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Information Technologies

**INFLUENCING FACTORS OF USING THE E-
LEARNING SYSTEMS BASED ON CLOUD
COMPUTING IN IRAQI UNIVERSITIES**

Mohamad Ayad Ahmad AHMAD

Master's Thesis

Supervisor

Asst. Prof. Dr. Abdullahi Abdu IBRAHIM

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The thesis titled “INFLUENCING FACTORS OF USING THE E-LEARNING SYSTEMS BASED ON CLOUD COMPUTING IN IRAQI UNIVERSITIES” prepared by “MOHAMAD AYAD AHMAD AHMAD” and submitted on (31/12/2021) has been **accepted unanimously** for the degree of Master of Science in Information Technologies.

Lecturer. DR.Mohammed ALSALEM

Co-Supervisor

Assoc. Prof. DR.Abdullahi Abdu

IBRAHIM

Supervisor

Thesis Defense Jury Members:

Asst. Prof. DR.Abdullahi Abdu
IBRAHIM

School of Engineering and
Architecture,

Altinbas University

Asst. Prof. DR Hasan ABDULKADER

School of Engineering and
Architecture,

Altinbas University

Asst. Prof. DR.Tareq Abed
MOHAMMED

College of Computer Science
and Information Technology,

Imam Ja'fer AL-Sadiq
University, Kirkuk ,Iraq

I hereby declare that this thesis meets all format and submission requirements of a Master's thesis.

Accepted by Altinbaş University Institute of Graduate Studies on the following date:

____/____/____

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Mohamad Ayad Ahmad AHMAD

Signature

DEDICATION

I dedicate my dissertation work to my family and many friends. I would like to dedicate to my supervisor Asst. Prof. Dr. Abdullahi Abdu Ibrahim which help me in all stages of the thesis.



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ABSTRACT

INFLUENCING FACTORS OF USING THE E-LEARNING SYSTEMS BASED ON CLOUD COMPUTING IN IRAQI UNIVERSITIES

Ahmad, Mohamad Ayad

M.Sc, Information Technologies, Altınbaş University,

Supervisor: Asst. Prof. Dr. Abdullahi Abdu IBRAHIM

Co-Supervisor: Lecturer. Dr. Mohammed ALSALEM

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Cloud-based e-learning (CBEL) has created a paradigm shift in the use of technology. Related literature focused on the adoption and use of this technology among business organizations while studies related to educational institutions were few. The aim of this study is to investigate the factors that influence behavioral intention (BI) and the actual use (AU) of CBEL in Iraqi universities. The research model was proposed based on the dual-factor concept through combine two theories, the first one is the unified theory of technology acceptance and use (UTAUT2) with the trust factor as an additional variable, and the second one is the status quo bias theory (SQB). The population of this study is academic staff* from five universities in Iraq. A random sampling technique has been used to select 258 staff members as a sample. The questionnaire has been used to collect data. Structural Equation Modeling (SEM) has been used to analyze the data based on AMOS software. The results confirm that performance expectancy (PE) is the most important factor regarding the (BI) and AU of CBEL, followed by the trust (TR), perceived value (PEV), Sunk costs (SC), social influence (SI), and hedonic motives (HM).

Keywords: Cloud Computing ,E-learning ,CBEL,Dual Factor Theory.

*Academic staff: Refers to the teaching staff in universities with various scientific titles (assistant lecturer, lecturer, assistant professor, professor)

ÖZET

IRAK ÜNİVERSİTELERİNDE BULUT BİLİŞİM TEMELLİ E-ÖĞRENİM SİSTEMLERİNİN KULLANILMASINI ETKİLEYEN FAKTÖRLER

Ahmad, Mohamad Ayad

Yüksek Lisans, Bilgi Teknolojileri, Altınbaş Üniversitesi,

Danışman: Asst. Prof. Dr. Abdullahi Abdu IBRAHİM

Yardımcı Danışman: Öğretim Üyesi.Dr. Mohammed ALSALEM

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Bulut tabanlı e-öğrenme (CBEL), teknoloji kullanımında bir paradigma değişikliği yarattı. İlgili literatür, bu teknolojinin iş organizasyonları arasında benimsenmesi ve kullanılmasına odaklanırken, eğitim kurumları ile ilgili çalışmalar azdı. Bu çalışmanın amacı, Irak üniversitelerinde CBEL'in davranışsal niyeti (BI) ve fiili kullanımını (AU) etkileyen faktörleri araştırmaktır. Araştırma modeli, iki teoriyi birleştirerek çift faktör kavramına dayalı olarak önerilmiştir; birincisi, güven faktörünün ek bir değişken olarak kullanıldığı birleşik teknoloji kabulü ve kullanımı teorisi (UTAUT2) ve ikincisi ise statüko yanlılığıdır. teori (SQB). Bu çalışmanın evreni, Irak'taki beş üniversitenin akademik personelidir*. 258 personelin örneklem olarak seçilmesi için tesadüfi örnekleme tekniği kullanılmıştır. Veri toplamak için anket kullanılmıştır. AMOS yazılımına dayalı verilerin analizinde Yapısal Eşitlik Modellemesi (SEM) kullanılmıştır. Sonuçlar, performans beklentisinin (PE), CBEL'in (BI) ve AU'su ile ilgili en önemli faktör olduğunu, ardından güven (TR), algılanan değer (PEV), Batık maliyetler (SC), sosyal etki (SI), ve hedonik güdüler (HM).

Anahtar Kelimeler: Bulut Bilişim, E-öğrenme, CBEL, Dual Factor Theory.

*Akademik kadro: Üniversitelerdeki çeşitli bilimsel unvanlara sahip öğretim elemanlarını (yardımcı öğretim üyesi, öğretim görevlisi, yardımcı doçent, profesör) ifade eder.

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LIST OF ABBREVIATIONS

ICT	: Information Communication Technology
E-learning	: Electronic Learning
CBT	: Computer-Based Training
IBT	: Internet-Based Training
WBT	: Web-Based Training
LMS	: Learning Management Systems
CMS	: Course/Content Management Systems
CLE	: Collaborative Learning Environment
VLE	: Virtual Learning Environments
MOOCs	: Massive Open Online Courses
CC	: Cloud Computing
IEEE	: Institute of Electrical and Electronics Engineers
NIST	: National Institute of Standards and Technology
ATM	: Asynchronous Transfer Mode
SaaS	: Software as a service
PaaS	: Platform as a Service
IaaS	: Infrastructure as a service
GUI	: Graphical User Interface
CRM	: Customer Relationship Manager

SAP	: System Application and products
VM	: Virtual Machine
RAM	: Random Access Memory
CPU	: Central Processing Unit
QoS	: Quality of Service
CBEL	: Cloud-Based E-Learning
ITK	: Information Technology Knowledge
FVM	: Fit-Viability Model
DOI	: Diffusion of Innovation
TAM	: Technology Acceptance Model
VETA	: Values-Enhanced Technology Adoption
RCT	: Rational Choice Theory
ECM	: Expectation-confirmation model
QU	: Qassim University
MM	: Motivational Model
SCT	: Social Cognitive Theory
PIM	: Purchase Intention Model
UTAUT	: Unified Theory of Acceptance and Use of Technology
SQB	: Status Quo Bias
PE	: Performance Expectancy
BI	: Behavioral Intention

EE	: Effort Expectancy
SI	: Social Influence
FCs	: Facilitating Conditions
SEM	: Structural Equation Modeling
AMOS	: Analysis of Moment structures
ISs	: In information systems
AU	: Actual Usage
RA	: Relative Advantage
PEOU	: Perceived Ease Of Use
US	: User Satisfaction
SSA	: Sub-Saharan Africa
ITU	: Intention To Use
TPB	: Theory of Planning Behavior
TRA	: Theory of Reason Action
HM	: Hedonic Motivation
PV	: Price Value
TR	: Trust

