used to assess the statistical significance of group mean case scores as dependent variables and the demographic characteristics of the participants, including gender, age, experience in teaching, highest qualification, university, and type of college, as independent or grouping variables.

Furthermore, the questionnaire included some open-ended questions, allowing unrestricted answers. The majority of the responses to the open-ended questions were written in Arabic, therefore they needed to be translated into English and then analysed similarly to the qualitative data.

Table 3-8 outlines each research question alongside the corresponding data collection instrument and the specific analytical procedures applied.

Table 3-8: Summary of Data Collection and Analysis

RQ	Data collection instruments	Data analysis
How do faculty members in four emerging universities in the southern region of KSA perceive the use of e-learning?	Semi-structured interviews Online questionnaire	Thematic analysis Descriptive statistics and inferential statistics

What challenges do faculty members face to use e-learning?	Semi-structured interviews Online questionnaire	Thematic analysis Descriptive statistics and inferential statistics
From the perspective of faculty members, what are the needs to help improve the use of e-learning in emerging Saudi universities?	Semi-structured interviews Online questionnaire	Thematic analysis Descriptive statistics and inferential statistics
What are the enablers that lead to increasing and improving the quality and extent of the use of e-learning in higher education in the Kingdom of Saudi Arabia?	Semi-structured interviews Online questionnaire	Thematic analysis Descriptive statistics and inferential statistics
How have the educational institutions responded to the global COVID-19 pandemic, and to what extent has e-learning been utilised in the higher education sector in KSA?	Semi-structured interviews Online questionnaire	Thematic analysis Descriptive statistics and inferential statistics

3.9 Ethical Considerations

Social research involves ethical issues, decisions, and choices because the researcher is relating to other people. Ethical considerations are related to the responsibility that researchers have toward research participants (Zalah, 2018). It is unethical to collect information without the knowledge, consent, and willingness of the participants (Kumar, 2018). In addition, Cohen et al. (2007) point out that ethical issues depend on the following: research procedures, research context, characteristics of the sample population and data collection and processing methods.

The researcher obtained ethical approval (Approval No: HE21-159) from the University of New England (UNE) Ethics Committee. Approval was also obtained from the universities selected for the study (Appendix G).

In the first phase, the prospective participants were contacted through correspondence via e-mail to invite them to participate in an online interview through the Zoom application, and to schedule interviews that took approximately one hour. In addition, the participants were informed that an audio recording of the interview would be made to ensure that the researcher could accurately recall the information they provided. In the second phase, an email was sent to the Vice-Rectors for Graduate Studies and Scientific Research at the universities targeted by the study,

including the study's aims, as well as a letter from the researcher's main supervisor and a facilitation letter from the Saudi Cultural Attaché.

All participants were informed of the purpose and aims of the study. Letters of informed consent and Information Sheets (Appendix A) were sent to all participants indicating that any personal details gathered during the study would remain confidential. They were also informed that no individual would be identified by name in any publication of the results. Thus, all names were replaced with pseudonyms, to ensure participants' anonymity. Participants were also informed that their participation in the study was voluntary, and that their right to stop participating in the study at any time without consequence and without any need to provide an explanation would be respected. Furthermore, participants were advised that all records and data would be kept securely and that they would be destroyed when it was no longer required in the research.

There were some cultural and religious restrictions regarding communications with female participants due to gender segregation in Saudi Arabia. This issue was resolved by offering several options for female participants, for example to either turn off the camera on their device or wear a cover on the face or conduct the interviews via phone. Female participation was not restricted by this issue and a number of women expressed their willingness to participate, knowing that the researcher was male.

3.10 Chapter Summary

This chapter has outlined the methodology used in this study. A mixed methods approach with an explanatory–sequential design was used. This included both qualitative and quantitative methods, utilising both semi-structured interviews and an online questionnaire, which was justified as an optimal design for this particular study and responded to a gap in the research literature.

The overall research design was outlined followed by a description of the first phase of the study, the Qualitative Study – that is, interviews with participants. Each step of this First Phase was detailed including: the sampling, translation, implementation of the pilot study, data collection and

analysis, a discussion of the coding software, the validity and reliability of qualitative studies, and intercoder reliability (ICR).

This chapter also outlined the second phase of the study, the Quantitative Study – the online questionnaires. Details of this second phase included sampling, data collection, the questionnaire design, the pilot survey and mode of analysis. Importantly, the development and validation of the quantitative instrument were discussed, as were details of testing its validity and reliability through the Rasch model and data analysis.

Finally, this chapter also detailed the important ethical considerations in relation to conducting research with human participants.

The obstacles identified in this chapter included the analysis of the results of the semi-structured interviews from Phase One and, thus, how to identify what needed to be further explored in Phase Two of the study. Obstacles included being able to successfully integrate both sets of data so that their combined strengths would allow the researcher to understand the issues surrounding the faculty members' perceptions of e-learning in four emerging Saudi universities. The next chapter outlines and analyses the findings of the semi-structured interviews.

Chapter 4: Research Findings Phase One – Semi-Structured Interviews

4.1 Introduction

This chapter presents an analysis of the qualitative data obtained through interviews and from the open-ended questions in the faculty members' online questionnaire. Seven themes were constructed that represent the factors in the conceptual framework. The interviews were conducted with 16 experts in e-Learning. These experts were the Deans of e-learning in the four universities included in the study, in addition to 12 faculty members who possessed sufficient experience (i.e., they specialised or had at least 10 to 20 years of experience in practice) in e-learning from those same universities, and who were recommended by the Deans. In order to ensure confidentiality and anonymity of the participants, each participant was given an abbreviation or a symbol. The four Deans were each given an abbreviation: D1, D2, D3 D4. While the twelve faculty members were given the abbreviation F1, F2, ... F12. The results of the analysis of the data collected from the interviews are presented below.

4.2 Thematic Analysis code Frequencies and Codes

Thematic analysis of 450 text fragments identified from the sixteen transcribed interviews yielded 95 codes. The full table of codes and frequencies can be found in Appendix H. Table 4-1 shows the 12 most frequently assigned codes. These codes have been assigned and created where almost all of the sixteen participants interviewed indicated these codes frequently.

Table 4-1: Ten most frequently reported codes.

Code	Frequency
Fast and strong internet connection	19
Lack of skills	18

Flexibility in place and time	18
Design preparation time	17
Lack of conviction	17
Get and provide feedback	15
Lack of Infrastructure	14
Material and moral	13
Lack of instructional design	12
Exchange Experiences	11
Technical support	11
Computer illiteracy	10

4.3 Reporting of Themes and Sub-Themes

Five themes were constructed from the analysis of the semi-structured interviews (Perceptions, Challenges, Needs, enablers and Covid-19) : Each theme produced sub-themes, and each sub-themes consisted of codes. The total number of sub-themes was (19) and the total number of codes was (95). The thematic analysis works on the relationship among the codes, and the researcher can organize or merge the many codes into a smaller number of sub-themes depending on the relationships between these codes (Hsieh & Shannon, 2005). Some of the codes were included under more than one sub-theme, which illustrated the relationships between the codes and each other in different themes and sub-themes. The codes from which sub-themes and the themes were constructed are presented in the following seven major sub-sections.

4.4 Theme 1: Perceptions

Perceptions emerged as a major theme in this research, and this can be divided into four sub-themes negative perceptions, positive perceptions, advantages of e-learning, and disadvantages of e-learning that represent the general perceptions of faculty members towards the use of e-learning. Each sub-themes has been divided into a variety of codes (Table 4-2), and these will be discussed below.

Table 4-2: Perceptions –Sub-Themes and Codes.

Theme	Sub-Themes	Codes
Perceptions	Negative	Fear of Failure Fear to use Technology Lack of conviction Lack of timely technical support Negative Environment Weak e-learning skills
	Positive	Attending training courses Convince of the importance of e-learning Exchange Experiences Specialisation Successful Experiences
	Advantages of E-learning	Alleviate pressures on higher education facilities Reduce expenses Solve the lack of faculty members in some disciplines A useful solution to the problem of large numbers of students in some academic divisions Flexibility in place and time Provide feedback Helps faculty members to access the latest updates in the curriculum Develop professionally (Develop technical and academic skills) The diversity of activities, tasks, and assignments. Delivering educational content with multiple tools and software Individual differences Easy access to knowledge and educational resources Get feedback Diversity in activities and tasks Effective communication
	Disadvantages of E-learning	Strong infrastructure Constant need to update hardware and software Quick technical support Fast and strong internet connection Continuous training and development Design preparation time Special skills Poor social relations and communication Curriculum Specific Suitability The health effects

		Isolation and introversion Opportunity for corruption (cheating - impersonation)
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4.4.1 Sub-theme – Negative perceptions

"Negative perceptions" refer to faculty members' unfavorable attitudes, opinions, or beliefs toward e-learning. These perceptions are often based on prior experiences or personal biases and can lead to feelings of distrust, dissatisfaction, or disapproval. Such negative perceptions may influence their behaviors and decision-making regarding e-learning.

Negative perceptions about the use of e-learning generated some interesting codes, many of which related to a 'fear' of using it.

A group of participants for example, indicated that there are negative perceptions resulting from fear of failure, as they see that a faculty member may use e-learning and may face technical difficulties that lead them to failure and their failure to use e-learning. For example, one of the participants indicated this by saying:

Some faculty members have negative perceptions, and these members tend to avoid trying new experiences because of their fear of failure or having poor outcomes. (D3)

Another participant confirmed that this above fear of failure is one of the most important reasons for the negative perceptions of faculty members, and this results in weak e-learning skills. Participant F8 indicated this by saying:

Despite the positive perceptions, there are negative perceptions among faculty members, one of the main causes of which is the fear of failure when they use e-learning because of the lack of some of them knowing how to use e-learning tools. (F8)

Personal conviction plays a major role in the adoption of e-learning, as some participants argued that if a faculty member does not have any personal conviction, this generates a negative perception of the use of e-learning. One of the participants emphasized this point by saying that:

The vast majority of faculty members do not have an internal conviction of the importance of e-learning, which generated a negative perception of it. (F2)

Some of the participants attributed the negative perceptions of a faculty member to the lack of timely technical support in addition to the fear of using technology. For instance, one of the participants stated that:

There are several reasons for the negative perceptions of faculty members, including the lack of technical support, especially when it is urgently needed.
(F10)

Participant F10 also stated that the negative perceptions were fuelled by staff:

... being afraid of using technology because of their weak skills in using it.
(F10)

In line with interview participants' statements that indicated negative perceptions of e-learning use, faculty members also demonstrated negative perceptions in their responses to open-ended questions in the online questionnaire. The results illustrated that most of participants' responses about the promotion of using e-learning systems actively at their universities were negative with answer 'N' (n=72, 18.6%).

4.4.2 Sub-theme – Positive perceptions

"Positive perceptions of e-learning" refer to faculty members' favorable attitudes, beliefs, or opinions regarding e-learning. These perceptions typically stem from experiences or beliefs that e-learning is effective, flexible, accessible, or engaging. When faculty members hold positive

perceptions of e-learning, they are more likely to adopt and actively engage in it, viewing it as beneficial for achieving educational goals and enhancing learning outcomes.

There were a number of positive perceptions revealed in this research among faculty members, and these were divided into a further five different codes , which are attending training courses, convince of the importance of e-learning, exchange experiences, specialisation, and successful experiences, which will be discussed below.

Being convinced of the importance of e-learning was the main issue emerging from the positive perceptions among faculty members. Participants indicated that being convinced of the importance and benefits of e-learning is the main motive for its use, which creates an effective positive perception that pushes them to use e-learning regardless of the presence of challenges in its use. For example, one of the participants indicated by saying:

The vast majority of faculty members have a positive perception towards e-learning, and this is the result of an internal conviction of the importance of e-learning and its ability to overcome difficulties and achieve continuity of education amidst any circumstances. (F2)

Successful experiences had a major role in the positive perception towards e-learning. Participant F5 for example stated that:

The successful experiences broke the barrier of fear among faculty members towards the use of e-learning and its tools and formed a positive perception for them. (F5)

While participant D4 added that:

From my point of view, the more experience a faculty member has in using e-learning and its tools and dealing with technology, the higher they will have a positive perception compared to those with less experience. (D4)

Furthermore, the exchange of experiences also has a major role in the positive perception towards e-learning. For example, Participant 7 also stated that:

... in addition to transferring these experiences for others, [e-learning] helped create positive perceptions among faculty members. (F5)

Participants noted that specialisation plays a prominent and important role in positive perceptions towards e-learning. For example, they see that faculty members who specialise in computer sciences, educational technologies and information and communication technology are more positive towards e-learning than others. One of the participants mentioned by saying that:

I see that expertise and specialisation play a prominent role in the positive perception towards e-learning. (D3)

Another of the participants added:

Specialisation has a positive impact on the use of e-learning; for example, students of computer sciences and scientific colleges such as engineering or educational technologies more positive towards e-learning. (F12)

Training courses and their attendance have an impact on the perceptions of faculty members, as indicated by a group of participants. One of the participants emphasized the importance of attending training courses and this was one of the reasons that created positive perceptions of a faculty member towards e-learning. The participant stated that:

Most faculty members have positive perceptions, especially those who attend training courses in e-learning. (D2)

Consistent with interview participants' statements that indicated positive perceptions of e-learning use, faculty members also demonstrated positive perceptions in their responses to open-ended questions in the online questionnaire. The results illustrated that most of the participants' responses about the promotion of using e-learning systems actively at their universities were positive with the answer 'Yes' (n=278, 71.3%).

4.4.3 Sub-theme – Advantages of e-learning

"The advantages of e-learning" refer to the various benefits that motivate faculty members to utilize e-learning in the educational process.

The advantages of e-learning emerged as a Sub-themes in this research. There are fifteen main codes grouped here. The majority of the faculty members reported a range of advantages of e-learning, and these advantages were related to each of the stakeholders, who are university leaders and presidents. In addition to faculty members and students.

The interview analysis demonstrated that there are several advantages to stakeholders: alleviate pressures on higher education facilities, reduce expenses, solve the lack of faculty members in some disciplines, and solve the problem of large numbers of students in some academic divisions.

Participants indicated the following advantages of e-learning:

Helping the educational institutions [to] alleviate overcrowding in classrooms, especially small ones. (F2)

E-learning also helps the university to ... alleviate overcrowding in university buildings. (F10)

Helping the educational institutions reduce expenses. (F2)

E-learning also helps the university to reduce expenses.... (F10)

The same thing was agreed by Participant D4, who added that e-learning is:

Helping the educational institutions reduce expenses.... (D4)

A group of participants stressed that e-learning plays a major role in containing large numbers of students in classrooms, especially in the curricula of the first academic year at the university, or what is called the curricula of general preparation. For example, two participant stated:

A great benefit to the university is to alleviate overcrowding in classrooms, which cannot accommodate a large number of students. (F8)

Helping the educational institutions ... alleviate overcrowding in classrooms, especially small ones. (D4)

Some participants acknowledged that there is a shortage of faculty members in some disciplines, so e-learning helps fill this shortfall for universities that complain of this shortage.

It also helps address the shortage of faculty members in a variety of specialisations. (F3)

Moreover, participants pointed to a number of advantages for faculty members (Table 4-8).

All participants emphasized that the greatest benefit of e-learning is the flexibility of time and place, where faculty members can communicate with their students at any time by various electronic means of communication, meaning that it facilitates communication between teachers and students. For example, one participant indicated this by saying:

E-learning has many advantages, namely: the faculty members and students can communicate with each other at any time and from anywhere. (F8)

Feedback and the speed of its provision to learners by faculty members are among the main benefits indicated by the participants. One of the participants referred to this, as they stated that:

Furthermore, they can provide quick feedback to the students to learn from mistakes and address their weaknesses. (F4)

Another participant confirmed that one of the advantages of e-learning is being able to provide quick feedback:

One of the most important advantages of e-learning is that immediate feedback is provided for students who can directly know their weaknesses and strengths, which is often missing in traditional education. (D3)

Ease of access to knowledge and educational resources, diversity of educational resources, and access to the latest updates is one of the advantages of e-learning that the participants mentioned to faculty members. Participant F5 endorsed this view when they noted that:

The advantages [of e-learning] to faculty members includes helping them to access the latest updates in the curriculum and easy access to knowledge and educational resources. (F5)

E-learning helps teachers develop their technical skills through practice and use of e-learning tools.

In addition to providing different tools for the faculty member to present educational content in new and interesting ways, e-learning can, for example, according to one participant:

Help teachers to present the educational content using multiple tools and programs. (F10)

Also, the diversity of tasks, activities, and assessments were among the advantages of e-learning that the participants referred to when talking about the advantages of e-learning for teachers. For example, the participants stated:

E-learning has many advantages such as enabling faculty members to diversify their learning activities, tasks, assessment, tests, and feedback. (F9)

Furthermore, participants indicated a several of advantages for students (Table 4-8).

One of the advantages of using e-learning for students is that it accommodate the individual differences in students' learning, that is, it can be used to accommodate the characteristics of learners. The participants indicated that e-learning allows learners to proceed with their learning according to their individual abilities.

E-learning has a lot of advantages, such as takes individual differences into consideration where each student has specific psychological and behavioural characteristics. (D1)

The same view was shared by the other participants, who indicated that one of the advantages of e-learning is considering the individual differences of students.

E-learning addresses the issues of individual differences because of the use of multiple teaching tools, assessment, etc. (D3)

E-learning allows learners to access educational content anywhere and anytime. In addition to communicating with their teachers from anywhere and at the appropriate time. One of the participants argued that the flexibility of time and space is one of the advantages of e-learning, referring to this as:

One of the advantages of using e-learning is in the offering of flexibility in place and time so that the learner can access educational content at any time and from anywhere. (F2)

Another participant stated:

In my view, one of the advantages of e-learning is that the effective use of e-learning will help me overcome the issue of time and place where students can follow up on what they've missed at any time and from anywhere. (F7)

Participant F2 stated that e-learning is effective because it can assist with communications:

At the same time, the faculty members and students can communicate with each other at any time and from anywhere. (F2)

Participant D2 pointed out that ease of access to knowledge and educational resources were among the benefits that students obtained through their learning through e-learning:

As well as easy access to information and references for example e-learning increases effective access to knowledge and educational resources. (D2)

Participant D2 also pointed out that the:

Other advantages include the diversity of activities, tasks, assignments, and assessments that students receive. (D2)

One of the most prominent advantages of e-learning for students is that they get quick feedback, as one of the participants indicated that:

One of the most important advantages of e-learning is that immediate feedback is provided for students. (F12)

In general, participants argue that these advantages of e-learning reflect positively on the perceptions of faculty members.

4.4.4 Sub-theme – Disadvantages of e-learning

The "disadvantages of e-learning" refer to the various disadvantages or challenges faculty may experience when using e-learning. These disadvantages can impact their effectiveness and overall experience in the e-learning environment.

Although the interview analysis demonstrated several advantages, it also showed that there were many disadvantages. The disadvantages of e-learning emerged as a Sub-themes in this research. There are fifteen main codes grouped here. The majority of participants reported a range of disadvantages of e-learning, and these disadvantages were also related to each of the stakeholders, faculty members, and students .

The majority of the participants reported a range of disadvantages of e-learning for stakeholders, and these disadvantages were the need for strong infrastructure, a constant need to update hardware and software, and the need for quick technical support. Which increases the burden on universities to meet these ongoing needs.

One of the participants spoke about the disadvantages of e-learning by saying:

One of the disadvantages of e-learning is that it requires educational institutions to provide a strong infrastructure to make it an effective and beneficial educational system by providing devices, tools, laboratories and fast internet. (F3)

Also, another participant mentioned that:

One of the disadvantages of e-learning is that it needs a strong infrastructure to make it an effective educational system. (F5)

The majority of participants reported that the constant need to update and develop software, as well as maintain devices, is one of the disadvantages of e-learning that burdens educational institutions. For example, one of the participants indicated that:

Another disadvantage is the technical problems that occur during online classes, such as when devices suddenly stop. So, devices and programs always need continuous updating. (F11)

Another participants also stated that:

One of the disadvantages of e-learning is the need for rapid technical support due to technical problems that occur during its use, which causes some members to give up on using it. (F5)

Furthermore, participants indicated a several of disadvantages for faculty members (**Error! Reference source not found.**).

Continuous training and development were the major topic that participants expressed regarding the disadvantages of e-learning for faculty members. For example, Participant F2 mentioned that:

In my opinion, one of the disadvantages of e-learning is that it needs continuous training of staff to efficiently deal with e-learning systems. (F2)

One of the participants added:

As for the disadvantages for e-learning, the content creation and design require more time and effort, which puts burden on some faculty members from their perspective. (F6)

Preparing e-learning requires a long time to sit in front of devices and computer screens, which has undesirable health effects such as poor eyesight and obesity among faculty members and students. Most of the participants pointed out these disadvantages and health effects. One of the participants indicated that by saying:

Many colleagues complain about spending long periods of time in front of devices and screens which may affect their health. (F11)

Inform the participant D4 about it, and he mentioned:

Also, the design takes the faculty members' time and effort, since sitting in front of the computer screen may cause them to suffer from health problems and affect their eyes. (D4)

E-learning users deal with various and different technical devices and software, so they need special technical skills to use e-learning. Participants see that one of the disadvantages of e-learning is that it requires special technical skills to deal with the hardware and software used in it, which may not be available to many faculty members or users of e-learning, which makes them embarrassed when any problem occurs while presenting their curricula using e-learning. For instance, one participant mentioned:

E-learning also requires specific skills, the lack of which will make it difficult for the faculty member to use and interact with it. (D1)

The participants indicated that one of the disadvantages of e-learning is the weak social relations between the teacher and the student because the teacher in e-learning focuses on providing knowledge more than demonstrating any interest in emotional aspects or physical movements that have meaning in dealing with others.

Some participants stated that it e-learning is not suitable for some educational curricula, which makes its use difficult, especially when it requires a practical and applied aspect. One of the participants talked about it and said:

E-learning is not suitable for practical courses, for example e-learning may not be effective in some scientific specialisations such as medicine and science.

(D3)

Moreover, participants pointed to a number of disadvantages for students (**Error! Reference source not found.**).

Participants emphasized that the greatest disadvantages of e-learning are the poor social relations and communications. For example, one participant stated that:

E-learning [results in] ... poor social relations due to the focus on the cognitive aspects and neglects the emotional aspects and social relations.

(F10)

Weak social relations, whether between students and teachers or students and students, also resulted in a sense of isolation and increased introversion. For example, Participant (F10) also indicated this by saying:

Also, e-learning causes isolation, introversion.... (F10)

Another participant said:

One of the disadvantages of e-learning is that it ignores social relations, which makes some students feel isolated. (F2)

While another participant stated that in relation to the negative health effects, the disadvantages of e-learning included:

... isolation and introversion among students. (F11)

One of the participants believed that the opportunities for cheating presented itself as one of the disadvantages of e-learning for students:

Cheating in exams and assignments is one of these disadvantages we have witnessed and suffered from. (F3)

Another participant reported that:

One of the most prominent disadvantages of e-learning is cheating in exams and assignments, and impersonation. (F9)

E-learning requires a long time to sit in front of devices and computer screens, which has undesirable health effects such as poor eyesight and obesity, in addition to the effects of isolation and introversion among students. Most of the participants referred to these unintended consequences of e-learning. For example:

E-learning has some disadvantages, including obesity and poor eyesight, whether for teachers or students due to long sitting in front of screens and devices.... (F11)

One of the success factors for e-learning is the availability of a strong and fast internet to avoid interruptions and technical problems while using it. Some of the participants reported that students complain about the weak or lack of internet for some students, especially those who live in villages or rural areas, which causes them embarrassment in submitting their homework and assignments and completing their exams. One of the participants mentioned said the following:

I know some students who are forced to walk long distances searching for an internet connection to hand over their assignments, let alone attending

synchronous lectures, especially, those who live in villages and rural areas.

(F7)

Participants mentioned that these disadvantages may have a negative impact on the perceptions of faculty members, especially those who have resistance to change.

Table 4-3 shows a summary of the differences and commonalities in the responses from the participant groups.

Table 4-3: Summary of the differences and commonalities in the responses from the participant groups to the perceptions of e-learning

Sub-themes	Participants							
	University-J		University - N		University-B		University - K	
	Dean	Faculty	Dean	Faculty	Dean	Faculty	Dean	Faculty
Negative perceptions	-	-	-	-	✓	✓	✓	✓
Positive Perceptions	✓	✓	✓	✓	✓	-	✓	✓
Advantages of E-learning	✓	✓	✓	✓	✓	✓	✓	✓
Disadvantages of E-learning	✓	✓	✓	✓	✓	✓	✓	✓

Based on Table 4-3, it is evident that there is a consensus among the interview participants that there are positive perceptions of e-learning, while 50% of the participants indicated that there are some negative perceptions of e-learning.

Moreover, there is a consensus among the interview participants that there are a wide range of advantages and disadvantages to e-learning for stakeholders, who are the officials in the universities the target of the study, as well as faculty members and students.

4.5 Theme 2: Challenges

Challenges refer to the difficulties, barriers, or problems that hinder or prevent faculty members from achieving their educational goals or desired outcomes.

The challenges facing faculty members was the first major theme to develop from the research data from participants. Table 4-4 illustrates the content of these challenges facing faculty members in their use of e-learning. The theme of ‘Challenges’ is divided into eight sub-themes, and each sub-themes has been divided into a variety of codes. This theme and its sub-themes will be discussed in further detail below.

Table 4-4: Challenges - Sub-Themes and Codes.

Theme	Sub-Themes	Codes
Challenges	Support	Technical support Financial support (Budgets) Material and moral
	Infrastructure	Lack of devices available Lack of computer technology Lack of Infrastructure Slow internet connection Update hardware and software
	Resistance to Change	Culture Design preparation time Lack of interest in attending training courses The decision-makers Weak personal conviction
	Incentive and Motivation	Encouragement from the leadership Lack of student's interaction Poor interaction between student and teacher
	Skills	Use e-learning tools Technology illiteracy Computer illiteracy Lack of instructional design Lack of training Virtual classroom management
	Experience	Lack of experience Lack of qualified staff Lack of technical experience Lack of using e-learning Specialisation
	Location	Geographical location The nature of region

Theme	Sub-Themes	Codes
	Policy	Unclear policies

4.5.1 Sub-theme- Support

The first sub-theme under the theme of challenges was ‘Support’. In relation to this study, ‘support’ referred to the concepts of assistance, encouragement, and resources that are available to faculty members and are offered to them by their educational institution in order to ‘support’ them in the use of e-learning and more specifically to overcome any of the challenges and difficulties they may face while using e-learning, thus, to achieve the goals of education. Support can take many forms, such as technical support, financial support (i.e., budgets), and material and/or moral support. In this sub-theme, it was the lack of support that dominated the participants’ responses.

As demonstrated in Table 4-4, there are three codes under the sub-themes of ‘Support’. These are lack of quick technical support; lack of financial support; and poor material and moral support. Each of these codes will be discussed in more detail below.

When the participants were asked about the challenges or challenges facing faculty members when using e-learning, 50% of the participants (8) indicated that technical support, especially at the required time, is one of the most significant challenges they faced. For example, one participant stated that:

Other challenges facing faculty members in the use of e-learning are, lack of timely technical support, ... (F2)

In the Kingdom of Saudi Arabia, the government pays great attention to education in the annual budget and the Ministry of Education seeks to provide all of the required educational needs, However, 25% of the participants (4) indicated that financial or budgetary support is one of the

main challenges that faculty members face in using e-learning, whether as a means of motivation and encouragement or the provision of some tools used in e-learning in some university branches. One participant expressed this perspective:

The first challenge is the lack of required financial support to the deanship of e-learning. (F10)

Other participants indicated that among the challenges in the use of e-learning for faculty members is the lack of material and moral support. This was seen as a significant challenge. As one participant stated:

One of the most important challenges to e-learning from my point of view is the lack of material and moral support, especially with faculty members who lack conviction and personal motivation to use e-learning. As well as to encourage and motivate those who are passionate about its use. (F10)

4.5.2 Sub-theme - Infrastructure

The second sub-theme under the theme of challenges is infrastructure. In relation to this study, infrastructure refers to the material resources that are needed to support the delivery of education. For example, this would include computer devices, computer technology, internet connections, updated computer hardware and software, and other physical facilities that are necessary for teaching and learning. In this sub-theme, it was the lack of infrastructure that dominated the participants' responses.

Infrastructure is one of the most important factors for the success of e-learning, and it requires a significantly large budget in order to provide a high-quality product. Based on **Error! Reference source not found.**, and investigating the detail of this sub-theme, this research has found a significant number of challenges related to infrastructure which will be discussed below.

A lack of infrastructure can be summarised as either ‘weak’ or ‘poor’ infrastructure, and this is one of the challenges preventing the optimal use of e-learning. 75% of the participants (12) mentioned that ‘weak infrastructure’ is the most common challenge, and this was expressed by one participant who stated that:

Poor infrastructure is the strongest challenge facing a faculty member in most university branches. (F1)

Many faculty members pointed out that poor internet connections, made it difficult for them to communicate with most of their students. This was a major challenge and challenge in the effective use of e-learning and was especially so for those who live in villages or the rural regions. This problem was evident in most branches of the emerging universities. For example, one participant stated that:

Another major challenge for faculty members is the slow internet connection due to the nature of the region. (F3)

The code of ‘computer technology skills’ referred to a person who had access to the technology, but more importantly also has the technical knowledge, even if basic, in dealing with the technical problems that s/he will face while using a computer. This does not include the computer programs and tools, but rather how to deal with the computer in the event that it suddenly stops working. According to one participant:

*We at the university have faced several challenges, including the following:
Competencies: there are a few faculty members who lack the basic knowledge about computer technology. (D3)*

Participants in this study pointed out that the lack of adequate equipment was one of the challenges they faced when using e-learning. For example, one participant stated that:

Some of the university's colleges in other branches, put an extra burden on it, as it is difficult to provide sufficient devices in all branches, which is a challenge to the use of e-learning. (F1)

Many faculty members pointed out about the problems associated with having to constantly update the hardware and software used in e-learning. Moreover, the lack of updating or the delays in doing so, results in further challenges to the optimal use of those programs and devices in the e-learning process. One participant mentioned that:

In order to keep pace with the change in e-learning tools, hardware and software that are characterized by continuous development and updating, universities must constantly update these hardware, software, and devices used in e-learning. Because not updating these devices makes it a challenge to using e-learning in an effective manner. (F2)

4.5.3 Sub-theme- Resistance to change

The third sub-theme under the theme of challenges is 'resistance to change'; in this study, 'resistance to change' refers to the reluctance of faculty members themselves to use e-learning. This reluctance manifested itself as a range of attitudes and/or behaviours that were in-themselves considered significant challenges, such as 'fear' and 'refusal' to adopt and use e-learning.

Resisting change is one of the difficult issues facing the uptake of e-learning. This can be resistance from the end-users or even the decision-makers and can be a result of the person's lack of conviction or understanding of the importance of e-learning. Some participants mentioned that resistance to change is one of the challenges and challenges for using e-learning. For example, one participant mentioned that:

Some faculty members have resistance to change, believing that e-learning will put an extra burden. (F4)

In addition, another participant indicated that:

Resistance to change from faculty members [is] because of their fear of technology failure. (D3)

As demonstrated in **Error! Reference source not found.** the sub-theme of ‘resistance to change’ has five different codes, which are culture, design preparation time, lack of interest in attending training courses, the decision-makers, and weak personal conviction.. These are illustrated in the following statements.

The personal conviction and the internal and psychological factors of faculty members plays a role in using e-learning. (F5)

Today, I see that the major challenge stems from the faculty member's personal conviction of the importance and great benefits of e-learning. (F3)

There are many challenges to the use e-learning, such as the lack of conviction of the higher managements of the importance of e-learning and their conviction of traditional education. (F8)

The weak belief of decision-makers in the importance of e-learning is one of the challenges to the faculty member's use of this type of education. (F10)

The prevailing culture, whether in society or faculty members, has a significant impact on the use of e-learning. (F4)

The resistance to change constitutes a challenge and a great challenge for some negative people who, in turn, influence others around them and spread negative ideas about technology and its problems because of their negative culture about it. (F3)

There is no doubt that the establishment and attendance of e-learning training courses have an important role in the self-efficacy of trainees, which raises their skills and abilities to use e-learning and its tools. This is illustrated in the following statements from three participants.

The lack of interest in attending the training courses held in the field of e-learning is one of the factors of resistance to change that stand in the way of the use of e-learning. (D1)

Major challenges in e-learning are ...the poor training attendance and this is the result of a lack of conviction in its importance and a preference for traditional education over e-learning. (F4)

There are other challenges which related to faculty members, including ignorance of e-learning instructional design, their perception that it takes time and effort and puts a burden on them with no incentives in return. (F8)

4.5.4 Sub-theme- Incentive and Motivation

The fourth sub-theme under the theme of challenges is ‘incentive and motivation’. As demonstrated in **Error! Reference source not found.** above the sub-theme of ‘incentive and motivation’ has three major codes, which are encouragement from the leadership, lack of student’s interaction, and poor interaction between student and teacher, and each of these will be discussed below. However, firstly it is important to show the comments from participants that generated the sub-theme. For example, one participant argued that:

The lack of motivation is what makes them less excited about the use of e-learning. (F4)

This sample participant also stated:

From my point of view, in addition to personal conviction, the absence or weakness of incentives is one of the challenges that make a faculty member not enthusiastic about using e-learning, for example some faculty members say, 'Why use e-learning when there is no incentive for that use?.'

Some faculty members pointed out the weak interactions of students while using e-learning. They mentioned that students turned off their cameras and microphones simultaneously while 'participating' in e-learning. This was especially the case for female students (perhaps due to their religious and cultural values), however, the male students also did this, resulting in the faculty member feeling as though they were talking to themselves online.

According to one participant:

*We at university have faced several challenges, including the following:
Faculty members' concern about the lack of students' interaction with the curriculum and material during lectures where most of them turn their cameras and mics off. (F7)*

The encouragement by the leadership is not limited to providing incentives only, but also includes encouraging faculty members to attend training courses in the field of e-learning and its tools and facilitating and overcoming the challenges they face while using it. For example, one participant mentioned that:

It is the responsibility of the leadership to encourage and motivate faculty members towards the use of e-learning, whether encouraging them to attend training courses or providing them with material and moral incentives. (D3)

4.5.5 Sub-theme- Skills

The fifth sub-theme under the theme of challenges is 'skills'. In this study, the skills specifically refer to educational skills necessary for effective teaching and learning, such as the

range of abilities, knowledge, and competencies to perform these tasks. These skills cover a variety of areas, such as communications, pedagogical technologies, assessment, classroom management, and technology integration. Educational skills are essential for teachers, trainers, and educators of all levels to effectively convey information and facilitate learning among their students. It was notable from this research that it was the lack of such skills that contributed to the challenges to the uptake of e-learning.

There is a minimum set and level of skills that faculty members must master in order to facilitate the process of using e-learning and its tools. The sub-theme of ‘skills’ is dominated by the ‘lack’ of such skills required for successful e-learning. One participant stated that:

Another challenge is that some faculty members do not have the basic skills to use e-learning and its tools. (F4)

As **Error! Reference source not found.** above shows there are six codes related to the sub-theme of ‘skills’ has six codes, which are the use of e-learning tools, technology illiteracy, computer illiteracy, lack of instructional design, lack of training, and virtual classroom management, and each of these will be discussed below.

Technical skills are one of the basic skills for dealing with e-learning tools, and also one of the most important ones. Some participants mentioned that the lack of technical skills is one of the challenges facing them as teaching staff needing to use e-learning. For instance, one participant indicated that:

One of the challenges to using e-learning is the lack of some faculty members of the technical skills necessary to use e-learning tools. (D1)

Computer illiteracy is one of the major challenges that teachers face in activating e-learning. One participant indicated that:

Computer illiteracy or lack of knowledge of using computer programs is a major challenge for some faculty members to use e-learning. (F6)

Another participant argued that:

The faculty member's lack of knowledge of using computer programs such as PowerPoint and Excel are one of the problems that some faculty members face while using e-learning. (D3)

Involving the teacher in the design and teaching them how to design their educational courses is one of the important things that teachers should know. One participant indicated that:

If the faculty member does not have the skill of instructional design, then at least the universities should provide instructional designers either to conduct training courses on instructional design or to help the faculty member in designing [their] course content. (D1)

Some participants indicated that there were many training courses offered by the deanship of e-learning, but these were more concerned with the technical side of things rather than with the academic and educational side. In addition, they pointed out that there was a lack of training courses. According one participant:

Other challenges facing faculty members in the use of e-learning are the lack of training. (F1)

E-learning needs the skill of managing virtual classrooms, especially if the education is synchronous. Some participants indicated that there is a weakness in the skill of managing virtual classrooms by faculty members, which creates a challenge for them to use e-learning. For example, one participant indicated that:

Other challenges include the lack of virtual classroom management skills.

(F11)

4.5.6 Sub-theme- Experience

The sixth sub-theme under the theme of challenges to e-learning is ‘experience’, in particular the ‘lack of experience’ of faculty members in universities, in relation to their technical, academic, and educational aspects related to their use of e-learning and its tools. As Table 4-4 above shows, there are five codes associated with the sub-theme of ‘Experience’ and all of them relate to the ‘lack of relevant experience’ required to undertake e-learning effectively. Each of these codes will be discussed in more detail below.

This research found that 62.5% of the participants stated that faculty members face challenges in using e-learning due to a lack of experience. One participant indicated that there are a number of challenges for the use of e-learning, including “*lack of experience*”. (F6)

Another participant stated that:

One of the challenges facing faculty members for using e-learning is their lack of technical expertise in using e-learning tools. (F7)

Another participant pointed out that:

We at university have faced several challenges, including the following: Lack of faculty members' experience in using e-learning. (D3)

Some participants noted that a lack of experience manifested itself as a lack of specialisation in computers and/or educational technologies. For example, one participant noted that faculty members need to have specialist skills because without them they lack experience:

The technical experience and specialisation also have a great impact on faculty members ... [because] non-specialists find it difficult to use e-learning and its tools. (D2)

Some indicated that the lack of trainers specialising in e-learning was one of the challenges that prevent the use of e-learning, and if there are trainers, they are more interested in the technical aspects than the educational aspects, as they specialise in technology only. They can train faculty members on how to use tools and how to operate and use those tools, but they neglect the educational aspects, design, and interactive activities associated with electronic content. According to one participant:

The limited qualified [human resources needed] in the design and production of some fields of e-learning, at more professional levels that meet the aspirations, i.e., the lack of qualified human resources in e-learning I think that is one challenge. (F2)

4.5.7 Sub-theme- Location

The seventh sub-theme under the theme of challenges is ‘location’. One of the physical constraints on e-learning is the location. Within this sub-theme this research found two main codes, which are geographical location and the nature of region, which impacted on the strength and speed of the actual Internet connections needed for e-learning and these two codes will be discussed below (SeeTable 4-4).

The geographical location resulted in some faculty members facing many challenges in communicating with those students who live in villages or rural areas where the Internet connections tend to be slower, making synchronous e-learning with these students very difficult.

Three participants stated:

One of the major challenges in synchronous e-learning are the slow internet connection due to the nature of the region. (D1)

The nature of the region served by the university and deanship – in which there are rugged areas or others with special geographical conditions, namely plains, mountains, seas, etc. – imposes a challenge to provide effective technical services there. (F2)

Another challenge is the poor internet connection and network disconnection during classes due to the nature of the region (i.e., borderline). (F5)

4.5.8 Sub-theme- Policy

The eighth sub-theme under the theme of challenges is ‘policy’. In this case ‘policy’ refers to those educational policies that provide clear guidelines, rules, and regulations by the educational institution to guide the delivery and management of e-learning. Legislation, policies, and clear regulations are among the most important factors that help a faculty member to perform their duties. e-learning needs clear policies and regulations from policy makers to enhance the use of e-learning among faculty members. Significantly it was the lack of such policies that contributed to the challenges in the uptake of e-learning. There was one main code associated with this sub-theme is unclear policies, and this will be discussed below.

One participant indicated that the lack of clarity of policies and regulations is one of the challenges that faculty members face in using e-learning:

Other important challenges include the unclear legislation, policies, and regulations. (F6)

When asking participants in the online questionnaire in the open-ended question about the challenges that negatively affect their use of e-learning in their universities, the participants listed a set of challenges and challenges they face, as shown in **Error! Reference source not found..**

Table 4-5: Frequencies and percentages of multiple participants' responses about the challenges that may negatively affect the application of e-learning at their universities.

Number	Statement	Frequency	Percent %
1	Internet weakness	78	31.3
2	Lack of encouragement from officials	10	4.0
3	Not having enough time to attend training courses	10	4.0
4	Not preserving the copyright of the educational content	2	0.8
5	Lack of Computerized educational programs	4	1.6
6	Some faculty members lack e-learning skills or strategies	7	2.8
7	Lack of devices needed for e-learning in the classroom (e.g., computers, data projector, etc.) or the need for update	18	7.2
8	Lack of the software used in e-learning and need to update	25	10.0
9	Lack of the training courses provided to the faculty member	2	0.8
10	Increase the burden on the faculty member	6	2.4
11	Preparing an e-learning course takes a long time	9	3.7
12	Lack of knowledge in instructional design for e-learning	5	2.0
13	Difficulty in using it in scientific unit	2	0.8
14	Lack of interest in attending training courses by faculty members	7	2.8
15	Lack of material and moral support	11	4.4
16	Lack of conviction of officials in e-learning	9	3.7
17	Lack of technical support in a timely	27	10.9
18	Lack of a faculty member to develop his/her skills	7	2.8
19	Unclear policies in the use of e-learning	10	4.0
Total		249	100.0

Table 4-5 presents a summary of the differences and commonalities in the participant groups' responses.

Table 4-6: Summary of the differences and commonalities in the responses from the participant groups to the Challenges of e-learning

Sub-themes	Participants							
	University-J		University - N		University-B		University - K	
	Dean	Faculty	Dean	Faculty	Dean	Faculty	Dean	Faculty
Support	-	✓	✓	✓	-	✓	-	✓
Infrastructure	✓	✓	✓	✓	✓	✓	✓	✓
Resistance to Change	✓	✓	✓	✓	✓	✓	-	✓
Incentive and Motivation	✓	✓	-	✓	✓	✓	✓	✓
Skills	✓	✓	-	✓	✓	-	✓	✓
Experience	✓	✓	✓	✓	✓	✓	✓	-
Location	✓	✓	-	✓	✓	-	✓	-
Policy	-	✓	-	✓	✓	-	✓	✓

Based on Table 4-6, it is evident that the lack of support has been mentioned by faculty members from all universities and the majority of deans of e-learning departments. This indicates that faculty members face challenges in receiving various types of support. In addition to weak infrastructure, resistance to change, lack of incentive and motivation, weak skills, lack of experience, and location. Some of them mentioned the lack of clarity in policies as one of the challenges that faculty members face in using e-learning.

4.6 Theme 3: Needs

The interview analysis identified a set of ‘needs’ that would need to be met and provided for faculty members to make optimal use of e-learning to benefit from it in the educational process, achieve learning goals and maintain the learning motivation of learners. There were three sub-themes and a number of codes attached to these sub-themes which will all be discussed below (See Table 4-7).

Table 4-7: Needs –Sub-Themes and Codes.

Theme	Sub-Themes	Codes
Needs	Existence Needs	Clear policies Support Experiences
	Relatedness Needs	Communication Cooperation Conviction
	Growth Needs	Skills Training Infrastructure

4.6.1 Sub-theme- Existence Needs

The first sub-theme under the theme of ‘needs’ is ‘existence needs’, which are defined here as the basic physiological and material requirements that are essential for a faculty member to effectively use e-learning. These needs include clear policies, technical support, and material and moral support. As the lack of policy clarity is one of the challenges faced by faculty members. Therefore, there should be clear policies in place, which is what faculty members need for the effective use of e-learning,

As demonstrated in **Error! Reference source not found.** above the sub-theme of ‘existence needs’ generated the following codes: clear policies; support; and experience.

Clear policy, or a clarity of policies enhances faculty members' sense of safety when using e-learning, obtaining clear information. For example, one of the participants mentioned the necessity of this, as they said:

There is a significant need for a clear vision and policies by universities to increase faculty members' motivation to use e-learning and help them know their responsibilities and duties so as not to violate the regulations and laws.