LIST OF SYMBOLS

β : Weights regression



1. INTRODUCTION

1.1 MOTIVATION AND BACKGROUND

Nowadays, educational technologies have evolved rapidly in lockstep with the rapid growth of Information and Communication Technology (ICT), the prevalence of the internet has increased during the past two decades as universities and other educational institutions invested in ISs to aid in face-to-face and distance learning using electronic learning (E-learning) in combination with networked computers enables the transfer of digital knowledge from internet sources to end-user devices such as a laptop, mobile phone, or tablet [1]. E-learning systems are one of the most significant innovative technologies that educational institutions and universities have widely adopted and implemented on a global scale[2]. E-learning has evolved from its predecessor, distance learning, which attracted a large number of learners from all over the world due to its flexibility, the future of the education system will be defined by the increasing use of technology, which has a significant impact on the quality of the teaching and contributes to the improvement of learning at all educational levels, particularly nowadays due to lower enrollment rates and a decrease in students' physical presence in class, various colleges and universities offer distance learning for specific courses and sometimes even entire degree programs; this also occurs via online platforms, among the many different teaching models, one of the rapidly ascending and original topics in the field of information technology is cloud computing (CC)[3]. The current e-Learning system has a constraint in terms of meeting dynamic scalability demands for storage and other resources; however, this limitation can be overcome through the use of CC [4]. CC is a cutting-edge technology that allows organizations and educational institutions to access computing resources via the Internet, CC services like Amazon web services, google apps, and Microsoft education cloud assist universities by enabling teaching, research, and other development operations [5]. CC is a novel concept in the vast field of information technology (IT), as it enables the provision of a wide variety of services that operate in multiple dimensions, SaaS (software as a service), PaaS (Platform as a service), and IaaS (infrastructure as a service) are its models [6]. software and hardware upgrades CC has been proposed as a means of reducing universities' operational costs because it enables users to access enhanced IT and availability, as well as the reliability of these services from any location at any time on a pay-per-use basis, CC technology has simplified and increased the speed of services, as well as their reliability[7]. Due to its widespread acceptance and innovative

applications for meeting students' academic needs, CC shows a huge potential to give students more freedom and a cheaper cost outstanding educational facilities, CC is a term that “refers to a technology for sharing computing resources, such as storage, computing control, and application” [8]. CC has aided the facades of e-learning functions in achieving unprecedented levels of flexibility, efficiency, and cost-effectiveness, thus, CC became an excellent choice for e-learning because it enables the provision of learning facilities and services[9]. Due to its advantageous characteristics, such as geographic spread, cost-effectiveness in terms of automated systems, and related open-source software, CC has become extremely appealing to a wide range of educational institutions, CC enables such institutions to provide high-quality education, particularly in remote areas with insufficient service and divided populations, furthermore, encouraging contact between students and instructors in different geographic areas, it allows for the creation of lively and engaging learning platforms, active group work, and the discovery of more efficient and creative learning techniques[3]. CC has the greatest impact on course delivery and distance learning in higher education institutions (HEIs), additionally, daily communication between students and instructors or lecturers is a growing area of CC adoption in universities; most recently, one of the indispensable applications used by students and lecturers in HEIs is Gmail and its applications such as Google Drive and questionnaire tools[7]. Although the benefits of CC services for HEIs are enormous, including easy and rapid availability of resources, improved student performance, accelerated scientific research findings, and cost savings related to IT, as well as support for independent learning and collaboration, adoption of cloud services by universities in developing nations like Iraq is extremely low, and there is a scarcity of studies to back it up[5].

Despite the benefits offered by CBEL, there are a number of barriers that prevent users in developing countries in general, and Iraq in particular, from adopting and actually using them, these barriers include economic factors such as a lack of information technology infrastructure and social factors such as poor People's cultural information technology[6]. Technical issues such as availability, coverage, internet speed, and connectivity can all have an effect on how new technologies are adopted and used in Iraq [10]. CC is a novel innovation that has the potential to fundamentally alter the educational sector's modes of teaching and learning; its use not only increases the quality of learning and teaching but also reduces the overconsumption of prescriptive education, despite these benefits, CC adoption and actual use (AU) is still far from its full potential,

particularly in higher education, however, there are few research on the use and adoption of CBEL in developing countries, particularly Iraq [11][12][13].

By looking at the previous literature, it was found that researcher [14] had studied the factors that affecting the use of e-learning in universities by using Unified Theory of Acceptance and Use of Technology (UTAUT1), which included the factors (Performance Expectancy) (PE) and Effort Expectancy (EE)) with the Status Quo Bias (SQB) theory using only the Inertia factor, where the focus was very little on the basic factors of the two theories and due to the importance of this CBEL technology in the field of higher education, our study focused more on the factors affecting the AU of them. So our study used the dual-factor theory, which combines two theories, the first is the (UTAUT2), which includes factors (performance expectancy (PE), social influence(SI), effort expectancy(EE), facilitating conditions (FCs), hedonic motivation(HM), and price value(PV)) with the addition of the trust(TR) factor as an additional variable, all the previous factors are considered as enabling factors that encourage the use of new technology, and the second is the theory of SQB, which includes factors (sunk costs(SC), inertia(IN), regret avoidance(RA), perceived value(PEV), perceived threat(PT), and transition costs(TC)), which are considered as disincentive factors that hinder the use of technology. This study aims to analyze the relationship between the above-mentioned factors that affect the behavioral intention of individuals towards the AU of the CBEL in Iraq.

1.2 PROBLEM STATEMENT

The term "CBEL" is a system that combines the benefits of CC with those of e-learning, this combination provides some options for increasing the efficiency and usability of e-learning systems and contributes to establishing the optimal circumstances for distant learning system use[15]. Many HEIs are shifting from traditional e-learning to CBEL because of its numerous benefits, which include lower costs of accessing IT services, resource pooling, scalability, and mobility, as well as increased teaching quality[16]. Despite the benefits of CBEL, its adoption and utilization are still far from reaching their full potential, particularly in HEIs in developing countries[3]. where, certain institutions, particularly those in developing countries, are hesitant to implement CBEL for a range of factors[16]. Through our review of relevant previous studies and according to [17] [6] [18] [19] [20][21] [22], the researchers studied the problem of adoption and use of CBEL in HEIs in different

countries using several theories and factors that positively or negatively affected the adoption and use of this technology. Accordingly, this study will test the factors that affect the adoption and AU of CBEL in HEIs in Iraq; In order to reach the answer to the research questions in the next section due to their importance in achieving the objectives of the research

1.3 RESEARCH QUESTION

- a- What are the main elements and factors affecting the adoption and actual use of CBEL in Iraq?
- b- How do develop a framework for the adoption and actual use of CBEL in Iraq?

1.4 OBJECTIVE

The overall aim of this study is to investigate and explore the key factors that influence the adoption and use of CBEL in Iraq. The objectives of this study are presented as follows:

- a. To identify the influencing factors adoption of the CBEL by educational institutions in Iraq.
- b. To develop the adoption framework of CBEL for higher education institutions in Iraq.
- c. To validate the proposed framework.