(F10)

Another participant emphasized this by saying:

Clear policies, and laws, are necessary to help faculty members ensure the effective and optimal use of e-learning. (F6)

Technical support helps faculty members alleviate their anxiety while using technology in the e-learning process, especially faculty members who have a fear of using technology and help them use technology to achieve the intended educational results. One participant argued that:

Among the needs for faculty members to use and activation of e-learning is the timely technical support, the lack of which may cause members to give up on the use [of e-learning]. (D4)

The majority of the participants agreed that material and moral support is one of the basic needs that the faculty members see being available for the use of e-learning, as one of the participants indicated this by saying:

Furthermore, the necessary needs that will push a faculty member towards e-learning include technical and institutional support, whether moral or material. (F3)

In addition, the exchange of experiences is among the needs that help faculty members take advantage of e-learning and create new ways of teaching. A group of participants indicated the need to exchange experiences, for instance, one of the participants mentioned:

In my view, there are a set of needs that will help faculty members make effective and optimal use of e-learning they are summarized as follows: transfer and exchange of experiences between faculty members, and
(F3)

The same view was expressed by Participant F12, who stated that:

The transfer of experiences and cooperation help them improve their use of e-learning. (F12)

4.6.2 Sub-theme- Relatedness Needs

The second sub-theme under the theme of ‘needs’ is ‘relatedness needs’ which refer to the fundamental needs of a faculty member for communication, belonging, and intimacy with the educational institution and its members. From the participants' points of view, the need for social relationships and interpersonal connection are important when it comes to the faculty member using e-learning. These ‘relatedness needs’ include communication and cooperation with others to build knowledge which can help them to make the best use of e-learning and adopt it in their teaching methods, and also involves personal conviction for this type of education. Table 4-7 shows the sub-theme of ‘relatedness needs and the codes that were generated by this sub-theme. Each of these codes will be discussed below.

Three Participants (D3, F9 and F12) mentioned that effective communication between faculty members enhanced the use of e-learning and also changed negative attitudes to positive ones.

The same participants (D3, F9 and F12) also stated that cooperation was an effective means to exchange positive experiences which can enhance the use of e-learning. One of the participants indicated by saying that:

One of the needs that helps faculty members to use e-learning is communication and cooperation among them. (F6)

Some participants also mentioned that personal conviction plays a prominent role in the use of e-learning. According to one participant:

Faculty member needs are a personal conviction that pushes them to use e-learning and communicates with others to know everything that is new and useful in this type of education. (D3)

4.6.3 Sub-theme- Growth Needs

The third sub-theme under the theme of ‘needs’ is ‘growth needs’ which refer to the fundamental human needs for personal development, self-improvement, and the pursuit of meaningful goals. Most of the participants indicated the need for the availability of a set of skills, continuous training, and the availability of a strong infrastructure, all in order to develop the growth needs for the use of effective e-learning. There are three codes under this sub-theme of ‘growth needs’ as listed in Table 4-7. Each of these codes will be discussed below in more detail.

Some participants indicated that faculty members need a set of skills that they need to continuously develop in order to advance professionally. Some participants mentioned that the need for computer skills, instructional design and dealing with modern technologies are some of the most important skills needs that faculty members must possess. As one of the participants pointed out, he said:

In fact, there is a set of skills that a faculty member needs for the optimal use of e-learning, including the skill of designing educational content and dealing with computers and modern technical devices. (F10)

Participant D1 mentioned that they need training, as they indicated this by saying:

Other necessary needs to push faculty members, especially the passive ones, towards the use of e-learning include training and development, keeping pace with the technological advances, technical development, training on the use of everything new and useful. (D1)

Another participant added that:

Continuous training on modern devices and software is among the most important needs for faculty members in order to improve their use of e-learning. (F9)

While another participant also stated:

Faculty members need to receive training and development on the use of e-learning. (F11)

Strong infrastructure is one of the most important needs for the use of e-learning in educational institutions, which includes the availability of e-learning devices and tools, a strong Internet, or the development and modernization of educational software and hardware. One of the participants indicated that by saying:

There are a set of needs include development and modernization of laboratories and infrastructure at the university and availability of the most recent programs. (F2)

In addition, the participants were asked to list the resources and/or support needed by a faculty member in their universities while they were using e-learning through the online questionnaire; their responses were as shown in Table 4-8.

Table 4-8: Frequencies and percentages of multiple participants' responses about resources and/or support that they need while using e-learning.

Number	Statement	Frequency	Percent %
1	Exchange of experiences	103	19.2
2	Material and moral support	36	6.7
3	Encouragement from officials	41	7.6
4	The need for clear policies in the use of e-learning	12	2.3
5	The need for strong and fast internet	106	19.7

Number	Statement	Frequency	Percent %
6	Software development and devices update	22	4.1
7	Availability of devices such as (data show, computers, design devices, interactive screens, projectors, and smart boards)	36	6.7
8	Training courses suitable for e-learning	46	8.6
9	Timely and prompt technical support	66	12.3
10	Courses on instructional design	14	2.6
11	Digital electronic content	8	1.5
12	Laboratories equipped with modern devices	19	3.5
13	Availability of educational software	9	1.7
14	Modern computers	12	2.3
15	Increasing awareness of the importance of e-learning among faculty members	7	1.3
Total		537	100.0

Table 4-9 presents a summary of the differences and commonalities in the responses from the participant groups.

Table 4-9: Summary of the differences and commonalities in the responses from the participant groups to the needs of e-learning

Sub-themes	Participants							
	University-J		University - N		University-B		University - K	
	Dean	Faculty	Dean	Faculty	Dean	Faculty	Dean	Faculty

Existence Needs	✓	✓	✓	✓	✓	✓	✓	✓
Relatedness Needs	✓	-	✓	-	-	✓	✓	-
Growth Needs	✓	-	✓	✓	✓	✓	✓	✓

Based on **Error! Reference source not found.**, it is evident that there is a near consensus on the needs for existence and growth among the interview participants from all universities in the study's target. However, the majority of participants indicated the needs for relatedness.

4.7 Theme 4: Enablers of E-learning Use

The analysis of the interview data identified a set of the enablers contributing to the use of e-learning. The theme of 'Enablers of E-learning Use' comprised two sub-themes – internal and external enablers – and a number of codes attached to these sub-themes (Table 4-10) which will all be discussed in the following sections.

Table 4-10: Enablers contributing to the use of e-learning – Sub-Themes and Codes.

Theme	Sub-Themes	Codes
enablers contributing to the use of e-learning	Internal enablers	Incentives Support Infrastructure Training Clarity of policies Leaders' conviction
	External enablers	Conviction Experience Training Skills Specialization

4.7.1 Sub-theme- Internal enablers

Internal enablers are defined as those factors related to the educational institution and what it provides to the faculty member, in addition to the environment within the educational institution, and they include human and material factors. As demonstrated in Table 4-10 within this sub-theme

of internal factors, there were six codes: incentives, support, infrastructure, training, clarity of policies, and leaders' conviction.

Material and moral incentives, awarding of prizes and competitions among faculty members, encouraging leaders to use e-learning, and spreading the spirit of competition among teachers, play a prominent role in encouraging and improving the use of e-learning in educational institutions, as indicated by the majority of participants.

For example, one of the participants mentioned this by saying:

Incentives, whether material, moral or academic, such as granting certificates and incentive awards, motivate faculty members to use e-learning and are necessary to convince workers in the educational system of the importance of the new technology. (D1)

Another participant pointed out the same idea:

One of the most important factors that help the use of e-learning is incentives and motivation by leaders, such as competitions and prizes, create a spirit of competition and creativity amongst the faculty members. (F4)

Technical support was one of the main factors mentioned by the participants to increase or improve the use of e-learning. Participants pointed out that the lack of technical support in a timely manner puts psychological pressure on them especially when problems occur during e-learning. The responses also indicate that providing them with professional training and technical support in order to enable them to have more effective use of e-learning is an important factor for enhancing e-learning and increasing and improving its use. One of the participants indicated that:

The availability of technical support by experts to facilitate the process of using e-learning, especially when facing some technical problems, is one of the

most important factors that help improve and encourage faculty members to use e-learning in educational institutions. (D2)

The participants also referred to training courses as being an important factor for raising their efficiency and helping them to use e-learning. Some participants also mentioned that this training should be on the use of electronic devices and software and its tools, and there should be follow-up of developments and the provision of such courses by educational institutions. One of the participants mentioned that:

Other factors include training on technical tools, the availability, and ease of using technology, the training of faculty members on to use e-learning and its tools. (F10)

All participants indicated that the availability of a strong infrastructure is a major and important factor in the activation and use of e-learning. For example, one of the participants indicated that:

The availability of a strong and fast Internet, servers, computers, and tools for using e-learning must be available to use and activate e-learning. (F3)

One of the participants added that:

If educational institutions do not have a strong infrastructure such as a strong Internet and the availability of devices, tools, and software for e-learning, the result of adopting and using e-learning may be a failure. (D3)

In addition, one of the participants recommended:

The necessity of providing a strong infrastructure that includes hardware and software and a strong Internet that supports the process of using e-learning effectively in educational institutions. (F9)

Clarity of policies, regulations, and legislation regulating the use of e-learning were all emphasized by the participants as factors needed to promote, improve, and increase the use of e-learning in educational institutions. In addition, the decision-makers' and leaders' conviction towards their adoption and belief in the importance and benefits of e-learning is a critical and important factor to help increase the use of e-learning. One of the participants stated:

Clear legislation, regulations, and policies will greatly help and push faculty members forward towards the use of e-learning. (F11)

Another participant added:

There are internal factors, including the conviction of the importance and benefits of e-learning by leaders and decision-makers. (F2)

4.7.2 Sub-theme - External enablers

External enablers are defined as factors related to the faculty member that the educational institution may not have direct influence over in terms of their availability to the faculty member. Within this sub-theme, there were five codes: conviction, experience, training, skills, and specialization. As demonstrated in (Table 4-10).

Personal conviction in the importance and benefits of e-learning is one of the important factors for adopting and using e-learning. The majority of participants, with a rate of up to 75%, stated that personal conviction is a very important factor for adopting and using e-learning. One of the participants mentioned:

The main factor comes from within the faculty member, who is primarily led and motivated by his own belief and convictions. So, the member's personal conviction of the importance, characteristics, and benefits of e-learning is a strong factor and motivation for using e-learning. (F7)

Another participant added:

Internal conviction plays a prominent role in the use of e-learning, so unless a faculty member has an internal conviction in using e-learning, its benefits, and importance, it will not be used effectively, no matter how much facilities you provide for it. (F12)

Experience in the use of e-learning and its tools, such as using programs and devices or having experience in the use of e-learning methods of providing educational content, is one of the main factors indicated by the participants and thus it plays a prominent role in the use of e-learning. According to one of the participants:

The experience factor in the field of e-learning and its tools is one of the factors that play a vital role in activating the use of e-learning among faculty members, in addition to exchanging those experiences among them. (F3)

Another participant added that:

The experience in the field of e-learning technologies and the way of using its tools and programs make the faculty member enjoy e-learning in presenting its educational content as well as its students. (D3)

Most of the participants mentioned that attending training courses, especially those that have a direct relationship with e-learning, are among the factors that play a major role in improving and increasing the use of e-learning. They also added that such courses improve their skills in dealing with the techniques and tools used in e-learning, in addition to being an important factor in highlighting the importance of e-learning and showing its benefits and advantages to faculty members, which increases their conviction about the use of e-learning.

In my view, the main factors for motivating faculty members are developing their technical skills in general and taking training courses in e-learning, especially those courses that help faculty members on how to use e-learning tools and design its educational content. (D2)

Another participant mentioned that:

Continuous training on new hardware and software is one of the most important factors for faculty members to develop their use of e-learning. (D4)

Some participants stated that specialisation has a major role in increasing and improving the use of e-learning, as they see that disciplines related to technologies such as computer science or educational technologies have a significant impact on the adoption and use of e-learning and its tools. For example, one of the participants indicated that:

Specialisation has a significant impact on the use of e-learning by faculty members, as it plays a large role in this aspect, as non-specialists find it difficult to use e-learning and its tools. (D2)

The participants also explained when they answered the open question in the online questionnaire, some of the factors contributing to increasing and improving the use of e-learning, as shown in Table 4-11.

Table 4-11: Frequencies and percentages of participants' responses about activities have been conducted in or by their universities to help improve and increase the use of e-learning in higher education.

Number	Statement	Frequency	Percent %
1	Training (training courses)	232	98.7
2	Presenting the Excellence Award in the field of e-learning	1	0.4
3	Practitioner certificate in e-learning	1	0.4
4	Introductory brochures on the use of e-learning	1	0.4
Total		235	100.0

Table 4-12 shows a summary of the differences and commonalities in the responses from the participant groups.

Table 4-12: Summary of the differences and commonalities in the responses from the participant groups to the enablers of e-learning use

Sub-themes	Participants							
	University-J		University - N		University-B		University - K	
	Dean	Faculty	Dean	Faculty	Dean	Faculty	Dean	Faculty
Internal enablers	✓	✓	✓	✓	✓	✓	✓	✓
External enablers	✓	-	✓	-	✓	✓	✓	-

Based on Table 4-12, it is evident that there is a near consensus among the interview participants that there are various internal and external enablers of e-learning Use for faculty members.

4.8 Theme 5: COVID-19

Theme 5 related to the COVID-19 global pandemic and describes the extent to which educational institutions were able to demonstrate ‘Readiness’ for the pandemic and its impact on and requirement for the use of e-learning: Thus, Theme 5 is made up of two sub-themes: Readiness and Effects, as the Table 4-13.

Table 4-13: Covid-19 –Sub-Themes and Codes.

Theme	Sub-Themes	Codes
Covid-19	Readiness	A plan to provide e-learning
	Effects	Positive change Increase in usage Changing convictions (leaders/teachers) Increase the exchange of experiences Reducing the barriers of fear and failure Increase in attendance at training courses

4.8.1 Sub-theme- Readiness

Readiness is the extent to which educational institutions in the higher education sector in the Kingdom of Saudi Arabia were able to respond to the COVID-19 global pandemic through the use of e-learning. Within this sub-theme, there was one code: a plan to provide e-learning. All participants confirmed that there was a plan to provide e-learning, and this plan was managed through the deanship of e-learning and Information Technology and the University Vice Presidency for Educational Affairs, in addition to the university's vice Deans and some supporting deanships, headed by His /Her Excellency the University President. For instance, one participant mentioned:

There was a plan for the management and facilitation of the educational process during the coronavirus pandemic, ensuring the continuity of the educational process. There has been the cooperation of all to make it successful, starting from the ministry to faculty members. The plan was administered by a supreme committee, headed by His Excellency the University President, the deanship of e-learning and Information Technology, and the Vice Presidency for Academic Affairs, each in their respective specialty. (D1)

The evidence was agreed upon by all participants.

4.8.2 Sub-theme- Effects

The 'effects' sub-theme covered the impact of the COVID-19 global pandemic on the use of e-learning within educational institutions. Within this sub-theme, there were six codes, which are positive change, increase in usage, changing convictions (leaders/teachers), increase the exchange of experiences, reducing the barriers of fear and failure, and increase in attendance at training courses (Table 4-13).

All participants indicated that there had been significant changes in the use of e-learning by faculty members during the Corona pandemic (Coved-19). One participant indicated that:

During the Corona pandemic, for sure! the perceptions of faculty members and even leaders have changed positively towards the use of e-learning, especially when they saw its benefits and advantages. (F4)

One of the participants added:

Yes, of course! This was evident in what we witnessed from senior faculty members or let us say those who had had a negative perception or resistance to transfer into e-learning. A noticeable change has been made during the pandemic at all levels, from leaders to students. (F9)

Due to the circumstances that the whole world went through during the pandemic, the participants indicated that there was an increase in the use of e-learning, so the convictions of many leaders and faculty members about the use of e-learning changed, and the extent of its contribution to the delivery of education to all members of society at all levels also changed. One of participants stated that:

There has been a very clear and noticeable change at all levels of education in the Kingdom in the use of e-learning. The pandemic has imposed a great challenge for all universities have managed to move forward in their mission. There was a noticeable change, whether at the level of the individuals (e.g., teachers, faculty members, students) or at the level of leadership and relevant authorities, in the use of e-learning. (F12)

Another participant added:

Yes, the pandemic has significantly changed the use of e-learning and changed people's perceptions and convictions about e-learning. (D2)

The participants also confirmed that during the pandemic there was a great interaction in the exchange of experiences between faculty members, and the keenness to attend specialized training courses in e-learning and the use of tools, in addition to courses related to technology and how to use it in e-learning. The participants confirmed that:

During the pandemic, there was a noticeable change at all Universities. The pandemic has facilitated the transfer of experiences among faculty members and their problem-solving methods, in addition, many faculty members showed great interest in training and inquired about all the details of its use. (F9)

Participants also mentioned that COVID-19 helped those who previously had a fear of using technology and pushed them to use and benefit from it in e-learning and gain basic skills in the use of e-learning. One participant stated:

Yes, there has been a significant change in the use of e-learning by faculty members during the coronavirus pandemic, for example, the challenge of awe or fear of using modern technologies among some lecturers has been overcome. (F2)

One of the participants added:

There has certainly been a huge positive change. The pandemic has prompted those who previously had a fear of using technology to use it and benefit from it in e-learning and acquire basic skills in the use of e-learning. The hesitant people took steps forward. (F9)

Table 4-14 shows a summary of the differences and commonalities in the responses from the participant groups.

Table 4-14: Summary of the differences and commonalities in the responses from the participant groups to the impact of COVID-19 on e-learning

Sub-themes	Participants							
	University-J		University - N		University-B		University - K	
	Dean	Faculty	Dean	Faculty	Dean	Faculty	Dean	Faculty
Readiness	✓	-	✓	-	✓	-	✓	✓
Effects	✓	✓	✓	✓	✓	✓	✓	✓

Based on Table 4-14, it is evident that only the deans of e-learning commented on the university's readiness to implement e-learning in response to the COVID pandemic because they were among those directly responsible for managing this plan. On the other hand, all participants emphasized the impact of COVID-19 on the use of e-learning.

4.9 Chapter Summary

This chapter has presented the results of the analysis of the data collected through the semi-structured interviews conducted for phase one and open questions in the questionnaire for phase two of this research. From the thematic analysis, seven themes emerged, and each theme produced sub-themes, and each sub-theme consisted of codes. Some of the codes demonstrated more than one connection with other sub-themes.

The participants referred to a set of challenges facing faculty members when they use e-learning, as well as a set of needs that help them to overcome such challenges, which helps them to use e-learning effectively. In addition, they mentioned some advantages and disadvantages of e-learning and the factors that contribute to improving the use of e-learning in educational institutions. Finally, the impact of the COVID-19 global pandemic was discussed, and it was clear from the data that the use of e-learning in these educational institutions was needed as a result of the need to learn remotely and stay isolated from others.

In the case of the impact of COVID-19, it is clear that in some cases, there is no choice but to use e-learning, and the results showed that faculty were keen to get the training that they needed.

Table 4-15 presents a summary of the data provided at the end of each theme as discussed above in relation to the differences and commonalities in the responses from the participant groups.

Table 4-15: A summary of the differences and commonalities in responses from the participant groups.

Sub-themes	Participants							
	University-J		University - N		University-B		University - K	
	Dean	Faculty	Dean	Faculty	Dean	Faculty	Dean	Faculty
Challenges								
Support	-	✓	✓	✓	-	✓	-	✓
Infrastructure	✓	✓	✓	✓	✓	✓	✓	✓
Resistance to Change	✓	✓	✓	✓	✓	✓	-	✓
Incentive and Motivation	✓	✓	-	✓	✓	✓	✓	✓
Skills	✓	✓	-	✓	✓	-	✓	✓
Experience	✓	✓	✓	✓	✓	✓	✓	-
Location	✓	✓	-	✓	✓	-	✓	-
Policy	-	✓	-	✓	✓	-	✓	✓
Needs								
Existence Needs	✓	✓	✓	✓	✓	✓	✓	✓
Relatedness Needs	✓	-	✓	-	-	✓	✓	-
Growth Needs	✓	-	✓	✓	✓	✓	✓	✓
Perceptions								
Negative perceptions	-	-	-	-	✓	✓	✓	✓
Positive Perceptions	✓	✓	✓	✓	✓	-	✓	✓
Advantages of E-learning	✓	✓	✓	✓	✓	✓	✓	✓
Disadvantages of E-learning	✓	✓	✓	✓	✓	✓	✓	✓
Enablers of e-learning use								
Internal enablers	✓	✓	✓	✓	✓	✓	✓	✓
External enablers	✓	-	✓	-	✓	✓	✓	-
Covid-19								
Readiness	✓	-	✓	-	✓	-	✓	✓
Effects	✓	✓	✓	✓	✓	✓	✓	✓

To sum up, although there were some discrepancies between the qualitative data from the semi-structured interviews and open-ended questions, overall there was a high degree of agreement on numerous aspects. The next chapter outlines and analyses the quantitative findings of the online questionnaire.

Chapter 5: Research Findings - Phase Two Questionnaire

5.1 Introduction

This chapter presents the outcomes of the quantitative analysis on the data collected through the online questionnaire.

The structure of the chapter is as follows. Section 5.2 presents sampling characteristics in terms of gender, age, experience in teaching, highest qualification, university, and type of college. Section 5.3 is about Rasch Models analysis. Section 5.4 presents analysis of faculty members' reported levels of agreement with statements concerning challenges affecting the use of e-learning. Section 5.5 presents analysis of faculty members' reported level of agreement with statements concerning the needs in relation to the use of e-learning. The next section 5.6 presents analysis of faculty members' reported levels of agreement with statements concerning the enablers contributing to increasing and improving the use of e-learning. Section 5.7 presents analysis of faculty members' reported level of agreement with statements concerning the COVID-19 pandemic and its impact on the use of e-learning in the higher education sector in KSA. Section 5.8 presents the level of faculty member perceptions of e-learning in four emerging Saudi Universities. Then section 5.9 presents the results of the MANOVA comparison of respondents' group mean ability estimates yielded by Rasch modelling of each construct. Section 5.10 presents the path analysis of the conceptual framework, and the last section 5.11 summarises the results of the quantitative aspects of the study.

5.2 Sample Characteristics

Participants' demographics were collected from Part I of the questionnaire (Appendix C) and analysed. There were 385 responses to the survey instrument, which was sent to a population of 6896 academics at the four universities covered by the study. This is a small fraction of the targeted population, and for this reason it is not possible to generalise the results with an acceptable level of accuracy. Consequently, the results presented here refer only to this self-selected sample of 385 academics and should be seen as indicative, not definitive, of the wider population.

Respondents' personal details, including gender, age, teaching experience, educational level, and type of college, are summarised in Table 5-1, with the frequency and percentages computed to show the sample's characteristics. Key features of the study sample are:

- 60.3% male and 39.7% female;
- 47.8% were aged between 41-50 years and 33% were aged between 25-40 years;
- 73.8% had a doctoral degree and 26.2% had a master's degree;
- 31.9% had 6-10 years of experience and 21.0% had 16-20 years of experience;
- 27.3% were employed at King Khalid University, 25.5% worked at Jazan University, 24.2% at Al-Baha University, and 23% at Najran University;
- 51.4% worked in science focused colleges and 48.6% worked in humanities-based colleges.

Table 5-1: Sample's Distribution According to general Information (n=385).

Participants' characteristics	Category	Frequency	Percentage (%)
Gender	Male	232	60.3
	Female	153	39.7
	Total	385	100.0
Current Age	25-30	13	3.4
	31-40	137	35.6
	41-50	184	47.8
	51-60	44	11.4
	Over 60	7	1.8
	Total	385	100.0
Experience in Teaching	1-5	0	0.0
	6-10	123	31.9
	11-15	96	24.9
	16-20	81	21.0
	21-25	62	16.1
	More than 25 Years	23	6.1
	Total	385	100.0
Highest Qualification	Doctoral	284	73.8
	Master	95	24.6
	Bachelor	6	1.6

Participants' characteristics	Category	Frequency	Percentage (%)
	Total	385	100.0
University	King Khalid	105	27.3
	Jazan	98	25.5
	Al-Baha	93	24.2
	Najran	89	23
	Total	385	100.0
Type of College	Shariah and Fundamentals of Religion	5	1.3
	Computer Science	22	5.7
	Sciences	32	8.3
	Medicine	9	2.3
	Dentistry	2	0.5
	Pharmacy	17	4.4
	Engineering	18	4.7
	Applied Medical Sciences	33	8.6
	Languages and Translation	45	11.7
	Education	36	9.4
	Humanities	14	3.6
	Business	48	12.5
	Nursing	17	4.4
	Sciences and Arts	41	10.6
	Home Economics	5	1.3
	Applied College	7	1.8
	Administrative Sciences	18	4.7
	Law	2	0.5
	Other	14	3.6
	Total	385	100.0
Classification of College	Science	198	51.4
	Humanities	187	48.6
	Total	385	100.0

5.3 Rasch Models

Table 5-2 presents the psychometric parameters for each of the Rasch models processed by the QUEST software (ACER, 1996). The main output summary for each model and the response frequencies for every question for each model as reported by the QUEST software are given in Appendix I.

Table 5-2: Psychometric Parameters for the Rasch Models.

Model	Item Reliability	Case Reliability	Internal Construct Validity	Discriminant Ability
-------	------------------	------------------	-----------------------------	----------------------

Perception	0.78	0.82	13/14	13/14
Challenges	0.81	0.90	12/14	14/14
Needs	0.79	0.84	9/12	9/12
Enablers	0.70	0.79	9/11	10/11
COVID	0.01	0.91	13/15	14/15

The reliability parameter for each model lies within the range 0 to 1.00. The threshold for acceptance is usually set at 0.70 (Fox & Jones, 1998) and this threshold level of acceptability was exceeded for all models except for the COVID model. The item reliability of 0.01 for the COVID model is due to the small variance of the case scores for that model. This indicates that the COVID questions had very high frequencies for “Agree” or “Strongly Agree”. Given the nature of the pandemic and its recency to when the survey was implemented, it is not surprising that there was a small variance in case ability. It is safe to conclude that the survey instrument is reliable.

As mentioned in Section 5.3, internal construct validity in Rasch Modelling is measured by the Infit Mean Square parameter – INFIT MNSQ - (Bond & Fox, 2001). Questions that fit the model should have INFIT MNSQ values within the range 0.75 to 1.25. In the Table 5-2 that parameter is expressed as a fraction where, for example, “13/14” indicates that 13 of 14 questions cohere to measure a single underlying construct. As shown in Table 5-2, most questions had INFIT MNSQ values located within the lower and upper INFIT MNSQ boundaries. Given that the large majority of questions in each model had INFIT MNSQ parameters within this range it is reasonable to conclude that the survey instrument has acceptable internal construct validity.

QUEST estimates a discriminant parameter for each question, which should exceed 0.40. This parameter measures the extent to which a question reliably discriminates between respondents of near equal ability. In Table 5-2, that parameter is expressed as a fraction where, for example, “13/14” indicates that 13 of 14 questions had discriminant values exceeding 0.40. As shown in

Table 1, nearly all questions in each model had discriminant values exceeding 0.40. It may be concluded, therefore, that the survey instrument had strong discriminant ability.

Based on the Rasch model, the Table 5-3 to Table 5-7 in the following sections show the percentage breakdown of responses, providing an understanding of the distribution of participants' reported level of agreement regarding each item. The "Ranking" column indicates the ranking of positivity, with "Least Positive" indicating the item with the lowest agreement and "Most Positive" indicating the item with the highest agreement.

5.4 Challenges Affecting the Use of E-learning.

In the investigation of challenges facing faculty members to use e-learning in their teaching, Rasch modelling (Table 5-3) revealed that Item 13, "I do not have enough experience to use e-learning in my teaching" received the most positive response with a difficulty score of -1.15 logits. In addition, 0.3 % of the respondents expressed that they strongly disagreed with the statement, while 9.6% disagreed. Most respondents expressed (55.8%) 'Agree' with the statement, and 27.1% 'Strongly Agree'.

In addition, the items in Table 5-3 are arranged in descending order from most positive to least positive as computed by the Rasch modelling.

Table 5-3: Results of item analysis of challenges.

Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Difficulty (Logits)
13- I do not have enough experience to use e-learning in my teaching.	1 (0.3%)	37 (9.6%)	28 (7.2%)	216 (55.8%)	105 (27.1%)	-1.15 Most Positive
14- It is difficult for me to manage an e-learning course.	2 (0.5%)	37 (9.6%)	36 (9.3%)	220 (56.8%)	92 (23.8%)	-0.93
1-I lack the necessary technology skills (for example, the ability to use a computer using software applications, such as Word, PowerPoint, Excel, email, etc.) to use e-learning in my teaching.	9 (2.3%)	44 (11.4%)	21 (5.4%)	152 (39.3%)	161 (41.6%)	-0.76
9- My university does not encourage faculty members to attend e-learning training courses.	7 (1.8%)	93 (24.0%)	47 (12.1%)	134 (34.6%)	106 (27.4%)	-0.49

10- I do not have sufficient technical knowledge to solve any problems that occur while using e-learning.	12 (3.1%)	83 (21.4%)	54 (14.0%)	160 (41.3%)	78 (20.2%)	-0.25
6- My university does not provide computers to faculty members.	31 (8.0%)	80 (20.7%)	57 (14.7%)	140 (36.2%)	79 (20.4%)	0.04
5- Sufficient support is not available when problems occur during the use of e-learning	24 (6.2%)	120 (31.0%)	66 (17.1%)	126 (32.6%)	51 (13.2%)	0.22
11- I do not have enough time to attend training courses.	15 (3.9%)	141 (36.4%)	55 (14.2%)	140 (36.2%)	36 (9.3%)	0.24
7- Computerized educational programs are not available for faculty members to use.	27 (7.0%)	131 (33.9%)	77 (19.9%)	104 (26.9%)	48 (12.4%)	0.33
12- E-learning increases my workload.	18 (4.7%)	154 (39.8%)	54 (14.0%)	126 (32.6%)	35 (9.0%)	0.34
2- The devices needed for e-learning in the classroom (e.g., computers, data projector, etc.) are not always available.	33 (8.5%)	158 (40.8%)	52 (13.4%)	100 (25.8%)	44 (11.4%)	0.46
8- Most of the training courses offered in e-learning are theoretical, not practical.	36 (9.3%)	155 (40.1%)	58 (15.0%)	104 (26.9%)	34 (8.8%)	0.59
4- Weak access to adequate internet services at my university does not allow the use of e-learning.	52 (13.4%)	144 (37.2%)	38 (9.8%)	119 (30.7%)	34 (8.8%)	0.67
3- There are not sufficient computer laboratories at my university available to use for e-learning.	46 (11.9%)	156 (40.3%)	67 (17.3%)	83 (21.4%)	35 (9.0%)	0.69 Least Positive

In contrast, Rasch modelling revealed that the difficulty score of Item 3 of 0.69 logits, which indicates that it is the least positive statement. Also, 11.9% of the respondents selected ‘Strongly Disagree’, while 40.3% selected ‘Disagree’. Most respondents (21.4%) selected ‘Agree’, and 9.0% selected ‘Strongly Agree’.

When interpreting respondents’ scores derived from Rasch modelling it is necessary to understand that a high score indicates a positive (Agree and Strongly Agree) view of the propositions embedded in the questions, and a low score a less positive attitude.

The results indicate that most respondents expressed concerns, challenges, or limitations related to e-learning implementation and their own abilities. For example, 56.8% of respondents agreed or strongly agreed that either they do not have enough experience or find it difficult to manage an e-learning course.

A substantial number of respondents agreed or strongly agreed that they lack necessary technology skills (39.3%) or sufficient technical knowledge to solve e-learning problems (41.3%).

A considerable proportion of respondents agreed or strongly agreed that their universities do not encourage faculty members to attend e-learning training courses (34.6%).

5.5 Needs to Help Improve the Use of E-learning.

To identify the most important needs that faculty members need to facilitate the process of using e-learning in their teaching, Table 5-4 shows that the difficulty score for Item 8 was -0.94 logits indicating that the item was positively perceived.

In the investigation of needs of faculty members to facilitate the process of using e-learning in their teaching, Rasch modelling showed that the difficulty score for Item 8 – It is important to exchange experiences in the use of e-learning – was -0.94 logits. This indicates that the item was positively perceived (Table 5-4). The majority of the respondents 58.9% ‘Agree’ that it is important to exchange experiences in the use of e-learning, while 34.6% ‘Strongly Agree’. A small percentage (0.3%) of respondents either ‘Strongly Disagree’ or ‘Disagree’ with the statement.

Table 5-4: Results of item analysis of needs.

Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Difficulty (Logits)
8- It is important to exchange experiences in the use of e-learning.	1 (0.3%)	1 (0.3%)	23 (5.9%)	228 (58.9%)	134 (34.6%)	-0.94 Most Positive
7- Attending e-learning training courses is beneficial to my teaching.	2 (0.5%)	5 (1.3%)	29 (7.5%)	229 (59.2%)	122 (31.5%)	-0.75
4- The use of e-learning is enhanced when faculty members are able to share their successful experiences.	2 (0.5%)	73 (18.9%)	53 (13.7%)	199 (51.4%)	60 (15.5%)	-0.55
10-E-learning provides individual learners with access to high-quality materials that meet their different needs.	3 (0.8%)	15 (3.9%)	53 (13.7%)	241 (62.3%)	75 (19.4%)	-0.53
1- I find it easy to use e-learning systems and tools at my university.	5 (1.3%)	63 (16.3%)	35 (9.0%)	214 (55.3%)	70 (18.1%)	-0.38
9-I need to develop my skills in the use of e-learning.	9 (2.3%)	21 (5.4%)	45 (11.6%)	248 (64.1%)	64 (16.5%)	-0.24
3- I participate in designing e-learning course content.	16 (4.1%)	142 (36.7%)	73 (18.9%)	127 (32.8%)	29 (7.5%)	0.12

Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Difficulty (Logits)
5- Faculty members are involved in e-learning teamwork projects.	16 (4.1%)	130 (33.6%)	107 (27.6%)	110 (28.4%)	24 (6.2%)	0.17
12- E-learning helps improve learning outcomes.	60 (15.5%)	209 (54.0%)	71 (18.3%)	34 (8.8%)	13 (3.4%)	0.65
2- I find it easy to communicate with the e-learning support team.	67 (17.3%)	149 (38.5%)	54 (14.0%)	110 (28.4%)	7 (1.8%)	0.8
6- Clear guidance on the use e-learning is available to novice faculty members.	72 (18.6%)	152 (39.3%)	61 (15.8%)	95 (24.5%)	7 (1.8%)	0.82
11- My university benefits from faculty members with previous experiences in designing and producing electronic educational content.	64 (16.5%)	149 (38.5%)	77 (19.9%)	91 (23.5%)	6 (1.6%)	0.83 Least Positive

Also, the difficulty score of 0.83 for Item 11- My university benefits from faculty members with previous experiences in designing and producing electronic educational content- suggests that the item was perceived as relatively difficult or challenging by the respondents.

A majority of the respondent's expressed disagreement or strong disagreement with the statement. Specifically, 16.5% 'Strongly Disagree' and 38.5% 'Disagree' that their university benefits from faculty members with previous experiences in designing and producing electronic educational content. On the other hand, 23.5% 'Agree', and only 1.6% 'Strongly Agree' with the statement.

5.6 Enablers Contributing to Increasing and Improving the Use of E-learning.

In the investigation of enablers that help improve and increase the use of e-learning for faculty members in their teaching, the Rasch modelling indicates that Item 11– My university offers training courses on the use of the e-learning technologies – with a difficulty score of -1.2 logits (Table 5-5) was perceived as relatively easy by the respondents. Item 11 received predominantly positive responses, with the majority 59.2% of respondents 'Agree' and 22.0% 'Strongly Agree' that their university offers training courses on the use of e-learning technologies. Only a small percentage 1.0% 'Strongly disagree'.

Table 5-5: Results of item analysis of enablers that help improve and increase the use of e-learning.

Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Difficulty (Logits)
11- My university offers training courses on the use of the e-learning technologies.	4 (1.0%)	18 (4.7%)	51 (13.2%)	229 (59.2%)	85 (22.0%)	-1.2 Most Positive
10- The university leaders and deans support the use of e-learning.	11 (2.8%)	89 (23.0%)	69 (17.8%)	157 (40.6%)	61 (15.8%)	-0.28
1-My university provides quick and timely technical e-learning support.	12 (3.1%)	99 (25.6%)	61 (15.8%)	148 (38.2%)	67 (17.3%)	-0.26
5- The university's leaders and decision makers emphasise the importance of using e-learning.	14 (3.6%)	96 (24.8%)	69 (17.8%)	151 (39.0%)	57 (14.7%)	-0.14
4- There are clear and easy to understand policies in the use of e-learning at my university.	13 (3.4%)	99 (25.6%)	70 (18.1%)	160 (41.3%)	45 (11.6%)	-0.05
6- The software and hardware needed for e-learning is available at my university.	20 (5.2%)	95 (24.5%)	76 (19.6%)	146 (37.7%)	50 (12.9%)	0.06
7- It is easy to access the software and hardware needed for e-learning at my university.	17 (4.4%)	97 (25.1%)	78 (20.2%)	152 (39.3%)	43 (11.1%)	0.07
9- E-learning requires a specialization or expertise to use it in teaching.	17 (4.4%)	88 (22.7%)	56 (14.5%)	194 (50.1%)	32 (8.3%)	0.09
3- Strong infrastructure (such as fast internet, computers, e-learning tools, hardware, software, etc.) is available for the use of e-learning at my university.	28 (7.2%)	136 (35.1%)	74 (19.1%)	112 (28.9%)	37 (9.6%)	0.49
8- Faculty colleagues from my university and/or other universities exchange experiences in relation to the use of e-learning.	26 (6.7%)	113 (29.2%)	104 (26.9%)	112 (28.9%)	32 (8.3%)	0.49
2- My university encourages faculty members by providing material or moral incentives to use e-learning (e.g., rewards, or certificates of thanks, etc.).	41 (10.6%)	141 (36.4%)	84 (21.7%)	84 (21.7%)	37 (9.6%)	0.71 Least Positive

In contrast, the difficulty score of 0.71 logits for Item 2 – My university encourages faculty members by providing material or moral incentives to use e-learning (e.g., rewards, or certificates of thanks, etc. – indicates a moderately challenging item. This item received relatively lower levels of agreement compared to others. Only 21.7% ‘Agree’, and 9.6% ‘Strongly Agree’, that their university encourages faculty members to use e-learning through incentives. Conversely, 36.4% ‘Disagree’, including 10.6% who ‘Strongly disagree’.

In summary, the results show varying levels of agreement or disagreement on different aspects of e-learning. Some items received predominantly positive responses, indicating favorable perceptions, while others had more mixed or negative responses.

5.7 The COVID-19 and its Impact on the Use of E-learning.

To explore the impact of COVID-19 on the use of e-learning, Rasch modelling indicated that a large majority of respondents (95.3%) agreed or strongly agreed with Item 5 – During the COVID-19 global pandemic, there was an increase in the use of e-learning (Table 5-6). Only a small percentage 1.1% ‘Disagree’ or ‘Strongly disagree’. The associated difficulty score (-0.54 logits) indicates a more positive view.

Table 5-6: Results of the analysis of COVID-19 items and their impact on the use of e-learning.

Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Difficulty (Logits)
5- During the COVID-19 global pandemic, there was an increase in the use of e-learning.	3 (0.8%)	1 (0.3%)	14 (3.6%)	148 (38.2%)	221 (57.1%)	-0.54 Most Positive
6- During the COVID-19 global pandemic, there was a change in the convictions of leaders and teachers towards the use of e-learning	1 (0.3%)	4 (1.0%)	38 (9.8%)	206 (53.2%)	138 (35.7%)	-0.47
9- During the COVID-19 global pandemic, there was an increase in faculty members attending e-learning training courses.	1 (0.3%)	7 (1.8%)	47 (12.1%)	194 (50.1%)	138 (35.7%)	-0.44
8- During the COVID-19 global pandemic, the barriers (e.g., a fear of failure in using the new technologies) in the uptake of e-learning among faculty members were reduced.	1 (0.3%)	10 (2.6%)	52 (13.4%)	214 (55.3%)	110 (28.4%)	-0.29
11- During the COVID-19 global pandemic, there were adequate training courses held to prepare teachers to use e-learning.	1 (0.3%)	25 (6.5%)	78 (20.2%)	181 (46.8%)	102 (26.4%)	-0.14
12- During the COVID-19 global pandemic, my university provided adequate technical support when faculty members experienced technical issues when delivering e-learning.	1 (0.3%)	54 (14.0%)	66 (17.1%)	149 (38.5%)	117 (30.2%)	-0.13
4- During the COVID-19 global pandemic, the university and faculty members, were positive about the use of e-learning.	3 (0.8%)	15 (3.9%)	37 (9.6%)	208 (53.7%)	124 (32.0%)	-0.09
7- During the COVID-19 global pandemic, there were more opportunities for exchanging experiences among faculty members in relation to e-learning.	3 (0.8%)	11 (2.8%)	37 (9.6%)	219 (56.6%)	117 (30.2%)	-0.07
2- During the COVID-19 global pandemic, it was easy to use e-learning and its tools.	2 (0.5%)	54 (14.0%)	52 (13.4%)	165 (42.6%)	114 (29.5%)	0.02
1- During the COVID-19 global pandemic, my university provided a clear plan to faculty members on how to use e-learning to deliver their course content.	3 (0.8%)	51 (13.2%)	50 (12.9%)	152 (39.3%)	131 (33.9%)	0.03
15- During the COVID-19 global pandemic, my university was able to continuously answer the inquiries of faculty members and students in relation to e-learning.	2 (0.5%)	18 (4.7%)	103 (26.6%)	161 (41.6%)	103 (26.6%)	0.05
13- During the COVID-19 global pandemic, a guide in the use of e-learning educational materials was provided to faculty members.	3 (0.8%)	75 (19.4%)	57 (14.7%)	150 (38.8%)	102 (26.4%)	0.27
3- During the COVID-19 global pandemic, high-quality educational content was provided through the use of e-learning	3 (0.8%)	69 (17.8%)	70 (18.1%)	147 (38.0%)	98 (25.3%)	0.29

Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Difficulty (Logits)
14- During the COVID-19 global pandemic, my university administration regularly evaluated e-learning mechanisms.	6 (1.6%)	16 (4.1%)	123 (31.8%)	147 (38.0%)	95 (24.5%)	0.41
10- During the COVID-19 global pandemic, the transition from using traditional education to using e-learning methods was not easy.	17 (4.4%)	66 (17.1%)	65 (16.8%)	189 (48.8%)	50 (12.9%)	1.09 Least Positive

Therefore, it was clear that due to the circumstances that the whole world went through during COVID-19, the convictions of many leaders and faculty members about the use of e-learning changed, and the extent of its contribution to the delivery of education to all members of society at all levels, also changed.

On the other hand, item 10's difficulty level of 1.09 logits indicated that a substantial percentage of respondents ($48.8\% + 12.9\% = 61.7\%$) 'Agree' or 'Strongly Agree' that the transition from traditional education to e-learning methods was not easy during the pandemic. A smaller percentage ($4.4\% + 17.1\% = 21.5\%$) 'Disagree' or 'Strongly disagree'.

Overall, these results indicate that during the COVID-19 global pandemic, there was generally a positive perception of e-learning among the surveyed individuals. A majority of respondents agreed or strongly agreed that: (i) their universities provided clear plans for using e-learning; (ii) e-learning was easy to use; (iii) high-quality educational content was provided; and (iv) there was an increase in the use of e-learning. They also agreed that there was: (i) a positive attitude towards e-learning; (ii) increased opportunities for exchanging experiences; (iv) reduced barriers to adoption; (v) increased faculty training; and (vi) effective assessment of student learning outcomes. However, there were some mixed responses and challenges in the transition to e-learning methods, and perceptions varied for certain items.

5.8 Faculty Member Perceptions of E-learning

To investigate and explore faculty members' perceptions of e-learning in these universities, the Rasch modelling revealed that the difficulty of item 13 "E-learning offers me flexibility in teaching with respect to time and place" is -0.52 logits (Table 5-7). This indicates that participants considered this particular item the least difficult (most positive). In addition, 2.1% of the respondents 'Strongly disagree' with the statement, while 3.1% 'Disagree'. Most respondents 62.8% 'Agree' that e-learning provides them with flexibility in time and place, and 27.6% 'Strongly agree' with the statement.

Table 5-7: Results of item analysis for perception.

Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Difficulty (Logits)
13- E-learning offers me flexibility in teaching with respect to time and place.	8 (2.1%)	12 (3.1%)	17 (4.4%)	243 (62.8%)	107 (27.6%)	-0.52 Most Positive
4- E-learning enables the design and production of high-quality educational content.	8 (2.1%)	24 (6.2%)	52 (13.4%)	208 (53.7%)	95 (24.5%)	-0.43
5- A variety of activities can be offered to students when using e-learning.	8 (2.1%)	30 (7.8%)	45 (11.6%)	211 (54.5%)	93 (24.0%)	-0.42
10- I find it difficult to use e-learning in my teaching.	7 (1.8%)	51 (13.2%)	33 (8.5%)	205 (53.0%)	91 (23.5%)	-0.42
1-Using e-learning allows me to complete tasks more quickly.	12 (3.1%)	17 (4.4%)	36 (9.3%)	209 (54.0%)	113 (29.2%)	-0.41
2-Using e-learning helps me to present the course content with ease.	11 (2.8%)	20 (5.2%)	32 (8.3%)	226 (58.4%)	98 (25.3%)	-0.38
3-I have the necessary pedagogical skills (e.g., instructional planning, presentation, virtual classroom management, instructional design, and assessment, etc.) needed to use e-learning in my teaching.	11 (2.8%)	32 (8.3%)	34 (8.8%)	208 (53.7%)	102 (26.4%)	-0.37
7- E-learning is useful for teaching and learning.	9 (2.3%)	22 (5.7%)	45 (11.6%)	238 (61.5%)	73 (18.9%)	-0.33
9-Using e-learning improves the quality of my work.	9 (2.3%)	42 (10.9%)	70 (18.1%)	228 (58.9%)	38 (9.8%)	-0.07
12-E-learning is a threat to faculty members' employment.	17 (4.4%)	97 (25.1%)	75 (19.4%)	153 (39.5%)	45 (11.6%)	0.16
6-E-learning results in weaker learning outcomes for students.	33 (8.5%)	138 (35.7%)	77 (19.9%)	119 (30.7%)	20 (5.2%)	0.68
11-E-learning is more tiring than traditional teaching because it requires more time on computer screens.	38 (9.8%)	164 (42.4%)	57 (14.7%)	104 (26.9%)	24 (6.2%)	0.7
8-I prefer to use more traditional ways of teaching rather than e-learning.	38 (9.8%)	153 (39.5%)	77 (19.9%)	98 (25.3%)	21 (5.4%)	0.75
14- Developing an e-learning course takes more time than developing a traditional course.	40 (10.3%)	188 (48.6%)	69 (17.8%)	80 (20.7%)	10 (2.6%)	1.07 Least Positive

In contrast, Rasch modelling computed revealed that the difficulty of item 14 is 1.07 logits, which indicates that it is the least positive statement among the items included in the Perceptions section of the questionnaire. In addition, 10.3% of the respondents ‘Strongly Disagree’ with the statement, while 48.6% ‘Disagree’. Most respondents 20.7% ‘Agree’ with the statement, and 2.6% ‘Strongly Agree’.

The analysis of the Perceptions data revealed a generally positive attitude towards e-learning among the surveyed participants. They perceived e-learning as a flexible, effective, and time-efficient teaching approach that can enhance the quality of education. The respondents also demonstrated confidence in their pedagogical skills related to e-learning and did not view it as a threat to their employment. These findings indicate a favourable disposition towards e-learning and suggest that the surveyed participants are generally receptive to integrating e-learning into their teaching practices.

5.9 The Influence of Personal Variables on Faculty Members’ Perceptions of E-learning

Group mean comparisons of participants’ ability scores produced by Rasch modelling of their responses to all questions in each of the models were examined using MANOVA procedures with ability scores as the dependent variable and age, gender, and qualifications as the independent or grouping variables. A summary of the MANOVA results is given in Table 5-8.

Table 5-8: Summary Table MANOVA For Ability Scores by Age, Gender and Qualifications.

Effect		Value	F	Hypothesis df	Error df	Sig.
Age	Wilks' Lambda	0.94	2.21	10.00	740.00	0.02
Gender	Wilks' Lambda	0.96	2.99	5.00	370.00	0.01
Qualifications	Wilks' Lambda	0.99	0.38	5.00	370.00	0.86
Age*Gender	Wilks' Lambda	0.97	0.98	10.00	740.00	0.46

Age*Qualifications	Wilks' Lambda	0.98	0.64	10.00	740.00	0.78
Gender*Qualifications	Wilks' Lambda	0.96	3.11	5.00	370.00	0.01

Table 5-8 shows that for the orthonormalised dependent variable (respondents' ability scores on Perceptions, Challenges, Needs, Factors and COVID) that there is:

- (i) a statistically significant interaction effect for gender and qualifications ($F = 3.11$, $df = 5,370$, $p = 0.01$; Wilks' $\Lambda = 0.960$);
- (ii) a statistically significant main effect of age ($F = 2.210$, $df = 10,740$, $p = 0.02$; Wilks' $\Lambda = 0.940$); and
- (iii) a statistically significant main effect of gender ($F = 2.990$, $df = 5,370$, $p = 0.01$; Wilks' $\Lambda = 0.960$).

Given this outcome, separate ANOVAs were run on each of the dependent variables so as to locate the source of the significant group mean differences. These are summarised in Table 5-9 and the red color shows that there is an effect for each source.

Table 5-9: ANOVA Summary table for Dependent Variables Grouped by Age, Gender and Qualifications.

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
Age	Perceptions	0.89	2.00	0.45	0.71	0.49
	Challenges	379.45	2.00	189.72	3.76	0.02
	Needs	8.42	2.00	4.21	5.23	0.01
	Enablers	59.48	2.00	29.74	0.28	0.75
	COVID	1320.65	2.00	660.33	2.01	0.13
Gender	Perceptions	0.38	1.00	0.38	0.60	0.44
	Challenges	229.65	1.00	229.65	4.56	0.03
	Needs	5.93	1.00	5.93	7.38	0.01
	Enablers	27.15	1.00	27.15	0.26	0.61
	COVID	1668.72	1.00	1668.72	5.09	0.02
Qualifications	Perceptions	0.27	1.00	0.27	0.43	0.51
	Challenges	20.53	1.00	20.53	0.41	0.52
	Needs	0.47	1.00	0.47	0.58	0.45
	Enablers	9.22	1.00	9.22	0.09	0.77

	COVID	62.87	1.00	62.87	0.19	0.66
Age * Gender	Perceptions	0.86	2.00	0.43	0.69	0.50
	Challenges	240.84	2.00	120.42	2.39	0.09
	Needs	1.33	2.00	0.66	0.82	0.44
	Enablers	29.69	2.00	14.85	0.14	0.87
	COVID	611.65	2.00	305.82	0.93	0.39
Age * Qualifications	Perceptions	0.09	2.00	0.04	0.07	0.93
	Challenges	223.66	2.00	111.83	2.22	0.11
	Needs	1.45	2.00	0.73	0.90	0.41
	Enablers	16.13	2.00	8.06	0.08	0.93
	COVID	318.10	2.00	159.05	0.49	0.62
Gender * Qualifications	Perceptions	2.36	1.00	2.36	3.75	0.05
	Challenges	245.78	1.00	245.78	4.88	0.03
	Needs	3.86	1.00	3.86	4.80	0.03
	Enablers	3.41	1.00	3.41	0.03	0.86
	COVID	0.04	1.00	0.04	0.00	0.99

It is clear for Table 5-9 that there are:

- (i) main effects of Age for Challenges ($F=3.76$, $df=2.00$, $p=0.02$) and Needs ($F=5.23$, $df=2.00$, $p=0.01$);
- (ii) main effects of Gender for Challenges ($F=4.56$, $df=1.00$, $p=0.03$) and Needs ($F=7.38$, $df=1.00$, $p=0.01$) and COVID ($F=5.09$, $df=1.00$, $p=0.02$); and
- (iii) interaction effects of Gender and Qualifications for Perception ($F=3.75$, $df=1.00$, $p=0.05$), and Challenges ($F=4.88$, $df=1.00$, $p=0.03$), and Needs ($F=4.80$, $df=1.00$, $p=0.03$). This means that the effect of Qualifications on Perceptions, Challenges, and Needs is not the same for males and females.

Figure 5-1 illustrates a comparison of group mean scores for Challenges by respondent age and qualification. It shows that individuals between the ages of 25-40 with a master's degree have a marginally more positive view than those with a Doctoral degree. However, individuals aged 41-50 with a master's degree have a much more positive view than those with a Doctoral degree, possibly due to the additional years of experience they have gained during their service and the progress in

their careers. For individuals in the oldest age range the outcome is reversed as in that age range those with a master's degree have a marginally less positive view than those with a Doctoral degree.

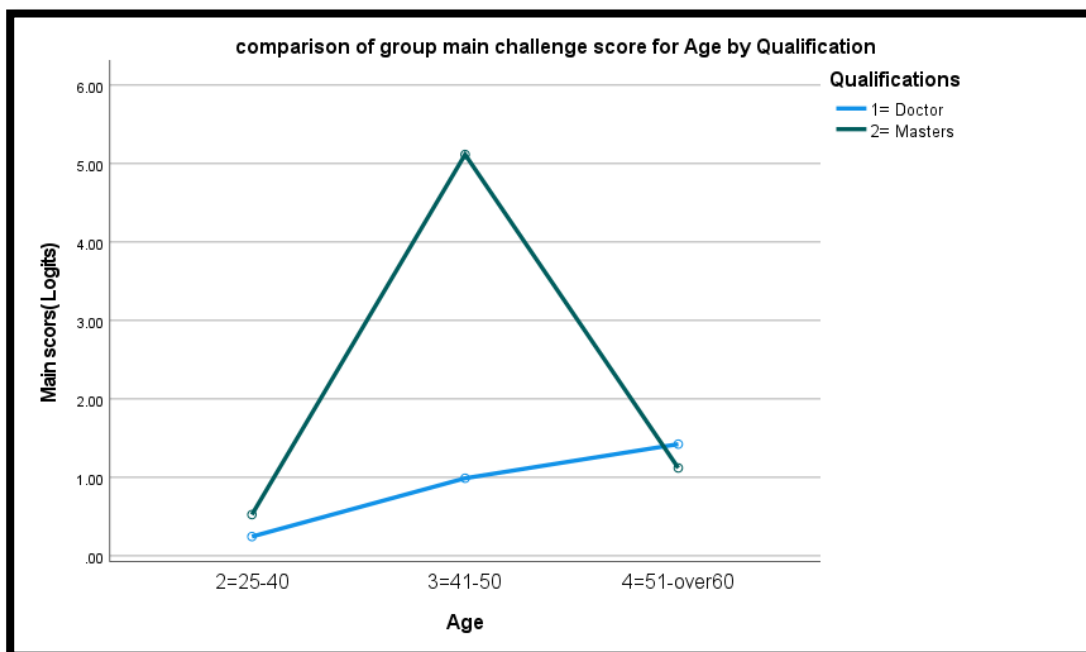


Figure 5-1: comparison of group main challenge score for Age by Qualification.

Overall, there are statistically significant main effects of gender on challenges, needs, and COVID-19. However, there is no statistically significant gender effect on perceptions, as there was no significant difference observed between males and females ($F = 0.60$, $df = 1$, $p > 0.05 = 0.44$). This may be attributed to both males and females having a good level of experience in the field of technology.

In addition, there is no statistically significant interaction effect of (qualifications * age) on perceptions ($F = 0.07$, $df = 2$, $p > 0.05$). This means that the effect of age on perceptions is similar for respondents with master and doctoral qualifications.

Group mean comparisons of participants' ability scores produced by Rasch modelling of their responses to all questions in each of the models were examined using MANOVA procedures with ability scores as the dependent variable and university, college, and gender as the independent or grouping variables. A summary of the MANOVA results is given in

Table 5-10.

Table 5-10: Summary Table MANOVA For Ability Score by University, Gender, and College.

Effect		Value	F	Hypothesis df	Error df	Sig.
University	Wilks' Lambda	.890	2.901	15.000	1008.006	<.001
College	Wilks' Lambda	.980	1.454	5.000	365.000	.204
Gender	Wilks' Lambda	.966	2.575	5.000	365.000	.026
University * College	Wilks' Lambda	.950	1.267	15.000	1008.006	.216
University * Gender	Wilks' Lambda	.931	1.752	15.000	1008.006	.037
College * Gender	Wilks' Lambda	.988	.921	5.000	365.000	.467
University * College * Gender	Wilks' Lambda	.934	1.695	15.000	1008.006	.046

Table 5-10 shows that for the orthonormalised dependent variable (respondents' ability scores on Perceptions, Challenges, Needs, Enablers and COVID) that there are:

- (i) a statistically significant interaction effect for University and Gender (University * Gender) ($F=1.752$, $df=15,1008$, $p=0.037$; Wilks' $\Lambda = 0.931$);
- (ii) a statistically significant main effect of University, College, and Gender (University * College*Gender) ($F=1.695$, $df=15,1008$, $p=0.046$; Wilks' $\Lambda = 0.934$);
- (iii) a statistically significant main effect of the university ($F=2.901$, $df=15,1008$, $p=0.001$); Wilks' $\Lambda = 0.890$); and
- (iv) a statistically significant main effect of gender ($F=2.575$, $df=5,365$, $p=0.026$; Wilks' $\Lambda = 0.966$).

Given this outcome, separate ANOVAs were run on each of the dependent variables so as to locate the source of the significant outcomes of the MANOVA procedure. These are summarised in Table 5-11.

Table 5-11: ANOVA Summary table for Dependent Variables Grouped by University, and College by Gender.

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.
University	Perceptions	2.232	3	.744	1.194	.312
	Challenges	160.656	3	53.552	1.044	.373
	Needs	21.748	3	7.249	9.355	<.001
	Enablers	917.052	3	305.684	3.156	.025
	COVID	607.452	3	202.484	.604	.613
College	Perceptions	.734	1	.734	1.177	.279
	Challenges	64.629	1	64.629	1.260	.262
	Needs	.145	1	.145	.187	.666
	Enablers	428.546	1	428.546	4.425	.036
	COVID	20.050	1	20.050	.060	.807
Gender	Perceptions	.116	1	.116	.187	.666
	Challenges Enablers	.229	1	.229	.004	.947
	Needs	7.272	1	7.272	9.384	.002
	Enablers	172.828	1	172.828	1.784	.182
	COVID	1889.592	1	1889.592	5.635	.018
University * College	Perceptions	2.796	3	.932	1.495	.215
	Challenges	76.515	3	25.505	.497	.684
	Needs	.948	3	.316	.408	.747
	Enablers	543.768	3	181.256	1.871	.134
	COVID	757.946	3	252.649	.753	.521
University * Gender	Perceptions	4.489	3	1.496	2.400	.068
	Challenges	136.284	3	45.428	.886	.449
	Needs	6.809	3	2.270	2.929	.034
	Enablers	1011.673	3	337.224	3.482	.016
	COVID	474.439	3	158.146	.472	.702
College * Gender	Perceptions	1.262	1	1.262	2.024	.156
	Challenges	6.201	1	6.201	.121	.728
	Needs	1.002	1	1.002	1.293	.256
	Enablers	1.771	1	1.771	.018	.893
	COVID	1.230	1	1.230	.004	.952
University * College * Gender	Perceptions	.780	3	.260	.417	.741
	Challenges	178.648	3	59.549	1.161	.324

	Needs	.411	3	.137	.177	.912
	Enablers	1502.959	3	500.986	5.172	.002
	COVID	984.250	3	328.083	.978	.403

It is clear for Table 5-11 that there are:

- (i) main effects of University for Needs ($F = 9.355$, $df = 3$, $p = 0.001$) and Enablers ($F = 3.156$, $df = 3$, $p = 0.025$);
- (ii) main effects of College for Enablers ($F = 4.425$, $df = 1$, $p = 0.036$);
- (iii) main effects of Gender for Needs ($F = 9.384$, $df = 1$, $p = 0.002$) and COVID ($F = 5.635$, $df = 1$, $p = 0.018$);
- (iv) interaction effects of University * Gender for Needs ($F = 2.929$, $df = 3$, $p = 0.034$) and Enablers ($F = 3.482$, $df = 3$, $p = 0.016$). This means that the effect of Gender on Needs and Enablers is not the same across Universities; and
- (v) interaction effects of University * College * Gender for Enablers ($F = 5.172$, $df = 3$, $p = 0.002$).

5.9.1 Perceptions

Figure 5-2 illustrates a comparison of group mean scores for Perception by respondent university and gender. It shows that males at University 1 have more positive perceptions compared to females at the same university. Additionally, males at University 2 have slightly more positive perceptions than females at the same university. As for University 3, the result is reversed, with females having significantly more positive perceptions than males at the same university. This could be attributed to the fact that females in that university have a greater inclination towards technology and engage more in the practice and use of e-learning compared to their male counterparts. Meanwhile, females and males at University 4 have the same positive perceptions.

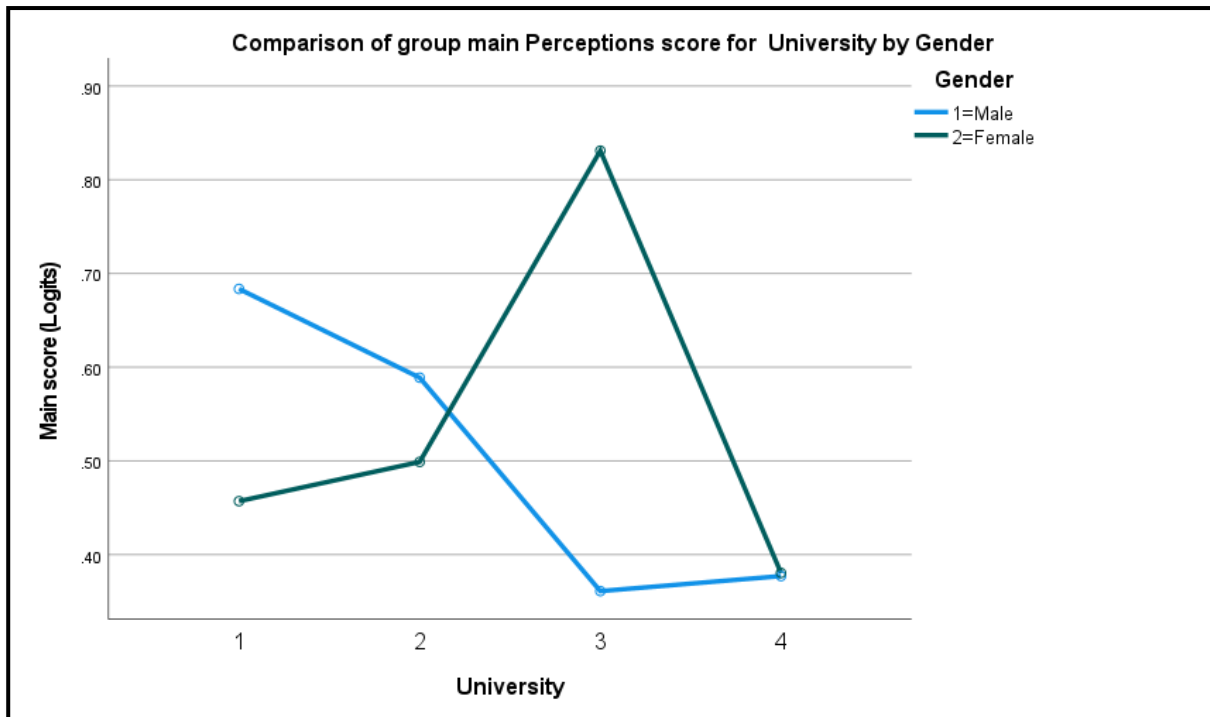


Figure 5-2: Comparison of group main perceptions score for University by Gender.

Overall, there is no statistically significant interaction effect of (university * gender) on perceptions ($F = 2.400$, $df = 3$, $p > 0.05 = .068$). This means that the effect of the university on perceptions is similar for males and females.

5.9.2 Challenges

Figure 5-3 illustrates a comparison of group mean scores for Challenges by respondent to universities and gender. It shows that males at University 1 face more challenges than females at the same university. However, the result is reversed at University 2, where females face more challenges than males at the same university. Additionally, females at University 3 face slightly more challenges than males at the same university. On the other hand, both males and females at University 4 encounter the same challenges.

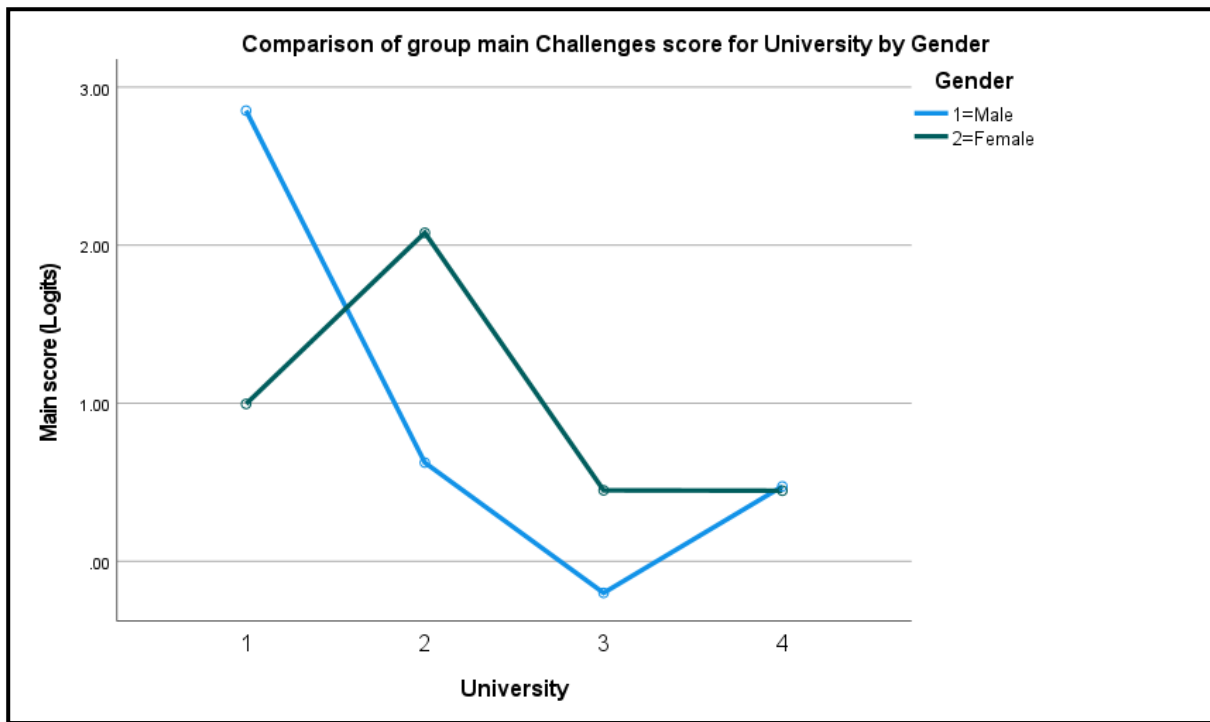


Figure 5-3: Comparison of group main challenges score for University by Gender.

To sum up, there is no statistically significant interaction effect of (university * gender) on challenges ($F = 0.886$, $df = 3$, $p > 0.05 = .449$). This means that the effect of the university on challenges is similar for males and females.

5.9.3 Needs

Figure 5-4 illustrates a comparison of group mean scores for needs by respondent university and gender. It shows that males at University 1 exhibit the same level of needs as females at the same university. However, males at University 2 demonstrate slightly lower needs compared to females at the same university. On the other hand, females at University 3 exhibit significantly higher needs than males at the same university. As for females at University 4, they also demonstrate slightly higher needs than males at the same university. Overall, females demonstrate higher needs than males in all universities.

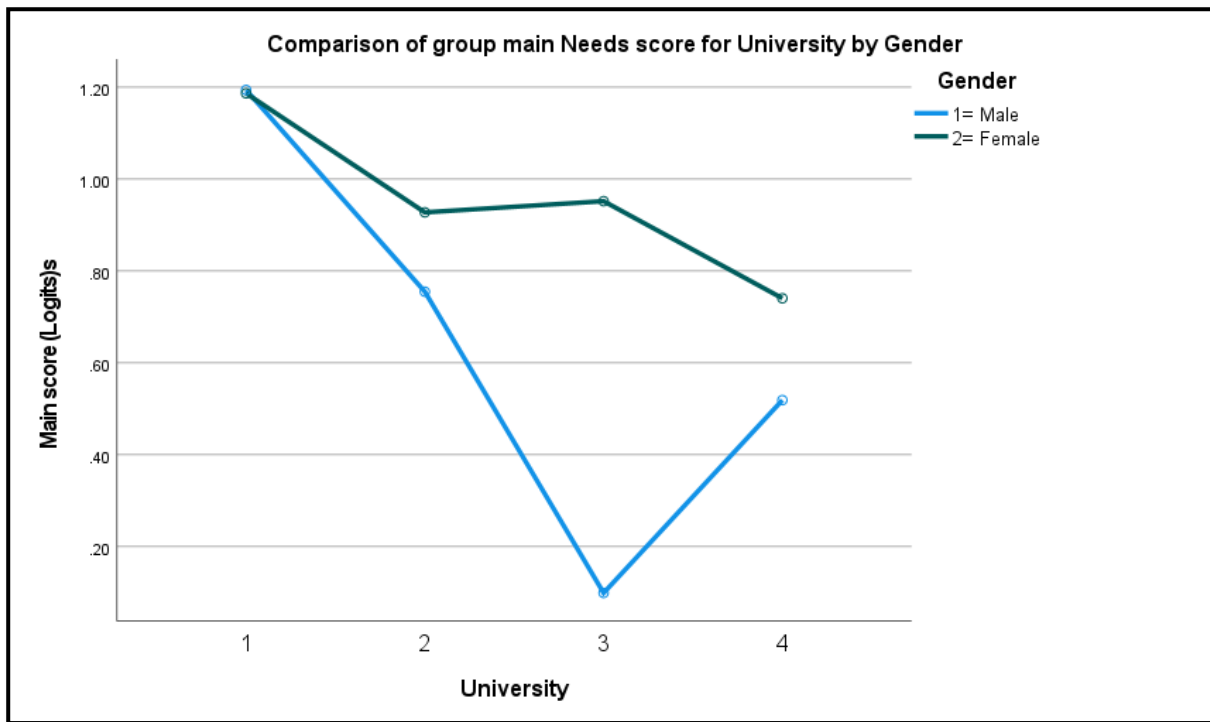


Figure 5-4: Comparison of group main needs score for University by Gender.

In summary, there is a statistically significant interaction effect of (university * gender) on needs ($F = 2.929$, $df = 3$, $p < 0.05 = .034$). This means that the effect of the university on needs is not the same for males and females.

5.9.4 Enablers

Figure 5-5 illustrates a comparison of group mean scores for Enablers by respondent university and gender. It indicates that males at University 1 have relatively higher enablers compared to females at the same university. As for University 2, both males and females have the same enablers. On the other hand, females at University 3 exhibit significantly higher enablers than males at the same university. However, females and males at University 4 have the same enablers for increasing and improving the use of e-learning.

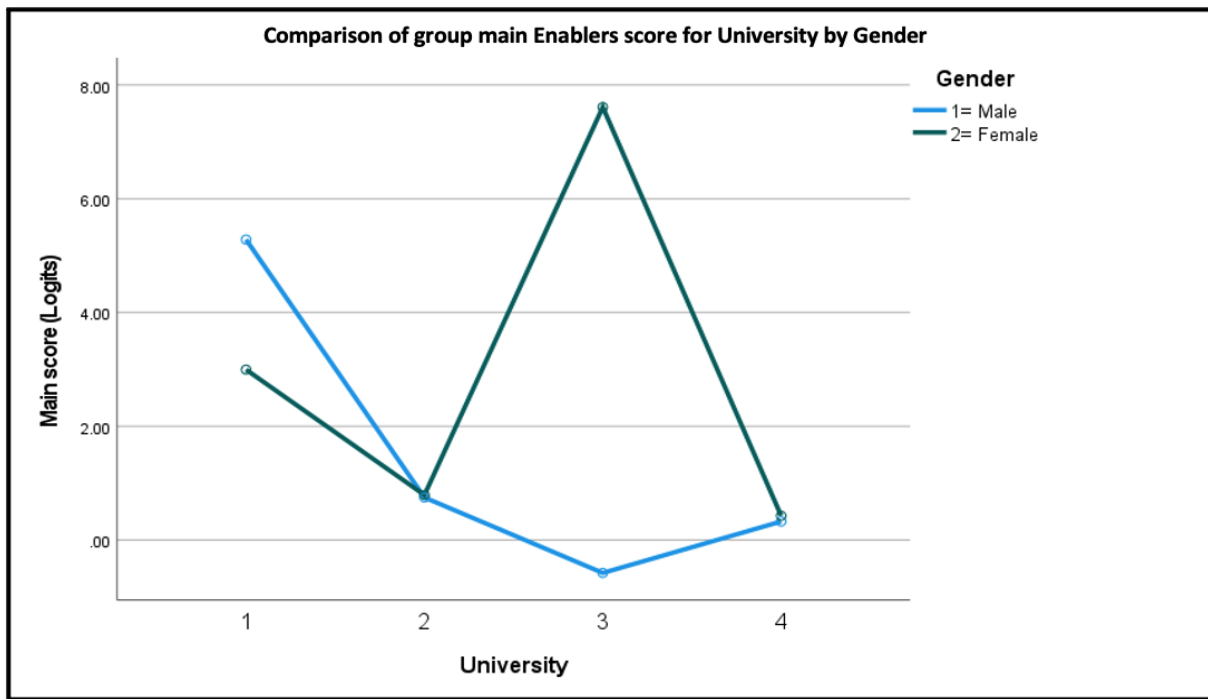


Figure 5-5: Comparison of group main factors score for University by Gender.

In summary, there is a statistically significant interaction effect of (university * gender) on enablers ($F = 3.482$, $df = 3$, $p < 0.05 = .016$). This means that the effect of the university on enablers is not the same for males and females.

5.9.5 COVID-19

Figure 5-6 illustrates a comparison of group mean scores for COVID-19 by respondent university and gender. It shows that females at University 1 have a higher impact by COVID-19 compared to males at the same university. Additionally, females at University 2 have a slightly higher impact of COVID-19 than males at the same university. Similarly, females at University 3 also have a higher impact than males at the same university. As for University 4, females have a significantly higher impact of COVID-19 compared to males at the same university. Overall, females in all universities demonstrated a higher impact of COVID-19 compared to males.

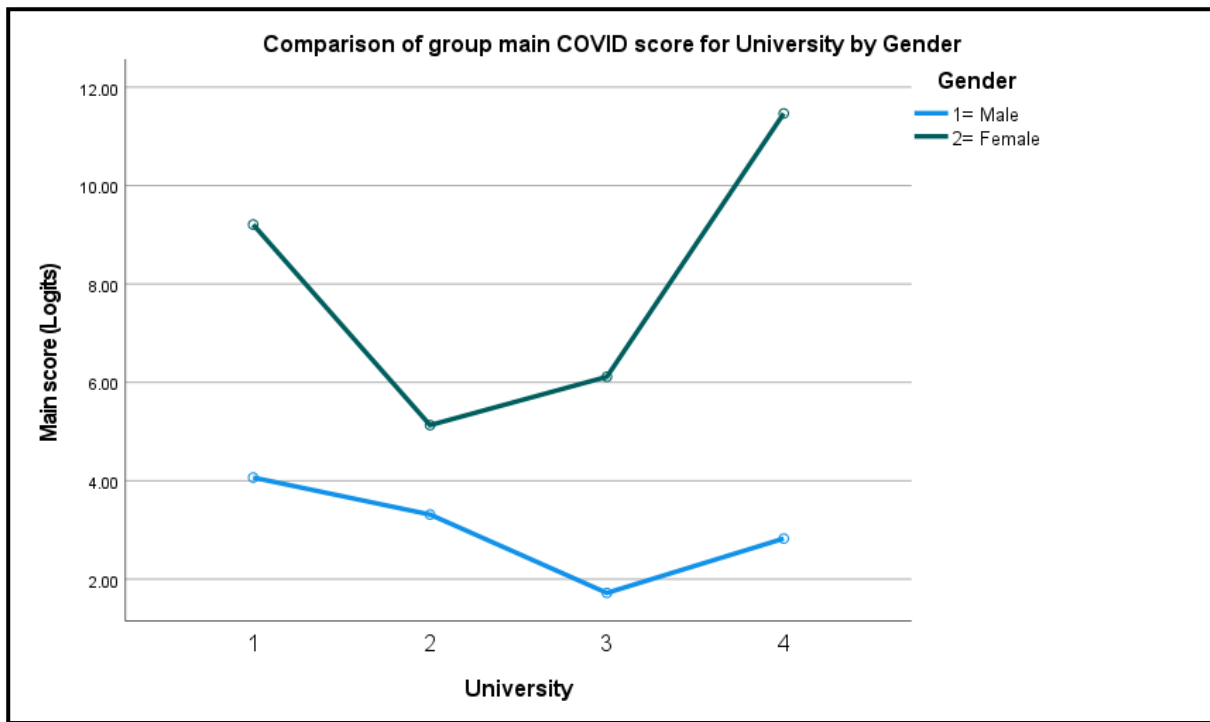


Figure 5-6: Comparison of group main COVID-19 score for University by Gender.

Overall, there is no statistically significant interaction effect of (university * gender) on COVID ($F = 0.472$, $df = 3$, $p > 0.05 = .702$). This means that the effect of the university on COVID is similar for males and females.

5.10 Path Analysis

The first layer model computed for the development of the path analysis describing the study's conceptual framework was based on COVID as the dependent variable and Challenges, Needs and Enablers as predictor variables. The summary tables of the analysis are given at Table 5-12 and Table 5-13.

Table 5-12: Model Summary – COVID Dependent Variable.

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
.384 ^a	0.148	0.141	16.96856	0.148	21.979	3	381	<.001

It can be seen from Table 5-12 that there is a significant ($\alpha = .05$) effect of Challenges, Needs and Enablers on COVID ($p < .001$.)

Table 5-13: Regression Coefficients.

Variable	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.652	1.102		1.499	0.135
Challenges	0.397	0.124	0.155	3.199	0.001
Needs	3.387	0.99	0.176	3.421	<.001
Enablers	0.409	0.091	0.226	4.514	<.001

Table 5-13 shows that Challenges is significantly ($\alpha = .05$) related to COVID ($t = 3.199$, $p = .001$) as are Needs ($t = 3.421$, $p < .001$) and Enablers ($t = 4.514$, $p < .001$).

The full path model was based on Perceptions as the dependent variable and Challenges, Needs and Enablers as the predictor variables. The summary results are presented in Table 5-14 and Table 5-15.

Table 5-14: Model Summary - Perceptions Dependent Variable.

R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
				R Square Change	F Change	df1	df2	Sig. F Change
.301 ^a	0.091	0.081	0.75995	0.091	9.461	4	380	<.001

It can be seen from Table 5-14 that there is a significant ($\alpha = .05$) effect of Challenges, Needs, Enablers and COVID on Perceptions ($p < .001$.)

Table 5-15: Regression Coefficients.

Variables	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.318	0.049		6.426	<.001
Challenges	-0.006	0.006	-0.058	-1.139	0.255
COVID	0.006	0.002	0.14	2.637	0.009
Needs	0.202	0.045	0.242	4.491	<.001
Enablers	0	0.004	-0.002	-0.033	0.974

Table 5-15 shows that Challenges is not a significant ($\alpha = .05$) predictor of Perceptions ($t = -1.139, p = .255$) and nor is Factors ($t = -.033, p < .974$) but Needs ($t=4.491, p < .001$) and COVID ($t=2.637, p < .009$) are significant predictors of Perceptions.

Based on the above the full path model is as illustrated in Figure 5-7. The values shown on the paths are the standardized Beta coefficients of the multiple regression model. The COVID error variance is 0.92 and the Perceptions error variance is 0.95.

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Based on the above, the full path model is illustrated in Figure 5-7. The values shown on the paths are the standardized Beta coefficients of the multiple regression model. The COVID error variance is 0.92 and the Perceptions error variance is 0.95.

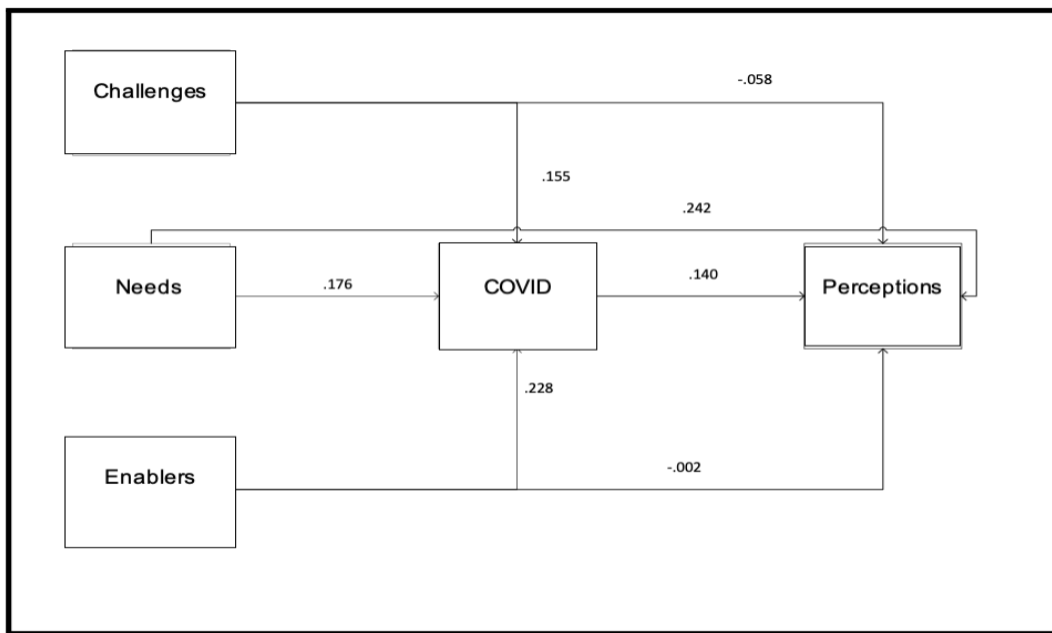


Figure 5-7: Path Diagram Showing Direct and Indirect Effects on Perceptions.

It can be seen from Figure 5-7 that COVID and Needs have a direct effect on Perceptions and that the effects of Challenges and Enablers on Perceptions are indirect and operate through COVID. It should also be mentioned that r^2 , the coefficient of determination (.091) is quite small which indicates that there are effects on Perceptions that are not included in this model. That is not unexpected given that across the world COVID impacted economic prosperity, social cohesion, and political stability. Academics in the surveyed institutions were not immune from these consequences. Moreover, some of them may have family members who contracted the virus, a circumstance which may well have shaped their perception of the role of e-learning. The implications that the path diagram carries for the study are explored more fully in the following chapter.

5.11 Summary of Results

The results indicate the following:

1. areas of respondent strengths and weaknesses in respect of the five constructs were identified;
2. respondent strengths and weaknesses varied across age, gender, qualification, university, and college;

3. very importantly the study has revealed how Challenges, Needs, Enablers and COVID work together directly and indirectly to shape perceptions;
4. there is a generally positive perception towards e-learning among the survey participants;
5. a significant proportion of respondents expressed concerns, challenges, or perceived limitations related to implementing e-learning and their own capabilities;
6. a large percentage of the respondents expressed the existence of a set of needs that would help them improve their use of e-learning; and
7. during the global COVID-19 pandemic, there was a generally positive perception of e-learning among the surveyed individuals.

5.12 Chapter Summary

In general, the analysis of the online survey data revealed that respondents have positive attitudes towards e-learning and its use in their teaching. Although the participants' points of view were generally positive, it is clear that they face some challenges and difficulties in using e-learning. In addition, the participants highlighted some unmet needs for their optimal use of e-learning in their educational institutions. The results of the survey thus illustrate that there are a number of enablers that can help improve and increase the use of e-learning. The results of the survey also reveal that the global COVID-19 pandemic had a significant impact on the use of e-learning. Moreover, various statistical tests on personal variables (gender, age, experience, academic degree, and type of college) have revealed that some of these variables do affect faculty members' perceptions of e-learning.

Chapter Six will discuss the results obtained in the two phases of the qualitative and quantitative study.

Chapter 6: Discussion of Research Findings

6.1 Introduction

The main aim of this research was to explore faculty members' perceptions and to get a deeper understanding of e-learning in four emerging Saudi universities. This chapter focuses on synthesising the findings of the qualitative and quantitative analyses. The next discussion will address the research questions.

Determining and meeting the needs of faculty members is critical to their use of e-learning and their perceptions of it. The aim is to enhance and improve faculty members use of e-learning and enable them to adopt it in their teaching methods. When reviewing the different theories about the needs and perceptions of teachers about their use of e-learning, it is worth noting that there is no previous or current comprehensive framework which can explain the needs and perceptions of faculty members in their use of e-learning, which is supported by multiple theories, including motivational theories and technological acceptance models. In this regard, the Alderfer's (1972) ERG Theory (is applicable, in that it can explain different types of needs to sustain the motivation for the use of e-learning by teachers. Using ERG theory as a comprehensive framework, we can capture the needs of faculty members. In other words, the specific needs are to help faculty members perform optimally for the use of e-learning and their perceptions towards it on the one hand, and to maintain their motivation during the process of using e-learning on the other hand.

After examining the existing research and conducting initial investigations in Saudi Arabia, a modified version of the ERG model is suggested for this study. This revised model will include definitions of each construct and explanations for their inclusion.

The following dimensions: Existence Needs, Relatedness Needs, and Growth Needs, are the main dimensions of the ERG theory. Clear policies, support, and expertise are the key elements of

Existence needs; Communication, collaboration, and conviction are the main elements of Relatedness needs; Skills, Training, and Infrastructure are the main elements of Growth needs.

The revised ERG model proposed here includes the above major elements as a result of the results of the present research which has also determined its suitability for the Saudi context. The modified model proposed here has been designed to allow a more comprehensive analysis of faculty members' perceptions of e-learning in the emerging Saudi universities.

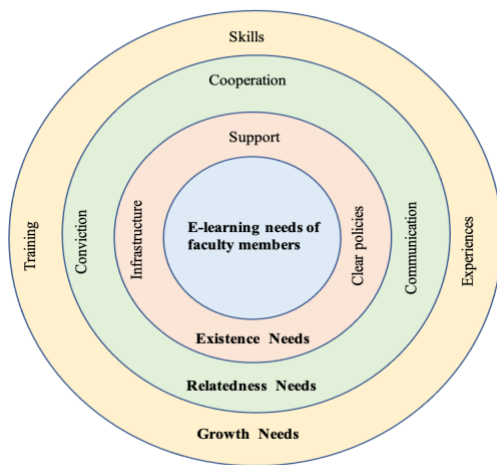


Figure 6-1: Schematic Diagram of the Revised ERG Model

The main research question is: How do faculty members in four emerging universities in the southern region of KSA perceive the use of e-learning?

Sub-questions:

Sub-RQ1 What challenges do faculty members face to use e-learning?

Sub-RQ2 From the perspective of faculty members, what are the needs to help improve the use of e-learning in emerging Saudi universities?

Sub-RQ3 What are the enablers that lead to increasing and improving the quality and extent of the use of e-learning in higher education in the Kingdom of Saudi Arabia?

Sub-RQ4 How have the educational institutions responded to the global COVID-19

pandemic, and to what extent has e-learning been utilised in the higher education sector in KSA?

This chapter thus discusses the findings from both phases of the current study in terms of how the study participants responded to the research questions and how their responses can be understood in terms of the subsequent ‘factors’ developed by this research. In addition, the impact of demographic variables on faculty members' perceptions of e-learning.