1.5 SIGNIFICANT OF STUDY

The benefit of this study is to encourage academic staff in HEIs in developing countries (the Iraqi environment) to use modern technologies in education, represented by CBEL, which raises the quality and efficiency of teaching and learning, especially in light of the current circumstances of the covid-19 pandemic and the isolation of the world with what it offers Among the benefits, represented by access to courses and materials from anywhere and at any time via the Internet, flexibility, and ease of use, scalability, and collaboration, and low-cost infrastructure, thus determining the factors that affecting on the adoption of CBEL services in the educational institution.

1.6 RESEARCH METHODOLOGY

The research methodology used is the quantitative research approach, the questionnaire will be used as a tool to collect data. The Iraqi universities (University of Mosul, Northern Technical College, Baghdad University, Tikrit University, and Maysan University) will be the community for this study. Moreover, the statistical analysis Structural Equation Modeling (SEM) will be used to analyze the data according to software Analysis of Moment Structures (AMOS).

1.7 SCOPE OF THE STUDY

This research will focus on CBEL services in Iraqi universities and aimed to identify the factors that examine the behavioral intention of users toward CBEL, after that, a framework will be developed to examine the CBEL adoption in Iraq based on the user perspective.

1.8 DEFINITIONS OF MAIN TERMS

Electronic learning (E-learning): is a wider learning strategy that provides additional educational possibilities in many disciplines away from the typical classroom context [23].

Cloud computing (CC): is a paradigm for providing users with easy and retrievable access to a shared pool of computer resources such as (networks, storage, applications, and services) that may be swiftly provided and released with minimum administration effort and/or service provider participation[24].

Cloud-based e-learning (CBEL): It is a system that combines the advantages and benefits of CC with e-learning systems, provides specific solutions that make e-learning systems more efficient and easier to use, and assists in dealing with the ideal conditions for the use of remote education systems [15].

Actual use (AU): is a modification and improvement in a unique method, product, or system for the changing institution, her definition is reasonably compatible with that used in this work, including in the definition used herein is the adoption of ideas from good practice guides, especially those compiled based on experience in other jurisdictions, academic studies, etc [25].

1.9 THESIS ORGANIZATION

This thesis was organized into a five chapters. Chapter one presents the background of the study, statement of the problem, study question, the objectives of the study, the significance of the study, the study scope, conceptual and operational definitions, and the summary. Chapter Two was devoted to the literature review, The aim of this chapter is to provide the reader acquaintance with current research about the subjects addressed in the study and to prove the necessity and relevance to the investigation in part. This includes pioneering writings concepts and the types, practices, areas, and benefits of CBEL in HEIs. The research technique utilized to do these studies is discussed in Chapter Three. The study of the finds, presentation, and interpretation of the data was discussed in depth in Chapter four. Finally, Chapter Five incorporates the summary of major findings conclusions, limitations of the study, and future work.

1.10 CHAPTER SUMMARY

The first chapter provided an overview of the research, starting with the concept and background of the study. The background of the study identified the challenges and risks facing higher education institutions and their need for the AU of CBEL in order to improve education. Higher education institutions should develop a unified policy for information technology and orientation towards the AU of CBEL. Based on the above, the researcher believes that the CBEL contributes to improving the performance of education in higher education institutions. Moreover, the first chapter presented the problem statement, objectives and significance of the study, the scope of the study, and the definition of the terms consisting of the conceptual and operational definitions.

2. LITERATURE REVIEW

2.1 INTRODUCTION

This chapter outlines the theoretical foundation of e-learning, CC, and CBEL. The first section of this chapter discusses the concept of e-learning and its types, the advantages it provides, and the challenges it faces. The second section, it will deal with the concept of CC and its evolution and describe CC service and deployment models. The third section describes the relationship between e-learning and CC in terms of benefits and justifications for use and previous studies related to the adoption of CBEL. The last section of this chapter includes the theoretical framework of the thesis and theories that contributed to building the conceptual research model.

2.2 E-LEARNING

2.2.1 ICT In Education

ICT may be described as the use of technology and associated services to educate and conduct courses electronically through computers, tablets, computer networking, unified communications, and telecommunication, It is also referred to as a critical tool in education since it inspires students and the academic staff uses ICT goods to educate students, which include CD-ROMs, emails, television courses, and teleconferencing [26]. Historically, lecturers created slides for classroom usage based on a context from the whole course and textbook, might be structured around a single textbook, with the instructor and the library serving as the primary sources of knowledge, with the advancement of technology and the model shift that occurred in the twenty-first century, the instructional model shifted from teacher-centered to learner-centered education, with learners taking responsibility for their own learning [27]. The use of ICT in education also enables institutions to provide distance learning, in which the instructor and student do not have to meet in a shared location for lessons to take place[28].

2.2.2 E-Learning Concept

The word "e-learning" goes all the way back to the 1980s, numerous scholars, however, have previously utilized a variety of terminology and meanings to refer to the ideas of network learning, distant learning, eLearning, online learning, and virtual learning environments,

examined a large number of scholars in this area from across the globe to ascertain the degree of variance in the meaning ascribed to these ideas and their features, while the majority of researchers saw no distinction between these categories, some saw distinctions depending on interaction processes or technological usages, this variation in nomenclature exemplifies the issue of inconsistent language and, therefore, the results in this study field[29]. E-learning enables people to access educational resources at any time and from any location through the use of technology, the "E" letter in the term 'E-Learning' refers to electronic learning, which encompasses all educational network activities conducted by individuals or groups working online or offline via electronic devices [30]. The rapid development of E-learning is now preferred by the majority of educational sectors; the technological revolution began with the widespread use of computers and technologies; children and adults have become integral parts of technology by incorporating an increasing number of electronic devices into their daily activities; in this situation, E-learning played a critical role in diverting them from misuse of electronic devices[31]. Today, e-learning is extensively utilized on a variety of educational levels, including continuing education, academic courses, and corporate training, there are many e-learning systems available, ranging from commercial to open source, an e-learning system must include at least two entities: students and trainers[32]. E-Learning includes all forms of electronically assisted learning and teaching, regardless of whether they are referred to as computer based on training (CBT), web based on training (WBT), or Internet based on training (IBT), simply stated, e-Learning is the facilitation of learning via the use of the internet and computers, it is defined as the teaching and delivery of educational resources through the use of ICT [33]. E-learning is a method of imparting knowledge to learners that makes use of the internet, e-learning systems are widely used in a variety of sectors of education, including universities, businesses, medical organizations, and even lower-level training schools, the primary stakeholders in e-learning systems are educators and students, students may gain significantly from an e-learning environment in terms of media delivery efficiency, quick feedback, and contact with instructors, additionally, students may engage directly with tutors and other students from any location and at any time[34]. According to[11], E-learning is described as a method that enables people to improve their learning via the use of a variety of technologies, including cell phones, computers, notebooks, and tablets, additionally, In order to promote better knowledge and therefore more precisely and efficiently, e-learning uses technologies that include

communication, information, and the Internet, different applications, such as (computer-based on learning, web-based on learning, digital collaboration, and virtual classrooms) can be linked with e-learning. According to [35], e-learning defined as "the use of the Internet or other digital material for learning and teaching activities", to develop a new learning style, it uses existing education technology, including a novel communication technique and a rich learning environment. E-learning includes technological improved learning, multimedia learning and distant learning, and is often used interchangeably, such alternate names include computer-based on training, computer-based instruction, web-based training, online education, computer-based teaching or online training, digital learning, m-learning and collaborative digital training [36]. Today, especially in the digital world, e-learning has become an indispensable instrument of education, which enables student-centered learning to flourish and new, more flexible methods of teaching to be introduced [37].

2.2.3 E-Learning Environment

The primary users of an e-Learning system are learners and instructors; thus, examining e-Learning from this viewpoint results in two distinct kinds of learning environments: E-Learning Platforms and Massive Open Online Courses [38].

2.2.3.1 E-Learning platforms

During the majority of e-Learning tools or applications, different universities use e-learning platforms to enhance student learning activity by provides the ability to enhance collaboration, management, learner materials, facilities for student learners, publications and reports, deliver web-basic courses, couplings, and other services e-Learning tools or applications, as a result, electronic learning platforms are now referred to as Virtual Learning Environments (VLE) and Course/Content Management Systems (CMS) [38]. According to [39], defined a virtual learning environment (VLE) is "a set of software tools that assist academic administration, teaching, and research". According to [29], The CMS is described as a collaborative learning environment that includes tools for creating and delivering courses over the Internet.

2.2.3.2 Massive open online courses (MOOCs)

That MOOCs have become one of the most stirring topics in HEIs in recent years as the educational landscape has been challenged by shrinking public budgets and rising costs, MOOCs are defined as online courses with open enrollment and access via the Internet[40]. They represent a watershed moment in the evolution of web-based education systems, made possible by the tremendous expansion of Internet access and capacity over the last decade [41]. The primary goal of the MOOC development is to further the concept of open education by supporting the idea that information should be freely shared regardless of economic, demographic, social, and geographic constraints [42]. This development and spread of MOOCs has piqued the attention of more market participants, as higher education institutions and venture capitalists attempt to create income streams via this novel approach to online education, MOOCs make available[43]. MOOCs were largely unknown until 2011 when a number of the country's most renowned institutions began offering MOOCs via the online delivery of their courses and the establishment of open learning platforms, MOOC systems require considerable effort to provide a positive user experience[38].

2.2.4 Advantages of The E-learning System

E-learning has many benefits, particular of them are listed below[44]:

- a. Accessibility: Students may access the materials at any time and from any location without fear of missing critical information.
- b. Saving money: E-learning has no production, set-up, delivery, or travel expenses.
- c. Affectivity: E-learning accommodates a number of learning styles, and students can select their preferred mode of teaching from a variety of media (for example, presentations, video, and audio).

E-learning has risen in popularity and it has been embraced by a large number of educational institutions because it offers effective and high-quality education, it is also supported for the following reasons [32]:

- a. The collaborative group works - learners collaborate in groups to discuss and exchange ideas.

- b. Accessibility It makes it possible for students to register for education and access education materials without being physically present at a trainer's premises, which also makes it possible for educational resources and course materials to be available to the learner and not the instructor's comfort, increased responsiveness to deadlines.
- c. Self-paced learning enables students to progress at their own speed.

2.2.5 Challenges of E-learning Systems

While it is clear that elearning systems have a number of advantages over traditional classroom-based education, with the exponential development of information at an ever increasing pace, e-learning confronts major difficulties, these difficulties, which include pedagogical, technological, and organizational problems, must be addressed and overcome before e-learning may be fully integrated into the academic sector [45]. The main problems faced by schools relate to the optimal use of resources of the elearning system, as well as to keep up with the rapid rise in the amount and diversity of data stored in these systems and therefore elearning systems continue to fight scalability in the infrastructure[46]. In an elearning system, many resources are deployed and allocated to particular tasks, which necessitates the addition and configuration of additional resources of the same kind in response to increased workloads, this significantly increases the cost and complexity of resource management [47]. Indeed, since the number of learners, trainers, services provided, material and resources made accessible by educational institutions continues to increase exponentially, the dimensions of e-learning systems continue to expand exponentially, the difficulties associated with this new development, which include optimizing computing resources and addressing storage and communication needs, emphasize the importance of using a platform that supports scalability demands and cost management [45]. As pointed out, the storage issue is a barrier to hosting elearning systems that include multimedia material [48]. Finally, it is critical to realize that an elearning system incurs costs not only for the maintenance of physical resources (servers, computers, computing centers, and data centers), but also to install certain software packages, licensing, and technical support [49].

2.3 CLOUD COMPUTING (CC)

The origin of the word cloud is debatable, according to some, a cloud evolved into the way network diagrams represent the internet [50]. Others assert that the cloud originated when telecommunications firms began using virtual private networks, as a result, CC may take on a variety of meanings depending on who uses it[51].

2.3.1 What is Cloud Computing

By 2007, the term "cloud computing" had become a popular way of referring to the online storage of data, which was aided by the increased use of the internet, following that, the purchase or rental of servers and other computer equipment began to be determined solely by the variable demand anticipated by organizations based on their needs [52]. CC is the result of an innovation process that encompasses software, hardware, and distributed computing [53]. CC is seen as a dynamic platform that offers cyberinfrastructure, software and hardware access, and simplified access to services and applications[54]. This has facilitated the development of CC as a technical breakthrough capable of managing huge quantities of data transmitted and stored via electronic applications [55]. CC is a novel idea in the wide area of information technology; it provides a variety of services that operate in many dimensions; its models include platform, software, and infrastructure [56]. CC is most commonly defined as "a model for enabling convenient, on-demand network access to a shared pool of configurable computing resources (e.g. servers, networks, applications, storage, and services) that can be quickly provisioned and released with little management effort or service provider interaction"[52]. CC is defined by the National Institute of Standards and Technology (NIST) as "a model for enabling convenient access to networks and applications quickly, a shared set of configurable computing resources (e.g., storage, networks, servers, and applications) that can operate independently of or interfere with the service provider to provide or be released immediately"[57]. CC is defined by the Institute of Electrical and Electronics Engineers (IEEE) Computer Society as "a paradigm in which information is constantly stored in servers on the Internet and temporarily cached on clients such as desktops, entertainment centers, computers, notebooks, and handheld devices"[58]. As shown in Figure(2.1), the cloud may be viewed as a centralized access point for all requests received from globally distributed customers[50].



Figure 2.1: Cloud computing[50].

2.3.2 Evolution of Cloud Computing

CC is a phrase with a long history in telecommunications, where it was used as a metaphor for Internet-based services, the fundamental idea goes all the way back to the 1960s, when John McCarthy stated that computing might one day be offered as a public utility, by the early 1990s, the word cloud was already being used commercially to refer to massive Asynchronous Transfer Mode (ATM) networks [34]. Additionally, in 1999, the sales force business launched a user-friendly website to facilitate the distribution of its software to customers [59]. Amazon Web Services was launched by Amazon in 2002 and provided storage and computing services [60]. Cloud computing's inception in 2007 ushered in a paradigm change in technology, enabling widespread use of CC in corporate enterprises, individual users, and educational institutions [61]. Around 2009, Oracle began offering CC services via partnerships with large firms such as Google, Microsoft, and others[62]. Everybody today utilizes CC services in their daily life, including Google Images, Google Drive, and others, for instance, CC in the future will address the basic requirements of the information technology industry [63][64]. As shown in Figure (2.2), the development of CC [65].