Data were collected through semi-structured interviews and an online questionnaire related to the faculty members' perceptions of e-learning in four emerging Saudi universities. The results of the qualitative and quantitative parts were combined in order to provide an explanation of the issue under exploration. The qualitative data gathered from the questionnaire's open-ended questions and semi-structured interviews were subjected to thematic analysis (Chapter 4). Using the Rasch model, the quantitative data obtained from the online questionnaire responses were analysed (see Chapter 5). Particular attention was given to other factors that were shown to have an impact on faculty members' perceptions and their use of e-learning, which are age, gender, academic qualification, university, and classification of college. The qualitative and quantitative data reported in Chapters 5 and 6, respectively, are combined here to present the study's findings. The interaction of these two phases gave rise to a clearer map of the findings.

This chapter has six sections following the introduction, as follows:

Section 6.2 discusses the results relating to the challenges, as the results demonstrate there are several challenges facing faculty members in their use of e-learning.

Section 6.3 discusses the needs of faculty members for e-learning, as the results show that there are un-met needs for the adequate use of e-learning.

In Section 6.4, the enablers that help improve and increase the use of e-learning are discussed, and the results show that there are several enablers helping to improve and enhance e-learning.

Section 6.5 discusses COVID-19, as the study demonstrates that the global COVID-19 pandemic had a strong impact on changing the perceptions of many faculty members about e-learning.

Section 6.6 discusses faculty members' perceptions of e-learning, as the results demonstrate that perceptions are generally positive for e-learning.

Section 6.7 illustrates that there are significant demographic variables that impact faculty members' perceptions of e-learning.

6.2 Challenges

Sub-RQ1: What challenges do faculty members face to use e-learning?

The aim of this question was to explore the challenges that hinder the use of e-learning by faculty members. Participants were asked about the challenges that faculty members face when using e-learning in their educational practices.

Thus, the second dimension explored these challenges that hinder faculty members' use of e-learning, and the participant's responses and interview data are duly discussed below. Furthermore, the literature review identified various factors that serve as challenges for faculty members when it comes to the implementation of e-learning in higher education institutions and these findings have supported those conclusions.

6.2.1 The challenges to using e-learning, from the perspectives of the faculty members.

Data collected through interviews with e-learning experts and a questionnaire with faculty shed light on their perspectives regarding the barriers associated with the utilisation of e-learning by

faculty members in teaching. There are 13 items contained in this factor, Rasch modelling (Table 5-3, Chapter 5) revealed that Item 13, "I do not have enough experience to use e-learning in my teaching" received the most positive response with a difficulty score of -1.15 logits. Most respondents 55.8%) 'Agree' with the statement, and 27.1% 'Strongly Agree'.

In contrast, Rasch modelling revealed that the difficulty score of Item 3 "There are not sufficient computer laboratories at my university available to use for e-learning" of 0.69 logits indicates that it is the least positive statement. 11.9% of the respondents strongly disagreed with the statement, while 40.3% disagreed. Most respondents (21.4%) agreed with the statement, and 9.0% strongly agreed. It was the least positive, but it was a negatively phrased item. Therefore, they did have sufficient computer laboratories, so it was not a challenge.

The comprehensive review of the literature revealed a multitude of challenges that serve as hindrances for faculty members when attempting to implement e-learning in higher education institutions (Alenezi, 2012; Aljaber, 2018; Newton, 2003; Sife et al., 2007; Uppal, 2017; Zalah, 2018). There are two main challenges that will be discussed further in this section. The first can be classified into challenges at the level of faculty members (personal sources) and the second is classified at the level of universities (institutional sources). Understanding the barriers and challenges associated with the adoption of e-learning is of utmost importance, as the successful implementation of e-learning relies on overcoming these challenges that may arise during the process.

6.2.1.1 Faculty member-level challenges

The literature highlights several challenges facing faculty members when using e-learning, which have a negative impact on their perceptions of e-learning. These include the lack of sufficient experience to use e-learning and its tools, weak skills and technical knowledge to solve any problems that occur during the use of e-learning, and resistance to change under the pretext of not having enough time to attend training courses; that e-learning increases workloads; and also the

lack of sufficient experience to use e-learning in teaching, which leads to some faculty members finding it difficult to manage e-learning courses.

6.3.1.1.1 Lack of sufficient experience

The results of the quantitative study revealed that approximately 82.6% of the survey participants agreed or strongly agreed that they either do not have enough experience or find it difficult to manage an e-learning course (Item13, Table 5-3). received the most positive response with a difficulty score of -1.15 logits.

The literature review confirmed this finding that the lack of experience in the field of e-learning poses a significant challenge in the use of e-learning. This lack of experience also impedes the use of e-learning in the educational process for many faculty members, and in addition makes it difficult for them to manage e-learning courses, especially if they have a lack of e-learning skills (Abdullah & Ward, 2016; Alenezi, 2012; Almaiah et al., 2020a; Alshehri, 2021; Zalah, 2018). Alasmari (2014) argues that a lack of experience and especially a lack of computer literacy reduces e-learning engagement and increases educational difficulties for students and teachers alike. Moreover, Alshehri (2021) contends that the lack of experience in the use of e-learning tools challenges to their actual use in teaching. Furthermore, Abdullah and Ward (2016) mentioned that among the challenges that hinder the acceptance and use of e-learning is the lack of experience in using its tools, such as lack of experience with computers. In this regard, 62.5% e-learning experts who participated in the interviews for this research indicated that faculty members face challenges in using e-learning due to a lack of experience. One participant indicated that there are a number of challenges to the use of e-learning, including this lack of experience:

We at university have faced several challenges, including the following: Lack of faculty members' experience in using e-learning. (D3)

Some participants noted that a lack of experience manifested itself as a lack of specialisation in computers and/or educational technologies. For example, one participant noted that faculty members need to have specialist skills because without them, they lack experience:

The technical experience and specialisation also have a great impact on faculty members ... [because] non-specialists find it difficult to use e-learning and its tools. (D2)

6.3.1.1.2 Weak skills and technical knowledge

In this study, the skills specifically refer to educational skills necessary for effective teaching and learning, such as the range of abilities, knowledge, and competencies to perform these tasks. These skills cover a variety of areas, such as communications, pedagogical technologies, assessment, classroom management, and technology integration. Educational skills are essential for teachers, trainers, and educators of all levels to effectively convey information and facilitate learning among their students. It was notable from this research that it was the lack of such skills that contributed to the challenges to the uptake of e-learning.

In addition, lack of knowledge includes a lack of technological skills and awareness regarding e-learning, capabilities, and advantages. The results align with those found by Mtebe and Raisamo (2014), who discovered that the more the teachers lack knowledge about e-learning, the more negative their attitudes become, which can hinder institutional strategies for achieving e-learning in educational institutions. There is a minimum set and level of skills that faculty members must master in order to facilitate the process of using e-learning and its tools.

80.9% of participants indicated 'Agree' and 'Strongly Agree' that theythat "I lack the necessary technology skills (for example, the ability to use a computer using software applications, such as Word, PowerPoint, Excel, email, etc.) to use e-learning in my teaching", received response with a difficulty score of -0.93 logits. in addition, 61.5% of them 'Agree' and 'Strongly Agree' that

'I do not have sufficient technical knowledge to solve any problems that occur while using e-learning' received response with a difficulty score of -0.25 logits.

These findings are in line with several studies discussed in the literature review. Among the challenges that faculty members face is the lack of knowledge or technical skills that prevent them from solving problems they face while using e-learning, such as: skills to use e-learning tools, technology literacy, computer literacy, and virtual classroom management. Computer literacy is a necessary skill for successful e-learning; thus teachers and learners must have enough computer knowledge to use e-learning tools (Uppal, 2017). According to Alasmari (2014), one of the challenges to using e-learning is the lack of skills to use e-learning tools. Other than the infrastructural factors that limit e-learning, there are other common and often underestimated challenges, including the technology gap and course design (Aljaber, 2018). Aljaber (2018) also added that one of the challenges that teachers face is their need for continual professional development to adjust to or learn new technologies and pedagogies. It is commonly stated that technology now evolves at a higher rate than that at which we are able to learn about it. Alshibni (2022) argues that the lack of abilities and competencies of teachers in the use of e-learning tools is among the challenges and difficulties that faculty members face in using e-learning. For instance, one participant indicated that:

One of the challenges to using e-learning is the lack of some faculty members of the technical skills necessary to use e-learning tools. (D1)

One participant stated that:

Another challenge is that some faculty members do not have the basic skills to use e-learning and its tools. (F4)

6.3.1.1.3 Resistance to change.

Faculty members' resistance to change was also found to be one of the challenges to the use of e-learning in educational institutions. In this study, 'resistance to change' referred to the reluctance of faculty members themselves to use e-learning. This reluctance manifested itself as a range of attitudes and/or behaviours that were in-themselves considered significant challenges, such as 'fear' and 'refusal' to adopt and use e-learning.

Resisting change is one of the difficult issues facing the uptake of e-learning. This can be resistance from the end-users or even the decision-makers and can be a result of the person's lack of conviction or understanding of the importance of e-learning.

45.5% of participants indicated 'Strongly Agree' or 'Agree' to Item 11, 'I do not have enough time to attend training courses', which had a difficulty score of 0.24 logits. In addition, 41.6% of the participants indicated 'Strongly Agree' or 'Agree' to Item 12 'E-learning increases my workload', which had a difficulty score of 0.34 logits. The positive logit scores indicate lower levels of positivity. Nevertheless, considerable minorities expressed agreement or strong agreement with the statements.

These findings are in line with several studies discussed in the literature review (Alshibni, 2022; Walabe, 2020; Zalah, 2018). Alshibni (2022), for example, argues there is resistance to change and a lack of acceptance of modern teaching techniques, such as e-learning, among some teachers and educators. There is also a perception that e-learning is an additional and heavy burden and there is a lack of incentives to use it. Walabe (2020) mentioned that teachers need time to accept the changes taking place and move from traditional education to e-learning. There is a resistance to change by some, as they are not ready to use the technology either because of their fear of failure, or it is a consequence of the leadership's attitudes towards technology and their lack of conviction to support it. Zalah (2018) stated that resistance to change and social culture has a negative impact on the acceptance and use of technology in e-learning, especially among older

faculty members. In addition, this result is supported by (Alshibni, 2022) who also found that faculty members see e-learning as an additional burden on their workloads.

This result was confirmed in interviews with the participants. Some participants mentioned that resistance to change is one of the challenges to using e-learning. For example, one participant mentioned that:

Some faculty members have resistance to change, believing that e-learning will put an extra burden. (F4)

In addition, another participant indicated that:

The personal conviction and the internal and psychological factors of faculty members play a role in using e-learning. (F5)

As stated by another participant:

The resistance to change constitutes a great challenge for some negative people who, in turn, influence others around them and spread negative ideas about technology and its problems because of their negative culture about it. (F3)

Some of the interviewees indicated that culture has a significant impact on the use of e-learning, especially those who have a negative perception of technology.

According to one participant:

The prevailing culture, whether in society or faculty members, has a significant impact on the use of e-learning. (F4)

As stated by another participant:

The resistance to change constitutes a great challenge for some negative people who, in turn, influence others around them and spread negative ideas about technology and its problems because of their negative culture about it. (F3)

According to Milani (2008), it is crucial to consider the local society and culture when implementing e-learning to ensure its success. This perspective is further reinforced by Alhareth (2014b), who advocates for the consideration of societal culture and traditions in the design of new e-learning programs to ensure their effectiveness.

6.2.1.2 University-level challenges

According to previous studies as discussed in the literature review and based on the results obtained from both the qualitative and quantitative studies for this research, the most prominent challenges facing faculty members are lack of support, poor infrastructure, lack of incentives and motivation, location, and the lack of clarity of policies.

6.3.1.2.1 Lack of support

The majority of the sample members 45.8 % ‘Strongly Agree’ and ‘Agree’ that adequate support is not available when problems occur while using e-learning, “Sufficient support is not available when problems occur during the use of e-learning”, received a response with a difficulty score of 0.22 logits. This outcome reinforces the extent of support, encouragement, and motivation in every form, whether technological, material, and moral, or financial. This finding aligns with several studies discussed in the literature review (Aljaber, 2018; Almaiah et al., 2020a; Uppal, 2017) which emphasize the significance of institutional support for faculty members and its profound influence on the use of e-learning in the twenty-first century. Thus, the current result is in line with the existing body of research, reinforcing the extent of institutional support for leveraging e-learning in educational settings. Uppal (2017) maintains that for the success of e-learning, it is necessary to provide administrative support for all users, whether they are teachers or learners. Almaiah et al. (2020a) demonstrate that one of the challenges to using e-learning is the lack of

technical support, the other is lack of financial support. Participants in the interviews confirm this.

In relation to the former, one participant stated that:

Other challenges facing faculty members in the use of e-learning are, lack of timely technical support. (F2)

In relation to the latter, one participant stated:

The first challenge is the lack of required financial support to the deanship of e-learning. (F10)

62% of the participants 'Agree' or 'Strongly Agree' that they do not find encouragement from their universities to attend e-learning training courses, in addition to the fact that 35.7% indicated that these courses are more theoretical than practical.

The literature review also supported this finding, which is a need to provide training courses on the use of e-learning in addition to encouraging and motivating faculty members to attend such training courses. The importance of promoting the use of e-learning to faculty members must include an emphasis on its positive and effective outcomes. This finding is consistent with that of Alshibni (2022) who indicated that the biggest challenges facing faculty members were the lack of computers, e-learning tools, and training courses for faculty members.

In addition, the findings from semi-structured interviews indicated that lack of motivation is what makes them less excited about the use of e-learning, for example, one participant argued that:

The lack of motivation is what makes them less excited about the use of e-learning. (F4)

This sample participant also stated:

From my point of view..., the absence or weakness of incentives is one of the challenges that make a faculty member not enthusiastic about using e-learning, for example some faculty members say, 'Why use e-learning when there is no incentive for that use? (F4)

The encouragement by the leadership is not limited to providing incentives only, but also includes encouraging faculty members to attend training courses in the field of e-learning and its tools and facilitating and overcoming the challenges they face while using it. For example, one participant mentioned that:

It is the responsibility of the leadership to encourage and motivate faculty members towards the use of e-learning, whether encouraging them to attend training courses or providing them with material and moral incentives. (D3)

As indicated by prior research findings (Al Harbi, 2014; Selim, 2007) , the absence of sufficient in educational institutions support poses a significant risk to the success of e-learning programs. This support includes the provision of necessary resources such as computers, internet access, and technical assistance for utilising e-learning, as well as the crucial backing from educational institutions management. Consequently, the findings imply that the provision of adequate institutional support can enhance faculty members' confidence in using e-learning, thereby fostering their preparedness to effectively engage with e-learning.

6.3.1.2.2 Poor infrastructure

In relation to this study, infrastructure refers to the material resources that are needed to support the delivery of e-learning. For example, this would include computer devices, computer technology, internet connections, updated computer hardware and software, and other physical facilities that are necessary for teaching and learning.

Infrastructure is one of the most important factors for the success of e-learning, and it requires a significantly large budget in order to provide a high-quality product. Based on the results of the study, and extrapolating the detail of this sub-theme, this research has found a significant number of challenges related to infrastructure which will be discussed below.

A lack of infrastructure can be summarised as either ‘weak’ or ‘poor’ infrastructure, and this is one of the challenges preventing the optimal use of e-learning. In the semi-structured interviews, 75% of participants (12) mentioned “poor infrastructure” as the most common challenge.

Despite Saudi Arabia's wealth, it is important to recognize that the country's ICT infrastructure does not align with external perceptions. Despite its vast landmass and reliance on oil and gas as the primary source of foreign exchange, Saudi Arabia is still in the early stages of development and possesses limited state-of-the-art infrastructure, particularly in rural areas. Consequently, the inadequate infrastructure serves as a significant challenge to the successful implementation of e-learning initiatives in the country (Mutambik, 2018).

The findings of this study revealed that the most important infrastructure challenge was the lack of devices available, lack of computer technology, slow internet connection, and the lack of availability and continuous updating of hardware and software.

The literature review further supports this finding, indicating that the necessity to provide the equipment for the use of e-learning in addition to sufficient computer laboratories, and the availability of a strong internet, are very important matters to enhance the use of e-learning by faculty members which results in positive and effective impacts on e-learning (AL-Shammari, 2016; Aljaber, 2018; Mahyoob, 2020; Uppal, 2017; Zalah, 2018).

Uppal (2017) has confirmed that the main challenges to the success of e-learning is the infrastructure and the need for fast internet and the availability of modern hardware and software is extremely important to the success of e-learning. The lack of necessary software for e-learning, as

well as not enough computers, constitutes a challenge to the full use of e-learning (Uppal, 2017). Mahyoob (2020) maintains that one of the challenges facing users of e-learning is the weak internet speed. According to Aljaber (2018), the modernization and development of technology are challenges for universities in KSA, one that they must confront and overcome in order to develop their quality of e-learning.

This research here has demonstrated that the successful utilisation and execution of e-learning necessitates a suitable strong infrastructure, including strong internet, hardware, and software alongside the accessibility of advanced e-learning tools, enabling faculty members to utilize them effortlessly.

Although all the institutions studied have computer laboratories, they are not sufficient to meet the increasing demand of users, especially students. However, the most common computer problems identified in the institutions studied were insufficient equipment available or not updating the software and hardware available in these laboratories.

Participants in this study pointed out that the lack of adequate equipment was one of the challenges they faced when using e-learning. For example, one participant stated that:

Some of the university's colleges in other branches, put an extra burden on it, as it is difficult to provide sufficient devices in all branches, which is a challenge to the use of e-learning. (F1)

Many faculty members pointed out about the problems associated with having to constantly update the hardware and software used in e-learning. The lack of updating or the delays in doing so results in further challenges to the optimal use of those programs and devices in the e-learning process. One participant mentioned that:

In order to keep pace with the change in e-learning tools, hardware and software that are characterised by continuous development and updating, universities must

constantly update these hardware, software, and devices used in e-learning.

Because not updating these devices makes it a challenge to using e-learning in an effective manner. (F2)

6.3.1.2.3 Location

The results of the qualitative study showed that one of the challenges of e-learning is location. The geographical location resulted in some faculty members facing many challenges in communicating with those students who live in villages or rural areas where the Internet connections tend to be slower, making synchronous e-learning with these students very difficult.

This result is consistent with Zalah (2018) study, where he indicated that the site poses a challenge in the use of electronic learning in the southern regions, especially mountainous or rural areas, due to students' exposure to the lack of digital resources in their homes, as teachers considered this a source of anxiety for them. Therefore, officials in educational institutions must take this into account when implementing the use of e-learning.

One participant in the interview mentioned that:

One of the major challenges in synchronous e-learning is the slow internet connection due to the nature of the region. (D1)

Another participant indicated that:

The nature of the region served by the university and deanship – in which there are rugged areas or others with special geographical conditions, namely plains, mountains, seas, etc. – imposes a challenge to provide effective technical services there. (F2)

Also, another participant indicated that:

Another challenge is the poor internet connection and network disconnection during classes due to the nature of the region (i.e., borderline). (F5)

6.3.1.2.4 Lack of clear of policies

E-learning needs clear policies and regulations from policy makers to enhance its use among faculty members. Significantly it was the lack of such policies that contributed to the challenges in the uptake of e-learning.

The literature review points to several studies that emphasize the importance of education policy in the use of e-learning (AL-Shammari, 2016; Alenezi, 2012; Alshehri, 2021; Mutambik, 2018; Panda & Mishra, 2007; Zalah, 2018). Clarity of policies plays a major role in the effective use of e-learning by faculty members in their educational practices.

According to Panda and Mishra (2007), the most important challenges that faculty members see include the institutional policy related to e-learning. Therefore, there is a need for clear policies by educational institutions with regard to e-learning.

Clear policy, enhances faculty members' sense of safety when using e-learning, and obtaining clear information when using e-learning. These results were reflected in the interviews. For example, one participant indicated that the lack of clarity of policies and regulations is one of the challenges that faculty members face in using e-learning:

Other important challenges include the unclear legislation, policies, and regulations. (F6)

At the political and practical levels, the results of this study indicate that despite the Saudi government's substantial investment of resources to promote the implementation of e-learning in the country, participants felt that the impact of this investment is insufficient in practice.

However, there appears to be a fundamental gap between policy and practice, which may negatively affect faculty members' perceptions of using e-learning. This gap between policy and practice is also evident in other countries in the Middle East, such as Kuwait (Aldhafeeri & Khan, 2016). Therefore, it is crucial to address this issue promptly and proactively.

6.2.2 Summary of Challenges

Faculty members' were fully aware of the challenges they encounter such as poor infrastructure, insufficient software and hardware, lack of adequate support to manage e-learning courses when problems occur, and the insufficient technical assistance for software, hardware and/or internet connections issues. The comprehensive review of the literature revealed a multitude of challenges that serve as hindrances for faculty members when attempting to implement e-learning in higher education institutions (Agboola, 2006; Alenezi, 2012; Aljaber, 2018; Alshammari, 2019). The lack of sufficient computer laboratories for use in e-learning, insufficient support when problems occurred while using e-learning, and the inability to be creative in the courses were also part of the problem, were especially noted as barriers to finding the right educational tools (Hartley, 2000). Lack of equipment, resources, technologies, computerized educational programs, and other pertinent resources were some of the challenges that were raised (Aljaber, 2018; Mahyoob, 2020; Uppal, 2017). Although many faculty members expressed a positive inclination towards e-learning, there was also a perceived deficiency in receiving effective support, a lack of sufficient technical knowledge to solve any problems that occur while using e-learning, and a lack of sufficient experience in using e-learning. In their teaching, the lack of interest in attending training courses, from either weak personal conviction or a lack of clarity in policies, posed challenges for some faculty members in adapting to the requirements of the contemporary e-learning environment (Alenezi, 2012; Aljaber, 2018; Almohaisen, 2007; Alshibni, 2022; Zalah, 2018). The challenges that faculty members face in using e-learning may subsequently give rise to additional challenges in the process of embracing and sustaining favourable attitudes toward e-learning. However, the majority of the study sample responses demonstrate that the

statements related to this dimension reflect positive opinions about faculty members' perceptions of e-learning however, there was knowledge, experience and concern for the challenges preventing an easy uptake of e-learning in this study context.

6.3 Needs

Sub-RQ2: From the perspective of faculty members, what are the needs to help improve the use of e-learning in emerging Saudi universities?

This explores the needs that must be met to motivate faculty members and reflect positively on their perceptions of e-learning. Provision of these needs constitutes an appropriate solution for faculty members to resolve any problems and difficulties they experience while using e-learning and thus create a positive perception of e-learning in order to increase their use of it.

In order to achieve the objectives of the organization, colleagues must be inspired and motivated. Motivation greatly inspires the human spirit. Almost every element of life requires motivation. Understanding work motivation and job happiness can be important factors in boosting productivity (Acquah, Nsiah, Antie, & Otoo, 2021).

In a study conducted by Egbuta and Omojola (2022) on a sample of 264 participants, in which the researcher sought to examine the work engagements of employees in the health sector in Lagos State, the study showed that the institutions that meet the needs of their employees, whether psychological or social, and realise their importance will result in more employees who love to participate in their work. In other words, the results of the study show that when meeting the needs of the participants, their levels of engagement in work increased, also when meeting the needs of existence as well as growth, their participation in work increased.

Sub-RQ2 was important to explore the needs of faculty members and motivate them with regard to their effective use of e-learning.

The majority of the respondents (58.9%) agreed that it is important to exchange experiences in the use of e-learning, while 34.6% strongly agreed, and Rasch modelling showed that the difficulty score for Item 8 – It is important to exchange experiences in the use of e-learning – was - 0.94 logits. A small percentage (0.3%) of respondents either strongly disagreed or disagreed with the statement.

In contrast, Rasch modelling revealed that the difficulty score of Item 11” My university benefits from faculty members with previous experiences in designing and producing electronic educational content” of 0.83 logits indicates that it is the least positive statement, as the majority of the respondents expressed disagreement or strong disagreement that their university benefits from faculty members with previous experiences in designing and producing electronic educational content (16.5% strongly disagreed and 38.5% disagreed). On the other hand, 23.5% agreed, and only 1.6% strongly agreed with the statement.

The findings from the interviews and the survey indicate that the most important needs that must be provided based on the basic structure of the revised ERG model (Figure 6-1), which had the greatest impact on the use of e-learning by faculty members, as it provided clear policies, all types of support, and a strong infrastructure, in addition to providing effective communication between faculty members and cooperation among them. In addition, created a positive personal conviction among the faculty members for the importance of e-learning, the development of skills, the provision of appropriate training courses, and exchanging experiences that help in their professional development.

Also, the results of the open question” What resources and/or support do you need while using e-learning?” that was asked of participants in the questionnaire provided more details about the needs that must be met for faculty members to use e-learning, which in turn encourages them to use e-learning in their teaching practice. The following is a discussion of each of the results of the interviews and the questionnaire, which showed the most important needs that must be provided

based on the ERG theory, which contains the needs of existence, relatedness, and growth. The results indicate that faculty members, in general, displayed positive perceptions toward e-learning.

6.3.1 Needs to help improve the use of e-learning

In addition, the results of the interviews and the analysis of the responses to the open-ended question that was included in the questionnaire indicated a set of needs that must be met for the use of e-learning by the participants.

Respondents were asked in the interview about their needs to use e-learning which will be discussed below. In addition, the results of the questionnaire with 11 items related to the topic of e-learning needs (Table 5-4, Chapter 5) showed that faculty members agreed on most of the existing items. For example, 93.5% agreed and strongly agreed on the importance of sharing experiences in using e-learning Item 8 “It is important to exchange experiences in the use of e-learning.”, this item received the most positive response with a difficulty score of -0.94 logits. Moreover, 90.7% of faculty members indicated that attending e-learning training courses is beneficial to them in their teaching Item 7 “Attending e-learning training courses is beneficial to my teaching”, and this item received a response with a difficulty score of -0.75 logits. This Sub-RQ2 shows the results of the respondents' attitudes toward the needs of using e-learning. These needs can be classified according to the revised ERG model into three dimensions: namely, 1) existence; 2) relatedness; and 3) growth needs (Section 2.16, Chapter 2). Below, you will find additional information for each dimension, considering the results of previous studies mentioned in the literature review, encompassing both qualitative and quantitative data, on needs that influence perceptions of e-learning and the importance of their availability to motivate faculty members to engage in e-learning (Alaa, 2019; Alanazi & Alshaalan, 2020; Alenezi, 2012; Algahtani, 2011; Ali et al., 2005; Alshibni, 2022; Judge & O'Bannon, 2008; Mohr & Shelton, n.d; Ocak, 2011; Panda & Mishra, 2007; Sadik, 2007).

The participants indicated that these needs have a significant positive impact and a strong stimulus that is reflected in the perceptions of faculty members of e-learning when available. Among the most important of these needs, based on the results of the analysis of qualitative and quantitative data were: 1) the need for strong and fast internet; and 2) timely and prompt technical support; 3) training courses suitable for e-learning; 4) material and moral support; 5) availability of devices such as (data shows, computers, design devices, interactive screens, projectors, and smart boards); and 6) the need for clear policies in the use of e-learning (**Error! Reference source not found.**).

Moreover, the analysis of the responses to the open-ended question included in this third section of the questionnaire indicated a set of needs that must be provided and, at the same time, was considered as an auxiliary solution in the use of e-learning by the participants.

6.3.1.1 Existence needs.

Existence needs can be defined as the basic physiological and material requirements that are essential for a faculty member to effectively use e-learning. These needs include clear policies, technical support, material and moral support, and strong infrastructure.

The findings of the two research stages indicate that education policy is an important factor in the success of the use of e-learning and its tools by faculty members in universities. To be successful, these strategies have to respond to the affairs and needs of educators, particularly in relation to their concerns about explicit e-learning policies.

57.9% of participants indicated that they ‘Disagree’ and ‘Strongly Disagree’ with the Item 6, *"Clear guidance on the use of e-learning is available to novice faculty members"*, this item received a response with a difficulty score of 0.82 logits, which indicates their urgent need to have clear and easy-to-understand policies in the use of e-learning at their educational institutions, especially for novice faculty members. In addition, 2.2% of participants mentioned the need for clear policies (**Error! Reference source not found.**). The literature review points to several studies that

emphasize the importance of education policy in the use of e-learning (AL-Shammari, 2016; Alenezi, 2012; Alshehri, 2021; Mutambik, 2018; Panda & Mishra, 2007; Zalah, 2018). For example, the results of the study by AL-Shammari (2016), indicated that adopting a clear policy is one of the most important needs that educational institutions must seek to develop in order to implement and activate e-learning at the university level. In addition, in the study conducted by Panda and Mishra (2007), the most important challenges that faculty members see include the institutional policy related to e-learning. Therefore, there is a need for clear policies by educational institutions with regard to e-learning. While the Saudi Ministry of Education demonstrates a firm commitment to integrating e-learning technology, the likelihood of successful implementation greatly improves when teachers are knowledgeable about the policy, well-informed about its aims and objectives, and understand how these align with their specific roles (Kennewell, Parkinson, & Tanner, 2000).

Similar to other nations, Saudi Arabia has implemented regulations and established strategies to embrace e-learning and new technologies as a response to the economic, cultural, and social challenges that arise in an interconnected digital world (Bell & Stevenson, 2006). In the domain of education, policies are necessary to address various aspects such as computer networks, acceptable use of computers, dissemination, and creation of electronic content, copyright of courses, and encryption. Clear policy, or a clarity of policies, enhances faculty members' sense of safety when using e-learning. Obtaining clear information reduces their confusion when using e-learning. These results were reflected in the interviews, where the participants highlighted the importance of clear policies, which they mentioned are the most important needs of existence, and that providing it helps in the optimal use of e-learning. For example, one of the participants mentioned the necessity of this:

There is a significant need for a clear vision and policies by universities to increase faculty members' motivation to use e-learning and help them know

their responsibilities and duties so as not to violate the regulations and laws.

(F10)

Universities must consider a range of issues when transitioning to e-learning, including the need to prepare clear policies to identify needs, and to define the goals and expected final results of e-learning when it is adopted in teaching.

Moreover, the results indicate that support (of all kinds – technical, material, and moral) is one of the most important needs that must be provided for the use of e-learning. For example, technical support helps faculty members alleviate their anxiety while using technology in the e-learning process, especially faculty members who have a fear of using technology and help them use technology to achieve the intended educational results. Technical support refers to addressing all the problems that the learners face, as they, via online platforms, frequently confront technical issues that might affect the learning process. Therefore, clear procedures, quick feedback, and support materials are needed to meet technical support needs (Diep et al., 2019). These outcomes are consistent with previous studies that confirm the importance of providing a set of needs for the use of e-learning and motivating faculty members to use them (i.e., On time support; Encouragement and motivation; and Material and moral support) (Alanazi & Alshaalan, 2020; Mutambik, 2018; Sadik, 2007; Zalah, 2018). This finding was confirmed in the interviews with the participants. The majority of the participants agreed that material and moral support are the basic needs for the effective use of e-learning by faculty members. As one of the participants stated:

Furthermore, the necessary needs that will push a faculty member towards e-learning include technical and institutional support (whether moral or material).

(F3)

Another participant also stated that:

Among the needs for faculty members to use and activation of e-learning is the timely technical support, the lack of which may cause members to give up on the use [of e-learning]. (D4)

Furthermore, the results of the open-ended question confirmed these needs (see **Error!**

Reference source not found.).

Strong infrastructure is one of the most important needs for the use of e-learning in educational institutions, which includes the availability of e-learning devices and tools, a strong internet, and the development and modernization of educational software and hardware. The literature shows that ease of access to electronic tools and resources (Judge & O'Bannon, 2008; Panda & Mishra, 2007), and availability of resources and tools for using e-learning are important infrastructure needs (Alaa, 2019; Ali et al., 2005; Ocak, 2011; Sadik, 2007). In addition, one of the important issues in meeting the needs of existence, as indicated by Diep et al. (2019),, area the systems functions such as the practicality, efficiency, and ease of dealing with e-learning systems and tools, i.e., strong infrastructure. The participants in the interviews and surveys emphasized their need for a strong infrastructure, such as the availability of e-learning systems and tools in their universities, along with their ease of use. They also highlighted the importance of having high-quality materials that meet their diverse needs and are easily accessible. 81.7% and 73.4% of the participants strongly agreed and agreed, respectively, with these two items.

In order to optimize the capabilities of faculty members on technologies related to the process of using e-learning, it is imperative for educational institutions and designers of programs/courses to ensure that the technologies are user-friendly, as outlined by established technology acceptance models. Additionally, it is crucial to offer sufficient support to faculty members to enhance their self-efficacy and competence in utilizing these technological tools. This finding was confirmed in interviews with the participants, where the majority of the participants indicated that the strength of the infrastructure (such as the need for a strong and fast internet; the availability of educational

devices and programs; updating them, etc.) is one of the most important needs for the use of e-learning. One of the participants stated:

There are a set of needs include development and modernization of laboratories and infrastructure at the university and availability of the most recent programs. (F2)

In addition, the results of the open-ended question confirmed these needs (**Error! Reference source not found.**, Chapter 4).

6.3.1.2 Relatedness needs

Relatedness needs refers to the fundamental needs of a faculty member for communication, belonging, and intimacy with the educational institution and its members. The need for social relationships and interpersonal connections is important when it comes to the faculty members using e-learning. These ‘relatedness needs’ include communication and cooperation with others to build knowledge that can help them to make the best use of e-learning and adopt it in their teaching methods and also involves a personal conviction for this type of education. Each of these three needs will be discussed below in turn.

The first relatedness need of communication is reflected in the following items:

55.8% ‘Disagree’ nor ‘Strongly Disagree’ with Item 1, “I find it easy to communicate with the e-learning support team”, and this item received a response with a difficulty score of -0.38 logits. Item 5, “Faculty members are involved in e-learning teamwork projects”, 65.3% ‘Disagree’ or were ‘Neutral’, and this item received a response with a difficulty score of 0.17 logits. In this result, communication with the support team or with other faculty members and the participation of group projects motivates the faculty member to use e-learning and enhances their experience. This communication contributes to building knowledge about e-learning and to increasing positive

perceptions among faculty members. This finding is reflected in the view of one of the participants, who is an e-learning expert and Dean of the deanship of e-Learning:

Faculty members need to communicate effectively among themselves or between themselves and educational institutions and decision-makers to promote the use of e-learning and change their negative attitudes. (D3)

This finding was also corroborated by some of the other participants. For example, one of the participants stated:

That cooperation was an effective tool for exchanging positive experiences that could enhance the use of e-learning. (F9)

In addition, the analysis of the responses to the open-ended question included in this dimension of the questionnaire indicated that communication is one of the needs that helps transfer experiences among faculty members and positively impacts the effective use of e-learning and their perceptions towards it.

In our current era, knowledge and its sources change every day. In addition, education in traditional classrooms does not always meet all the new e-learning needs. Faculty members need cooperation to transfer knowledge to learners in the best way. This type of cooperation increases the link between the faculty member and their educational institution and their social relations with colleagues. Ali et al. (2005) assessed the needs for the development of faculty members in online education and pointed out the importance of collaboration and knowledge transfer to develop new teaching strategies. This finding reflects the points of view of some participants. For example, one of the Deans of E-learning indicated that the faculty member needs the cooperation of their colleagues in addition to the educational institution in order to provide and facilitate everything that would help them to use e-learning and increase the strength of social cohesion between all stakeholders in the educational institution:

The university's cooperation with the faculty member by quickly responding to the problems that he faces when using e-learning and providing the necessary resources and knowledge for that is important in activating the use and strengthening the relations between the faculty member and the educational institution. (D4)

Another Dean of E-Learning indicated, when asked about the needs of a faculty member to use e-learning:

In my view, there are a set of needs such as ... Cooperation between faculty members and exchange of experiences..... (D2)

One of the participants also indicated that:

One of the needs that helps faculty members to use e-learning is communication and cooperation among them. (F6)

As we mentioned earlier, the relatedness needs refer to the fundamental needs of a faculty member for communication, belonging, and intimacy with the educational institution and its members. The need for social relationships and interpersonal connections is important when it comes to the faculty members using e-learning. Therefore, personal conviction plays a prominent role in the use of e-learning. Personal conviction can influence an individual's thoughts, behaviours, and feelings, and can guide their decision-making and actions in various areas of life, such as relationships, career, and educational or social issues. In addition, conviction generates confidence in the use of e-learning tools and facilitates its use. . Prestridge (2012) asserts that instructors who have higher confidence in their own ICT proficiency are more likely to adopt e-learning in the classroom. This finding was revealed in the interviews when participants were asked about the importance of e-learning and its impact on faculty members' perceptions towards it. For example, one participant stated that:

Faculty member needs are a personal conviction that pushes them to use e-learning and communicates with others to know everything that is new and useful in this type of education. (D3)

6.3.1.3 Growth needs

Growth needs refer to the fundamental human needs for personal development, self-improvement, and the pursuit of meaningful goals. Growth needs include the availability of a range of skills, continuous training, and exchange of experiences, all in order to develop the growth needs for the use of effective e-learning. Each of these items will be discussed below in turn.

The majority of participants indicated that they need to develop their skills in using e-learning, as 80.6% 'Agree' and 'Strongly Agree' with Item 9, "I need to develop my skills in the use of e-learning", and this item received a response with a difficulty score of -0.24 logits. This indicates that e-learning helps in developing the skills of faculty members. Furthermore, knowledge of these skills and possession of them is very important when it comes to using them, so that if faculty members did not have these skills, they would not have been able to use them effectively. These findings are corroborated in the literature review, which demonstrated that the use of e-learning technology in higher education is pivotal in fostering the growth of academic faculty members' skills and subsequently influencing their teaching performance (Prestridge, 2012). The results of the study indicate that faculty members need to have a set of skills and develop them continuously in order to use e-learning effectively in their educational institutions. (Al-Soraiey-Alqahtani, 2010) has indicated that educational institutions should meet the needs of teachers to develop their skills to use technology in education in response to the continuous development of technology. Furthermore, Walabe (2020), has pointed out that teachers need to develop their technical skills in order to use e-learning and its tools that enable them provide e-content effectively.

Among those skills that faculty members must possess are the skills of dealing with the computer and how to use the programs and devices used in teaching: what is known as computer

literacy. In addition, the skill of designing digital educational content, class management, using e-learning platforms and modern technologies, and others was considered important. Recent research has revealed that while e-learning has great value and benefit, one of the main challenges in preventing its widespread adoption in Saudi Arabia is the scarcity of skills and knowledge among users regarding e-learning and its tools (Al-Sarrani, 2010). The more recent and continuous development of technology requires teachers to have the basic skills required to use the constantly changing technologies in education (Almaghlouth, 2008). According to Alsadoon (2009), faculty members who possess advanced computer skills tend to exhibit more favourable perceptions towards e-learning in comparison to their counterparts who possess lower levels of computer skills and knowledge. According to Zhen, Garthwait, and Pratt (2008), this can be attributed to individuals' confidence and ease of use with modern technologies.

The mere provision of technology and its use in e-learning is not sufficient, but the efficiency and quality of technology must be taken into account by educational institutions in addition to providing users with the necessary and basic skills to achieve the successful implementation of e-learning (Zalah, 2018). (AL-Shammari, 2016) indicated that e-learning skills are not only the ability to use a computer but the ability to use all e-learning tools and hardware and software in order to effectively provide educational courses. Most of the participants in this study indicated that faculty members need a set of skills that they need to continuously develop in order to advance professionally. Some participants mentioned that the need for computer skills, instructional design and dealing with modern technologies are some of the most important skills needs that faculty members must possess. As one of the participants pointed out, he said:

In fact, there is a set of skills that a faculty member needs for the optimal use of e-learning, including the skill of designing educational content and dealing with computers and modern technical devices. (F10)

Due to the rapid development of information technology, the process of modernization and sharing of knowledge has greatly accelerated in recent times. In Saudi educational institutions, there are many e-learning tools and platforms that have the ability to provide education to the largest number of learners. However, unless there is sufficient training on using these tools and platforms, failure may result. The findings of this study show that the faculty members' need for training courses and attending them is useful to learn how to use e-learning in their teaching.

90.7% of participants indicated that they 'Agree' or 'Strongly Agree' with Itm 7, "Attending e-learning training courses is beneficial to my teaching", and this item received a response with a difficulty score of -0.75 logits. While education policy strongly advocates for e-learning, a discrepancy exists between this stated approach and the actual implementation in educational institutions, and the researchers contend that decision-makers should heed the perspectives of teachers regarding their needs and concerns. They further propose the necessity of novel initiatives to address these issues and offer sufficient training and support effectively (Robertson & Al-Zahrani, 2012). Zalah (2018) argues that the failure to provide adequate training needs affects the likelihood of teachers integrating e-learning and its treatment into their teaching practices. This result confirms the study AL-Shammari (2016) that mentions the importance of providing training and that the Ministry of Education should establish specialised training and professional facilities staffed by competent instructors. These centres would be dedicated to providing high-level training to faculty members, focusing on the effective utilisation and application of e-learning methodologies. Furthermore, it is imperative that training programs not solely concentrate on fundamental e-learning competencies but also advance toward contemporary pedagogical approaches that facilitate the seamless integration and enhanced efficacy of e-learning in teaching. Moreover, this was confirmed in the results of the qualitative data from the responses of e-learning experts in the interviews, where the participants indicated that among the necessities to push faculty members, especially the passive ones, towards the use of e-learning is training and development;

keeping pace with the technological advances; technical development; and training on the use of everything new and useful. For example, one participant stated that:

Continuous training on modern devices and software is among the most important needs for faculty members in order to improve their use of e-learning. (F9)

While another participant also stated:

Faculty members need to receive training and development on the use of e-learning. (F11)

In addition, the results of the open-ended question confirmed these needs (**Error! Reference source not found.**, Chapter 4).

The exchange of experiences is among the most important growth needs that help faculty members take advantage of e-learning and create new ways. Numerous scholars have posited that experience impacts teachers' attitudes about e-learning and that a dearth of such experience coupled with factors such as insufficient facilitating conditions, can contribute to hesitancy and the unwillingness to use e-(AL-Shammari, 2016; Donnelly & McSweeney, 2008; Jimoyiannis & Komis, 2007; Zalah, 2018).

93.5% of the participants 'Agree' and 'Strongly Agree' with Item 8, "It is important to exchange experiences in the use of e-learning", and this item received the most positive response with a difficulty score of -0.94 logits. Also, 66.9% of them 'Agree' and 'Strongly Agree' with Item 4, "the use of e-learning is enhanced when faculty members are able to share their successful experiences", and this item received a response with a difficulty score of -0.55 logits. In contrast, 40.8% of them 'Disagree' and 'Strongly Disagree' with Item 3, "I participate in designing the course content", and this item received a response with a difficulty score of 0.12 logits. Therefore, they indicate that their participation in designing the course content for e-learning reflects their experiences in that.

Finally, 55% of the participants indicated that they ‘Disagree’ or ‘Strongly Disagree’ with Item 11, “My university benefits from faculty members with previous experience in designing and producing electronic educational content”, and this item received a response with a difficulty score of 0.38 logits, which shows that their universities did not benefit from those with experience in designing and producing electronic educational content and that they need to exchange those experiences in designing and producing electronic educational content.

The results of the interviews and the open question (**Error! Reference source not found.**) that was included in the questionnaire were similar and highlighted that experience is one of the most important needs for the use of e-learning and the exchange of experiences between faculty members along with training increases the experience level of faculty members and motivates them to use e-learning effectively. For instance, one of the participants mentioned:

In my view, there are a set of needs that will help faculty members make effective and optimal use of e-learning they are summarized as follows: transfer and exchange of experiences between faculty members, and

(F3)

6.3.2 Summary of Needs

In summary, the answer to the Sub-RQ2 from these findings suggests that there is a set of needs that the participants emphasize. In addition, it gives a positive indication of faculty members' perceptions of e-learning in higher education institutions. The study confirmed that the elements used in the ERG model are useful in exploring the needs of faculty members to use e-learning in its three dimensions (the needs of existence, connection, and growth). This is especially the case with the needs of existence, which was revealed as a strong factor for knowing the need to use e-learning and its impact on faculty members' perceptions of e-learning by providing infrastructure, support, and clarity of policies. Likewise, attachment and growth needs had an impact on those perceptions. The qualitative and quantitative phases of the study revealed that there is a set of needs that must be

met to motivate the teaching staff for e-learning in the three dimensions (the needs of existence, relatedness, and growth). The findings from the two phases of the study indicate that faculty members exhibit a positive perception towards e-learning, despite the presence of various challenges that impede its optimal implementation. The study revealed that there is a set of existence needs that must be provided to motivate faculty members to effectively use e-learning, which has an impact on their perceptions of it, the most important of which are support, infrastructure, and policy clarity.

When looking at relatedness needs, it is clear from the results of the study that the needs that were found are to communicate and cooperate with others to build knowledge that can help them make the best use of e-learning and adopt it in their teaching methods, and also include personal conviction for this type of education. As for the growth needs, which have an impact on the actual use of e-learning, they were represented in the following elements: the need for a set of skills, continuous training, and the exchange of experiences between faculty members. This shows that one of the basic steps for a positive perception of e-learning in higher education is to provide those needs that were mentioned above, which have an impact on addressing many of the difficulties and challenges facing faculty members when they use e-learning.

6.4 Improve and Increase

In this study, participants were asked about enablers that could improve and increase the use of e-learning in higher education in Saudi Arabia, in the following research questions:

Sub-RQ3: What are the enablers that lead to increasing and improving the quality and extent of the use of e-learning in higher education in K SA?

The reactions of e-learning experts in the interviews, and the responses of the faculty members in the questionnaire in this dimension, clarify their perceptions about the enablers that can improve and increase the use of e-learning in higher education in the KSA by participants and contain 11 items.

Rasch modelling (Table 5-5) indicated that Item 11 with a difficulty score of -1.2 logits, was perceived as relatively easy by the respondents. Item 11, “My university offers training courses on the use of the e-learning technologies”, received predominantly positive responses, with the majority 59.2% of respondents ‘Agree’ and 22.0% ‘Strongly Agree’ that their university offers training courses on the use of e-learning technologies. Only a small percentage 1.0% ‘Strongly Disagree’.

The participants in the interviews also referred to training courses as being an important enabler in raising their efficiency and helping them to use e-learning. Some participants also mentioned that this training should focus on the use of electronic devices and software and its tools, and there should be follow-up on developments and the provision of such courses by educational institutions. For example, one of the participants mentioned that:

Other factors include training on technical tools, the availability and ease of using technology, and the training of faculty members on the use of e-learning and its tools. (F10)

In general, the results show varying levels of agreement or disagreement on different aspects of e-learning. Some items received predominantly positive responses, indicating favorable perceptions, while others had more mixed or negative responses.

6.4.1 The enablers that could improve and increase the use of e-learning.

Responses were collected through interviews with e-learning experts, in addition to responses from faculty members through a questionnaire, which sheds light on the enablers that will improve and increase the use of e-learning in higher education in the Kingdom of Saudi Arabia. The comprehensive review of the literature and the current study both reveal several enablers that lead to the increase and improvement of e-learning for faculty members in higher education institutions. These enablers can be classified into internal enablers related to educational institutions, such as

(incentives, support, infrastructure, training, clarity of policies, and conviction of leaders in e-learning), and other external enablers related to faculty members, such as (faculty members' beliefs, experiences, attendance at training courses, development of their skills and specialisation). The results obtained from the qualitative and quantitative data indicate that these enablers play a major role in faculty members' perceptions of e-learning, along with the needs indicated by the participants above. These enablers will be discussed in more detail below.

6.4.1.1 Internal enablers

The results of this research study, qualitative and quantitative, indicate that there are a number of internal enablers that have an impact on increasing and improving the use of e-learning in educational institutions. The results showed that the most important of these internal enablers are: training; technical support; material and moral support; infrastructure; clarity of policies; availability of programmes and systems and ease of access to them; and leaders' conviction in e-learning.

The literature review supported this finding, including the one conducted by (Mutambik, 2018; Zalah, 2018) (AL-Shammari, 2016; Alenezi, 2012), all of whom noted the need to provide training courses on the use of e-learning, in addition to encourage and motivate faculty members to attend such training courses, which would result in a positive impact and thus the effective use of e-learning. In addition, Material and moral incentives, awarding of prizes and competitions among faculty members, encouraging leaders to use e-learning, and spreading the spirit of competition among teachers, play a prominent role in encouraging and improving the use of e-learning in educational institutions, as indicated by the majority of participants.

The results indicated that 81.2% of the participants 'Agree' or 'Strongly Agree' that training courses are an important enabler for faculty members to be able to use e-learning item 11, this item received the most positive response with a difficulty score of -1.2 logits.

The participants in the interviews also referred to training courses as being an important enabler for raising their efficiency and helping them to use e-learning. Some participants also mentioned that this training should be on the use of electronic devices and software and its tools, and there should be follow-up of developments and the provision of such courses by educational institutions. One of the participants mentioned that:

Other enablers include training on technical tools, the availability, and ease of using technology, the training of faculty members on to use e-learning and its tools. (F10)

According to AL-Shammari (2016) and Hamdy (2003), one of the enablers that helps increase and improve the use of e-learning among faculty members is technical support, which can prevent any additional burden on the faculty member. Thus, it is expected that there will be a professional technical support team to support teachers when they use modern technologies.

The results indicated that 56.4% of the participants ‘Agree’ or ‘Strongly Agree’ with Item 10, “My university offers training courses on the use of the e-learning technologies,” and this item received a response with a difficulty score of -0.28 logits. Additionally, 55.5% of them mentioned that technical support is of significant importance in encouraging faculty members to use e-learning; item 1, and this item received a response with a difficulty score of -0.26 logits. However, 47% of the participants ‘Disagree’ or ‘Strongly Disagree’ with Item 2, “My university encourages faculty members by providing material or moral incentives to use e-learning (e.g., rewards, or certificates of thanks, etc.),” and this item received a response with a difficulty score of 0.71 logits, indicating their need for this enabler to promote their use of e-learning in their teaching practices.

Technical support is one of the main enablers mentioned by the participants in the interviews to increase or improve the use of e-learning. Participants in the interviews pointed out that the lack of technical support in a timely manner puts psychological pressure on them, especially when problems occur during e-learning. The responses also indicate that providing them with professional

training and technical support in order to enable them to have more effective use of e-learning is an important enabler for enhancing e-learning and increasing and improving its use. One of the participants indicated that:

The availability of technical support by experts to facilitate the process of using e-learning, especially when facing some technical problems, is one of the most important enablers that help improve and encourage faculty members to use e-learning in educational institutions. (D2)

In addition, 38.5% of the participants ‘Agree’ and ‘Strongly Agree’ with Item 3, "Strong infrastructure (such as fast internet, computers, e-learning tools, hardware, software, etc.) is available for the use of e-learning at my university", and this item received a response with a difficulty score of 0.49 logits. However, 19.1% of them remained neutral, while 42.3% of the participants ‘Disagree’ or ‘Strongly Disagree’ with the presence of a strong infrastructure. This highlights the necessity of having a strong infrastructure for faculty members to effectively utilize e-learning, as they identified the weakness of infrastructure as one of the major challenges, they face in adopting e-learning. Furthermore, 50.6% of the participants ‘Agree’ or ‘Strongly Agree’ with Item 6, “The software and hardware needed for e-learning are available at my university”, and this item received a response with a difficulty score of 0.06 logits, while 50.4% of them agreed or strongly agreed on the significance of ease of access to this software and hardware.

According to (Alenezi, 2012; Y. A. Alharbi, 2002) , e-learning requires a strong and suitable infrastructure to enhance support for both teachers and students, as well as enable teachers to deliver course materials to students in a timely manner.

Moreover, the results of the interviews support this finding, as all participants indicated that the availability of a strong infrastructure is a major and important enabler in the activation and use of e-learning. For example, one of the participants indicated that:

If educational institutions do not have a strong infrastructure such as a strong Internet and the availability of devices, tools, and software for e-learning, the result of adopting and using e-learning may be a failure. (D3)

In addition, one of the participants recommended:

The necessity of providing a strong infrastructure that includes hardware and software and a strong Internet that supports the process of using e-learning effectively in educational institutions. (F9)

Legislation, policies, and clear regulations are among the most important enablers that help a faculty member to perform their duties. The results of the study showed that 52.9% of the participants indicated that they agreed or strongly agreed with the enabler of policy clarity in the use of e-learning, and that it is among the important enablers that educational institutions must provide, which encourages and improves faculty members' use of e-learning.

Dalton H Kisanga (2015) argues that the challenge to most institutions is not the policy but rather, they lack integration techniques of e-learning into pedagogical practice. To overcome this problem, educational institutions should align clear policies with their e-learning activities. While the Saudi Ministry of Education demonstrates a firm commitment to integrating e-learning technology, the likelihood of successful implementation greatly improves when teachers are knowledgeable about the policy, well-informed about its aims and objectives, and understand how these align with their specific roles (Kennewell et al., 2000).

Clarity of policies, regulations, regulations, and legislation regulating the use of e-learning were all emphasized by the participants in the interviews as enablers needed to promote, improve, and increase the use of e-learning in educational institutions. In addition, the decision-makers and leaders' conviction towards their adoption and belief in the importance and benefits of e-learning is a critical and important enabler to help increase the use of e-learning. One of the participants stated:

Clear legislation, regulations, and policies will greatly help and push faculty members forward towards the use of e-learning. (F11)

Another participant added:

There are internal enablers, including the conviction of the importance and benefits of e-learning by leaders and decision-makers. (F2)

6.4.1.2 External enablers

The study results indicated that training courses and the necessity for faculty members to attend them are among the enablers that contribute to improving the use of e-learning. 81.2% of the participants agreed or strongly agreed with this statement. Additionally, 58.4% of them viewed specialization as one of the enablers that help increase and enhance the use of e-learning.

According to Rovai and Childress (2002), training courses play a prominent enabler in building teachers' self-efficacy and expanding their knowledge of the devices used in e-learning, because these courses reduce the anxiety they feel when dealing with technology. Most of the participants mentioned that attending training courses, especially those that have a direct relationship with e-learning, are among the enablers that play a major role in improving and increasing the use of e-learning. They also added that such courses improve their skills in dealing with the techniques and tools used in e-learning, in addition to being an important enabler in highlighting the importance of e-learning and showing its benefits and advantages to faculty members, which increases their conviction about the use of e-learning.

In my view, the main enablers for motivating faculty members are developing their technical skills in general and taking training courses in e-learning, especially those courses that help faculty members on how to use e-learning tools and design its educational content. (D2)

Another participant mentioned that:

Continuous training on new hardware and software is one of the most important enablers for faculty members to develop their use of e-learning. (D4)

Some participants stated that specialisation has a major role in increasing and improving the use of e-learning, as they see that disciplines related to technologies such as computer science or educational technologies have a significant impact on the adoption and use of e-learning and its tools. For example, one of the participants indicated that:

Specialisation has a significant impact on the use of e-learning by faculty members, as it plays a large role in this aspect, as non-specialists find it difficult to use e-learning and its tools. (D2)

Kane, Sandretto, and Heath (2002) argue that teachers' teaching practices are correlated to their personal attitudes, perceptions, and beliefs. Therefore, the personal conviction of faculty members plays an important role in their perceptions of e-learning and their use of it. Personal conviction in the importance and benefits of e-learning is one of the important enablers for adopting and using e-learning. The majority of participants, with a rate of up to 75%, stated that personal conviction is a very important enabler for adopting and using e-learning. One of the participants mentioned:

The main enabler comes from within the faculty member, who is primarily led and motivated by his own belief and convictions. So, the member's personal conviction of the importance, characteristics, and benefits of e-learning is a strong enabler and motivation for using e-learning. (F7)

Another participant added:

Internal conviction plays a prominent role in the use of e-learning, so unless a faculty member has an internal conviction in using e-learning, its benefits, and

importance, it will not be used effectively, no matter how much facilities you provide for it. (F12)

Experience in the use of e-learning and its tools, such as using programs and devices or having experience in the use of e-learning methods of providing educational content, is one of the main enablers indicated by the participants and thus it plays a prominent role in the use of e-learning. According to one of the participants:

The experience enabler in the field of e-learning and its tools is one of the enablers that play a vital role in activating the use of e-learning among faculty members, in addition to exchanging those experiences among them. (F3)

Another participant added that:

The experience in the field of e-learning technologies and the way of using its tools and programs make the faculty member enjoy e-learning in presenting its educational content as well as its students. (D3)

Furthermore, the analysis of the responses to the open question (**Error! Reference source not found.**) that was included in this fourth dimension of the questionnaire indicated a set of enablers that helps improve and increase the use of e-learning by the participants, and they can be summarized in the following: 1) Training (training courses); 2) Presenting the Excellence Award in the field of e-learning; 3) Practitioner certificate in e-learning; 4) Introductory brochures on the use of e-learning.

6.4.2 Summary of Improve and Increase

It is clear that the main result that emerges from this fourth dimension is the positive perceptions of faculty members about the enablers that help increase and improve e-learning in higher education institutions. This was also confirmed in interviews. Thus, decision makers in those educational institutions can be encouraged to continue developing this type of learning by paying

attention to these enablers. In general, there is a positive indicator of e-learning in this dimension that gives a positive indicator to support the continuity of use and increase the activation of the role of e-learning in the educational process in higher education institutions by reviewing these enablers. In general, the answer to this question through the responses collected through interviews with e-learning experts, in addition to the responses of faculty members through the questionnaire, shows us that there are a set of enablers that will improve and increase the use of e-learning. These enablers can be classified into internal enablers related to educational institutions, such as (incentives, support, infrastructure, training, clarity of policies, and conviction of leaders in e-learning), and other external enablers related to faculty members, such as (faculty members' beliefs, experiences, attendance at training courses, development of their skills and specialization).

6.5 Impact of COVID-19

The following research question seeks to explore how educational institutions were able to demonstrate 'readiness' for the pandemic and its impact on the use of e-learning:

Sub-RQ4: How have educational institutions responded to the global COVID-19 pandemic, and to what extent has e-learning been utilised in the higher education sector in KSA?

The researcher included this question because data collection was conducted during the 2020-2022 global COVID-19 pandemic and crisis. Around the world social isolation policies resulted in 'lockdowns' and the closure of many businesses and institutions. People were literally told to stay at home. This researcher wanted to directly capture the impact of this crisis on educational institutions, especially the faculty members and their uptake of e-learning, which is so crucial in this global context. This challenge was an appropriate opportunity for the researcher to include this question and focus on the present study.

6.5.1 Impact of COVID-19 on the use of e-learning

The questionnaire included 14 items that focused on the issue of the readiness of higher education institutions in Saudi Arabia for the COVID-19 pandemic and its impact on faculty members' perceptions of e-learning in those institutions. Rasch modelling (Table 5-6, Chapter 5) indicates that Item 5, “During the COVID-19 global pandemic, there was an increase in the use of e-learning”, received the most positive response with a difficulty score of -0.54 logits, as a significant majority of respondents 95.3% ‘Agree’ and ‘Strongly Agree’ that there was an increase in the use of e-learning during the COVID-19 pandemic. Only a small percentage 1.1% disagreed or strongly disagreed. In addition, due to the circumstances that the whole world went through during COVID-19, the results of the interviews also showed that there was an increase in the use of e-learning, so the convictions of many leaders and faculty members about the use of e-learning changed, and the extent of its contribution to the delivery of education to all members of society at all levels, also changed.

On the other hand, Rasch modelling revealed that the difficulty score of Item 10, “During the COVID-19 global pandemic, the transition from using traditional education to using e-learning methods was not easy” of 1.09 logits indicates that it is the least positive statement, as a large percentage of respondents 61.7% ‘Agree’ and ‘Strongly Agree’ that the transition from traditional education to e-learning methods was not easy during the pandemic. A smaller percentage 21.5% ‘Disagree’ and ‘Strongly Disagree’.

Overall, these results indicate that during the COVID-19 global pandemic, there was generally a positive perception of e-learning among the surveyed individuals. A majority of respondents agreed or strongly agreed that: (i) their universities provided clear plans for using e-learning; (ii) e-learning was easy to use; (iii) high-quality educational content was provided; and (iv) there was an increase in the use of e-learning. They also agreed that there was; (i) a positive attitude towards e-learning; (ii) increased opportunities for exchanging experiences; (iv) reduced

barriers to adoption; (v) increased faculty training; and (vi) effective assessment of student learning outcomes. However, there were some mixed responses and challenges in the transition to e-learning methods, and perceptions varied for certain items., in addition to Table 4-13 shows the results of the interviews, which confirms the positive impact of e-learning on Saudi higher education institutions.

The results of the study showed that 73.2% of the participants in the questionnaire indicated that ‘During the COVID-19 global pandemic, my university provided a clear plan to faculty members on how to use e-learning to deliver their course content’. In addition, 65.2% of participants indicated that during the global pandemic of COVID-19, a guide for using e-learning educational materials was provided to faculty members. This finding indicates that the educational institutions provided a clear plan for e-learning during the COVID pandemic period. As the global health crisis developed causing massive social and economic disruptions, educational institutions around the world responded and adapted quickly. According to Hoq (2020), governments during this period responded quickly by closing educational institutions in order to ensure the safety of students and actors in the field of education and provided the necessary plans in coordination with educational institutions to ensure the continuity of education. This finding is in line with the views of the interviewees who confirmed that there was a plan to provide e-learning. For instance, one participant mentioned:

There was a plan for the management and facilitation of the educational process during the coronavirus pandemic, ensuring the continuity of the educational process.... (D1)

Table 5-6 indicates that for Item 5, “During the COVID-19 global pandemic, there was an increase in the use of e-learning”, a significant majority of respondents 95.3% ‘Agree’ or ‘Strongly Agree’ that there was an increase in the use of e-learning during the COVID-19 pandemic. Only a small percentage 1.1% ‘Disagree’ or ‘Strongly Disagree’.

The results also revealed that ‘During the COVID-19 global pandemic, there was a change in the convictions of leaders and teachers towards the use of e-learning’, 88.9% of the participants agreed or strongly agreed with this statement. Clearly, this finding shows a positive influence on the convictions of (leaders/teachers) towards the use of e-learning, this shall reflect on learners by making them excited to learn. Alammery et al. (2021) indicated that it is good news that the exposure of leaders and faculty members to e-learning needs during COVID-19 changed their perception of e-learning positively, as they were more likely to integrate e-learning into their teaching plans in the future. He also adds that COVID-19 played a prominent role in changing the attitudes of both academics and leaders towards the use of e-learning and increasing their awareness of the role that e-learning needs play in improving learning outcomes and its importance.

Training plays an important role in developing the skills of faculty members to use e-learning and its uses, and it is reflected in their teaching. In light of the COVID-19 pandemic, faculty members have expeditiously adopted e-learning as a means of instructional delivery.

The results of the study showed that during the COVID-19 global pandemic, there was an increase in faculty members attending e-learning training courses, 85.8% of the survey participants agreed and strongly agreed with this item.

83.7% of participants ‘Agree’ and ‘Strongly Agree’ with Item 8, “During the COVID-19 global pandemic, the barriers (e.g., a fear of failure in using the new technologies) in the uptake of e-learning among faculty members were reduced”, and this item received a response with a difficulty score of -0.29 logits. This finding aligns with the perspectives of the experts in the field of e-learning who confirmed that during the pandemic, barriers (for example, fear of failure to use new technologies) in the uptake of e-learning were reduced among faculty members. Accordingly, there was an increase in the use of e-learning by faculty members, which the pandemic forced them to use, which broke the barrier of fear of failure or technology among many faculty members. One of the participants added:

There has certainly been a huge positive change. The pandemic has prompted those who previously had a fear of using technology to use it and benefit from it in e-learning and acquire basic skills in the use of e-learning. The hesitant people took steps forward. (F9)

This result is consistent with several studies discussed in the literature review (Al-Anezi, 2021; Alammery et al., 2021; Alanazi & Alshaalan, 2020; Sastre-Merino et al., 2021). In addition, the study found that there was a significant increase in the use of e-learning during the global COVID-19 pandemic, as 83.2% of the respondents used e-learning regularly, compared to 19.1% of the respondents who used it regularly before the COVID-19 pandemic (Alanazi & Alshaalan, 2020). According to Alammery et al. (2021), the use of e-learning has significantly increased since the COVID-19 pandemic and as a direct result of the forced transition to distance learning.

Moreover, 73.2% of participants ‘Agree’ and ‘Strongly Agree’ with Item 11, “During the COVID-19 global pandemic, there were adequate training courses held to prepare teachers to use e-learning”, and this item received a response with a difficulty score of -0.14 logits. This finding was confirmed in the literature review, which showed that educational institutions provided sufficient training and assistance for the use of e-learning during the pandemic (Sims & Baker, 2021). Alodan (2021) indicated that the rapid and unexpected transition from traditional education to e-learning led to educational institutions quickly implementing training programs for their employees to meet the challenges they might face, so e-learning units in colleges organized a set of daily training sessions by 30 minutes per session to support and train faculty members and answer their inquiries. This result was also confirmed by Alanazi and Alshaalan (2020), who showed that the participating faculty members agreed that their institutions provided them with suitable training on e-learning during the COVID-19 global pandemic. The utilisation of e-learning has experienced a significant surge in frequency during and after the COVID-19 pandemic, in contrast to its pre-pandemic levels. This increase in use made faculty members keen to attend training courses, especially those who had a deficiency in some of the skills of using e-learning. The e-learning experts participating

in the interviews pointed out that the training courses are among the important factors for raising the efficiency of faculty members and helping them to use e-learning. During the pandemic, there was a noticeable increase in faculty members and their keenness to attend training courses related to e-learning and their keenness to ask a lot about these training courses. One of the participants indicated this by saying:

The epidemic prompted faculty members, especially those who do not have enough skill in using e-learning and its tools, to attend training courses on an ongoing basis. (F9)

The rapid and sudden transition to e-learning during the COVID pandemic undoubtedly caused a lot of confusion among faculty members within educational institutions, in addition to that it may cause strong pressure on e-learning and its tools, which requires rapid technical support when problems occur.

The results showed that 68.7% of the participants indicated that during the global COVID-19 pandemic, the university provided adequate technical support when the faculty members experienced technical issues when delivering e-learning. During the COVID-19 global pandemic, significant efforts were made by Saudi universities to assist their instructors in adapting to e-learning. These efforts encompassed technical support, the creation of online resources, and training workshops (Alammary et al., 2021). Ebner et al. (2020) indicated that there are a set of critical aspects for the use of e-learning and its technological tools, including the availability of computers, access to the internet, technical support, infrastructure, and others. Providing technical support in a timely manner leads to an increase in the desire of faculty members to use e-learning, so it is expected that educational institutions that did not receive any sufficient technical support when they encountered difficulties in e-learning will not be interested in using e-learning in the future (Alanazi & Alshaalan, 2020).

In addition, 85.7% reported their agreement or strong agreement with Item 4, "During the COVID-19 global pandemic, the university and faculty members, were positive about the use of e-learning", and this item received a response with a difficulty score of -0.09 logits. This finding indicates that during the COVID-19 global pandemic, the university and faculty members were positive about the use of e-learning and increased their use of e-learning. 86.8% of participants indicated that the outbreak of the global COVID-19 pandemic created opportunities for exchanging experiences between faculty members, either among themselves at the same university or with their colleagues in other universities with regard to e-learning. This outcome is consistent with the research conducted by (Alammary et al., 2021; Ebner et al., 2020). During the pandemic, work teams were prepared to support e-learning, which increased opportunities for exchanging experiences, providing advice, overcoming difficulties, and providing the required resources to benefit from all of this (Alammary et al., 2021).

The results indicate that it was easy during the COVID pandemic to use e-learning and its tools, and it seems that the reason for this was to provide the necessary plans for crisis management provided by educational institutions. On Item 2, "During the COVID-19 global pandemic, it was easy to use e-learning and its tools", 72.1% of the participants in the questionnaire 'Agree' and 'Strongly agree'. This item received a response with a difficulty score of 0.02 logits. This finding is consistent with answers provided by interview participants, as one participant indicated:

The university has provided a clear plan to assist and support faculty members in the use of e-learning, which facilitated the use of e-learning and its tools in the educational process. (F3)

Moreover, the results indicate that the sudden transition to e-learning in all educational institutions during the global outbreak of the COVID-19 pandemic led to the emergence of some problems which forced those institutions to quickly address the difficulties faced by teachers, including regular evaluation of e-learning mechanisms and constantly answering inquiries from

faculty members and students regarding e-learning. 68.2% of the survey participants expressed their 'Agree' and 'Strong Agree' with Item 15, "During the COVID-19 global pandemic, my university was able to continuously answer the inquiries of faculty members and students in relation to e-learning". This item received a response with a difficulty score of 0.05 logits. On the other hand, 62.5% of them indicated that during the global Covid-19, their university administration regularly evaluated e-learning mechanisms item 14. Alodan (2021) indicated that during the pandemic, there was intense cooperation between the Ministry of Education and educational institutions to address the problems that hindered the progress of e-learning and to carry out a regular evaluation of the e-learning process in order to expand the strengths and transaction with weaknesses. Alodan (2021) also outlined that in order to address these challenges and problems faced by faculty members, the university's set up committees to evaluate them regularly and worked to find appropriate needs with the concerned authorities in order to improve e-learning tools and their compatibility with the modern situation.

Also, 63.3% of the survey participants expressed their 'Agree' and Strongly Agree' with Item 3, "During the COVID-19 global pandemic, high-quality educational content was provided through the use of e-learning". This item received a response with a difficulty score of 0.29 logits. This result indicates that during the pandemic, educational content of acceptable quality was provided from the participant's point of view. Kazem (2021) argues that e-learning has contributed to the design of educational content that motivates learners; in addition to that, it uses appropriate assessment methods in a variety of ways. Although Alkinani (2021) finds that the quality of e-learning during the pandemic in Saudi Arabia has raised significant concern for many academics, as well as people in general, because e-learning has not received sufficient priority in education. However, in his study, the results showed that positive perceptions of e-learning contributed to the availability of good e-content for learners' learning needs in improving learning outcomes and its importance.

In addition, 61.7% of the survey participants expressed their ‘Agree’ and ‘Strongly Agree’ with Item 10, “During the COVID-19 global pandemic, the transition from using traditional education to using e-learning methods was not easy”. This item received a response with a difficulty score of 1.09 logits.

The difficulty in transitioning from traditional education to e-learning appears to stem from some faculty members being caught off guard by this mandatory shift and not being adequately prepared due to a lack of sufficient skills in utilizing e-learning. Govindarajan and Srivastava (2020) noted that the sudden transition to e-learning during the pandemic was not easy, as there are still faculty members who need to learn new techniques while teaching their content areas. This has created challenges for them in transitioning from face-to-face instruction to e-learning.

According to Sims and Baker (2021), the sudden transition from face-to-face learning to e-learning was not easy, as it presented various challenges. Some of these challenges were associated with the new perspectives of e-learning and its electronic complexities. Additionally, he also added that some faculty members may not necessarily possess the necessary technological skills to adopt e-learning due to the abrupt and mandatory nature of the change at the beginning of the pandemic (Ibid).

The results of interviews with e-learning experts also indicated that the transition from traditional learning to e-learning was not easy and caused an additional burden on faculty members, especially those who were unprepared for this shift, either due to a lack of sufficient skills for e-learning or their resistance to change. For example, one participant indicated:

In reality, the sudden shift from face-to-face education to e-learning was not easy for some faculty members... [then continued to say] ... but the pandemic came and changed everything. (F2)

6.5.2 Summary of the impact of COVID-19

The results indicate that the COVID-19 pandemic greatly affected e-learning outcomes both during and after the crisis and created greater educational opportunities in Saudi educational institutions. The impact of COVID-19 may be that future methods of education in these institutions has been changed forever, and some may consider this a "blessing in disguise" in terms of the uptake of new technologies in education. It is clear that the main result that emerges from this dimension is the agreement of the participants that there was a significant positive perception towards e-learning during the COVID-19 pandemic, a significant majority of respondents 95.3% agreed or strongly agreed that there was an increase in the use of e-learning during the COVID-19 pandemic. This result was also confirmed through the interviews. For example, all participants confirmed that there have been significant changes in the use of e-learning by faculty members during the COVID-19 pandemic. One participant indicated that:

During the Corona pandemic, for sure! the perceptions of faculty members and even leaders have changed positively towards the use of e-learning, especially when they saw its benefits and advantages. (F4)

In addition, the main results indicated a clear and significant impact on various aspects of the faculty members towards e-learning during the COVID-19 pandemic, as there was an increase in the use of e-learning and the increase in the exchange of experiences between faculty members. Moreover, there was a change in the convictions of leaders and teachers towards the use of e-learning, as well as reducing the barriers of fear and failure, and the eagerness of faculty members to attend training courses. In general, the results indicate a positive trend in favour of supporting the ongoing use and enhanced role of e-learning in the higher education teaching process.

6.6 Perceptions

Main RQ/ How do faculty members in four emerging universities in the southern region of KSA perceive the use of e-learning?

The aim of the main research question was to explore the perceptions of faculty members in four emerging Saudi universities about e-learning in higher education, based on the results of interviews with experts in e-learning in those universities, in addition to questionnaires for faculty members. The focus was on determining whether faculty members held a positive or negative overall perception of e-learning. The findings reveal a significantly positive response toward the overall perception of e-learning. The results of other research also support these findings (Alajmi, 2010; Alenezi, 2012; Almuqayteeb, 2009).

Among the questions posed to the participants regarding their perceptions of e-learning, a majority responded positively that e-learning has a lot of positive advantages. This positive response indicates a general agreement among the participants.

Rasch modelling (Table 5 -7) indicated that Item 13, "E-learning offers me flexibility in teaching with respect to time and place" with a difficulty score of -0.52 logits, was perceived as relatively easy by the respondents. Participants expressed that e-learning provides them with flexibility in teaching with regard to time and place (with a high agreement of 90.4%). They have also shown that it allows them to complete their teaching tasks more quickly in addition to presenting the course content easily (83.2% agreement). However, the lowest response was that developing an e-learning course takes more time than developing a traditional course (with 76.6% disagreement), with a difficulty score of 1.07 logits. On the other hand, the responses of some participants were that there are some disadvantages to e-learning.

6.6.1 The perceptions of general faculty members of e-learning.

Participants were asked about their perceptions of e-learning. The response through interviews with e-learning experts, along with the responses of faculty members via a questionnaire, provide an understanding of their perceptions of e-learning. The inquiry contained 14 items in addition to two open questions. The results were presented in Table 5-7. This highlights the significance of e-learning in educational practices as a means of effectively engaging with

contemporary technology. This finding aligns with previous studies cited in the literature review, including those conducted by AL-Shammari (2016); Alenezi (2012); Felege and Olson (2015); Valentín et al. (2013).

According to Holmes and Gardner (2006), e-learning possesses the capability to have a positive influence on education by offering significant opportunities for faculty members to enhance their educational practices. It serves as a valuable tool for improving the quality of teaching and learning. Additionally, Siritongthaworn, Krairit, Dimmitt, and Paul (2006, p. 139) describe e-learning as an "innovative approach to delivering education through electronic means that enhance learners' knowledge, skills, or performance". The current study demonstrates that e-learning has successfully attained its primary and significant goal, as perceived by academic staff members. Below, additional information for each item is provided, considering previous studies cited in the literature review and the findings of the data analysis, encompassing both qualitative and quantitative data findings. This dimension shows the findings of the respondents' perceptions towards the use of e-learning and consists of 14 items (as shown in Table 5-7) and these can be classified into two types: positive perceptions and negative perceptions.

6.6.1.1 Positive perceptions

Positive perception means what the participants see the advantages of e-learning and reflect a positive perception towards it, in addition to what e-learning offers them in terms of capabilities that help them present their teaching courses and achieve the educational goals that they aspire to achieve. The positive response obtained aligns with the literature review which highlights similar goals for e-learning. These positive results indicate that the majority of the participants believe that e-learning has many advantages. These positive aspects correspond to the results from studies that show how e-learning can allow faculty members to complete their tasks more quickly, in addition to helping them to present course content with ease (Venkatesh et al., 2003; Zalah, 2018). E-learning enables the design and production of high-quality educational content (Afzal et al., 2015). This

positive perception also results from the fact that e-learning provides flexibility for faculty members to present educational content to their students with respect to time and place (Husamo & Fawaz, 2011; Mutambik, 2018).

According to Marc (2002), the utilisation of e-learning has the potential to improve the effectiveness of accessing knowledge and acquiring qualifications. Furthermore, the utilisation of discussion forums in online platforms fosters interaction by mitigating potential challenges that may impede individuals from engaging in face-to-face conversations, such as social anxiety or apprehension towards interpersonal communication (Hameed, Badii, & Cullen, 2008). The results of the interviews with e-learning experts show that they referred to a large group of advantages to e-learning, which they see as having a positive and strong impact on the perceptions of faculty members of e-learning. On the other hand, there are a set of advantages related to teachers and students, for example providing feedback, professional development (development of technical and academic skills), diversity of activities, tasks and tasks provided to learners, provision of educational content with multiple tools and programs and considering individual differences, flexibility in time and place, easy access to knowledge and educational resources.

Most respondents 62.8% 'Agree' that e-learning provides them with flexibility in time and place, Item 13, "E-learning offers me flexibility in teaching with respect to time and place" with a difficulty score of -0.52 logits. 27.6% 'Strongly Agree' with the statement, and 90.4% 'Agree' and 'Strongly Agree', which is consistent with the results of Felege and Olson (2015), as they indicate that it can produce create work and effective. In addition, 2.1% of the respondents 'Strongly Disagree' with the statement, while 3.1% 'Disagree'. The high score can be attributed to the appeal of e-learning's flexibility, which allows learners and faculty members to access educational materials from any location and at any time (AL-Shammari, 2016; Al-Soraiey-Alqahtani, 2010; Alasmari, 2014).

This result was confirmed in interviews with participants, where they indicated that e-learning provides flexibility in time and space for both faculty members and learners alike.

E-learning has many advantages, namely: Offering flexibility in place and time so that the learner can access educational content at any time and from anywhere. At the same time, the faculty members and students can communicate with each other at any time and from anywhere. (F2)

The results indicated that 78.2 % of the survey participants ‘Agree’ and ‘Strongly Agree’ with Item 4, “ E-learning enables the design and production of high-quality educational content”, and this item received a response with a difficulty score of -0.43 logits. Al-Soraiey-Alqahtani (2010) argues that e-learning helps teachers focus on the needs of learners, which helps them to design and produce high-quality educational content that suits the different abilities of their students, in addition to that, it allows them to access the latest updates in the curricula, in addition to the possibility of accessing large amounts of information (Al-Shboul & Alsmadi, 2010; Al-Qahtani & Higgins, 2013).

This finding is substantiated through interviews conducted with the participants. Ease of access to knowledge and educational resources, diversity of educational resources, and access to the latest updates are one of the advantages of e-learning that the participants mentioned to faculty members. Participant F5 endorsed this view when they noted that:

The advantages [of e-learning] to faculty members includes helping them to access the latest updates in the curriculum and easy access to knowledge and educational resources. (F5)

This enables faculty members to produce and design high-quality educational content, considering the individual differences of their students.

Moreover, the results showed that e-learning helps faculty members provide a variety of activities to students. 78.5% of participants 'Agree' and 'Strongly Agree' with Item 5, "A variety of activities can be offered to students when using e-learning", and this item received a response with a difficulty score of -0.42 logits. This finding is in line with several studies presented in the literature review, including those conducted by (Alajmi, 2010; Alasmari, 2014; Gerasimova et al., 2018). Their studies confirm that e-learning provides many benefits to its users as it helps to offer students a variety of activities. The diversity of tasks, activities, and assessments was what the interviewees emphasized when talking about e-learning. For example, one participant stated:

E-learning enables faculty members to diversify their learning activities, tasks, assessment, tests, and feedback. (F9)

Participants indicated that using e-learning helps them to present course content easily , as 83.7% 'Agree' and 'Strongly Agree' with item 2, and this item received a response with a difficulty score of -0.38 logits. In addition, 83.2 of participants 'Agree' and 'Strongly Agree' with Item 1," Using e-learning allows me to complete tasks more quickly", and this item received a response with a difficulty score of -0.41 logits. This result indicates that e-learning helps faculty members to do their work and perform their tasks more quickly and easily than traditional education, and this enhances the benefit of e-learning for faculty members in their teaching. This result is consistent with many previous studies reviewed in the literature, such as the study of both (Al-Harbi, 2011a; Zalah, 2018) .

Faculty members find that the use of traditional teaching is repetitive. However, e-learning and its use of modern technologies added to them a variety of methods of teaching, which led to improving their pedagogical and teaching skills. 80.1% of participants 'Agree' and 'Strongly Agree' with Item 3, "I have the necessary pedagogical skills (e.g., instructional planning, presentation, virtual classroom management, instructional design, and assessment, etc.) needed to use e-learning in my teaching". This item received a response with a difficulty score of -0.37 logits.

Alasmari (2014) indicates that e-learning enables teachers to develop professionally and helps them to own and improve their teaching skills.

The results indicate that the use of e-learning enhances the learning and teaching process, as 80.4% of participants 'Agree' and 'Strongly Agree' with Item 7, "e-learning is useful for teaching and learning." This item received a response with a difficulty score of -0.33 logits. Moreover, 68.7% of participants 'Agree' and 'Strongly Agree' with Item 9, "Using e-learning improves the quality of my work", as mentioned above by providing various activities for learners as well as designing high-quality educational content. This item received a response with a difficulty score of -0.07 logits. The literature review also supports this finding, stating that e-learning is one of the most useful teachings methods (Al-Qahtani & Higgins, 2013; Babu & Sridevi, 2018). This finding was confirmed in interviews with the participants. They indicated that e-learning provides different tools for faculty members to present educational content in new and interesting ways. As one participant stated it can:

Help faculty members to present the educational content using multiple tools and programs. (F10)

6.6.1.2 Negative perceptions

The negative perceptions are the defects that users see as side effects that affect their perceptions of e-learning and impede their use of it, in addition to the problems that users see occurring when they use e-learning. The negative responses align with the literature review that highlighted similar goals for e-learning. These negative results indicate that the majority of the participants believe that e-learning has many disadvantages. (Al Rawashdeh et al., 2021; Al-Soraiey-Alqahtani, 2010; Alasmari, 2014; Algahtani, 2011; Almosa, 2002; Arkorful & Abaidoo, 2015; Lewis & Orton, 2000; Srivastava, 2019; Williams, 2012).

Alenezi (2012) argues that faculty members with negative attitudes to e-education are unlikely to support the use of e-education in universities. Delgado-Almonte, Andreu, and Pedraja-

Rejas (2010) pointed out that if faculty members had a negative perception of e-learning, their use of e-education would have a negative impact on the achievement of educational goals, and therefore remedial measures would have to be taken to address that negative perception.

A number of faculty members have indicated that they find it difficult to use e-learning in their teaching, and 76.5% of them 'Strongly agree' and 'Agree' with Item 10, "I find it difficult to use e-learning in my teaching", and this item received a response with a difficulty score of -0.42 logits. This may be due to their lack of necessary skills to utilize e-learning and its tools.

Alasmari (2014) argues that one of the disadvantages of e-learning, which simultaneously poses a challenge for teachers in utilizing e-learning, is the heavy workload burdens placed on teachers. Additionally, there is a limited amount of time available for the production, design, and delivery of educational materials.

Although some participants did not agree that e-learning is more stressful than traditional education, a group of them (58%) believe that e-learning is stressful for them because it causes them many health problems because it requires more time on computer screens. This finding indicates that a significant portion of the faculty members are bored with using e-learning in teaching for two reasons:

The first reason is that they see it as more stressful than traditional teaching because it requires more time on computer screens, which may lead to many health problems, as indicated by (Alasmari, 2014; Algahtani, 2011; Arkorful & Abaidoo, 2015). One of the participants summarised this view with the following statement:

Many colleagues complain about spending long periods of time in front of devices and screens which may affect their health. (F11)

The second reason is that developing an e-learning course takes more time than developing a traditional course. This result was confirmed in interviews with the participants. One of the participants indicated this by saying:

As for the disadvantages for e-learning, the content creation and design require more time and effort, which puts burden on some faculty members from their perspective. (F6)

Additionally, 51.1% of participants ‘Agree’ and ‘Strongly Agree’ with Item 12, “E-learning is a threat to faculty members’ employment”, and this item received a response with a difficulty score of 0.16 logits, which may be one of the reasons for their resistance to adopting e-learning. The results indicate that there is a group of participants who expressed their fears that technology, represented by e-learning, may replace them in the educational process, as they expressed their fears that universities may move towards abandoning their employees or reducing the number of faculty members. For example, one faculty member may be teaching large numbers of students in the course through e-learning, which may lead to many faculty members losing their jobs. Therefore, they see that e-learning is a threat to the employment of faculty members. According to (Alshibni, 2022; Dalton H Kisanga, 2015), e-learning represents a threat to teachers’ employment due to the development of technology, and these authors believe that this is one of the challenges faced by teachers in the use of e-learning. Moreover, the participants in the interviews here expressed their concerns about the use of e-learning. They mentioned a set of negative aspects some of which are related to the stakeholders and others to the teachers and students, such as the constant need to update hardware and software, provide quick technical support, the weakness of the internet, poor social relations and communication, and isolation and introversion. Yet, despite mentioning these negatives, they also believe that the advantages of e-learning outweigh any of these negative aspects. For example, one of the participants mentioned:

Everything has its own advantages and disadvantages, including e-learning whose disadvantages don't override the advantages. (F8)

6.6.2 Summary of Perceptions

Based on the analysis of the results of both the qualitative and quantitative study regarding the ‘first dimension’ and the responses of faculty members regarding the utilisation and efficacy of e-learning in their instructional practices, it is clear that faculty members, in general, have positive perceptions towards e-learning. The positive perceptions shown by faculty members can be attributed to their experience in using non-electronic education, understanding e-learning, as well as awareness of the advantages of e-learning. The majority of participants indicated that e-learning is useful and faculty members stated that they enjoy e-learning, with item 13 receiving the highest rate: that is, e-learning provides them with flexibility in teaching with regard to time and place. The favourable responses obtained for the first question align with the findings reported in the literature review and corroborate with the results of previous studies as mentioned above.

This study's favourable findings pertain to overall perceptions and attitudes which are driving a growing interest in the adoption of e-learning within higher education institutions in KSA. This increased interest stems from the recognition that e-learning presents opportunities for expanding learning opportunities and advancing education through the utilization of this innovative technology (Qudais, Al-Adhaileh, & Al-Omari, 2010). Moreover, this technology offers faculty members the potential to develop improved teaching approaches and enrich higher education experiences (Al-Khalifa, 2008).

The analysis of the Perceptions data reveals a generally positive attitude towards e-learning among the surveyed participants. They perceive e-learning as a flexible, effective, and time-efficient teaching approach that can enhance the quality of education. The respondents also demonstrated confidence in their pedagogical skills related to e-learning and do not view it as a threat to their employment. These findings indicate a favourable disposition towards e-learning and

suggest that the surveyed participants are generally receptive to integrating e-learning into their teaching practices.

On the other hand, the results of the study indicate that negative perceptions of faculty members towards e-learning can be attributed to challenges that may hinder its adoption in their educational practices.

As mentioned previously, the conceptual framework (Figure 5-7) indicated that COVID and needs have a direct impact on perceptions and that the effects of challenges and enablers on perceptions are indirect and work through COVID. Moreover, the full path model was based on Perceptions as the dependent variable and Challenges, Needs, and Enablers as the predictor variables. The summary results are presented in Table 5-14 and Table 5-15. It can be seen from Table 5-14 that there is a significant ($\alpha = .05$) effect of Challenges, Needs, enablers, and COVID on Perceptions ($p < .001$.)

It should also be noted that the coefficient of determination (.091) r^2 is very small, which indicates the presence of effects on perceptions that are not included in this model. This is not unexpected, given the worldwide impact of the coronavirus on economic prosperity, social cohesion, and political stability. Academics at the institutions studied were not immune to these consequences.

In the following sections, the impact of demographic factors on perceptions will be discussed so that the whole story is complete, and the conceptual framework becomes clearer.