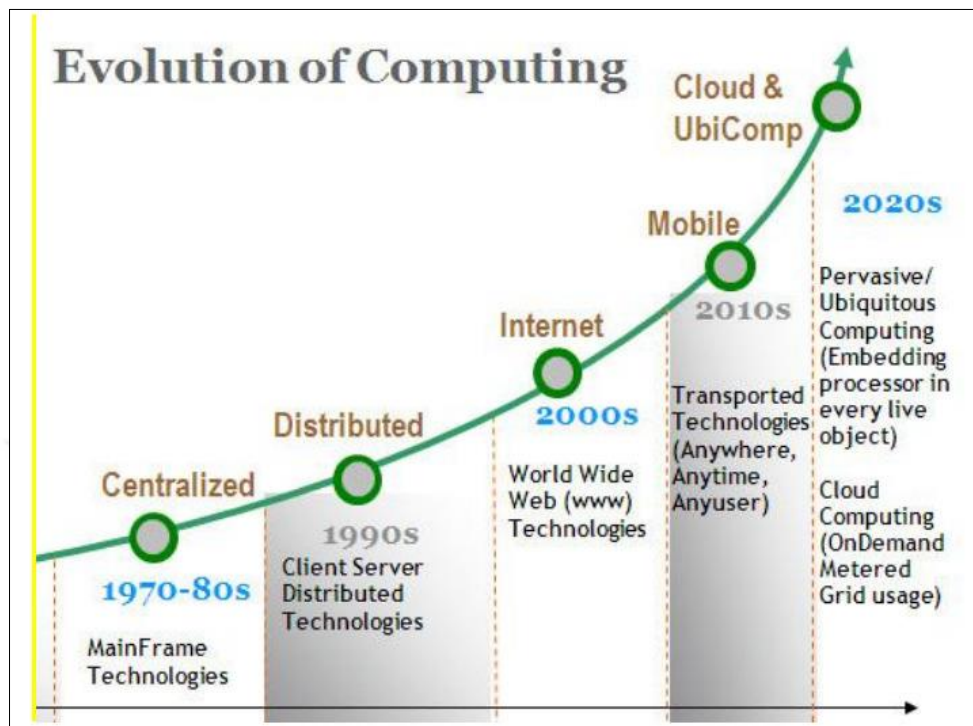


Figure 2.2: Evolution of cloud computing[65].

2.3.3 Cloud Computing Service Models

As shown in Figure (2.3), CC is composed of three primary layers: software as a service (SaaS), platform as a service (PaaS), and infrastructure as a service (IaaS) [66]. These layers are tailored to the requirements of diverse stakeholders, for example, SaaS is designed to benefit end-users by providing applications on demand; PaaS is designed to benefit developers by providing virtual access to computers and databases; and IaaS is designed to benefit network architects by providing access to services such as hardware, storage, servers, and networking[37][38].

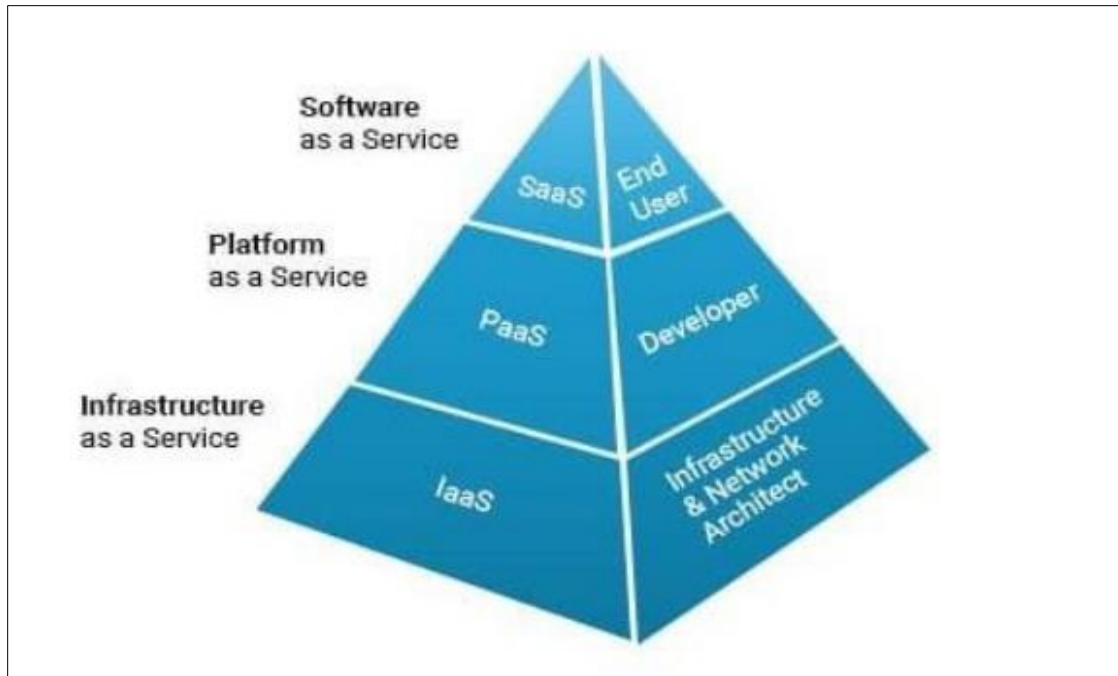


Figure 2.3: Cloud computing services[69]

2.3.3.1 Software as a service (SaaS)

When users subscribe to SaaS services, software applications are offered as services, because of this, customers can access applications on the cloud infrastructure and they use web browsers like google chrome or Internet Explorer or programmed Graphical User Interface (GUI) to do so, in the SaaS spaces, some of the companies include office 365, google docs, adobe creative cloud, oracle CRM, and web-based email, end users do not have control over the cloud resources of the service, and thus they cannot manage it themselves[51][52].

2.3.3.2 Platform as a service (PaaS)

Cloud platform services, also known as PaaS, enable developers to create, test, and operate applications in a cloud environment, While the user may manage the deployed apps, the vendor or the third party controls the underlying network, storage, and operating system Open Shift, google app Engine, System Application and Products (SAP), and Windows Azure are all examples of the PaaS model, PaaS is similar to SaaS in that it provides a forum for application development rather than distributing software via the internet as SaaS does; additionally, The user does not require pricey equipment to execute its PaaS apps; and PaaS offers a high degree of scalability [72][71].

2.3.3.3 Infrastructure as a service (IaaS)

IaaS is a computer model that is highly dispersed and digital in nature, rather than purchasing hardware, IaaS enables service providers to purchase on-demand, as-needed services, clients are permitted to configure Virtual Machine (VM) running on the cloud, with VM resources such as storage, Random Access Memory (RAM), operating system, and Central Processing Unit (CPU) speed managed solely by users, additionally, it is referred to as the self-service paradigm, While the client (service providers) may run any number of apps on a particular VM, the customer does not have complete control over the cloud's physical resources, Vendors are responsible for security, firewalls, and the physical data center; IaaS services include the following (Amazon, Microsoft Azure, Go Grid, Rackspace, etc)[73][71]. The table below offers a comparison between IaaS, PaaS, and SaaS service models [74]:

Table 2.1: The differences between IaaS, PaaS, and SaaS[74]

Service model	Paradigm shift	Characteristic	Advantage	Disadvantage
IaaS	Infrastructure as an asset	• Independent of the platform. • Costs associated with infrastructure are shared. • Pay as you need it. • Agreements on service levels.	• Risk reduction associated with the return on investment. • Prevents the need for capital investment in hardware.	• Increased long-term costs; • Efficiency is contingent upon the capabilities of the cloud provider.
PaaS	License purchasing	• Consumption as a result of cloud deployment.	• Streamlined version deployment.	• Additional security measures are necessary.
SaaS	Software as an asset	• SLAs. • Cloud components. • Communications via APIs.	• Prevents the need for capital investment in software. • Risk reduction associated with the return on investment.	• Data centralization necessitates the use of additional security measures.

2.3.4 Cloud Computing Deployment Models

As shown in Figure (2.3), CC utilizes four widely-used deployment models: private cloud, public cloud, community cloud, and hybrid cloud [73]. Additionally, research has classified CC deployment into four categories: private clouds, which are operated and developed inside companies, and public clouds, which are accessible to the general public and provided by major corporations such as Microsoft, additionally, the hybrid cloud is a combination of public clouds, private and, while the community cloud is a cloud created via strategic alliances between companies[36][39].



Figure 2.4: Cloud computing deployment model[73].

2.3.4.1 Public cloud

This CC paradigm offers services to anybody (organization) interested in using any computer resources (Hardware, Software), typically, these services are supplied by an organization (provider) that tailors them to the user's needs and expectations, one such provider is (Amazon, Google, and Microsoft)[76][77]. Customers cannot cover the costs of cloud-based services, as they can use applications offered by service providers, as service providers pay for their infrastructure and broadband expenditure on the cloud, the public service cloud is accessed to the public because they are not confined to any organization or community; for companies handling critical, publicly available information, it is inappropriate as safety requirements are not adapted to the firm[78][73].

2.3.4.2 Private cloud

A single client establishes a private cloud that ensures data security and service quality [79]. This model's infrastructure is tailored to the needs of a business, the organization, or a third party designated by the manager of the organization performs the installation, this model provides more secure dedicated and separated cloud services for specific users, implementing such a model enables users to respond quickly to business needs and reduces service costs[76]. A private cloud is a specialized cloud that is used by small and big businesses to store sensitive business data, a private cloud enables more control over scalability, flexibility, and security on-demand, sensitive data will stay in the private cloud, where it will be less accessible to other environmental groups, which is one of the most advantageous aspects[78].

2.3.4.3 Hybrid cloud

In a hybrid CC model, two distinct CC models are combined into one, Public and private clouds are used concurrently, which is advantageous when an organization needs to rapidly scale up its IT infrastructure, public clouds are used to host public and insensitive data, while private clouds are used to host sensitive and critical data and services[76][80].

2.3.4.4 Community cloud

This type of CC provides services to a small number of persons or groups, with the infrastructure and resources shared by these organizations, the usage of services and resources is limited to community members; this is an example of community, a cloud is a collection of universities that share resources and data for the benefit of the academic community, these resources and data are controlled internally or by a third party[73]. Community of collaborative computing CC is a collaborative effort in which many companies exchange technology, whether inside or externally, and host it internally or outside, as part of a specific community with common interests (jurisdiction, security, compliance, etc)[81].Table(2.2)illustrates a comparison of various models[82][83][84].

Table 2.2: Comparison among Public, Private, Hybrid, and Community cloud[82][83][84].

Parameters\Type	Public Cloud	private Cloud	Hybrid Cloud	Community Cloud
Description	Public cloud services are accessible to the general public	Private clouds are constructed using the pre-existing private infrastructure this type of cloud has a small number of authenticated users who can dynamically provision resources	A hybrid cloud is a heterogeneous distributed system formed by a private cloud that incorporates various types of public cloud services and resources	Different types of cloud computing are combined to address a common or specific need for an organization
Scalability	V. High	Limited.	V. High	Limited
Reliability	Moderate	V. High	Medium to High	V High
Security	Depends on the service provider	High class security	Secure	Secure
Performance	Low to medium	Good	Good	V. Good
cost	Cheaper	High Cost	Costly	Costly
Examples	Amazon, Google App Engine	Microsoft	IBM, HP	Soles Community cloud

2.3.5 Advantages of Cloud Computing

One of the major advantages of CC is the cost reductions that enable on-demand use of computer resources; CC is available from any device, including laptops, smartphones, and tablets, and is therefore not device-dependent, CC has no fixed expenses, as a result, it requires less investment and has fewer risks[85]. CC advantages may be categorized as follows:

2.3.5.1 Economical advantages

The costs are inexpensive or even free in a few cases; in addition, hardware updates involve no or very little costs [50]. Charges are based on use, businesses with variable levels of demand for computer services benefit from the fact that they do not have to spend as much and just pay when they need a service [85]. The concept of cloud computing is intriguing because it relieves the firm owner of the necessity of infrastructure investment by renting resources on a useable basis and also saves operational costs, as service providers no longer need to offer capacities depending on high demand, finally, outsourcing cloud service infrastructure shifts company risk to infrastructure providers who can frequently handle it more effectively [86]. In general, not only hardware costs may be reduced, but also system administration, licensing, and other fees, Because users can pay just for the required software (on-the-demand software idea) and user agreements, depending on what works best for the business model of the organization, with the user only paying for specific program instances, minimizing patching and upgrading time and price [87].

2.3.5.2 Technical advantages

Along with these economic benefits, CC provides a variety of technological advantages, including energy efficiency, resource optimization for hardware and software, performance isolation, elasticity, and flexibility[86]. There may be a completely disruptive connection between users and their own computers, since consumers may get the same result using any Internet connecting device that meets basic software criteria, in addition, certain programs can be employed off-line, such as spreadsheets, this indicates that the synchronization process will update when the client reconnects to the network[50]. Another advantage of CC is 'agile updating' This enables the system to be updated automatically whenever the provider hosts any application with no scheduled downtime [85].

2.3.5.3 Flexibility infrastructure scaled for investment maximum

CC allows a renewable scaling of the computers to respond to changing demand, computer platforms are available for rent, and scalable power makes perfect sense, especially when institutions are concerned about theft and destruction of the computer hardware [87]. Crash recovery is almost entirely unnecessary, if the client computer fails, virtually no data is lost since it is all saved on the cloud [50].

According to NIST, cloud computing's five most distinguishing characteristics are as follows [88]:

- a. Wide-area network access, in which services are provided via a network through ordinary devices such as mobile phones, computers, and so on.
- b. Self-service on-demand provisioning, in which customers may automatically supply computing capabilities and resources as required without requiring human involvement.
- c. Resource pooling, which refers to the pooling of resources like memory, bandwidth, storage, and processing for many clients.
- d. High elasticity, implying that resources are flexibly scaled up and down in response to demand.
- e. Measurable service, which refers to the automated control and optimization of resources through pay-per-use metering.

2.3.6 Cloud Computing Challenges

CC paradigm provides users/clients with access to the pool of computer resources throughout, while CC has some advantages, it does have certain limits such as security, privacy, reaction speed [89] [90].

2.3.6.1 Privacy

The privacy of the centralized CC system will become more of a concern for data security; in the future data protection and safety on the side of the cloud server will be a matter of concern, with

the conventional cloud being exposed to a wide array of possibly unfriendly users, raising concern over the privacy of user data [91][89].

2.3.6.2 Cost

In the long run, the cost of data center membership may be higher than the cost of hardware; furthermore, enormous amounts of data will be collected, making management impossible [90][50].

2.3.6.3 Latency

The delay is increasing as the physical distance between the source and destination points increases; there is a greater influence on the amount of routing hops as routers generate delays, especially while congestion is in progress; the time required to access the traditional cloud application depends on the distance between the user and the cloud, and the current developers create ap[89]. As a result, the cloud is not adaptable to applications that are sensitive to low latency or latency, like intelligent transport or e-health, which require high efficiency and dependability, and any delays in transferring patient data might result in the patient's death, making CC unsuitable with particular applications[92].

2.3.6.4 Network load

The number of end devices continues to increase every day resulting in the generation of a huge amount of data at the edge of the network, as this data requires cloud resources, it creates network congestion at the edge of the network, there is a requirement for a new platform solution which is impracticable in many cloud instances just [91][92].

2.3.6.5 The internet connection

CC requires the internet as a critical component, in certain areas, the internet is unavailable, preventing the user from accessing anything such as applications, and documents, as a result, CC is not feasible at that location[90].