6.7 Influence of the Demographic Variables

In this section, the findings obtained from the questionnaire, interviews, and literature review to assess the influence of the demographic variables on total faculty member perceptions of e-learning will be discussed (See Table 5-1): such as age, gender, academic qualification, university, and classification of college. Table 5-1 reported the results related to the demographics of the

participants. A total of 385 participants completed the online questionnaire; The study sample included 60.3% males and 39.7% females; The majority of participants (47.8%) are aged between 41-50 years, while 35.6% are aged between 31-40 years; The majority of individuals in the sample (73.8%) had a doctoral degree, and 24.6% had a master's degree; More than half of the participants (51.4%) worked in science-focused colleges, while 48.6% worked in humanities-based colleges. Group mean comparisons of participants' "ability "scores produced by Rasch modelling of their responses to all questions in each of the models were examined using MANOVA procedures (see Table 5-8) with ability scores as the dependent variable and age, gender, and qualifications as the independent or grouping variables. In addition, Group mean comparisons of participants' "ability "scores produced by Rasch modelling of their responses to all questions in each of the models were examined using MANOVA procedures (see

Table 5-10) with ability scores as the dependent variable and university, college, and gender as the independent or grouping variables.

6.7.1 Age

The study revealed that age has an impact on the perceptions of faculty members towards e-learning and its use (as shown in Table 5-8 and Table 5-9 in Chapter Five). The results of the MANOVA statistical test conducted to measure the differences in age groups of the study sample showed that there is a statistically significant main effect of age ($F = 2.210$, $df = 10,740$, $p = 0.02$; Wilks' $\Lambda = 0.940$). This result was supported by some findings reported in the literature. Younger users often show better positive perceptions towards e-learning than those older users who find their use of e-learning more difficult and, therefore, less positive towards it (Al-Fadhli, 2009; Alenezi, 2012; Morris & Venkatesh, 2000; Mutambik, 2018; Venkatesh et al., 2003; Zalah, 2018). Interestingly, one of the participants revealed that the impact of age might be shown in the idea that the young are more positive towards using e-learning based on their age. Based on the data

presented in Tables 5.9 and 5.10 above, we therefore conclude that the age variable significantly influences ‘Total Faculty Member Perceptions of E-learning in Four Emerging Saudi Universities’.

Al-Sarrani (2010); Gasaymeh (2009) argue that the difference in age groups between generations may affect their perceptions of e-learning and its technological tools among those groups. These results seem to endorse the concept introduced by Prensky (2001) that individuals who grew up without exposure to digital technology can be regarded as "digital immigrants," in contrast to those who were surrounded by it and are referred to as "digital natives." The aforementioned older teachers align with Prensky's notion of "digital immigrants," as they typically exhibit limited appreciation for the new skills acquired and perfected by those who have grown up with digital technology (Prensky, 2001, p. 2). Notably, there were older faculty members actively engaged in e-learning, suggesting that drawing conclusions based on age regarding positive attitudes and utilization of e-learning may be imprudent. Moreover, this challenge is surmountable as training strategies can be used to target older faculty members who lack proficiency in using e-learning and its tools. Al-Fadhli (2009) claims that groups of professors over the age of 45 preferred traditional pedagogies and did not wish to depend on e-learning methods. It is commonly believed that younger faculty members possess a greater capacity for adaptation, primarily due to their passion and ease of use of technology; their exposure to diverse teaching methodologies; and their ability to collaboratively adapt to the tools of emerging e-learning technology (Al-Khalifa, 2008; Al-Sarrani, 2010; Mital & Luthra, 2006).

6.7.2 Gender

Table 5-8 in Chapter 5 shows the results of the MANOVA statistical test conducted to measure the differences in gender groups of the study sample showing that there is a statistically significant main effect of gender ($F = 2.990$, $df = 5,370$, $p = 0.01$; Wilks' $\Lambda = 0.960$). Consequently, we conclude that based on the study sample responses, the gender variable significantly influences ‘Total faculty member perceptions of e-learning in four emerging Saudi Universities’. This is

consistent with the results of Zalah (2018), who indicated that gender has an impact on the use of e-learning and that females are more positive about e-learning than males in the KSA. Therefore, the results indicate that females have more positive perceptions than males. According to M. S. Albalawi (2007), individual differences between the sexes in e-learning are clutched to a specific relationship for each level of awareness, comfort, and ease of use for those who use e-learning and its tools. The demographic variations in e-learning participation between two genders may be linked to the capacity to embrace new technological tools. The manner in which e-learning is approached, influenced by the perception of gender roles in the KSA, their connection to pedagogies, and prevailing attitudes towards teaching, is directly associated with instructional practices (Almuqayteeb, 2009). In a study carried out in two schools within the United Arab Emirates, encompassing both male and female teachers, it was revealed that a significant proportion of female teachers exhibited notably positive attitudes towards technology. They demonstrated a greater propensity to incorporate diverse e-learning tools into their teaching practices compared to their male counterparts. Additionally, the study indicated that female teachers exhibited higher levels of experience and expertise in utilizing digital learning resources in their instructional approaches, as opposed to their male counterparts (Almekhlafi & Almeqdadi, 2010). This finding was confirmed in interviews with participants who were experts in the field of e-learning. One participant reported the following:

From my perception and experience, I see that females are more positive towards e-learning than males, which is evident in the high-quality and organized work submitted by them. (D4)

6.7.3 Academic qualification

Table 5-8 in Chapter Five shows the results of the MANOVA statistical test conducted to measure the differences in total faculty member perceptions of e-learning in four emerging Saudi Universities, with reference to the level of education qualification among the study sample. The results show that there is no significant difference between the groups ($F = 0.38$, $df = 5,370$, $p =$

0.86; Wilks' $\Lambda = 0.990$). Based on the data in Table 8.5, we, therefore, conclude that the variable of 'level of education' among the study participants does not influence 'Total faculty member perceptions of e-learning in four emerging Saudi Universities'. This finding is supported by some findings reported in the literature. The results of AL-Shammari (2016) study indicate that there are no statistically significant differences between faculty members in terms of the academic qualification variable. This can be explained by the fact that they may have received training courses and lessons on the use of e-learning in teaching through their academic studies and vocational training, which was reflected in their performance. In addition, in the past few years, there has been an awareness and love for technology - which has imposed itself on the whole world - by faculty members, which has reflected positively on their perceptions of e-learning more than before.

6.7.4 University

Table 5-10 in Chapter 5 shows the results of the MANOVA statistical test conducted to measure the differences in the universities of the study sample, showing that there is a statistically significant main effect of the university (($F=2.901$, $df=15,1008$, $p=0.001$); Wilks' $\Lambda = 0.890$). Consequently, we conclude that based on the study sample responses, the university variable significantly influences 'Total faculty member perceptions of e-learning in four emerging Saudi Universities'. The reason for this may be attributed to the variation in support, in all its forms (technical, financial, and moral), provided to faculty members in different universities. Additionally, there may be differences in the encouragement of leaders in those universities, the target of the study, as the study results showed that one of the internal enabling factors is the leaders' conviction in e-learning.

6.7.5 Classification of college

Table 5-10 in Chapter 5 shows the results of the MANOVA statistical test conducted to measure the differences in total faculty member perceptions of e-learning in four emerging Saudi Universities based on the classification of the college, in this case, between ‘science’ focused and ‘humanities’ based colleges. The results show that there is no significant difference between the groups ($F=1.454$, $df=5,365$, $p=0.204$; Wilks' $\Lambda = 0.980$). Based on the data in

Table 5-10, we, therefore, conclude that the variable of ‘classification of college’ among the study participants does not influence ‘Total faculty member perceptions of e-learning in four emerging Saudi Universities’. In contrast to earlier findings, however, no evidence of statistically significant differences was detected regarding the classification of college variables. For example, this result contradicts the study of Alshehri (2021), where the results of the study were that teachers who specialize in science had more positive perceptions towards e-learning than humanities. This result can be explained by the fact that the study sample may differ, or that the participants in this study have a greater inclination towards using e-learning and its tools regardless of the type of college, compared to the participants in the study conducted by Alshehri.

6.8 Chapter Summary

This chapter has discussed the findings of the study conducted to explore faculty members' perceptions of e-learning in four emerging Saudi universities in the Kingdom of Saudi Arabia. Through analysing the results of the qualitative and quantitative phases of the study, this research has shown that there is a somewhat positive perception among faculty members toward e-learning, which should encourage decision-makers to continue developing e-learning and its tools. To continue to attract more faculty members to use e-learning in their teaching. One of the reasons that may have led to the positive perception is that in recent times, many faculty members have developed a greater awareness and appreciation for technology and its use in their teaching, resulting in a more positive inclination towards e-learning. Additionally, the impact of COVID-19 has influenced the perceptions of faculty members towards technology and its usefulness in e-

learning. There are many challenges that educational institutions must overcome. In addition, there are a set of needs that must be met for the use of e-learning. Moreover, there are some factors that help to increase and improve the use of e-learning in Saudi higher education. The impact of COVID-19 has in general been a positive on the motivation and uptake of e-learning in Saudi higher education. The chapter concluded with a discussion of the results of the study on the impact of demographic variables on faculty members' perceptions of e-learning.

The next chapter presents the conclusions and recommendations of this study based on the perceptions of faculty members about e-learning determined through semi-structured interviews and questionnaire.

Chapter 7: Research conclusions and recommendations

7.1 Introduction

This study sought to augment the existing body of literature concerning faculty members' perspectives regarding the utilization of e-learning within universities located in the southern region of the Kingdom of Saudi Arabia. A conceptual framework was built to identify the factors that influence faculty members' perceptions of e-learning, ultimately fostering a more favourable outlook on e-learning. ERG was used to ascertain the most important needs required by faculty members. A mixed-methods approach (Creswell, 2009) using qualitative and quantitative data collection tools respectively was adopted to comprehensively address these goals. The development and validation of data collection instruments were executed with meticulous care, incorporating relevant tests and procedures to ensure their reliability and validity.

The participants comprised 16 e-learning experts who participated in the semi-structured interviews and 385 faculty members who participated in the survey. Qualitative data were analysed thematically, and the quantitative data were analysed descriptively using the Rasch model and SPSS software. The qualitative and quantitative results were discussed along with relevant literature in order to explore faculty members' perceptions of e-learning at the target universities. Through the use of a mixed approach, this thesis succeeded in answering the research questions and provided an in-depth understanding of the phenomena of e-learning, which was made particularly relevant due to the global COVID-19 pandemic and associated lock-downs which emphasised the importance of e-learning.

This concluding chapter provides a comprehensive overview of the primary outcomes and conclusions from this study which will be evaluated in relation to the research objectives. Furthermore, this conclusion elucidates the contributions that this research thesis has made to the existing corpus of knowledge; highlighting the study's strengths and limits, discussing its

implications for education, and finally providing recommendations and suggestions for future research endeavours.

The main objective of the current study was not to question the efficiency and effectiveness of e-learning but to explore the views of faculty members on its use in their educational institutions. Overall, the study showed that faculty members have a positive attitude towards using e-learning, however the institutional readiness, in particular in relation to necessary infrastructure as a main resource for the effective use of e-learning was revealed as significant. Moreover, it was found that educational institutions need to provide comprehensive support to enhance faculty members' competence in the technical and educational aspects of e-learning. In addition, This study revealed a set of challenges, needs, and enablers that can assist the target university and others in addressing these challenges, providing the needs, and considering the enablers to enable faculty members to effectively utilize e-learning in the educational process. The results of this research include valuable insights for stakeholders on how universities interact with e-learning. This is an opportune moment to develop a clear strategy that prioritises e-learning as a major tool for curriculum delivery and address any challenges to its effective implementation. By doing so, faculty members will be better equipped to achieve great success in e-learning.

7.2 Research Aims

With the increasing reliance on new technologies in the learning environment, determining the perceptions of faculty members in educational institutions is a critical factor in the use of these technologies (Hara & Kling, 2001). Effective implementation of e-learning relies on a comprehensive understanding of the end-users perceptions (A. Albalawi & Badawi, 2008). Understanding faculty members' perceptions and the factors that influence their beliefs about e-learning can help decision-makers and administrators create decisions to empower and encourage teachers to become more accepting of and skilled in an e-learning environment. Thus, it is

necessary to research the challenges, needs, enablers and other, e.g., COVID, that influence perceptions in order to improve and increase the use of e-learning (Koohang & Durante, 2003).

The aims of this mixed-methods study were to:

- 1) Understand the perceptions of faculty members of e-learning in universities in the southern region of the Kingdom of Saudi Arabia (KSA), including the challenges they face and needs to help them overcome these challenges;
- 2) Identify how the provision of e-learning could be improved and how the extent of e-learning could be increased.
- 3) Investigate how e-learning could be expanded across the university sector in the KSA, in particular since the outbreak of the 2020 global COVID-19 pandemic, which resulted in a drastic but necessary shift in the way teaching could be effectively delivered.

Thus, the overall aim of this research was to understand how e-learning could be improved at emerging Saudi universities. This study investigated the perspectives of teaching faculty members about their needs and challenges they face, the enablers that exist in their contexts, and the needs that may assist them, such as implementing modern technologies and e-learning into their teaching. The results of this study can assist higher education providers in the southern region of KSA to improve their educational programmes by overcoming the challenges facing faculty members, in addition to providing the needs and enablers necessary for the use of e-learning in those educational institutions.

7.3 Research Questions

The main research question was: How do faculty members in four emerging universities in the southern region of KSA perceive the use of e-learning? Based on this question, the research aimed to answer the following sub-questions:

Sub-RQ1 What challenges do faculty members face to use e-learning?

Sub-RQ2 From the perspective of faculty members, what are the needs to help improve the use of e-learning in emerging Saudi universities?

Sub-RQ3 What are the enablers that lead to increasing and improving the quality and extent of the use of e-learning in higher education in the Kingdom of Saudi Arabia?

Sub-RQ4 How have the educational institutions responded to the global COVID19 pandemic, and to what extent has e-learning been utilised in the higher education sector in KSA?

7.4 Summary of the Research results

A summary of the research results obtained from both qualitative and quantitative studies is presented the following sections.

7.4.1 Challenges

Sub-RQ1: What challenges do faculty members face to use e-learning?

Based on the findings of this research obtained from both the qualitative and quantitative study a summary of the results from Sub-RQ1 is provided below.

7.4.1.1 The challenges to using e-learning, from the perspectives of the faculty members.

Within this dimension, participants were asked about their perceptions of the challenges that impede their use of e-learning in their teaching practices. There was near total agreement in the views expressed by e-learning experts and faculty members regarding the challenges that impede the application of e-learning and affect the perceptions of faculty members towards it. The review of the literature revealed a multitude of challenges that hindr faculty members when attempting to

implement e-learning in higher education institutions. These challenges can be divided into two categories: challenges at the level of universities (institutional sources) and the second at the level of faculty members (individual sources).

The analysis identified challenges that were classified within these categories as challenges facing faculty members in the application of e-learning in their education in educational institutions. For example, participants referred to challenges at the university level, such as the lack of clarity in institutional policies for e-learning; lack of technical, financial, material and moral supports; lack of adequate training on the use of e-learning and its tools; lack of adequate computer technology, i.e., hardware and software updates, and adequate internet services, resulting in an overall weak infrastructure for the delivery of e-learning; and the lack of conviction among university decision-makers of the importance of e-learning. A number of participants also indicated some challenges at the level of faculty members (individual sources) that hinder the use of e-learning in their teaching and affect their perceptions towards it. These included, weak personal conviction, lack of interest in attending training courses, technological illiteracy, fear of technology, and lack of technical expertise.

7.4.2 Needs

Sub-RQ2: From the perspective of faculty members, what are the needs to help improve the use of e-learning in emerging Saudi universities? Based on the findings of this research a summary of the results from Sub-RQ2 is provided below.

7.4.2.1 The needs to help improve the use of e-learning.

The research findings indicate a positive perception of e-learning by faculty members in general, however several needs were identified as crucial to motivate faculty members to use e-learning in their teaching practice. The most prominent results related to this factor of needs (i.e., existence, relatedness, and growth), included:

- 1) the need for a strong and fast internet;
- 2) prompt and timely technical support;
- 3) Training courses suitable for e-learning;
- 4) Material and moral support;
- 5) Availability of devices such as data displays, computers, design devices, interactive screens, projectors, and smart boards;
- 6) the need for clear policies in the use of e-learning;
- 7) the need to build the necessary skills to use e-learning; and
- 8) Exchanging and developing the necessary experiences for using e-learning.

7.4.3 Improve and Increase

Sub-RQ3: What are the enablers that lead to increasing and improving the quality and extent of the use of e-learning in higher education in the Kingdom of Saudi Arabia?

A summary of the results of this factor is provided below and examines the enablers for improving and increasing the use of e-learning in higher education in the Kingdom of Saudi Arabia.

7.4.3.1 The enablers that could improve and increase the use of e-learning in higher education in Saudi Arabia.

Both the review of the literature and the results of the current study reveal several enablers that would lead to the increased use of, and improvement of e-learning among faculty members in higher education institutions. Participants were asked about the enablers that could improve and increase their use of e-learning in higher education in Saudi Arabia. The reactions from e-learning experts in their interviews, and the responses from faculty members in the questionnaire show that faculty members have positive perceptions of e-learning, but there are several enablers that could

improve and increase their use of e-learning in higher education in the Kingdom of Saudi Arabia. These enablers can be classified into internal enablers; related to educational institutions, such as incentives, support, infrastructure, training, clarity of policies, and conviction of leaders in e-learning; and other external enablers related to faculty members, such as faculty members' beliefs, experiences, attendance at training courses, and development of their skills and specialisation. The results obtained from the qualitative and quantitative analyses indicate that these enablers play a major role in faculty members' perceptions of e-learning, along with the needs indicated by the participants above.

7.4.4 Impact of COVID-19

Sub-RQ4: How have the educational institutions responded to the global COVID19 pandemic, and to what extent has e-learning been utilised in the higher education sector in KSA?

The aim of this question was to directly capture the impact of the COVID-19 pandemic crisis on educational institutions, especially faculty members and their uptake of e-learning, which is extremely important in this global context. A summary of the results related to Sub-RQ4 is presented below.

7.4.4.1 The COVID pandemic and its impact on the use of e-learning in the higher education sector in KSA.

The results of the study indicate that educational institutions provided a clear e-learning plan during the COVID pandemic period. The consequences of the global health crisis included massive social and economic upheavals. Among these, educational institutions around the world needed to quickly respond and adapt to ensure continuity of education programs at all levels. The study findings here reveal that it was relatively easy for faculty members to use e-learning and its tools during the COVID pandemic, because crisis management plans was rolled out by educational institutions that encouraged its use. Also, the university and its faculty members were positive about the use of e-learning and increased their use of e-learning at this time. Furthermore, there was a

notable change in the convictions of leaders and teachers towards the use of e-learning. There were more opportunities for exchanging experiences among faculty members in relation to e-learning, and the barriers (e.g., a fear of failure in using the new technologies) to the uptake of e-learning among faculty members were reduced. The global COVID-19 pandemic prompted faculty members, especially those who did not have enough skills in the use of e-learning and its tools, to attend training courses on an ongoing basis. COVID-19 presented a significant challenge to the adaptation and flexibility of Saudi society to the emerging crisis. Accordingly, the Saudi government and institutions implemented a range of programmes aimed at facilitating the use of e-learning in response to the problems posed by the COVID-19 pandemic. As a result, the COVID-19 pandemic had a favourable impact on the sustained integration of e-learning into educational practises. It has led to positive perceptions of e-learning among faculty members.

7.4.5 Perceptions

Main RQ: How do faculty members in four emerging universities in the southern region of KSA perceive the use of e-learning? Based on the responses from semi-structured interviews and the questionnaires, the results of the main RQ are summarised below.

7.4.5.1 The perceptions of general faculty members of e-learning

The faculty members expressed a positive perception of e-learning in their teaching practises through their responses to the semi-structured interviews and the questionnaire. They indicated that dealing with e-learning and its tools is considered one of the most useful means of education and that its use in higher education will enhance the learning process for both teachers and students. Hence, it provides many benefits to its users. The majority of the participants indicated that they enjoy e-learning because it provides them with flexibility in time and place, which helps them provide educational content to learners wherever they are and at the time that suits them. In addition, it increases the efficiency of access to knowledge and educational resources for faculty members and researchers due to the possibility of accessing large amounts of information. It also

helps them access the latest updates in the curricula and the diversity of activities and tasks for the learners, as it provides different tools for the faculty members to present the educational content in new and fun ways, considering the individual differences of the learners. Moreover, it helps them develop professionally and quickly provide feedback to learners. Participants also emphasised that e-learning has many advantages not only for teachers and students, but also for stakeholders, as there is a shortage of faculty members in some disciplines, and therefore e-learning helps solve the problem of a lack of faculty members in some disciplines. Moreover, it is a useful solution to the problem of large numbers of students in some academic departments, especially in the first orientation year. They also argue that e-learning has economic aspects in addition to educational ones, such as relieving pressure on higher education institutions and reducing expenses. In addition, universities can extend their reach beyond their physical locations while reducing overheads associated with education and training by using e-learning systems in their educational programmes. On the other hand, some of the participants expressed some challenges to their use of e-learning, such as the lack of adequate infrastructure.

The constant need to update hardware and software and some health effects on teachers, students, and others, were also flagged as challenges to the effective use of e-learning. However, it seemed that these issues did not affect the enthusiasm of faculty members and their positive perception towards e-learning and its use in their teaching process. Thus, the perceptions on the use of e-learning were generally positive among faculty members.

7.5 The Demographic Variables

The results indicate that all personal variables; i.e., age, gender, and university significantly affect the faculty members' perceptions of e-learning. However, one variable, 'college type and academic qualification', did not significantly affect the perceptions. This could be attributed to the fact that faculty members have developed a stronger affinity for technology and enhanced their technical skills, along with a passion for its use in their daily lives, including education.

Consequently, they have become more positive towards technology, regardless of their college type or academic qualification.

7.5.1 Age

The study revealed that age has an impact on the perceptions of faculty members towards e-learning and its use (as shown in Table 5-8 and Table 5-9 in Chapter Five). The results of the MANOVA statistical test conducted to measure the differences in age groups of the study sample showed that there is a statistically significant main effect of age ($F = 2.210$, $df = 10,740$, $p = 0.02$; Wilks' $\Lambda = 0.940$). The results indicate that age, at the present time, is still a factor affecting the use of e-learning in educational institutions. This may not be the reason for that age itself, but perhaps because older faculty members find their use of e-learning more difficult and therefore less positive towards it. This may be because older faculty members are nearing the end of their careers, so they don't have much motivation to learn new skills and change the way they teach. It is worth noting that some participants indicated that older faculty members often actively participate in e-learning, especially those who have received good training on e-learning and its tools.

7.5.2 Gender

The results of the MANOVA conducted to measure the differences in Total Faculty Member Perceptions of E-learning in Four Emerging Saudi Universities between males and females who participated in the study sample show a significant difference between males and females ($F = 2.990$, $df = 5,370$, $p = 0.01$; Wilks' $\Lambda = 0.960$). The findings reveal that female faculty members were more positive and more likely to use e-learning tools in teaching. Thus, it can be concluded that 'gender' significantly influences 'Total Faculty Member Perceptions of E-learning in Four Emerging Saudi Universities'. However, this finding may not be due to actual 'gender differences' but may be due to the 'cultural differences' that exist in KSA, which has resulted in female faculty members and their (female) colleagues being present on the university campuses more than their

male counterparts, and therefore may have more time and inclination to use e-learning; and be more available to access information about the use of e-learning and its tools.

7.5.3 University

Table 5-10 in Chapter 5 shows the results of the MANOVA statistical test conducted to measure the differences in the universities of the study sample, showing that there is a statistically significant main effect of the university ($F=2.901$, $df=15,1008$, $p=0.001$; Wilks' $\Lambda = 0.890$). Consequently, it can be concluded that based on the study sample responses, the university variable significantly influences 'Total faculty member perceptions of e-learning in four emerging Saudi Universities'. This may be attributed to the variation in support, in all its forms (technical, financial, and moral), provided to faculty members in different universities. Additionally, there may be differences in the encouragement of leaders in those universities, the target of the study, as the study results showed that one of the internal enabling factors is the leaders' conviction in e-learning.

7.5.4 Academic qualification

Table 5-8 in Chapter Five shows the results of the MANOVA statistical test conducted to measure the differences in total faculty member perceptions of e-learning in four emerging Saudi Universities, with reference to the level of education qualification among the study sample. The results show that there is no significant difference between the groups ($F = 0.38$, $df = 5,370$, $p = 0.86$; Wilks' $\Lambda = 0.990$). Based on the data in Table 5-8, it can be concluded that the 'level of education' variable among the study participants does not influence the total faculty member perceptions of e-learning'. This can be explained by the fact that they may have received training courses and lessons on the use of e-learning in teaching through their academic studies and vocational training, which was reflected in their performance. In addition, the general global trends for embracing the use of communication technologies, is no different among faculty members in KSA, and this is reflected in their positive perceptions of e-learning.

7.5.5 Classification of college

Table 5-10 in Chapter 5 shows the results of the MANOVA statistical test conducted to measure the differences in total faculty member perceptions of e-learning in four emerging Saudi Universities based on the classification of the college, in this case, between ‘science’ focused and ‘humanities’ based colleges. The results show that there is no significant difference between the groups ($F=1.454$, $df=5,365$, $p=0.204$; Wilks' $\Lambda = 0.980$). Based on the data in

Table 5-10, It may be concluded that, therefore, conclude that the variable of ‘classification of college’ among the study participants does not influence ‘Total faculty member perceptions of e-learning in four emerging Saudi Universities’. In contrast to earlier findings, however, no evidence of statistically significant differences was detected regarding the classification of college variables. This result can be explained by the fact that the study sample may differ, or that the participants in this study have a greater inclination towards using e-learning and its tools regardless of the type of college, compared to the participants in other studies. Furthermore, the use of technology has become more widespread and widely used today, and the specialisation or type of college no longer has a significant impact on its use.

7.6 Limitations of the Study

Although this study has many strengths, such as its sampling from four universities and its mixed approach, combining semi-structured interviews with e-learning experts and questionnaires to explore faculty members' perceptions, it does have certain limitations. These limitations include its limited geographic diversity, omission of student perspectives, and focus only on faculty members within public universities.

Since the researcher was limited in time to conduct the study, the sheer size of the country forced him to confine himself to one region in order to be able to achieve the objectives of the study

(Error! Reference source not found.). However, although it represents a narrow geographical spread in the KSA, the four universities do represent the diversity of the region. Although the education policy in the KSA is national, the study revealed that there are features of the southern region which had very specific effects on the use of e-learning and its tools, such as poor internet connectivity. This means that caution must be exercised before applying the results to the whole of Saudi Arabia or other developing countries. It illustrates how narrowing a sample to one geographic region can skew the results and reveal interesting regional aspects that can support contextually-relevant initiatives. Nonetheless, the aforementioned constraint is effectively alleviated due to the shared religion and culture among Saudis (Al Harbi, 2014; Al-Harbi, 2011b). In addition, the education system in Saudi Arabia is standardized, which means that faculty members in different fields are likely to face the same challenges when using e-learning.

The study sample included e-learning experts in those selected universities and faculty members in public universities only. Private universities and students were omitted because of the limited time period given for the research. It might be worth conducting another study involving private universities and/or students.

Another limitation was that the interviews and survey raised some questions related to faculty members' needs to use e-learning related to the ERG model; however, only the most important aspects could be explored. Furthermore, the purpose of this study was to explore the perceptions of faculty members in general, and it did not look at the acceptance and use of specific e-learning technologies, in addition to exploring the enablers that contribute to increasing and improving e-learning, and it did not look at the factors that affect the use of faculty members for a set of available tools in order to determine what can help them make more effective use of these in the future. However, a general picture of faculty members' perceptions of e-learning was obtained.

Another limitation of the study is that due to cultural constraints, the male researcher could not use video to record the interviews with female e-learning experts. Thus, interviews with women

were conducted with the camera turned off. In analysing the findings of data, it was thus more challenging to note and review the feelings of women being interviewed, because the researcher could not use the video to clarify body language or words said, as he was able to do with the male participants.

7.7 Research Contribution

This study contributes to a better understanding of faculty members' perceptions of e-learning. It sheds light on the challenges, and enablers that may prevent or drive initiatives to use e-learning in higher education. The research findings here will be valuable to policymakers and Deans of e-learning, as they provide information that will help in the successful implementation of e-learning. The findings may also help in devising strategies to promote the adoption of e-learning among potential adopters. Likewise, the findings of this study will be valuable to developers and designers of e-learning systems as they provide insight into creating a more user-friendly and acceptable guidelines for the uptake of e-learning into the future.

This research is an important contribution to knowledge in the following ways:

- 1) The study makes a valuable contribution to the existing literature by addressing a gap in knowledge. Specifically, it provides valuable insights that can support the future development of e-learning among faculty members in higher education institutions. This contribution is not limited to Saudi Arabia but extends to other international and Arab countries.
- 2) This study has achieved its goal of enhancing comprehension of e-learning by exploring faculty members' perceptions about the use of e-learning in such a way that the challenges faced by faculty members, needs, and factors that help improve the use of e-learning can help educational institutions in developing and improving e-learning in higher education.

- 3) This study is characterized by addressing a group of issues related to e-learning: faculty members' perceptions of the use of e-learning, the challenges facing its implementation, the needs that help improve the use of e-learning, and the factors that help increase and improve the use of e-learning in addition to the effect of COVID-19 on faculty members' perceptions of e-learning in general. It is considered at the university and faculty level.
- 4) Faculty members in higher education institutions in the KSA now have a new understanding of the use of e-learning at the university level in classroom teaching and their perceptions of it by pointing out the motivating needs affecting faculty members to use e-learning and identifying the challenges and challenges facing the application of e-learning in those educational institutions.
- 5) Soliciting faculty members' perspectives about the current implementation of e-learning and its impact on their instructional approaches can empower policymakers within the Ministry of Education to make well-informed choices grounded in evidence rather than relying solely on intuition.
- 6) The utilisation of e-learning and its associated technologies by academic staff members in their teaching endeavours serves to expand the perspectives of decision-makers within the Ministry of Education, highlighting the significance of this approach. This underscores the need for individuals with advanced skills, by offering sophisticated electronic training programs that support instructional design for the efficient execution of e-learning.

7.8 Suggestions for Future Studies

Given the limitations of this research, further studies are recommended in the future. This study targeted four emerging public universities, and there is still a group of emerging universities, whether governmental or private in KSA, which has an ambitious vision aimed at developing e-learning. These other universities are thus also worthy of research and investigation. In addition,

other future research could include a comparative study dealing with both public and private universities. This would lead to enhancing the use of e-learning in all Saudi universities, especially emerging ones. This study has targeted the perceptions of faculty members only, so other studies can focus on the opinions of policymakers, faculty members, and students; and also, at the level of the Ministry of Education, to give more breadth and depth to the results.

A further area of inquiry that merits investigation under conservative cultural contexts, such as that seen in Saudi Arabia, is the impact of e-learning adoption on religious, cultural, and social customs. Saudi society is characterised by its conservative nature, which is deeply rooted in the principles of the Islamic faith. This is evident not only in the legislative framework but also in the preservation of tribal traditions, rituals, and adherence to Islamic values and morality. Any disruptions to these established customs are often avoided.

Since the uses of e-learning in universities vary, whether it is assisted, hybrid, or completely online, one recommendation would be to conduct a study to identify perceptions of which is more beneficial. Comparative research can also be conducted between the Saudi universities themselves to find out the faculty members' perceptions of e-learning and to learn more about the reasons for these perceptions, whether positive or negative. In addition, additional studies could be conducted to assess the experiences of other Saudi universities in implementing e-learning. This would enable a comparative analysis of findings and facilitate the establishment of a comprehensive understanding of the effectiveness of e-learning.

The global COVID-19 pandemic led to the total reliance on e-learning in all educational institutions, whether public education or higher education and since this study focused on higher education, it would be interesting to conduct a similar study on public education, whether (primary-intermediate-secondary) to see if teachers or students show the same perceptions about e-learning.

Although e-learning has great benefits for education and the economy, there is a question: What is its impact on learners, whether physical (health), social, or psychological? Despite the

excitement and fun that e-learning may provide, the end result is still questionable. Studies of these aspects are required to identify the long and short-term effects of technology use, both positive and negative.

This study revealed that there was a noticeable ‘positive change’ in the perceptions of faculty members and university leaders in the context of COVID-19. Thus, it would be appropriate to conduct a study to find out the reasons that led to these noticeable changes towards e-learning before and after COVID-19, and the extent of their impact on changing the perceptions of both faculty members and university leaders in relation to e-learning.

7.9 Recommendations of the Study

Based on the results of this study, some specific and general recommendations aimed at both the university sector and the Ministry of Education, related to proposals to improve e-learning; increase the use of e-learning; diversify the teaching methods and e-learning methods used by faculty members; and develop policies for undergraduate education, will be presented below.

7.9.1 Recommendations for Universities

The effective use of e-learning stems from the clear policies issued by senior leaders in universities, and through the activation of technology programs, projects and plans. Accordingly, universities must develop policies, future plans, and clear programs for the effective implementation of e-learning and follow-up on it continuously. Universities must be fully convinced of the importance of e-learning, its implementation and application in the educational process, and provide all requirements for that to occur based on clear policies for the effective use of e-learning. The following recommendations should be considered:

- 1) Provide a strong infrastructure: including the continuous maintenance of hardware and software; the provision of modern and advanced equipment; high-speed Internet; and sufficient resources in order to provide software and hardware support.

- 2) Provide adequate training for faculty members: trained and qualified human cadres assigned to teach such courses in e-learning and its tools, in order to develop the necessary skills among faculty members.
- 3) Provide clear policies and systems for faculty members and users of e-learning in order to implement and activate e-learning.
- 4) Provide material and moral incentives: including financial incentives, training courses outside the country and/or outside the university, computers, i.e., tablets or laptops; and encourage faculty members to use the e-learning tools and devices in their teaching.
- 5) Utilise and learn from the expertise and experience of highly experienced faculty members and from other universities and encourage the exchange of experiences and knowledge/skills.
- 6) Provide the necessary technical support in a timely manner with qualified staff to avoid any problems that faculty members may face in their use of e-learning, which hinder their progress in providing their teaching courses. In addition, provide educational design programs to assist faculty members in their design of e-learning educational content, and computerized educational programs.

7.9.2 Recommendations for the Ministry of Education

The responsibility of upholding educational quality and innovation and staying abreast of scientific progress to enhance higher education for upcoming generations typically falls within the purview of Ministries of Education (MoE) across various countries. This research and review of the literature has provided some valuable suggestions pertaining to the involvement of the MoE in Saudi Arabia in promoting e-learning for advanced educational programs. The following recommendations should be considered:

1. Consider the policies and regulations applied to e-learning and set unified standards and policies that are in line with the policies of using e-learning by the MoE according to a clear strategy and vision.
2. Increase the provision of training courses in the field of e-learning and provide officially accredited certificates, so that educational agencies and institutions, whether governmental or private, can recognize them.
3. Provide training courses that include modern methods for using technologies in e-learning and integrate them effectively into the teaching process.

In conclusion, the primary focus of the current study was not to question the effectiveness and efficiency of e-learning. Instead, its purpose was to explore faculty members' perceptions of the use of e-learning in their educational institutions. The study's findings offer valuable insights for stakeholders, and they have shed light on how educational institutions engage with e-learning. This opportune moment calls for a clear strategy that recognizes e-learning as a vital tool for curriculum delivery and effectively addresses any existing barriers. By doing so, faculty members can be better equipped to ensure the success of e-learning.

1. References

- Abdelmola, A., Makeen, A., Hanafi, H., & Ageeli, E. (2021). E-learning during COVID-19 pandemic, faculty Perceptions, challenges, and recommendations. *MedEdPublish*, 10, 112.
- Abdolhafez, T. (2016). Recent trends in the internationalisation of university education and the possibility of benefiting from it in Egypt. *Education Journal, Al-Azhar University*, 35(167 Part 1), 13-105.
- Abdullah, F., & Ward, R. (2016). Developing a General Extended Technology Acceptance Model for E-Learning (GETAMEL) by analysing commonly used external factors. *Computers in human behavior*, 56, 238-256.
- Acquah, A., Nsiah, T. K., Antie, E. N. A., & Otoo, B. (2021). Literature review on theories of motivation. *EPRA International Journal of Economic and Business Review*, 9(5), 25-29.
- Afzal, M. T., Safdar, A., & Ambreen, M. (2015). Teachers perceptions and needs towards the use of e-learning in teaching of physics at secondary level. *American Journal of Educational Research*, 3(8), 1045-1051.
- Agboola, A. K. (2006). Assessing the awareness and perceptions of academic staff in using e-learning tools for instructional delivery in a post-secondary institution: A case study. *The Innovation Journal: The Public Sector Innovation Journal*, 11(3), 1-12.
- Ahalt, S., & Fecho, K. (2015). Ten emerging technologies for higher education. *RENCI White Paper Series*, 3(1), 1-18.
- Ahmed, A., Alsulami. (2022). The health impact of distance education on children and adults during the Corona pandemic in the city of Mecca. *International Journal of Applied Research*, 8(7), 194-198. Retrieved from <https://www.allresearchjournal.com/search/?q=The+health+impact+of+distance+education+on+children+and+adults+during+the+Corona+pandemic+in+the+city+of+Mecca>
- Akbarilakeh, M., Razzaghi, A., & Moghaddam, H. D. P. (2019). Attitudes of faculty members towards using e-learning. *Research and Development in Medical Education*, 8(1), 12-19.
- Akçayır, G., & Akçayır, M. (2018). The flipped classroom: A review of its advantages and challenges. *Computers & Education*, 126, 334-345.
- Al Gamdi, M., & Samarji, A. (2016). Perceived barriers towards e-Learning by faculty members at a recently established university in Saudi Arabia. *International Journal of Information and Education Technology*, 6(1), 23.
- Al Harbi, H. E. M. (2014). *An examination of Saudi high school teachers' ICT knowledge and implementation*. (Doctoral dissertation, Queensland University of Technology). Retrieved from Available at: <http://eprints.qut.edu.au/78462/>. [Accessed 16 Oct 2024].
- Al Meajel, T. M., & Sharadgah, T. A. (2018). Barriers to using the blackboard system in teaching and learning: Faculty perceptions. *Technology, Knowledge and Learning*, 23(2), 351-366.
- Al Rawashdeh, A. Z., Mohammed, E. Y., Al Arab, A. R., Alara, M., & Al-Rawashdeh, B. (2021). Advantages and Disadvantages of Using e-Learning in University Education: Analyzing Students' Perspectives. *Electronic Journal of e-Learning*, 19(3), 107-117.
- Al Saif, A. A. (2005). *The motivating and inhibiting factors affecting the use of web-based instruction at the University of Qassim in Saudi Arabia*. (Doctoral dissertation, Wayne State University).
- Al-Anezi, F. M. (2021). Higher education teachers' and students' attitudes towards e-learning and distance education: a comparative study in light of the COVID-19 pandemic in Saudi Arabia. *International Journal of Management in Education*, 15(5), 437-457.
- Al-Asmari, A. M., & Khan, M. S. R. (2014). E-learning in Saudi Arabia: Past, present and future. *Near and Middle Eastern Journal of Research in Education*, 2014(1), 2.
- Al-Baha University. (2020). A Retrieved from <https://bu.edu.sa/web/guest/home>.

- Al-Dosari, H. (2011). Faculty members and students perceptions of e-learning in the English department: A project evaluation. *Journal of Social Sciences*, 7(3), 291.
- Al-Fadhli, S. (2009). Instructor Perceptions of E-learning in an Arab Country: Kuwait University as a case study. *E-Learning and Digital Media*, 6(2), 221-229.
- Al-Harbi, K. A.-S. (2011a). E-Learning in the Saudi tertiary education: Potential and challenges. *Applied Computing and Informatics*, 9(1), 31-46.
- Al-Harbi, K. A.-S. (2011b). *Investigating factors influencing the adoption of e-learning: Saudi students' perspective*. University of Leicester,
- Al-Khalifa, H. S. (2008). *Building an Arabic learning object repository with an ad hoc recommendation engine*. Paper presented at the Proceedings of the 10th International Conference on Information Integration and Web-based Applications & Services.
- Al-Najar, H. (2009). *A proposed program for Training Al-Aqsa University Faculty to Use Innovations of Instructional Technology in Light of their Training Needs*. *Islamic University Journal (Humanities)*, 17(1), 709–751.
- Al-Saif, M. (2009). The availability of e-learning competencies, constraints and methods of development from the point of view of faculty members at King Saud University (Unpublished master's thesis). King Saud University, Saudi Arabia.
- Al-Sarrani, N. (2010). *Concerns and professional development needs of science faculty at Taibah University in adopting blended learning*. Kansas State University,
- AL-Shammari, M. (2016). *Investigating Academic Staff Members' Perspectives Of The Effectiveness Of The Use Of E-learning Skills In Teaching In Saudi Arabia Universities*. Durham University,
- Al-Shboul, M., & Alsmadi, I. (2010). Challenges of utilizing e-learning systems in public universities in Jordan. *International Journal of Emerging Technologies in Learning (IJET)*, 5(2), 4-10.
- Al-Shehri, A. M. (2010). E-learning in Saudi Arabia: 'To E or not to E, that is the question'. *Journal of Family and Community Medicine*. 17(3), 147.
- Al-Soraiey-Alqahtani, A. (2010). *The Effectiveness of Using E-learning, Blended Learning and Traditional Learning on Students' Achievement and Attitudes in a Course on Islamic Culture: An Experimental Study*. (Doctoral dissertation, Durham University).
- Al-Qahtani, A. A., & Higgins, S. E. (2013). Effects of Traditional, Blended and E-learning on Students' Achievement in Higher Education. *Journal of Computer Assisted Learning*. 29(3), 220-234.
- Alaa, N. (2019). *Applying the Stages of Concern Theory to Understanding of Faculty Perceptions of Online Teaching*. University of Toledo,
- Alabdali, O. (2019). *Measuring the development of Saudi Arabia as an information society*. City, University of London,
- Alahmari, A., & Amirault, R. J. (2017). The use of e-learning in highly domain-specific settings: Perceptions of female students and faculty in Saudi Arabia. *Quarterly Review of Distance Education*, 18(4), 37-56.
- Alajmi, M. (2010). *Faculty members' readiness for e-learning in the college of basic education in Kuwait*. (Doctoral Dissertation , University of North Texas).
- Alammary, A., Alshaikh, M., & Alhogail, A. (2021). The impact of the COVID-19 pandemic on the adoption of e-learning among academics in Saudi Arabia. *Behaviour & Information Technology*, 1-23.
- Alamri, M. (2011). Higher education in Saudi Arabia. *Journal of Higher Education Theory and Practice*, 11(4), 88-91.
- Alanazi, A. A., & Alshaalan, Z. M. (2020). Views of faculty members on the use of e-learning in Saudi medical and health colleges during COVID-19 pandemic. *Journal of Nature and Science of Medicine*, 3(4), 308.

- Alasmari, I. (2014). *Improving teaching and learning in Higher Education through the use of e-learning: mixed methods research in one of the southern universities in Saudi Arabia*. (Doctoral dissertation, University of Southampton).
- Albalawi, A., & Badawi, M. (2008). *Teachers' Perception of E-learning at the University of Tabuk*. Paper presented at the In E-Learn: World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education (pp. 2434-2448). Association for the Advancement of Computing in Education (AACE).
- Albalawi, M. S. (2007). *Critical factors related to the implementation of web-based instruction by higher-education faculty at three universities in the Kingdom of Saudi Arabia*. University of West Florida Pensacola, FL,
- Alderfer, C. P. (1969). An empirical test of a new theory of human needs. *Organizational behavior and human performance*, 4(2), 142-175.
- Aldhafeeri, F., Almulla, M., & Alraqas, B. (2006). Teachers Expectations of the Impact of E-learning on Kuwait's Public Education System. *Social Behavior and Personality: an International Journal*, 34(6), 711-728.
- Aldhafeeri, F., & Khan, B. (2016). Teachers' and students' views on e-learning readiness in Kuwait's secondary public schools. *Journal of Educational Technology Systems*, 45(2), 202-235.
- Aldosemani, T., Shepherd, C. E., & Bolliger, D. U. (2019). Perceptions of instructors teaching in Saudi blended learning environments. *TechTrends*, 63(3), 341-352.
- Alebaikan, R. A. (2010). *Perceptions of blended learning in Saudi universities*. (Doctoral dissertation, University of Exeter),
- Alenezi, A. (2012). *Faculty members' perception of e-learning in higher education in the Kingdom of Saudi Arabia(KSA)*. (Doctoral dissertation, Texas University).
- Algahtani, A. (2011). *Evaluating the Effectiveness of the E-learning Experience in Some Universities in Saudi Arabia from Male Students' Perceptions*. (Doctoral dissertation, University of Durham).
- Alghamdi, A. A. (2021). Impact of the COVID-19 pandemic on the social and educational aspects of Saudi university students' lives. *PLoS One*, 16(4), e0250026.
- Alghamdi, S., Parkes, M., & Reyes, V. (2018). *The effect of EFL teachers' technological pedagogical content knowledge (TPACK) on EFL teaching in Saudi Arabian secondary schools*.
- Alharbi, Tolchard, B., & Isouard, G. (2019). Developing and Measuring the Reliability and Validity of the Factors Influencing the Implementation of ICD-10-AM and Clinical Coding in Saudi Public Hospitals. *Global Journal of Health Science*.
- Alharbi, A. (2013). *E-learning in the KSA: A taxonomy of learning methods in Saudi Arabia*. (Doctoral dissertation, Auckland University of Technology).
- Alharbi, Y. A. (2002). *A study of the barriers and attitudes of faculty and administrators toward implementation of online courses*: University Of Northern Colorado.
- Alhareth, Y. (2014a). *An investigation into the contribution of e-learning to the improvement of higher education opportunities for women in Saudi Arabia*. (Doctoral dissertation, Montfort University),
- Alhareth, Y. (2014b). *An investigation into the contribution of e-learning to the improvement of higher education opportunities for women in Saudi Arabia*. PhD Thesis. University of Leicester. Available at: <https://www.dora.dmu.ac.uk/handle/2086/12430>. [Accessed 16 Oct 2023].
- Ali, N. S., Hodson-Carlton, K., Ryan, M., Flowers, J., Rose, M. A., & Wayda, V. (2005). Online education: Needs assessment for faculty development. *The Journal of Continuing Education in Nursing*, 36(1), 32-38.
- Aljaber, A. (2018). E-learning policy in Saudi Arabia: Challenges and successes. *Research in Comparative and International Education*, 13(1), 176-194.

- Aljohani, L. (2016). Emerging Instructional Technologies: Its Use and Motives among Faculty Members in Saudi Universities in Light of Some Factors. *An-Najah University Journal for Research-B (Humanities)*, 30(2), 1.
- Alkhalaf, S., Drew, S., Alghamdi, R., & Alfarrarj, O. (2012). E-learning system on higher education institutions in KSA: Attitudes and perceptions of faculty members. *Procedia-Social and Behavioral Sciences*, 47, 1199-1205.
- Alkhalaf, S., Nguyen, A., & Drew, S. (2010). *Assessing E-learning Systems in the Kingdom of Saudi Arabia's Higher Education Sector*. Paper presented at the International Conference on Intelligent Network and Computing (ICINC 2010).
- Alkinani, E. A. (2021). Saudi Arabian undergraduate students' Perceptions of e-learning quality during COVID19 pandemic. *IJCSNS Int. J. Comput. Sci. Netw. Secur*, 21(2), 66-76.
- Almaghlouth, O. A. D. (2008). *Saudi secondary school science teachers' perceptions of the use of ICT tools to support teaching and learning*. The University of Waikato,
- Almahasees, Z., Mohsen, K., & Amin, M. O. (2021). *Faculty's and students' perceptions of online learning during COVID-19*. Paper presented at the Frontiers in Education.
- Almaiah, M. A., Al-Khasawneh, A., & Althunibat, A. (2020a). Exploring the critical challenges and factors influencing the E-learning system usage during COVID-19 pandemic. *Education and information technologies*, 25(6), 5261-5280.
- Almaiah, M. A., Al-Khasawneh, A., & Althunibat, A. (2020b). Exploring the critical challenges and factors influencing the E-learning system usage during COVID-19 pandemic. *Education and Information Technologies*, 25, 5261-5280.
- Almekhlafi, A. G., & Almeqdadi, F. A. (2010). Teachers' perceptions of technology integration in the United Arab Emirates school classrooms. *Journal of Educational Technology & Society*, 13(1), 165-175.
- Almohaisen, I. (2007). *E-learning in the Kingdom of Saudi Arabia*. Paper presented at the National Centre for Distance and E-Learning Seminar. Riyadh: Keynote speech.
- Almosa, A. (2002). *Use of Computer in Education, 2nd ed, Riyadh: Future Education Library*.
- Almuqayteeb, T. A. (2009). *Attitudes of female faculty toward the use of computer technologies and the barriers that limit their use of technologies in girls' colleges in Saudi Arabia*: Mississippi State University.
- Alodan, H. (2021). E-Learning transformation during the covid-19 pandemic among faculty members at princess nourah bint abdul rahman university. *Utopía y praxis latinoamericana: revista internacional de filosofía iberoamericana y teoría social*(2), 286-304.
- Alotaibi, A. S. (2017). *A Proposed form to Overcome Scientific Production Challenges in Saudi Emerging Universities*. Paper presented at the Basic Education College Magazine For Educational and Humanities Sciences (33).
- Alrashidi, A. Y. N. (2014). E-learning in Saudi Arabia: A Review of the Literature. *Journal of Education, Society and Behavioural Science*, 656-672.
- Alsadoon, E. A. (2009). *The potential of implementing online professional training development for faculty in the College of Education at King Saud University*. Ohio University,
- Alshammari, A. (2019). The Impact of E-Readiness on ELearning Success in Saudi Arabian Higher Education Institutions.
- Alshangeeti, A., Alsaghier, H., & Nguyen, A. (2009). *Faculty perceptions of attributes affecting the diffusion of online learning in Saudi Arabia: A quantitative study*. Paper presented at the Proceedings of the 4th International Conference on E-Learning.
- Alsharif, K. M. (2011). *Towards quality teacher education: Productive pedagogies as a framework for Saudi pre-service teachers' training in mathematics education*. (Doctoral dissertation, Curtin University).

- Alshehri, O. A. (2021). *Examining the existing reality of using social media as e-learning tools at an Emerging University in Saudi Arabia from the viewpoint of tutors and students*. University of Glasgow,
- Alshibni, N. M. A. (2022). The reality of e-learning and the difficulties faced by faculty members at Bani Walid University, from their point of view. *American International Journal of the Humanities and Social Sciences AIJHSS*. Retrieved from <https://www.aijhssa.us/%D9%88%D8%A7%D9%82%D8%B9-%D8%A7%D9%84%D8%AA%D8%B9%D9%84%D9%8A%D9%85-%D8%A7%D9%84%D8%A7%D9%84%D9%83%D8%AA%D8%B1%D9%88%D9%86%D9%8A-%D9%88%D8%A7%D9%84%D8%B5%D8%B9%D9%88%D8%A8%D8%A7%D8%AA-%D8%A7%D9%84/>
- Alshwaier, A., Youssef, A., & Emam, A. (2012). A new trend for e-learning in KSA using educational clouds. *Advanced Computing*, 3(1), 81.
- Alsobai, A. (2022). The reality of e-learning in light of the spread of the Corona virus from the point of view of teachers of basic education schools in the Sultanate of Oman. *Palestine Technical University Research Journal (PTURJ)*, 10(2), 228-216.
- Alsoud, A. R., & Harasis, A. A. (2021). The impact of COVID-19 pandemic on student's e-learning experience in Jordan. *Journal of Theoretical and Applied Electronic Commerce Research*, 16(5), 1404-1414.
- Alsuwailem, R. I. (2018). *Factors affecting faculty's intent to use e-learning systems at a university in the Kingdom of Saudi Arabia*. (Doctoral dissertation, Eastern Michigan University),
- Alzahrani, A. M. (2019). Factors that influence secondary school teachers' acceptance of e-learning technologies in teaching in the kingdom of Saudi Arabia. *Journal of Research in Curriculum Instruction and Educational Technology*, 5(2), 175-196.
- Anohina, A. (2005). Analysis of the terminology used in the field of virtual learning. *Journal of Educational Technology & Society*, 8(3), 91-102.
- Arkorful, V., & Abaidoo, N. (2015). The role of e-learning, advantages and disadvantages of its adoption in higher education. *International Journal of Instructional Technology and Distance Learning*, 12(1), 29-42.
- Babu, G. S., & Sridevi, K. (2018). Importance of E-learning in Higher Education: A Study. *International Journal of Research Culture Society*, 2(5), 1-8.
- Baharum, A., Lim, Y. W., Yahya, F., Nazlah, N. H., Nor, N. A. M., Ismail, I., & Noor, N. A. M. (2020). Mobile learning application: Flipped classroom. *Indonesian Journal of Electrical Engineering and Computer Science*, 17(2), 1084-1090.
- Barakat, K. (2014). The Educational Effects of Students' Utilization of Moodle System and their Attitudes Toward it. Unpublished Master Thesis, University of Jordan, Jordan.
- Bazeley, P., & Jackson, K. (2013). *Qualitative Data Analysis with NVivo 2nd ed*. Jai Seaman, ed. In: London: SAGE.
- Becta ICT Research. (2004). What the research says about ICT and reducing teacher's workloads. Retrieved from <http://www.becta.org.uk/research>.
- Bell, L., & Stevenson, H. (2006). *Education policy: Process, themes and impact*: Routledge.
- Ben Rayhan, A. (2010). *E-Learning Employment, Uses, Features, Applications and Constraints*. *The Comprehensive Multidisciplinary Electronic Magazine*. 10(4), 1-32.
- Bergmann, J., & Sams, A. (2012). *Flip your classroom: Reach every student in every class every day*. *International Society for Technology in Education*: International Society for Technology in Education.
- Bishop, J. L. (2013). *A controlled study of the flipped classroom with numerical methods for engineers*: Citeseer.

- Bond, T. G., & Fox, C. M. (2001). Applying the Rasch Model : Fundamental Measurement in the Human Sciences. L. Erlbaum.
- Bourque, L. B., Clark, V. A., & Clark, V. (1992). *Processing data: The survey example*: Sage.
- Bozalek, V. (2011). *An investigation into the use of emerging technologies to transform teaching and learning across differently positioned higher education institutions in South Africa*. Paper presented at the Ascilite.
- Bozkurt, A., & Sharma, R. C. (2020). Emergency remote teaching in a time of global crisis due to CoronaVirus pandemic. *Asian Journal of Distance Education*, 15(1), i-vi.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative research in psychology*, 3(2), 77-101.
- Brewer, R., & Movahedazarhouli, S. (2019). Flipped learning in flipped classrooms: A new pathway to prepare future special educators. *Journal of Digital Learning in Teacher Education*, 35(3), 128-143.
- Burton, L. J., & Mazerolle, S. M. (2011). Survey instrument validity part I: Principles of survey instrument development and validation in athletic training education research. *Athletic Training Education Journal*, 6(1), 27-35.
- Campbell, J. L., Quincy, C., Osseman, J., & Pedersen, O. K. (2013). Coding in-depth semistructured interviews: Problems of unitization and intercoder reliability and agreement. *Sociological Methods & Research*, 42(3), 294-320.
- Caulton, J. R. (2012). The development and use of the theory of ERG: A literature review. *Emerging Leadership Journeys*, 5(1), 2-8.
- Chen, H. Y., & Boore, J. R. (2010). Translation and back-translation in qualitative nursing research: methodological review. *Journal of Clinical Nursing*, 19(1-2), 234-239.
- Cheok, M. L., Wong, S. L., Ayub, A. F., & Mahmud, R. (2017). Teachers' Perceptions of E-Learning in Malaysian Secondary Schools. *Malaysian Online Journal of Educational Technology*, 5(2), 20-33.
- Choudrie, J., & Dwivedi, Y. K. (2005). Investigating the research approaches for examining technology adoption issues. *Journal of Research Practice*, 1(1). Retrieved from <http://jrp.icaap.org/index.php/jrp/article/view/4/7>
- Cohen, L., Manion, L., & Morrison, K. (2007). *Research methods in education. 6th edn*. London: Routledge.
- Cohen, L., Manion, L., & Morrison, K. (2011). *Research methods in education*. Routledge.
- Cohen, L., Manion, L., & Morrison, K. (2018). *Research methods in education, 8th Edition*.
- Connelly, L. M. (2008). Pilot studies. *Medsurg Nursing*, 17(6), 411.
- Corbetta, P. (2003). *Social research: Theory, methods and techniques*: Sage.
- Creswell, J. (2009). *Research design: Qualitative, quantitative, and mixed methods approaches.*: Thousand Oaks: Sage Publications.
- Creswell, J. (2013). Research design: qualitative, quantitative, and mixed methods approaches: Sage publications. In.
- Creswell, J., & Clark, V. (2007). Designing and conducting mixed methods research. thousand oaks, CA, US: sage publications.
- Creswell, J., & Poth, C. (2018). Qualitative inquiry & research design; Choosing among five approaches. Thousand Oaks, CA: SAGE Publications.
- Creswell, J., W, & Clark, V., L, P. (2007). *Designing and conducting mixed methods research*. Thousand Oaks, CA, US: Sage Publications, Inc.
- Czerkawski, B. (2016). Blending formal and informal learning networks for online learning. *International Review of Research in Open and Distributed Learning*, 17(3), 138-156.

- Delgado-Almonte, M., Andreu, H. B., & Pedraja-Rejas, L. (2010). Information technologies in higher education: Lessons learned in industrial engineering. *Journal of Educational Technology & Society*, 13(4), 140-154.
- Di Pietro, G., Biagi, F., Costa, P., Karpiński, Z., & Mazza, J. (2020). *The likely impact of COVID-19 on education: Reflections based on the existing literature and recent international datasets* (Vol. 30275): Publications Office of the European Union.
- Diep, Zhu, C., Cocquyt, C., De Greef, M., Vo, M. H., & Vanwing, T. (2019). Adult Learners' Needs in Online and Blended Learning. *Australian Journal of Adult Learning*, 59(2), 223-253.
- Dominic, M., Francis, S., & Pilomenraj, A. (2014). E-learning in web 3.0. *International Journal of Modern Education and Computer Science*, 6(2), 8.
- Donnelly, R., & McSweeney, F. (2008). *Applied e-learning and e-teaching in higher education*: IGI Global.
- Dreesen, T., Akseer, S., Brossard, M., Dewan, P., Giraldo, J.-P., Kamei, A., . . . Ortiz, J. S. (2020). Promising practices for equitable remote learning: Emerging lessons from COVID-19 education responses in 127 countries. *Office of Research-Innocent*
- Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*: Harcourt brace Jovanovich college publishers.
- Ebner, M., Schön, S., Braun, C., Ebner, M., Grigoriadis, Y., Haas, M., . . . Taraghi, B. (2020). COVID-19 epidemic as E-learning boost? Chronological development and effects at an Austrian university against the background of the concept of "E-Learning Readiness". *Future Internet*, 12(6), 94.
- Egbuta, O. U., & Omojola, O. I. (2022). The ERG Theory and Work Engagement of Employees in Lagos State Nigeria Health Sector. *The International Journal of Business & Management*, 10(1).
- El Zawaidy, H. A. Z. H. (2014). Using Blackboard in online learning at Saudi universities: faculty member's perceptions and existing obstacles. *International Interdisciplinary Journal of Education*, 3(7), 141-150.
- Felege, C., & Olson, M. (2015). Online education: Faculty perceptions and recommendations. *Focus on Colleges, Universities, and Schools*, 9(1), 1-9.
- Fink, A. (1995). *How to analyze survey data* (Vol. 8): Sage.
- Francis, J., Eccles, M. P., Johnston, M., Walker, A., Grimshaw, J. M., Foy, R., . . . Bonetti, D. (2004). Constructing questionnaires based on the theory of planned behaviour: A manual for health services researchers. *Newcastle upon Tyne, UK: Centre for Health Services Research, University of Newcastle upon Tyne*. .
- Friesen, N. (2009). *Re-thinking e-learning research: Foundations, methods, and practices* (Vol. 333): Peter Lang.
- Gasaymeh, A.-M. M. (2009). *A study of faculty attitudes toward internet-based distance education: A survey of two Jordanian public universities*. Ohio University,
- Gerasimova, V. G., Melamud, M. R., Tutaeva, D. R., Romanova, Y. D., & Zhenova, N. A. (2018). The adoption of e-learning technology at the faculty of distance learning of plekhanov russian university of economics. *Journal of Social Studies Education Research*, 9(2), 172-188.
- Ghauri, P., & Grønhaug, K. (2005). Research methods in business studies: a practical guide. 3. uud. p. In: Pearson Education Limited, Harlow.
- Golafshani, N. (2003). Understanding reliability and validity in qualitative research. *The Qualitative Report*, 8(4), 597-607.
- Govindarajan, V., & Srivastava, A. (2020). What the shift to virtual learning could mean for the future of higher ed. *Harvard business review*, 31(1), 3-8.
- Graham, M., Milanowski, A., & Miller, J. (2012). Measuring and promoting inter-rater agreement of teacher and principal performance ratings. *Online Submission*. Retrieved from <https://files.eric.ed.gov/fulltext/ED532068.pdf>

- Grand, S., & Wolff, K. (2020). Assessing Saudi vision 2030: A 2020 review. *Atlantic Council*, 17.
- Gros, B., & García-Peñalvo, F. J. (2016). Future trends in the design strategies and technological affordances of e-learning. In: Springer.
- Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*, 18(1), 59-82.
- Halasa, S., Abusalim, N., Rayyan, M., Constantino, R. E., Nassar, O., Amre, H., . . . Qadri, I. (2020). Comparing student achievement in traditional learning with a combination of blended and flipped learning. *Nursing Open*, 7(4), 1129-1138.
- Halaweh, M. (2013). Emerging technology: What is it. *Journal of Technology Management & Innovation*, 8(3), 108-115.
- Halili, S. H., & Zainuddin, Z. (2015). Flipping the classroom: What we know and what we don't. *The online Journal of Distance Education and E-learning*, 3(1), 28-35.
- Hamdan, A. (2014). *Faculty members' perceptions of online learning in Saudi Arabia: The case for more professional development support*. Paper presented at the European conference on e-learning.
- Hamdy, N. (2003). The Internet educational uses in Jordanian universities. *The Studies Journal of Educational Sciences*(2), 3-43.
- Hameed, S., Badii, A., & Cullen, A. J. (2008). *Effective e-learning integration with traditional learning in a blended learning environment*. Paper presented at the European and Mediterranean conference on information systems.
- Hammersley, A., Tallantyre, F., & Le Cornu, A. (2013). Flexible learning: A practical guide for academic staff. *Higher Education Academy*, York.
- Hammersley, M. (2011). *Methodology*. Los Angeles, Calif.: SAGE.
- Hao, Y. (2016). Exploring undergraduates' perspectives and flipped learning readiness in their flipped classrooms. *Computers in Human Behavior*, 59, 82-92.
- Hara, N., & Kling, R. (2001). Student distress in web-based distance education. *Educause Quarterly*, 24(3), 68-69.
- Hennessy, S., Onguko, B., Harrison, D., Ang'ondi, E. K., Namalefe, S., Naseem, A., & Wamakote, L. (2010). Developing the use of information and communication technology to enhance teaching and learning in East African schools: Review of the literature. *Centre for Commonwealth Education & Aga Khan University Institute for Educational Development–Eastern Africa Research Report*, 1, 1-3.
- Hodges, C. B., Moore, S., Lockee, B. B., Trust, T., & Bond, M. A. (2020). The difference between emergency remote teaching and online learning.
- Holmes, B., & Gardner, J. (2006). *E-learning: Concepts and practice*: Sage.
- Hoq, M. Z. (2020). E-Learning during the period of pandemic (COVID-19) in the kingdom of Saudi Arabia: an empirical study. *American Journal of Educational Research*, 8(7), 457-464.
- Hsieh, H.-F., & Shannon, S. E. (2005). Three approaches to qualitative content analysis. *Qualitative health research*, 15(9), 1277-1288.
- Husamo, S., & Fawaz, A. (2011). The reality of e-learning in Tishreen University from the perspective of both faculty members and students. *Damascus University Journal*. 27 (1), 243-269.
- Hussein, H. B. (2011). Attitudes of Saudi universities faculty members towards using learning management system (JUSUR). *Turkish Online Journal of Educational Technology-TOJET*, 10(2), 43-53.
- Ibrahim, L. K., Mohamed, A. G., Aldhafeeri, F. M., & Alqdah, M. (2019). Faculty members' perceptions towards utilizing blackboard in teaching system at Hafr Al-Batin University, Saudi Arabia. *Journal of Nursing Education and Practice*, 9(5), 64-74.

- Irvine, J., & Cossham, A. (2011). Flexible learning: Reflecting on a decade of library and information studies programmes at the Open Polytechnic of New Zealand. *Library Review*, 60(8), 712-722.
- Islam, N., Beer, M., & Slack, F. (2015). E-learning challenges faced by academics in higher education. *Journal of Education and Training Studies*, 3(5), 102-112.
- Jabli, N., & Qahmash, A. (2013). The benefits and barriers of e-learning in higher education in Saudi Arabia. *Journal of Emerging Trends in Computing and Information Sciences*, 4, No. 11 November 2013(2079-8407).
- Jagušt, T., Botički, I., & So, H. J. (2018). A review of research on bridging the gap between formal and informal learning with technology in primary school contexts. *Journal of Computer Assisted Learning*, 34(4), 417-428.
- Jamlan, M. (2004). Faculty opinions towards introducing e-learning at the University of Bahrain. *International Review of Research in Open and Distributed Learning*, 5(2), 1-14.
- Jazan University. (2019). Retrieved from <https://edugate.jazanu.edu.sa/jazan/init>.
- Jimoyiannis, A., & Komis, V. (2007). Examining teachers' beliefs about ICT in education: Implications of a teacher preparation programme. *Teacher development*, 11(2), 149-173.
- Joan, D. (2013). Flexible Learning as New Learning Design in Classroom Process to Promote Quality Education. *Journal on School Educational Technology*, 9(1), 37-42.
- Jong, M. S.-Y. (2019). To flip or not to flip: Social science faculty members' concerns about flipping the classroom. *Journal of Computing in Higher Education*, 31(2), 391-407.
- Jonsson, Å. (2013). Information System Usage-A study in the Middle East. In.
- Joshi, K., Jamadar, D., & Dixit, R. (2020). Perception of faculty toward online teaching and learning in the undergraduate medical students during coronavirus disease-19 pandemic. *Int J Med Sci Public Health*, 9(8), 484-487.
- Jovanovic, J., Chiong, R., & Weise, T. (2012). Social networking, teaching, and learning. *Interdisciplinary Journal of Information, Knowledge, and Management*, 7(1), 39-43.
- Judge, S., & O'Bannon, B. (2008). Faculty integration of technology in teacher preparation: Outcomes of a development model. *Technology, pedagogy and education*, 17(1), 17-28.
- Kajornboon, A. B. (2005). Using interviews as research instruments. *E-journal for Research Teachers*, 2(1), 1-9.
- Kane, R., Sandretto, S., & Heath, C. (2002). Telling half the story: A critical review of research on the teaching beliefs and practices of university academics. *Review of educational research*, 72(2), 177-228.
- Kazem, M. (2021). *The Reality of Distance Education at Iraqi Universities in light of the Corona from the Viewpoint of Students and Faculty Members*. (Master's dissertation, MIDDLE EAST UNIVERSITY).
- Kennewell, S., Parkinson, J., & Tanner, H. (2000). Developing the ICT capable school London: Routledge Falmer.
- Kessler, E. H. (2013). *Encyclopedia of management theory*: Sage Publications.
- Khan, M., & Setiawan, A. (2019). *The impact of E-learning on higher education perception, skills, critical thinking and satisfaction*. Paper presented at the Journal of Physics: Conference Series.
- King Khaled University. (2020). Retrieved from <https://www.kku.edu.sa/ar/portfolio/5139>.
- Kisanga, D. H. (2015). *Investigation of attitudinal factors towards the transition from face-to-face to e-learning in Tanzanian higher learning institutions: a mixed methods approach*: Nottingham Trent University (United Kingdom).
- Kisanga, D. H. (2016). Determinants of teachers' attitudes towards e-learning in Tanzanian higher learning institutions. *International Review of Research in Open and Distributed Learning*, 17(5), 109-125.

- Knapik, M. (2006). The qualitative research interview: Participants' responsive participation in knowledge making. *International Journal of Qualitative Methods*, 5(3), 77-93.
- Koohang, A., & Durante, A. (2003). Learners' perceptions toward the web-based distance learning activities/assignments portion of an undergraduate hybrid instructional model. *Journal of Information Technology Education: Research*, 2(1), 105-113.
- Kothari, C. R. (2004). *Research methodology: Methods and techniques*: New Age International.
- Kriek, J., & Coetzee, A. (2016). Development of a technology integrated intervention in tertiary education. *Journal of Baltic Science Education*, 15(6), 712.
- Kumar, R. (2018). *Research methodology: A step-by-step guide for beginners*: Sage.
- Kvale, S. (1996). *InterViews—An Introduction to Qualitative Research Interviewing* Sage Thousand Oaks. CA Google Scholar.
- Laal, M., Laal, A., & Aliramaei, A. (2014). Continuing education; lifelong learning. *Procedia-social and behavioral sciences*, 116, 4052-4056.
- Lee, M.-C. (2010). Explaining and predicting users' continuance intention toward e-learning: An extension of the expectation–confirmation model. *Computers & Education*, 54(2), 506-516.
- Lewis, N. J., & Orton, P. (2000). The five attributes of innovative e-learning. *Training & Development*, 54(6), 47-47.
- Litvinski, O., & Litvinski, O. (2018). Emerging Technology: Toward a Conceptual Definition. *International Journal of Trade, Economics and Finance*, 9(6), 256-262.
- Liu, Y. (2010). Social media tools as a learning resource. *Journal of Educational Technology Development and Exchange (JETDE)*, 3(1), 8.
- Mahyoob, M. (2020). Challenges of e-Learning during the COVID-19 Pandemic Experienced by EFL Learners. *Arab World English Journal (AWEJ)*, 11(4).
- Manuguerra, M., & Petocz, P. (2011). Promoting student engagement by integrating new technology into tertiary education: The role of the iPad. *Asian Social Science*, 7, No. 11; November 2011. Retrieved from <http://dx.doi.org/10.5539/ass.v7n11p61>
- Maslow, A. H. (1943). A theory of human motivation. *Psychological review*, 50(4), 370.
- Maxwell, J. A. (2005). *Qualitative research design: An interactive approach* (2nd ed.). Thousand Oaks, CA: Sage.
- Maxwell, J. A., & Loomis, D. M. (2003). Mixed methods design: An alternative approach. *Handbook of mixed methods in social and behavioral research*, 1(2003), 241-272.
- Milani, M. (2008). Cultural Impact on Online Education Quality Perception. *Electronic Journal of e-Learning*, 6(2), 149-160.
- Minichiello, V., Aroni, R., & Hays, T. N. (2008). *In-depth interviewing: Principles, techniques, analysis*: Pearson Education Australia.
- Ministry of Education. (2019). Retrieved from <https://www.moe.gov.sa/ar/Pages/default.aspx>.
- Ministry of Education. (2020). Retrieved from <https://www.moe.gov.sa/ar/Pages/default.aspx>.
- Ministry of Finance. (2019). Government budget data. Retrieved, from <https://www.mof.gov.sa/Pages/default.aspx>.
- Mishra, L., Gupta, T., & Shree, A. (2020). Online teaching-learning in higher education during lockdown period of COVID-19 pandemic. *International Journal of Educational Research Open*, 1, 100012.
- Mital, M., & Luthra, R. (2006). No age correlation in the effectiveness of corporate e-learning in India. *Asian Journal of Distance Education*, 4(1), 85-89.
- Mitchell, B., & Alfuraih, A. (2018). The Kingdom of Saudi Arabia: Achieving the aspirations of the National Transformation Program 2020 and Saudi vision 2030 through education. *Journal of Education and Development*, 2(3), 36.

- Mohr, S. C., & Shelton, K. (n.d). *Online Faculty Professional Development Framework*. Retrieved from <http://olc-wordpress-assets.s3.amazonaws.com/uploads/2017/10/OLC-Faculty-Professional-Development-Framework.pdf>
- Moralista, R., & Oducado, R. M. (2020). Faculty Perception Toward Online Education in Higher Education During the Coronavirus Disease 19 (COVID-19) Pandemic. *Available at SSRN 3636438*.
- Morris, M. G., & Venkatesh, V. (2000). Age differences in technology adoption decisions: Implications for a changing work force. *Personnel psychology*, 53(2), 375-403.
- Mtebe, J. S., & Raisamo, R. (2014). Challenges and instructors' intention to adopt and use open educational resources in higher education in Tanzania. *International Review of Research in Open and Distributed Learning*, 15(1), 249-271.
- Mukhtar, K., Javed, K., Arooj, M., & Sethi, A. (2020). Advantages, Limitations and Recommendations for online learning during COVID-19 pandemic era. *Pakistan journal of medical sciences*, 36(COVID19-S4), S27.
- Munn, P., & Drever, E. (1990). *Using Questionnaires in Small-Scale Research. A Teachers' Guide*: ERIC.
- Murray, P. (1999). Fundamental issues in questionnaire design. *Accident and emergency nursing*, 7(3), 148-153.
- Mutambik, I. M. O. (2018). *Exploring the readiness of students and English teachers to use e-learning for English as a foreign language in Saudi Arabia*. (Doctoral dissertation, University of Edinburgh).
- Naidu, S. (2006). *E-learning: A guidebook of principles, procedures and practices*: Commonwealth Educational Media Centre for Asia (CEMCA).
- Najran University. (2020). Retrieved from <https://www.nu.edu.sa/about-najran-university>.
- Nassoura, A. B. (2020). Measuring Students' Perceptions Of Online Learning In Higher Education. *Int. J. Sci. Technol. Res*, 9, 1965-1970.
- Nedeva, V., & Dimova, E. (2010). Some advantages of e-learning in English language training. *Trakia Journal of Sciences*, 8(3), 21-28.
- Newman, R. E., Miller, M. T., & Grover, K. S. (2015). Developing Faculty to Effectively Use Mobile Learning Technologies in Collegiate Classes: A Guide for Department Chairs. In *Advancing Higher Education with Mobile Learning Technologies: Cases, Trends, and Inquiry-Based Methods* (pp. 22-34): IGI Global.
- Newton, R. (2003). Staff attitudes to the development and delivery of e-learning. *New library world*, 104(10), 412-425.
- Nilsen, H., & Purao, S. (2005). Balancing objectivist and constructivist pedagogies for teaching emerging technologies: Evidence from a Scandinavian case study. *Journal of Information Systems Education*, 16(3), 281.
- O'Connor, C., & Joffe, H. (2020). Intercoder reliability in qualitative research: debates and practical guidelines. *International Journal of Qualitative Methods*, 19, 1609406919899220.
- Ocak, M. A. (2011). Why are faculty members not teaching blended courses? Insights from faculty members. *Computers & Education*, 56(3), 689-699.
- Onwuegbuzie, A. J., Leech, N. L., & Collins, K. M. (2010). Innovative data collection strategies in qualitative research. *Qualitative Report*, 15(3), 696-726.
- Ozolins, U., Hale, S., Cheng, X., Hyatt, A., & Schofield, P. (2020). Translation and back-translation methodology in health research—a critique. *Expert review of pharmacoeconomics & outcomes research*, 20(1), 69-77.
- Paavola, K. (2020). The Significance of Training in Employee Engagement: case Study of a Consulting Firm.
- Panda, S., & Mishra, S. (2007). E-Learning in a Mega Open University: Faculty attitude, barriers and motivators. *Educational Media International*, 44(4), 323-338.

- Potode, A., & Manjare, P. (2015). E-learning using artificial intelligence. *International Journal of Computer Science and Information Technology Research*, 3(1), 78-82.
- Prensky, M. (2001). Digital natives, digital immigrants part 2: Do they really think differently? *On the horizon*, 9(6), 1-6.
- Prestridge, S. (2012). The beliefs behind the teacher that influences their ICT practices. *Computers & education*, 58(1), 449-458.
- Prodromou, T. (2017). *Using a flipped classroom approach in the teaching of mathematics: A case study of a preservice teachers' class*. Paper presented at the CERME 10.
- Punch, K. (2005). Introduction to Social Research : Quantitative and Qualitative Approaches. Sage Publications Inc.
- Qu, S. Q., & Dumay, J. (2011). The qualitative research interview. *Qualitative Research in Accounting & Management*, 8 No. 3, 2011. doi: 10.1108/11766091111162070
- Qualtrics. (2022). Qualtrics forAcademics. [Online] Available from:. Retrieved from <https://www.qualtrics.com/au/education/>
- Qudais, M. A., Al-Adhaileh, M., & Al-Omari, A. (2010). Senior Faculty Members' Attitudes in Jordanian Universities towards Using Information and Communication Technology. *Int. Arab. J. e Technol.*, 1(4), 135-141.
- Rasch, G. (1980). Probabilistic models for some intelligence and attainment tests. 1960. *Copenhagen, Denmark: Danish Institute for Educational Research*.
- Rasheed, R. A., Kamsin, A., Abdullah, N. A., Kakudi, H. A., Ali, A. S., Musa, A. S., & Yahaya, A. S. (2020). Self-regulated learning in flipped classrooms: A systematic literature review. *International Journal of Information and Education Technology*, 10(11), 848-853.
- Robertson, M., & Al-Zahrani, A. (2012). Self-efficacy and ICT integration into initial teacher education in Saudi Arabia: Matching policy with practice. *Australasian Journal of Educational Technology*, 28(7).
- Rovai, A. P., & Childress, M. D. (2002). Explaining and predicting resistance to computer anxiety reduction among teacher education students. *Journal of Research on Computing in Education*, 35(2), 226-235.
- Rubio, D. M., Berg-Weger, M., Tebb, S. S., Lee, E. S., & Rauch, S. (2003). Objectifying content validity: Conducting a content validity study in social work research. *Social work research*, 27(2), 94-104.
- Rumbay, R. W. (2014). The Impact of Motivation and Employee Development on Employee Performance at Kpknl Manado. *Jurnal EMBA: Jurnal Riset Ekonomi, Manajemen, Bisnis dan Akuntansi*, 2(4).
- Sadik, A. (2007). The readiness of faculty members to develop and implement e-learning: The case of an Egyptian university. *International Journal on E-learning*, 6(3), 433-453.
- Salmi, J. (2001). Tertiary education in the 21st century: challenges and opportunities. *Higher education management*, 13(2).
- Sangrà, A., Vlachopoulos, D., & Cabrera, N. (2012). Building an inclusive definition of e-learning: An approach to the conceptual framework. *International Review of Research in Open and Distributed Learning*, 13(2), 145-159.
- Sarantakos, S. (2005). *Social research (3rd edn)*. Houndmills: Palgrave Macmillan.
- Sastre-Merino, S., Núñez-Del-Río, M., Caravantes, A., & Bravo-Ramos, J. L. (2021). Perceptions of engineering faculty members of online teaching due to COVID-19. *Int. J. Eng. Educ*, 37, 1567-1581.
- Saudi Vision 2030. (2023). Retrieved from https://www.vision2030.gov.sa/media/rc0b5oy1/saudi_vision203.pdf
- Saunders, M. (2011). *Research method for business students. 5th ed*, New York: Pearson.

- Saunders, M., Thornhill, A., & Lewis, P. (2012). *Research methods for Business Students (6th ed.)*: Pearson Education. Pearson Education.
- Schulz, R., Isabwe, G. M., & Reichert, F. (2014). *Supporting teachers' needs within and through E-learning systems*. Paper presented at the 2014 International Conference on Web and Open Access to Learning (ICWOAL).
- Selim, H. M. (2007). Critical success factors for e-learning acceptance: Confirmatory factor models. *Computers & education*, 49(2), 396-413.
- Sife, A., Lwoga, E., & Sanga, C. (2007). New technologies for teaching and learning: Challenges for higher learning institutions in developing countries. *International Journal of Education and Development Using ICT*, 3(2), 57-67.
- Sims, S. K., & Baker, D. M. (2021). Faculty Perceptions of Teaching Online during the COVID-19 University Transition of Courses to an Online Format. *Journal of Teaching and Learning with Technology*, 10, 337-353.
- Sincero, S. (2012). Online surveys. [Online]. Available from: <https://explorable.com/online-surveys>.
- Siniscalco, M. T., & Auriat, N. (2005). Questionnaire design. *Quantitative research methods in educational planning*, 8.
- Siritongthaworn, S., Krairit, D., Dimmitt, N. J., & Paul, H. (2006). The study of e-learning technology implementation: A preliminary investigation of universities in Thailand. *Education and Information Technologies*, 11, 137-160.
- Song, S. M. (2010). *E-learning: Investigating students' acceptance of online learning in hospitality programs*. (Doctoral dissertation, Iowa State University).
- Sosa, E., Salinas, J., & De Benito, B. (2017). Emerging technologies (ETs) in education: A systematic review of the literature published between 2006 and 2016. *International Journal of Emerging Technologies in Learning*, 2017, vol. 12, num. 5, p. 128-149.
- Srivastava, P. (2019). Advantages & disadvantages of e-education & e-learning. *Journal of Retail Marketing & Distribution Management*, 2(3), 22-27.
- Stone, B. B. (2012). *Flip your classroom to increase active learning and student engagement*. Paper presented at the Proceedings from 28th Annual Conference on Distance Teaching & Learning, Madison, Wisconsin, USA.
- Strauss, A., & Corbin, J. (1998). *Basics of qualitative research techniques*: Citeseer.
- Tang, K.-Y., Chang, C.-Y., & Hwang, G.-J. (2023). Trends in artificial intelligence-supported e-learning: A systematic review and co-citation network analysis (1998–2019). *Interactive Learning Environments*, 31(4), 2134-2152.
- Tarus, J. K., Gichoya, D., & Muumbo, A. (2015). Challenges of implementing e-learning in Kenya: A case of Kenyan public universities. *International Review of Research in Open and Distributed Learning*, 16(1), 120-141.
- Tashakkori, A., & Teddlie, C. (2003). Issues and dilemmas in teaching research methods courses in social and behavioural sciences: US perspective. *International journal of social research methodology*, 6(1), 61-77.
- Taylor, D. G., & Frechette, M. (2022). The impact of workload, productivity, and social support on burnout among marketing faculty during the COVID-19 pandemic. *Journal of Marketing Education*, 02734753221074284.
- Thomas, D. R. (2006). A general inductive approach for qualitative data analysis.
- Torkzadeh, G., & Van Dyke, T. P. (2002). Effects of training on Internet self-efficacy and computer user attitudes. *Computers in human behavior*, 18(5), 479-494.
- Tucker, J., & Gentry, G. (2009). Developing an e-learning strategy in higher education. *Society for Information Technology & Teacher Education International Conference*, 2702-2707.
- Unnisa, S. T. (2014). E learning in saudi arabia's higher education. *Kuwait Chapter of the Arabian Journal of Business and Management Review*, 4(2), 152.

- Uppal, M. A. (2017). *Addressing student perception of E-learning challenges in Higher Education holistic quality approach*. (Doctoral dissertation, University of Reading).
- Uzunboyulu, H., & Karagozlu, D. (2015). Flipped classroom: A review of recent literature. *World Journal on Educational Technology*, 7(2), 142-147.
- Valentín, A., Mateos, P. M., González-Tablas, M. M., Pérez, L., López, E., & García, I. (2013). Motivation and learning strategies in the use of ICTs among university students. *Computers & Education*, 61, 52-58.
- Veletsianos, G. (2010). *Emerging technologies in distance education*: Athabasca University Press.
- Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, 425-478.
- Walabe, E. (2020). *E-learning delivery in Saudi Arabian universities*. Université d'Ottawa/University of Ottawa,
- Weber, A. S., & Hamlaoui, S. (2018). *E-Learning in the Middle East and North Africa (MENA) Region*: Springer.
- Widhiarso, W., & Sumintono, B. (2016). Examining response aberrance as a cause of outliers in statistical analysis. *Personality and Individual Differences*, 98, 11-15.
- Williams, A. P. J. (2012). *Factors Influencing the Implementation of E--Learning at the University of Ha'il in Saudi Arabia*. (Doctoral dissertation, University of Waikato).
- Windiarti, S., Fadilah, N., Dharmawati, E., & Pratolo, B. W. (2019). Teachers' perception toward the obstacles of e-learning classes. *Ethical Lingua: Journal of Language Teaching and Literature*, 6(2), 117-128.
- Wisker, G. (2005). The good supervisor : supervising postgraduate and undergraduate research for doctoral theses and dissertations. *Palgrave Macmillan*.
- Wyatt, J. C. (2000). When to use web-based surveys. *Journal of the American Medical Informatics Association*, 7(4), 426-430. <https://doi.org/10.1136/jamia.2000.0070426>.
- Yang, C.-L., Hwang, M., & Chen, Y.-C. (2011). An empirical study of the existence, relatedness and growth (ERG) theory in consumers selection of mobile value-added services. *African Journal of Business Management*, 5(19), 7885-7898.
- Yin, R. K. (2009). *Case study research: Design and methods* (Vol. 5): sage.
- Zalah, I. (2018). *Factors that influence Saudi secondary teachers' acceptance and use of e-learning technologies*. (Doctoral dissertation, University of Brighton).
- Zhen, Y., Garthwait, A., & Pratt, P. (2008). Factors affecting faculty members' decision to teach or not to teach online in higher education. *Online Journal of Distance Learning Administration*, 11(3), 1-16.

Appendices

Appendix A: Information Sheets and Consent form



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Information Sheets for Participants

wish to invite you to participate in my research project, described below.

My name is Ali Majrashi, and I am conducting this research as part of my PhD in the School of Education at the University of New England. My supervisors are Dr. Theodosia Prodromou and Dr. Joy Hardy.

Research Project	Faculty Member Perceptions of E-learning in Four Emerging Saudi Universities: A Mixed Methods Study
Aim of the research	This study is an exploration of faculty member perceptions of e-learning in four emerging Saudi universities. This study aims to: 1- Understand the perceptions of faculty members on the use of e-learning in universities in the southern region of the Kingdom of Saudi Arabia (KSA), including the obstacles they face and solutions to help them overcome these obstacles. 2- Identify how the provision of e-learning could be improved and how the extent of e-learning could be increased. 3- Investigate how e-learning can be expanded across the university sector in the KSA, in particular since the 2020 global COVID19 pandemic has shifted the way of learning that all educational institutions need for years to come. Thus, the overall aim of this research is to understand how e-learning can be improved in emerging Saudi universities, and this can be achieved by investigating the perspectives of teaching faculty members on their needs, and their solutions to the challenges they face in implementing modern technologies and e-learning into their teaching.
Interview	I would like to conduct an online interview with you through the Zoom application. The interview will take approximately one hour. With your permission, I will make an audio recording of the interview to ensure that I accurately recall the information you provide. Following the interview, a transcript will be provided to you if you wish to see one.
Confidentiality	Any personal details gathered in the course of the study will remain confidential. No individual will be identified by name in any publication of the results. All names will be replaced by pseudonyms; this will ensure your anonymity. If you agree I would like to quote some of your responses. This will also be done in a way to ensure that you are not identifiable.