2.3.6.6 Security and data confidentiality

When using CC, the user does not have complete control over their data, additionally, sensitive data is kept in the cloud, data storage locations or data handling policies are modified without

authorization, and so on, the user may then retrieve and evaluate the new data in order to make important choices, the validity of the user data is critical in this situation and must be ensured, however, no common standards exist to ensure data security, so because a chain is complicated and opaque, it is impossible for an end-user to know which authentication methods and security mechanisms are employed to protect data in the cloud[72].

2.3.6.7 Quality of service (QoS)

With the CC paradigm, maintaining a high level of quality of service (QoS) becomes more difficult as the amount, type, and complexity of data grow, at every point of time, any kind and quantity of data may be induced, this may potentially be emergency information, latency, jitter, and bandwidth are all used to quantify the quality of service [93] [94] [50].

2.3.6.8 Limit the accessibility

The performance of CC in low-speed regions (i.e. dial-up services) is impaired by a constant and fast connection to operate with major online resources and applications that take a great deal of bandwidth to download[90] [50].

2.4 E-LEARNING SYSTEM BASED ON CLOUD COMPUTING

CC is now considered the world's fifth utility due to the ubiquitous computing needs of educational institutions, CC is a promising technology for leveraging teaching and learning processes through e-learning, CC supports multi-platform, elasticity storage with easy to access, economic cost model, on-demand computing, and liberating users from tethered computing, these characteristics attracted educational institutions to use CC for their e-learning services; nevertheless, users must trust the CC environment's e-learning systems to adopt them, as depicts in Figure(2.4) [34].

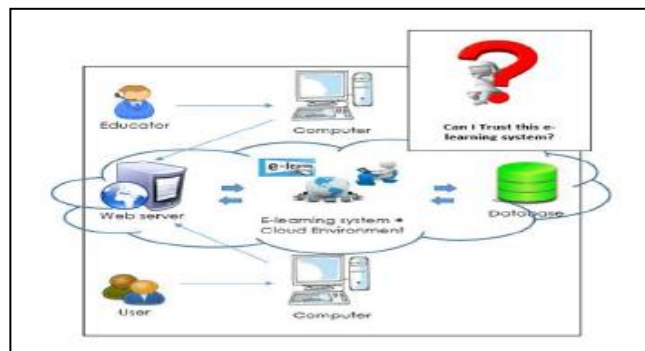


Figure 2.5: E-learning system based on cloud computing[34].

E-learning cloud is "a cloud computing migration to the field of e-learning, which is a future E-learning infrastructure that includes all the necessary hardware and software computing resources for e-learning; once these computing resources are virtualized, they can be rented in the form of services to educational institutions, students, and businesses"[95].

2.4.1 The Benefits of Using CBEL

E-learning systems encounter numerous problems; several previous studies have demonstrated certain possible solutions to these challenges by using CC, as shown in table (2.3) [95][96][97][98].

Table 2.3: The challenges of E-Learning and solutions via cloud computing[95][96][97][98].

The challenges of E-Learning	The solutions via cloud computing
Inadequate infrastructure: Many institutions are unable to implement E-learning systems because they demand extensive multimedia as well as a high level of resource availability, such as storage and bandwidth.	CC allows data to be generated and retrieved on the cloud, eliminating the need for users to have big memory or high-spec digital devices (mobile, PC, or tablet), they may access cloud-based apps through their devices. Concerning colleges, they have to pay for every use and just the space they require.
Lack of maintenance and technical support: Many universities do not have the highly qualified staff required to manage their infrastructure and respond to network outages or security problems.	CC utilizes a centralized infrastructure, which reduces the time required to resolve problems, furthermore, due to CC, learners will receive programs updated quickly.
Change Management: Transitioning to an online system such as E-learning will have an impact on all users, including instructors, students, and technical personnel, thus, the process of change is not simple, and users must realize the benefits of such a system and incorporate it into their everyday life.	CC enables E-learning users to have broader access (i.e. access from any location), and E-learning material may be developed and disseminated rapidly.

There is a significant security problem with CC, since distant systems may fail for no apparent reason, concerning this issue, there is no need to be concerned since CC offers the following fundamental security advantages to consumers and businesses who use/develop e-learning [99]:

- a. It is difficult to identify the computer on which critical data is stored (i.e. exam questions and results).
- b. Because most apps and data are stored in the cloud, losing a cloud client is not a major problem; any new client can be added quickly, and data access monitoring is simplified.
- c. Rapid replacement, without incurring substantial expenditure or damage, of a cloud-based server, because a clone of a virtual machine is easy, it is predicted that cloud downtime would be much reduced.

According to [100] [101], Implementing e-learning via CC technology enables the following benefits:

- a. Reduced costs: By using the cloud environment offered by their personal computer, mobile phones, and tablets, customers can operate all associated apps with the bare minimum of internet connection setup, also Operating an e-learning company shifts the expenses of creating, developing, and maintaining the system from the educational institution to the provider, thus lowering costs and increasing economies of scale.
- b. Improved performance: Client computers operate without experiencing performance problems since a large portion of the relevant programs and processes for CBEL applications are already cloud-reserved.
- c. Immediate software updates: E-learners are constantly kept current, this is because all software is automatically updated in the cloud, as a consequence of CBEL programs that operate on cloud power.
- d. The document formats are interoperable, and platform compatibility is enhanced depending on the program used to access the server files.

2.4.2 Justifications For The Use of CBEL in HEIs

CC has had a tremendous effect on the world of information technology as the most advanced technology, it will be a significant advancement in the future for data storage and Internet access from remote places [102]. CC technology is regarded as a highly beneficial application for organizations, particularly higher education institutions, due to the benefits it provides, including long-term cost savings, easy access to data at any time, and economics, indeed, there are numerous free cloud storage providers available these days, allowing users to easily store and share organizational data [103]. CC has been suggested as a cost-cutting measure for colleges since it provides users with improved IT and availability, as well as the dependability of these services, from anywhere and at any time, with the added benefit of paying on a per-use basis [104]. The CC technology has simplified services and improved the speed and quality of information technology services offered to consumers and organizations such as universities, nonetheless, despite the benefits of CC, cloud adoption is not extensively researched in certain sectors, such as education, and higher education is still reluctant to embrace CC technology [105]. In institutions of higher learning, the most often cited area of advantage from CC is course delivery and remote learning [106]. According to [50] A group of academics created a metric system to assess CC effectiveness in providing e-learning materials, every e-learning project using cloud technology is therefore very reliant on the model employed, whether it is SaaS or IaaS, moreover, the cost and risk management of the project has an influence on the performance of the CBEL project and provides higher education institutions many benefits, particularly those which score top in the international education rankings [107]. CC may be critical for HEIs as study concepts and criteria evolve, and this technology provides fast internet access and a huge capacity for data storage[108]. There may be some developing limitations on CC adoption since this technology is highly dependent on the usage and environment of HEIs[109]. CC has various characteristics in HEIs includes cost-effective calculations and data stock, scalability, disaster recovery, technology for virtualization, the best use of servers and on-demand cloud services that all contribute to the adoption and access to the internet and other applications by the CC [110]. Dynamic scalability expands the processing buffer of CC without requiring additional investment from higher education institutions, disaster recovery is a critical feature of CC that enables faster recovery of available data from multiple locations, thereby increasing its efficiency and effectiveness, however, this technology reduces the need for disaster recovery

plans, since the infrastructure of information technology in HEIs is already in place[111]. According to[112] The majority of e-learning initiatives are not handled only by specialist technologists; instructors often play a role as well.