Participation is Voluntary	Please understand that your involvement in this study is voluntary and I respect your right to withdraw from the study at any time. You may discontinue the interview at any time without consequence and you do not need to provide any explanation if you decide not to participate or withdraw at any time.
Questions	The interview questions will not be of a sensitive nature: rather they are general, aiming to enable you to enhance my knowledge of the challenges and opportunities for better rural resource governance.
Use of information	I will use information from the interview as part of my doctoral thesis, which I expect to complete in December 2023. Information from the interview may also be used in journal articles and conference presentations before and after this date. At all times, I will safeguard your identity by presenting the information in a way that will not allow you to be identified.
Upsetting issues	It is unlikely that this research will raise any personal or upsetting issues but if it does you may wish to contact your local Community Health Centre (+9665324882 OR + 9665348553)
Storage of information	I will keep hardcopy recordings and notes of the interview in a locked cabinet at the researcher's office at the University of New England's School of Education. Any electronic data will be kept on a password-protected computer in the same School. Only the research team will have access to the data.
Disposal of information	All the data collected in this research will be kept for a minimum of five years after successful submission of my thesis, after which it will be disposed of by deleting relevant computer files and destroying or shredding hardcopy materials.
Approval	This project has been approved by the Human Research Ethics Committee of the University of New England (Approval No....., Valid to .././....).
Contact details	Feel free to contact me with any questions about this research by email at amirash@myune.edu.au or by phone on +966508063298 OR +61415464773.
Complaints	You may also contact my supervisors. My principal supervisors name is Dr. Theodosia Prodromou, and he can be contacted at tprodrom@une.edu.au or +61 2 6773 3237 and my Co-supervisors name Dr. Joy Hardy and he can be at jhardy4@une.edu.au or +61 2 6773 2520. Should you have any complaints concerning the manner in which this research is conducted, please contact: Research Ethics Officer Research Services University of New England Armidale, NSW 2351 Tel: +612 6773 3715 Email: humanethics@une.edu.au Thank you for considering this request and I look forward to further contact with you. Regards, Ali Majrashi



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CONSENT FORM FOR PARTICIPANTS

Research Project: "Faculty Member Perceptions of E-learning in Four Emerging Saudi Universities: A Mixed Methods Study."

I, ..., have read the information contained in the Information Sheet for Participants and any questions I have asked to have been answered to my satisfaction. Yes ☐ No ☐

I agree to participate in this activity, realising that I may withdraw at any time. Yes ☐ No ☐

I agree that research data gathered for the study may be quoted and published using a pseudonym. Yes ☐ No ☐

I agree to the interview being audio recorded and transcribed. Yes ☐ No ☐

I would like to receive a copy of the transcription of the interview. Yes ☐ No ☐

I am older than 18 years of age. Yes ☐ No ☐

.....
Participant Date

.....
Researcher Date

نموذج معلومات للمشاركين في المقابلة

أود أن أدعوك للمشاركة في مشروع البحث الموضوع أدناه.

اسمي علي مجرشي، وأنا أجري هذا البحث كمطلب لدرجة الدكتوراه في الفلسفة في كلية التربية بجامعة نيو انجلاند. مشرفي هم الدكتور ثيودوسيا برودومو والدكتورة جوي هاردي.

عنوان الدراسة	تصورات أعضاء هيئة التدريس حول التعلم الإلكتروني في أربع جامعات سعودية ناشئة: دراسة مختلطة
هدف البحث	هذه الدراسة هي استكشاف لتصورات أعضاء هيئة التدريس حول التعلم الإلكتروني في أربع جامعات سعودية ناشئة. تهدف هذه الدراسة إلى: ١- فهم تصورات أعضاء هيئة التدريس حول استخدام التعلم الإلكتروني في جامعات المنطقة الجنوبية من المملكة العربية السعودية، بما في ذلك المعوقات التي يواجهونها والحلول التي تساعد في التغلب على هذه العقبات. ٢- تحديد كيف يمكن تحسين توفير التعلم الإلكتروني وكيف يمكن زيادة مدى التعلم الإلكتروني. ٣- التحقيق في كيفية توسيع نطاق التعلم الإلكتروني في الجامعات في المملكة العربية السعودية، ولا سيما منذ أن غيّر جائحة كورونا COVID19 العالمي طريقة التعلم التي تحتاجها جميع المؤسسات التعليمية لسنوات قادمة. وبالتالي، فإن الهدف العام من هذا البحث هو فهم كيف يمكن تحسين التعلم الإلكتروني في الجامعات السعودية الناشئة، ويمكن تحقيق ذلك من خلال التحقيق في وجهات نظر أعضاء هيئة التدريس حول احتياجاتهم، وحلولهم للتحديات التي يواجهونها في تنفيذ التقنيات الحديثة والتعليم الإلكتروني في تدريسيهم.
المقابلة	أرغب في إجراء مقابلة مع شخصكم الكريم عبر الإنترنت من خلال تطبيق Zoom. ستستغرق المقابلة حوالي ساعة. بعد إذنك، سأقوم بتسجيل صوتي للمقابلة للتأكد من أنني أتذكر بدقة المعلومات التي قدمتها. بعد المقابلة، سيتم توفير نسخة لك إذا كنت ترغب في رؤية واحدة.
الخصوصية	أي معلومات أو تفاصيل شخصية تم جمعها أثناء الدراسة ستبقى سرية. لن يتم تحديد أي فرد بالاسم في أي نشر للنتائج. سيتم استبدال جميع الأسماء بأسماء مستعارة؛ سيضمن ذلك عدم إمكانية التعرف عليك.
المشاركة طوعية	مشاركتك في هذه الدراسة طوعية وأنا أحترم حقك في الانسحاب من الدراسة في أي وقت. يمكنك التوقف عن المقابلة في أي وقت دون عواقب، ولا تحتاج إلى تقديم أي تفسير إذا قررت عدم المشاركة أو الانسحاب في أي وقت.
أسئلة البحث	أسئلة المقابلة ليست ذات طبيعة معقدة أو حساسة: بل هي أسئلة عامة تهدف إلى تمكينك من تعزيز معرفتي بالتحديات والعوائق التي تواجه أعضاء هيئة التدريس عند استخدامهم للتعليم الإلكتروني من أجل إدارة أفضل للموارد الجامعية المتاحة وماهي الاحتياجات والحلول المستقبلية.
استخدام المعلومات	سأستخدم معلومات من المقابلة كجزء من أطروحة الدكتوراه الخاصة بي، والتي أتوقع إكمالها في ديسمبر 2023. ويمكن أيضاً استخدام المعلومات من المقابلة في المقالات الصحفية وعروض المؤتمرات قبل هذا التاريخ وبعده. في جميع الأوقات، سأحمي هويتك من خلال تقديم المعلومات بطريقة لا تسمح بتحديد هويتك.
قضايا مزعجة	من غير المحتمل أن يؤثر هذا البحث أي مشكلات شخصية أو مزعجة، ولكن إذا كان الأمر كذلك، فقد ترغب في الاتصال بمركز صحة المجتمع المحلي (٠٠٩٦٦٥٣٢٤٨٨٢ أو ٠٠٩٦٦٥٣٤٨٥٥٣)
حفظ المعلومات	سأحتفظ بالتسجيلات الورقية والملاحظات الخاصة بالمقابلة في خزانة مغلقة في مكتبي في كلية التربية بجامعة نيو انجلاند. سيتم الاحتفاظ بأي بيانات إلكترونية على جهاز كمبيوتر محمي بكلمة مرور. سيتمكن فريق البحث فقط من الوصول إلى البيانات.



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نموذج معلومات للمشاركين في المقابلة

سيتم الاحتفاظ بجميع البيانات التي تم جمعها في هذا البحث لمدة لا تقل عن خمس سنوات بعد التقديم الناجح للطروحة، وبعد ذلك سيتم التخلص منها عن طريق حذف ملفات الكمبيوتر ذات الصلة وإتلاف أو تمزيق المواد المطبوعة.

تمت الموافقة على هذا المشروع من قبل لجنة أخلاقيات البحث البشري بجامعة نيو انجلاند (رقم الموافقة HE21-159، تاريخ ٢٠٢١/٨/٢)
لا تتردد في الاتصال بي بخصوص أي أسئلة حول هذا البحث عبر البريد الإلكتروني على amjrash@myune.edu.au أو عبر الواتس على 966508063298+ أو التواصل +61415464773

يمكنك أيضًا الاتصال بمشرفي. اسم المشرف الرئيسي هو الدكتور ثيودوسيا برودرومو، ويمكن الاتصال به على tprodrom@unc.edu.au
+61267733237، والمشرف المشارك هو الدكتور جوي هاردي ويمكن أن يكون على Jhardy4@une.edu.au أو +61267732520
إذا كان لديك أي شكاوى بخصوص الطريقة التي يتم بها إجراء هذا البحث، يرجى الاتصال بمسؤول أخلاقيات البحث على:

خدمات البحوث
جامعة نيو انجلاند
أرميدال، نيو ساوث ويلز 2351
هاتف: (02) 3449 6773 فاكس: (02) 3543 6773
البريد الإلكتروني ethics@une.edu.au
شكرًا لك على النظر في هذا الطلب وأتطلع إلى مزيد من الاتصال بك.

تحياتي،
علي مجرشي



كلية التربية والتعليم
جامعة نيو انجلاند
أرميدال نيو ساوث ويلز ٢٣٥١
أستراليا
هاتف ٠٢٦٧٧٣٤٢٢١
فاكس ٠٢٦٧٧٣٢٤٤٥
education@une.edu.au
www.une.edu.au

نموذج الموافقة للمشاركين في المقابلة

المشروع البحثي: "تصورات أعضاء هيئة التدريس عن التعلم الإلكتروني في أربع جامعات سعودية ناشئة: دراسة طرق مختلطة."

نعم أنا،، لقد قرأت المعلومات الواردة في ورقة معلومات المشاركين التي تحتوي على معلومات مفصلة عن هذه الدراسة وأي تساؤلات كانت عندي تمت الإجابة عليها بشكل مرضي.

☐ نعم ☐ لا

أوافق على المشاركة في هذا النشاط، مدركاً أنه يمكنني الانسحاب في أي وقت.

☐ نعم ☐ لا

أوافق على أن البيانات البحثية التي ستم جمعها للدراسة قد يتم اقتباسها ونشرها باستخدام اسم مستعار.

☐ نعم ☐ لا

أوافق على تسجيل المقابلة الصوتية وتدوينها.

☐ نعم ☐ لا

أرغب في الحصول على نسخة مكتوبة من هذه المقابلة.

☐ نعم ☐ لا

أنا أكبر من ١٨ عاماً.

☐ نعم ☐ لا

التاريخ

المشارك

.....

.....

التاريخ

الباحث

.....

علي بن حمد طيب مجرشي



كلية التربية والتعليم
جامعة نيو انجلاند
أرميدال نيو ساوث ويلز ٢٣٥١
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البريد الإلكتروني للمشاركين في المقابلة

حفظه الله

سعادة الدكتور/

السيد علي مجرشي طالب دكتوراه في كلية التربية بجامعة نيو انجلاند، أرميدال، نيو ساوث ويلز. يقوم بإجراء بحث حول موضوع "تصورات أعضاء هيئة التدريس عن التعلم الإلكتروني في أربع جامعات سعودية ناشئة: دراسة مختلطة." مرفق طيه ورقة المعلومات واستمارة الموافقة على المشاركة في الدراسة التي سيجريها السيد علي. سيكون السيد مجرشي ممثلاً لك لقبولك المشاركة في بحثه والتوقيع على النموذجين المرفقين في هذا البريد الإلكتروني وإعادتهما إليه على البريد الإلكتروني: amajrash@myune.edu.au

كعضو في المقابلة، س يُطلب منك الإجابة على عدد من الأسئلة. سيتم إجراء المقابلة من قبلي، قد تستغرق المقابلة حوالي 45 دقيقة لإكمالها. يرجى ملاحظة أن مشاركتك في هذه الدراسة طوعية وأنت حر في الانسحاب من الدراسة في أي وقت. يمكنك إيقاف المقابلة في أي وقت دون عواقب، ولا تحتاج إلى تقديم أي تفسير إذا قررت عدم المشاركة أو الانسحاب في أي وقت. شكراً لك على اهتمامك ببحثي.

مع أطيب التحيات،

علي مجرشي

لمزيد من المعلومات حول هذا البحث لا تتردد في الاتصال بنا. التفاصيل معطاة أدناه.

علي حمد مجرشي	د. جوي هاردي	د. ثيودوسيا برودرومو
طالب دكتوراه كلية التربية جامعة نيو انجلاند amjrash@myune.edu.au +61415464773	المشرف الثاني كلية التربية جامعة نيو انجلاند Jhardy4@une.edu.au +61 2 6773 2520	المشرف الأول كلية التربية جامعة نيو انجلاند tprodrom@une.edu.au +61 2 6773 3237

Appendix B:: Interview questions



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Interview questions

- Q1 Could you please tell me about your experience in the field of e-learning?
- Q2 Could you please tell me why you moved to the e-learning style?
- Q3 How do you perceive e-learning at your university?
- Q4 What are the perceptions of faculty members about the use of e-learning and why?
- Q5 What are the obstacles and challenges facing faculty members in the use of e-learning at (University Name)?
- Q6 What enablers help and encourage faculty members to use e-learning at (University Name)?
- Q7 What are the factors that affect a faculty member's use of e-learning at (University Name)?
- Q8 What are the skills/experiences that a faculty member must have to use e-learning from your point of view?
- Q9 What is the relationship between faculty members' personal characteristics and their perceptions of e-learning?
- Q10 What are the needs/solutions that will help faculty members improve their use of e-learning from your point of view?
- Q11 What training courses are offered to faculty members in the field of e-learning at (University Name)?
- Q12 Could you please tell me about some of the benefits or advantages of using e-learning?
- Q13 Could you please tell me about some disadvantages of using e-learning?
- Q14 Was there a noticeable change in the use of e-learning by faculty members before, during and after the coronavirus (COVID-19) pandemic?
- Q15 What was your plan to provide reliable e-learning during coronavirus (COVID-19) pandemic? And who undertook or directed this plan?
- Q16 How would rate the quality of e-learning at (University Name)?
- Q17 How would you rate the effectiveness of e-learning at (University Name)?
- Q17 Does the university encourage faculty members to use e-learning? What are the factors to encourage them?
- Q19 According to university policy, are the faculty members required to use e-learning?

أسئلة المقابلة

- س١/ من فضلك هل يمكن أن تخبرني عن خبرتك في مجال التعلم الإلكتروني؟
س٢/ من فضلك هل يمكن أن تخبرني لماذا انتقلت إلى أسلوب التعلم الإلكتروني؟
س٣/ كيف ترى التعلم الإلكتروني في جامعتك؟
س٤/ ما هي تصورات أعضاء هيئة التدريس حول استخدام التعلم الإلكتروني ولماذا؟
س٥/ ما هي المعوقات والتحديات التي تواجه أعضاء هيئة التدريس في استخدام التعلم الإلكتروني في (اسم الجامعة)؟
س٦/ ما هي العوامل التي تساعد أعضاء هيئة التدريس وتشجعهم على استخدام التعلم الإلكتروني في (اسم الجامعة)؟
س٧/ ما العوامل التي تؤثر على استخدام عضو هيئة التدريس للتعلم الإلكتروني في (اسم الجامعة)؟
س٨/ ما هي المهارات / الخبرات التي يجب أن يمتلكها عضو هيئة التدريس لاستخدام التعلم الإلكتروني من وجهة نظرك؟
س٩/ ما العلاقة بين الخصائص الشخصية لأعضاء هيئة التدريس وتصوراتهم عن التعلم الإلكتروني؟
س١٠/ ما هي الاحتياجات التي تساعد أعضاء هيئة التدريس على تحسين استخدامهم للتعلم الإلكتروني من وجهة نظرك؟
س١١/ ماهي الدورات التدريبية المقدمة لأعضاء هيئة التدريس في مجال التعلم الإلكتروني في (اسم الجامعة)؟
س١٢/ هل يمكن أن تخبرني من فضلك عن بعض مزايا أو فوائد استخدام التعلم الإلكتروني؟
س١٣/ هل يمكن أن تخبرني من فضلك عن بعض عيوب استخدام التعلم الإلكتروني؟
س١٤/ هل كان هناك تغيير ملحوظ في استخدام التعلم الإلكتروني من قبل أعضاء هيئة التدريس قبل جائحة فيروس كورونا (COVID-19) ولماذا؟
س١٥/ هل كان هناك خطة لتوفير تعليم إلكتروني موثوق أثناء جائحة فيروس كورونا (كوفيد-19)؟ ومن قام بهذه الخطة أو إدارها؟
س١٦/ كيف تقيم جودة التعليم الإلكتروني في (اسم الجامعة)؟
س١٧/ كيف تقيم فعالية (استخدام) التعلم الإلكتروني في (اسم الجامعة)؟
س١٨/ هل تشجع الجامعة أعضاء هيئة التدريس على استخدام التعلم الإلكتروني؟ ما هي عوامل تشجيعهم؟
س١٩/ وفقاً لسياسة الجامعة، هل أعضاء هيئة التدريس مطالبون باستخدام التعلم الإلكتروني؟



Appendix C: Questionnaire

Questionnaire

Dear Faculty Member

The survey should take no more than 15-20 minutes. Please answer each question to the best of your knowledge. Your thoughtfulness and candid responses will be greatly appreciated. All responses and information provided will be kept completely confidential and will not be disseminated in any form at any time.

If you agree to participate, please click ☐ Agree and then ☐ start to complete the survey.

If you do not agree, please click ☐ disagree and then ☐ start to exit the survey.

The Survey Covering Letter (consent form)

Dear Faculty Member

My name is Ali Majrashi, and I am interested in your attitudes and experiences of using e-learning in your teaching. This questionnaire has been developed to enable me to collect data for my research for my Doctoral Degree from the University of New England, Australia. The research is designed to determine Faculty Member Perceptions of E-learning in Four Emerging Saudi Universities. Your opinions about this issue are vital for this study. Please note that your participation in this study is confidential. Nobody other than the researcher will look at or use your answers to the questionnaire. Your data will be kept securely by the researcher and destroyed after the thesis is finished. I would also like to draw it to your attention that your participation in this survey is voluntary, and you are free to withdraw at any point. All information will be destroyed after the study is completed, and no names will be mentioned in the study.

Completing the on-line survey indicates your consent for use of the answers you supply.

Thanking you in anticipation of your kind cooperation and positive participation in this study.

Yours faithfully,

Ali Majrashi

Mobile: 00966508063298

Email: amajrash@myune.edu.au

alsmh100@gmail.com

Part 1: Personal details

Please put an (✓) in the box appropriate for each statement.

1-	What is your current age?	☐ 25-30 ☐ 31-40 ☐ 41-50 ☐ 51-60 ☐ Over 60
2-	Gender	☐ Male ☐ Female ☐ Prefer not to say
3-	How many years of experience do you have in Teaching?	☐ 1 - 5 Year ☐ 6-10 Years ☐ 11-15 Years ☐ 16-20 Years ☐ 21-25 Years ☐ More than 25 Years
4-	What is the highest qualification you have?	☐ Doctoral ☐ Master ☐ Bachelor
5-	What is your university?	☐ King Khalid University ☐ Jazan University ☐ Al-Baha University ☐ Najran University
6-	What is your type of college?	☐ Shariah and Fundamentals of Religion ☐ Computer Science ☐ Sciences ☐ Medicine ☐ Dentistry

		☐ Pharmacy ☐ Engineering ☐ Applied Medical Sciences ☐ Languages and Translation ☐ Education ☐ Humanities ☐ Business ☐ Nursing ☐ Sciences and Arts ☐ Home Economics ☐ The Applied College ☐ Administrative Sciences ☐ Law ☐ other (specify) - -----
--	--	---

Part 2: Perceptions					
Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Using e-learning allows me to complete tasks more quickly.					
Using e-learning helps me to present the course content with ease.					
I have the necessary pedagogical skills (e.g., instructional planning, presentation, virtual classroom management, instructional design, and assessment, etc.) needed to use e-learning in my teaching.					
E-learning enables the design and production of high-quality educational content.					
A variety of activities can be offered to students when using e-learning.					
E-learning results in weaker learning outcomes for students.					
E-learning is useful for teaching and learning.					
I prefer to use more traditional ways of teaching rather than e-learning.					
Using e-learning improves the quality of my work.					
I find it difficult to use e-learning in my teaching.					
E-learning is more tiring than traditional teaching because it requires more time on computer screens.					
E-learning is a threat to faculty members' employment.					
E-learning offers me flexibility in teaching with respect to time and place.					
Developing an e-learning course takes more time than developing a traditional course.					
Please write responses to the following questions: Is the use of e-learning systems actively promoted at your university? ----- ----- -----					
Do faculty members use these e-learning systems enough to justify their expense? ----- ----- -----					
3. Part 3: Challenges affecting the use of e-learning					
Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
The devices needed for e-learning in the classroom (e.g., computers, data projector, etc.) are not always available.					
There are not sufficient computer laboratories at my university available to use for e-learning.					

Weak access to adequate internet services at my university does not allow the use of e-learning.					
Sufficient support is not available when problems occur during the use of e-learning					
My university does not provide computers to faculty members.					
Computerized educational programs are not available for faculty members to use.					
Most of the training courses offered in e-learning are theoretical, not practical.					
My university does not encourage faculty members to attend e-learning training courses.					
I do not have sufficient technical knowledge to solve any problems that occur while using e-learning.					
I do not have enough time to attend training courses.					
E-learning increases my workload.					
I do not have enough experience to use e-learning in my teaching.					
It is difficult for me to manage an e-learning course.					
Please provide any additional comments that may negatively affect the application of e-learning at your university.					
4. Part 4: Needs: Needs to help improve the use of e-learning in emerging Saudi universities					
Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I find it easy to use e-learning systems and tools at my university.					
I find it easy to communicate with the e-learning support team.					
I participate in designing e-learning course content.					
The use of e-learning is enhanced when faculty members are able to share their successful experiences.					
Faculty members are involved in e-learning teamwork projects.					
Clear guidance on the use e-learning is available to novice faculty members.					
Attending e-learning training courses is beneficial to my teaching.					
It is important to exchange experiences in the use of e-learning.					
I need to develop my skills in the use of e-learning.					
E-learning provides individual learners with access to high-quality materials that meet their different needs.					
My university benefits from faculty members with previous experiences in designing and producing electronic educational content.					

What resources and/or support do you need while using e-learning?					
5. Part 5: Factors contributing to increasing and improving the use of e-learning					
Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
My university provides quick and timely technical e-learning support.					
My university encourages faculty members by providing material or moral incentives to use e-learning (e.g., rewards, or certificates of thanks, etc.).					
Strong infrastructure (such as fast internet, computers, e-learning tools, hardware, software, etc.) is available for the use of e-learning at my university.					
There are clear and easy to understand policies in the use of e-learning at my university.					
The university's leaders and decision makers emphasise the importance of using e-learning.					
The software and hardware needed for e-learning is available at my university.					
It is easy to access the software and hardware needed for e-learning at my university.					
Faculty colleagues from my university and/or other universities exchange experiences in relation to the use of e-learning.					
The university leaders and deans support the use of e-learning.					
My university offers training courses on the use of the e-learning technologies.					
Please write a response to the following question: What activities have been conducted in or by your university to help improve and increase the use of e-learning in higher education? 					
6. Part 6: The COVID pandemic and its impact on the use of e-learning in the higher education sector in KSA					
Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
During the COVID-19 global pandemic, my university provided a clear plan to faculty members on how to use e-learning to deliver their course content.					
During the COVID-19 global pandemic, it was easy to use e-learning and its tools.					
During the COVID-19 global pandemic, high-quality educational content was provided through the use of e-learning					

During the COVID-19 global pandemic, the university and faculty members, were positive about the use of e-learning.					
During the COVID-19 global pandemic, there was an increase in the use of e-learning.					
During the COVID-19 global pandemic, there was a change in the convictions of leaders and teachers towards the use of e-learning					
During the COVID-19 global pandemic, there were more opportunities for exchanging experiences among faculty members in relation to e-learning.					
During the COVID-19 global pandemic, the barriers (e.g., a fear of failure in using the new technologies) in the uptake of e-learning among faculty members were reduced.					
During the COVID-19 global pandemic, there was an increase in faculty members attending e-learning training courses.					
During the COVID-19 global pandemic, there were adequate training courses held to prepare teachers to use e-learning.					
During the COVID-19 global pandemic, my university provided adequate technical support when faculty members experienced technical issues when delivering e-learning.					
During the COVID-19 global pandemic, a guide in the use of e-learning educational materials was provided to faculty members.					
During the COVID-19 global pandemic, my university administration regularly evaluated e-learning mechanisms.					
During the COVID-19 global pandemic, my university was able to continuously answer the inquiries of faculty members and students in relation to e-learning.					

Appendix D: Online Impaired Consent for Participants

Research Project: “Faculty Member Perceptions of E-learning in Four Emerging Saudi Universities: A Mixed Methods Study.”

- I have read the information contained in the Information Sheet for Participants, and any questions I have asked to have been answered to my satisfaction.
- I agree to participate in this study, with the understanding that:
 - My participation is voluntary,
 - My contribution is anonymous
 - Information concerning my identity will not be collected, and
 - I may withdraw at any time without consequences & without follow-up.
- I agree that the anonymous research data collected for the study will form part of a thesis and may be published or presented at conferences at a later date.
- I agree that I may be quoted using a pseudonym.
- I am 18 years of age or older.
- In the preservation of anonymity, I understand that no name or signature is required of me to give consent. By activating the proceed button below, I am agreeing to the above and to participate in this study.

Completing the online survey indicates your consent for the use of the answers you supply.

If you agree to participate, please click Agree and then "Next" to complete the survey. If you do not agree, please click disagree and then "Next" to exit the survey.

Appendix E: Covering Letter

Covering Letter

Dear Faculty Member,

Welcome to the Online Survey

My name is Ali Majrashi, and I am interested in your attitudes and experiences of using e-learning in your teaching. This questionnaire has been developed to enable me to collect data for my research for my Doctoral Degree from the University of New England, Australia. The research is designed to determine Faculty Member Perceptions of E-learning in Four Emerging Saudi Universities. Your opinions about this issue are vital for this study. Please note that your participation in this study is confidential. Nobody other than the researcher will look at or use your answers to the questionnaire. Your data will be kept securely by the researcher and destroyed after the thesis is finished. I would also like to draw it to your attention that your participation in this survey is voluntary, and you are free to withdraw at any point. All information will be destroyed after the study is completed, and no names will be mentioned in the study.

Thanking you in anticipation of your kind cooperation and positive participation in this study.

Yours faithfully, Ali Majrashi

Mobile: 00966508063298

Email: amajrash@myune.edu.au

alsmh100@gmail.com

Appendix F: A letter from the Saudi Cultural Attaché in Australia to the universities targeted by the study to facilitate and request approval for interviews and survey.

ROYAL EMBASSY OF SAUDI ARABIA
CULTURAL ATTACHÉ OFFICE
CANBERRA



مملكة العربية السعودية
مكتب الملحق الثقافية
كانبرا
إفادة تسهيل مهمة

2021/08/16م

إلى من يهمه الأمر

يقيد مكتب الملحق الثقافي في سفارة المملكة العربية السعودية في أستراليا بأن المبتعث/ علي حمد طيب مجرشي، (رقم الهوية الوطنية 1006064990) مبتعث من وزارة التعليم لدراسة مرحلة الدكتوراة في تخصص Education في جامعة New England، علماً بأن عنوان البحث:

“Faculty Member Perceptions of E-Learning in Four Emerging Saudi Universities: A Mixed Methods Study”.

وقد بدأ بحثه بتاريخ 2018/08/05م، وستنتهي بحثه في تاريخ 2022/01/03م.

ونظراً لحاجة المبتعث للقيام بجمع معلومات متعلقة برسالة الدكتوراه من المملكة وبناءً على توصية المشرف الأكاديمي بالجامعة التي يدرس بها المبتعث؛ نأمل من الجهات ذات العلاقة التكريم بالنظر وفق أنظمة الجهة لمساعدة المبتعث وتسهيل مهمته في جمع المعلومات المطلوبة لأغراض البحث العلمي دون أدنى مسؤولية على الملحقية الثقافية في أستراليا حيال تأييد المبتعث بأي معلومات تخص الجهة.

مع خالص شكرنا وتقديرنا،،،

القائم بأعمال الملحقية الثقافية
بسفارة المملكة العربية السعودية في كانبرا

د. ربيع بن عبدالمادر هريدي



Ref No:..... Date:..... Attachments:..... الرقم:..... التاريخ:..... المرفقات:.....
Tel: +61 2 62693170 Fax: +61 2 62325978 P.O. BOX 1206, DICKSON, ACT, 2602, AUSTRALIA
www.sacm.org.au



2022/11/24م

إلى من يهمه الأمر

1006064990	رقم السجل المدني	علي حمد طيب مجرشي	إسم المبتعث
أستراليا	الدولة	وزارة التعليم (الكادر التعليمي)	جهة الابتعاث
دكتوراه	الدرجة العلمية	The University of New England	الجهة التعليمية
2023/08/05م	تاريخ نهاية البعثة	2018/08/05م	تاريخ بداية البعثة
SM-30516	رقم الطلب الإلكتروني عبر سفير 2	من تاريخ: 2022/12/18م حتى تاريخ: 2023/02/14م	فترة التطبيق
Faculty Member Perceptions of E-learning in Four Emerging Saudi Universities: A Mixed Methods Study			عنوان البحث

يفيد مكتب الملحق الثقافي في سفارة المملكة العربية السعودية في أستراليا بأن المبتعث الموضح بياناته أعلاه يرغب في القيام بجمع معلومات بحثية متعلقة برسالة الدكتوراه من المملكة العربية السعودية.

وبناء على توصية المشرف الأكاديمي بالجامعة التي يدرس بها المبتعث، نأمل من الجهات ذات العلاقة التكرم بالنظر وفق أنظمة الجهة لمساعدة المبتعث وتسهيل مهمته في جمع المعلومات المطلوبة لأغراض البحث العلمي دون أدنى مسؤولية على الملحقية الثقافية في أستراليا حيال تزويد المبتعث بأي معلومات تخص الجهة.

والله الموفق،،،

القائم بأعمال الملحقية الثقافية

بسفارة المملكة العربية السعودية لدى أستراليا

د. عبدالباري بن علي بن يحيى التمني

الرقم:..... التاريخ:..... المرفقات:.....
Ref No:....., Date:....., Attachments:.....
Tel: +1300 222 242 Or: +61262693170 Fax: +61262325978 Address: 16 Watson St, Turner, ACT, 2612, Australia

www.sacm.org.au

الرقم :
التاريخ :
المرفقات :
الموضوع :



المملكة العربية السعودية
وزارة التعليم
الرمز ٢٨٠
الإدارة العامة للتعليم بمنطقة تبوك
الشؤون التعليمية - إدارة الاختبارات والقبول

To whom it may concern

This is to inform you that E-learning Support Center at Administration of Tabuk Education, Saudi Arabia has approved the request submitted by the researcher, Mr. Ali Hamad Majrashi, to conduct his study entitled Faculty Member Perceptions of E-learning in Four Emerging Saudi Universities: A Mixed Methods Study.

Our administration wishes him all the best in his study.

Director of Administration of
Tabuk Education

Majid Abdulrahman Al-Qa'ir



Appendix G: ethical approval (Approval No: HE21-159) from the University of New England (UNE) Ethics Committee



Research Services
University of New England
Armidale NSW 2351
Australia
Phone 02 6773 3715
humanethics@une.edu.au
www.une.edu.au/research-services

HUMAN RESEARCH ETHICS COMMITTEE

MEMORANDUM TO: Dr Theodosia Prodromou, A/Prof Joy Hardy & Mr Ali Hamad T Majrashi

School of Education

This is to advise you that the Human Research Ethics Committee has approved the following:

PROJECT TITLE: Faculty Member Perceptions of e-Learning in Four Emerging Saudi Universities: A Mixed Methods Study

APPROVAL No.: HE21-159

COMMENCEMENT DATE: 02 August, 2021

APPROVAL VALID TO: 10 October, 2023

COMMENTS: Nil. Conditions met in full

The Human Research Ethics Committee may grant approval for up to a maximum of three years. For approval periods greater than 12 months, researchers are required to submit an application for renewal at each twelve-month period. All researchers are required to submit a Final Report at the completion of their project. The Progress/Final Report Form is available at the following web address:
<http://www.une.edu.au/research/research-services/rdi/ethics/hre/hrec-forms>

The NHMRC National Statement on Ethical Conduct in Research Involving Humans requires that researchers must report immediately to the Human Research Ethics Committee anything that might affect ethical acceptance of the protocol. This includes adverse reactions of participants, proposed changes in the protocol, and any other unforeseen events that might affect the continued ethical acceptability of the project.

In issuing this approval number, it is required that all data and consent forms are stored in a secure location for a minimum period of five years. These documents may be required for compliance audit processes during that time. If the location at which data and documentation are retained is changed within that five year period, the Research Ethics Officer should be advised of the new location.



Bethany Ayers
HREC Secretary
Research Ethics Officer

Appendix H: Thematic analysis coding-Frequencies

N	Code	Frequency
1)	Technical support	11
2)	Financial support (Budgets)	2
3)	Material and moral	13
4)	Lack of devices available	7
5)	Lack of computer technology	7
6)	Lack of Infrastructure	14
7)	Slow internet connection	9
8)	Update hardware and software	8
9)	Culture	3
10)	Design preparation time	7
11)	Lack of interest in attending training courses	7
12)	The decision-makers	8
13)	Weak personal conviction	8
14)	Encouragement from the leadership	8
15)	Lack of student's interaction	6
16)	Poor interaction between student and teacher	5
17)	Use e-learning tools	6
18)	Technology illiteracy	6
19)	Computer illiteracy	10
20)	Lack of instructional design	12
21)	Lack of training	8
22)	Virtual classroom management	8
23)	Lack of experience	9
24)	Lack of qualified staff	7
25)	Lack of technical experience	9
26)	Lack of using e-learning	7
27)	Specialisation	5
28)	Geographical location	4

29)	The nature of region	9
30)	Unclear policies	9
31)	Clear policies	8
32)	Support	9
33)	Experiences	9
34)	Communication	7
35)	Cooperation	8
36)	Conviction	9
37)	Lack of skills	18
38)	Training	10
39)	Infrastructure	10
40)	Alleviate pressures on higher education facilities	5
41)	Reduce expenses	6
42)	Solve the lack of faculty members in some disciplines	5
43)	A useful solution to the problem of large numbers of students in some academic divisions	5
44)	Flexibility in place and time	18
45)	Provide feedback	15
46)	Helps faculty members to access the latest updates in the curriculum	6
47)	Develop professionally (Develop technical and academic skills)	7
48)	The diversity of activities, tasks, and assignments.	6
49)	Delivering educational content with multiple tools and software	7
50)	Individual differences	7
51)	Easy access to knowledge and educational resources	5
52)	Get feedback	15
53)	Diversity in activities and tasks	5
54)	Effective communication	5
55)	Strong infrastructure	9
56)	Constant need to update hardware and software	9
57)	Quick technical support	9
58)	Fast and strong internet connection	19
59)	Continuous training and development	4
60)	Design preparation time	17

61)	Special skills	4
62)	Poor social relations and communication	5
63)	Curriculum Specific Suitability	4
64)	The health effects	6
65)	Isolation and introversion	4
66)	Opportunity for corruption (cheating - impersonation)	5
67)	Fear of Failure	8
68)	Fear to use Technology	7
69)	Lack of conviction	17
70)	Lack of timely technical support	9
71)	Negative Environment	8
72)	Weak e-learning skills	9
73)	Attending training courses	8
74)	Convince of the importance of e-learning	8
75)	Exchange Experiences	11
76)	Specialisation	3
77)	Successful Experiences	7
78)	Incentives	8
79)	Support	9
80)	Infrastructure	7
81)	Training	9
82)	Clarity of policies	12
83)	Leaders' conviction	9
84)	Conviction	9
85)	Experience	10
86)	Training	9
87)	Skills	8
88)	Specialisation	3
89)	A plan to provide e-learning	7
90)	Positive change	8
91)	Increase in usage	8
92)	Changing convictions (leaders/teachers)	7

93)	Increase the exchange of experiences	8
94)	Reducing the barriers of fear and failure	8
95)	Increase in attendance at training courses	7

Appendix I: The main output summary for each model and the response frequencies for every question for each model as reported by the QUEST software.

```

Perception
-----
Item Estimates (Thresholds)                                24/ 8/23
10:23
all on all (N = 387 L = 14 Probability Level= .50)
-----

Summary of item Estimates
=====

Mean                .00
SD                  .56
SD (adjusted)       .49
Reliability of estimate .78

Fit Statistics
=====

Infit Mean Square      Outfit Mean Square

Mean    1.00          Mean    1.05
SD       .21          SD       .26

Infit t              Outfit t

Mean    .14          Mean    .52
SD       2.64         SD       2.57

0 items with zero scores
0 items with perfect scores
=====
=====

```

```

Perception
-----
Case Estimates                                24/ 8/23
10:23
all on all (N = 387 L = 14 Probability Level= .50)
-----

Summary of case Estimates
=====

Mean                .49
SD                  .79
SD (adjusted)       .72
Reliability of estimate .82

Fit Statistics
=====

Infit Mean Square      Outfit Mean Square

Mean    1.03          Mean    1.05
SD       .87          SD       1.01

Infit t              Outfit t

Mean    -.20          Mean    -.11
SD       1.76         SD       1.50

0 cases with zero scores
5 cases with perfect scores
=====
=====

```

Challenges

```

-----
Item Estimates (Thresholds)                                     31/ 8/23
15: 0
all on all (N = 387 L = 14 Probability Level= .50)
-----

```

Summary of item Estimates

```

=====
Mean                .00
SD                  .61
SD (adjusted)       .55
Reliability of estimate .81

```

Fit Statistics

```

=====
Infit Mean Square      Outfit Mean Square

Mean    1.00           Mean    1.03
SD       .19           SD       .32

Infit t                Outfit t

Mean    -.18           Mean     .01
SD       2.85           SD       2.89

0 items with zero scores
0 items with perfect scores
=====
=====

```

Challenges

```

-----
Case Estimates                                     31/ 8/23
15: 0
all on all (N = 387 L = 14 Probability Level= .50)
-----

```

Summary of case Estimates

```

=====
Mean                .49
SD                  1.05
SD (adjusted)       .99
Reliability of estimate .90

```

Fit Statistics

```

=====
Infit Mean Square      Outfit Mean Square

Mean    1.02           Mean    1.03
SD       .70           SD       .86

Infit t                Outfit t

Mean    -.22           Mean    -.13
SD       1.76           SD       1.46

0 cases with zero scores
2 cases with perfect scores
=====
=====

```


Needs

Item Estimates (Thresholds)

31/ 8/23

15:29

all on all (N = 387 L = 12 Probability Level= .50)

Summary of item Estimates

Mean	-.01
SD	.74
SD (adjusted)	.66
Reliability of estimate	.79

Fit Statistics

Infit Mean Square		Outfit Mean Square	
Mean	1.02	Mean	1.04
SD	.41	SD	.43

Infit t		Outfit t	
Mean	-.68	Mean	-.29
SD	4.59	SD	3.95

0 items with zero scores

0 items with perfect scores

Needs

Case Estimates

31/ 8/23

15:29

all on all (N = 387 L = 12 Probability Level= .50)

Summary of case Estimates

Mean	.74
SD	.95
SD (adjusted)	.87
Reliability of estimate	.84

Fit Statistics

Infit Mean Square		Outfit Mean Square	
Mean	1.00	Mean	1.04
SD	.81	SD	.94

Infit t		Outfit t	
Mean	-.24	Mean	-.11
SD	1.60	SD	1.40

0 cases with zero scores

0 cases with perfect scores

```

Enablers
-----
-----
Item Estimates (Thresholds)                                31/ 8/23
15:55
all on all (N = 387 L = 11 Probability Level= .50)
-----
-----

Summary of item Estimates
=====

Mean                                .00
SD                                  .51
SD (adjusted)                       .43
Reliability of estimate              .70

Fit Statistics
=====

Infit Mean Square                Outfit Mean Square

Mean    1.00                    Mean    1.04
SD       .66                    SD       .79

Infit t                            Outfit t

Mean    -1.15                   Mean     -.53
SD       6.40                    SD       4.06

0 items with zero scores
0 items with perfect scores
=====
=====

```

```

Enablers
-----
-----
Case Estimates                                              31/ 8/23
15:55
all on all (N = 387 L = 11 Probability Level= .50)
-----
-----

Summary of case Estimates
=====

Mean                                .49
SD                                  1.55
SD (adjusted)                       1.38
Reliability of estimate              .79

Fit Statistics
=====

Infit Mean Square                Outfit Mean Square

Mean    1.02                    Mean    1.04
SD       .89                    SD       .95

Infit t                            Outfit t

Mean    -.23                     Mean     -.11
SD       1.75                    SD       1.46

0 cases with zero scores
4 cases with perfect scores
=====
=====

```

```

Covid
-----
-----
Item Estimates (Thresholds)                                31/ 8/23
16:15
all on all (N = 387 L = 15 Probability Level= .50)
-----
-----

```

Summary of item Estimates
=====

Mean	-.01
SD	.41
SD (adjusted)	.05
Reliability of estimate	.01

Fit Statistics
=====

Infit Mean Square		Outfit Mean Square	
Mean	.99	Mean	1.11
SD	.55	SD	.92

Infit t		Outfit t	
Mean	-.82	Mean	.10
SD	5.46	SD	5.67

0 items with zero scores
0 items with perfect scores

```

Covid
-----
-----
Case Estimates                                31/ 8/23
16:15
all on all (N = 387 L = 15 Probability Level= .50)
-----
-----

```

Summary of case Estimates
=====

Mean	1.63
SD	1.47
SD (adjusted)	1.40
Reliability of estimate	.91

Fit Statistics
=====

Infit Mean Square		Outfit Mean Square	
Mean	1.12	Mean	1.11
SD	.85	SD	.87

Infit t		Outfit t	
Mean	.04	Mean	.04
SD	1.90	SD	1.57

0 cases with zero scores
14 cases with perfect scores

Appendix J:

A letter to the Vice-Rector for Postgraduate Studies and Scientific Research for universities the target of the study- for interviews and questionnaire..



School of Education
University of New England
Armidale NSW 2351
Australia
Phone 02 6773 4221
Fax 02 6773 2445
education@une.edu.au
www.une.edu.au

Respected Vice-Rector for Graduate Studies and Scientific Research at:

**Al-Baha University
Najran University
Jazan University
King Khalid University**

Greetings!

I hope this letter finds you in good health. This letter is to inform you that Mr. Ali Hamad Majrashi is conducting research entitled **“Faculty Member Perceptions of E-learning in Four Emerging Saudi Universities: A Mixed Methods Study.”** Among his study’s scope is Jazan University. Ali wishes to conduct four interviews with the dean of the deanship of E-learning and three interviews with the faculty members nominated by the dean.

Therefore, we seek your approval to let the researcher to conduct the interviews with the aforementioned group.

Your cooperation in this matter is much appreciated and will definitely expedite accomplishing the researcher’s scholarship in a timely manner.

Please don’t hesitate to contact me if you would like to inquire about the research study:

+61267733237 tprodrom@une.edu.au

Also, you might contact the researcher directly at:

+966508063298
amajrash@myune.edu.au

Thank you for your cooperation and support for scientific research.

Yours faithfully,

Dr. Theodosia Prodromou

School of Education University of New England

A letter to the Vice-Rector for Postgraduate Studies and Scientific Research for universities the target of the study- for the questionnaire.



School of Education
University of New England
Armidale NSW 2351
Australia
Phone 02 6773 4221
Fax 02 6773 2445

Respected Vice-Rector for Graduate Studies and Scientific Research at:

- **Al-Baha University**
- **Najran University**
- **Jazan University**
- **King Khalid University**

Greetings!

I hope this letter finds you in good health. This letter is to let you know that Mr Ali Hamad Majrashi is conducting research entitled **“Faculty Member Perceptions of E-learning in Four Emerging Saudi Universities: A Mixed Methods Study.”** Among his study’s scope is Al-Baha University. Ali would like to distribute a questionnaire to university faculty members. Therefore, we ask for your consent to allow the researcher to distribute the questionnaires to faculty members at the university, and to direct university officials to facilitate the researcher's task.

Your cooperation in this matter is much appreciated and will definitely expedite accomplishing the researcher’s scholarship in a timely manner.

Please don’t hesitate to contact me if you would like to inquire about the research study:

+61267733237

tprodrom@une.edu.au

Also, you might contact the researcher directly at:

+966508063298

amajrash@myune.edu.au

Thank you for your cooperation and support for scientific research.

Yours faithfully,

Dr. Theodosia Prodromou

School of Education
University of New England