2.4.3 Potential Benefits of CBEL For Student And Academic Staff

Daily contact between students and instructors or lecturers is a growing area in which CC is being used at institutions, Gmail and its apps such as Google Drive and questionnaire tools have recently become essential tools for students and instructors in higher education [113]. Additionally, students and instructors use the LMS, library management system, and document storage [114]. The platform enables instructors to care for students personally by providing online course access, administering tests, and providing personalized feedback, additionally, the platform enables students to access course materials, project and assignment instructions, instructor feedback, and exams, as well as hold discussions from a flexible and convenient location [101]. The CBEL may benefit a variety of stakeholders, However, the primary goal of creating the CBEL is to assist the university's students in order to increase enrollment and enhance operations, the purpose of this study is to examine pupils and their adoption of CBEL[7] .CBEL offers several benefits to students, such as the ability to do nearly all of their student work online, such as registering in classes, taking examinations, receiving feedback from academic staff, and sending and receiving assignments and projects to and from instructors[100]. CC allows users, including students, to have complete access to apps, packages, software, databases, assignments, and projects while on and off campus Additionally, CC is a frequently utilized tool among students for data storage and enjoyment [115].

2.4.4 The Challenges Face The Universities in Iraq

Universities, particularly those in developing countries, have difficulties in providing the degree of ICT necessary to promote the growth of learning, teaching, research, and other development activities carried out by a normal university[116]. The institution requires certain ICT standards in order to keep up with technological advancements and to upgrade its services to reflect the current technological environment [105].

Universities of developing countries confront many difficulties, which may be summarized as follows: [117] [118] [119] [120][121]:

- a. In developing countries, universities have insufficient resources in comparison to population growth rates.
- b. Due to the high expense of high-quality materials, they are not accessible.
- c. Outside of class hours, laboratory facilities are not accessible, as a result, students are limited in their usage of university facilities.
- d. The absence of contact and information exchange beyond the classroom between lecturers and students.
- e. payment method and Cost: Although CC lowers IT costs by eliminating physical infrastructure, it remains prohibitively costly for institutions in poor nations, additionally, CC service providers often allow payment by credit or debit card, this payment technique is problematic in underdeveloped nations, as residents still favor conventional payment methods over internet banking due to the latter's restrictions.
- f. In many underdeveloped nations, such as Iraq, electricity may be cut off suddenly by the power provider, disrupting the download and upload process, particularly if there is a significant quantity of data.
- g. Inadequate awareness: the first step of new technology adoption is gaining an understanding of the technology.
- h. Concerns about privacy and security: Privacy and security were the primary reasons for embracing CC services.

2.4.5 Related Studies

This section has been reviewed the related studies of the adoption of CBEL. Table (2.4) described these studies as shown below:

Table 2.4: Related studies

address	model	target
[7]	-TAM -UTAUT	This research seeks to discover what variables influence CBEL student uptake.
[17]	UTAUT	Examine the relationship between specific elements (PE, EE, SI, and SA) and the BI in order to determine how best to use CBEL, it tries to see whether TR mediates and if Information Technology Knowledge (ITK) moderates.
[122]	TAM	To determine which usability characteristics influence whether people want to utilize Cloud e-learning apps, investigate those characteristics.
[3]	TAM	a theoretical study model was developed for university use of cloud computing
[6]	- Fit Viability Model (FVM) - Diffusion of Innovation theory (DOI) -Information Culture Factors.	This model aims to explore the important variables involved in using the cloud in higher education to improve e-learning.
[123]	TAM	It suggests extending the technology acceptance paradigm to identify and better understand the extent to which Subjective standard, perceived convenience, trust, self-efficacy of computing and software, influence the adoption of cloud in educational settings.
[124]	TAM	Researchers studied students at these institutions to determine the impact of trust on college students' adoption of cloud services at Saudi Arabian universities.
[125]	- UTAUT 2 - status quo and self-enhancement - Values-Enhanced Technology Adoption (VETA)	Use a creative conceptual model to connect technology adoption models with values and use it to facilitate digital education.

[126]	TAM	This research aims to develop a hybrid model to identify information technology (IT) professionals' motivators influencing their cloud computing adoption, this new model, the Extending TAM model, also includes three extra variables: the ability to believe in the capability of one's computer, trust in technology, and availability of well-paying work.
[127]	Rational Choice Theory (RCT)	The purpose of this research is to look at IT deployment decisions from a strategic- and operational-level point of view, this study expands upon the rational choice theory in order to identify how the monetary and nonmonetary costs and benefits of an existing IT program and that of its corresponding cloud computing influence a business' decision of discontinuing IT and keeping it running.
[128]	UTAUT	This paper will examine the four main aspects of e-learning intents, including expected performance, effort expectation, social impact, and easing conditions.
[129]	UTAUT	This study has been designed to discover critical variables that influence students' intentional cloud computing adoption in Jordan's higher education system, it can increase learning and teaching agility, as well as reduce the cost of infrastructure and information technologies if implemented in the cloud, as part of the current empirical analysis, a framework is proposed and extended based on the popular UTAUT, it incorporates the trust concept.
[130]	UTAUT 2	In order to discover an appropriate theoretical framework for technology adoption testing and validation, this study looks to identify a methodology, following this, a quantitative survey was used to discover what types of organizations intend to use cloud computing to aid them in organizing their information architecture.
[131]	UTAUT 2	The second iteration was used to research the technology usage of CC using the UTAUT2.
[18]	DOI	The purpose of the present paper is to enhance knowledge and to offer a detailed case study of the relative variables which impact the adoption of CC among colleges in developing countries.
[19]	Expectation-confirmation model (ECM)	The primary goal of this research is to develop a research model based on the ECM (expectance confirmation model), which focuses on the identification, in relation to the student satisfaction and continuous use in educational institutions, of the interactivity and quality of courses (quality of class content, quality of course design).

[20]	TAM	The purpose of this research is to look at the variables that encourage and allow HEIs in the UAE to use CC, it will do this by the use of the TAM Model and an explanatory SEM.
[21]	- Theory of motivation -TAM	This research looks at how factors influence student CBEL adoption at Qassim University (QU), this model is meant to aid in determining the efficacy of QU's existing E-learning system and identifying the different aspects that will aid in student retention in the system.
[22]	- TAM - UTAUT - IS success model - Motivational Model (MM) - Social Cognitive Theory (SCT) -Expectancy Value Model(EVM)	An integrated technological acceptance framework was used to identify cloud e-learning adoption variables, based on these findings, 11 factors of IS performance were aggregated and studied as a whole, this study centered on a group of information technology students from a private institution in southern Malaysia.
[132]	- TAM - DOI	The main objective of this study was to look at the major factors that impact cloud computing acceptance, diffusion, and usage in African institutions (SSA).
[133]	Dual Factor Theory	proposed a two-dimensional research model to study usage and adoption of CC in Saudi Arabia, utilizing motivators and inhibitors.
[134]	- SQB theory. -purchase intention model (PIM).	Through the research of behavioral intention to upgrade, users' upgrading intentions were studied as a key to effective tech-innovation adoption, it blends SQB theory and Warshaw's purchasing intention model (PIM).
[135]	SQB	Using a cloud computing SQB model, he developed and tested a model for behavioral switching to cloud computing services, according to the research model, both the current system status quo, such as sunk costs, transition costs, and resistance to cloud services, as well as personal beliefs about it, negatively influence individuals' perceived relative advantage, which in turn influences their decisions to use cloud services.
[14]	-SQB -UTAUT	recommended Understanding the reasons that hinder lecturers from adopting e-learning is essential to increasing e-learning adoption, these variables were studied using SQB theory and UTAUT models.

The following section describes the results in related studies that are shown in the table above:

According to Kayali and Alaraj [7], they investigated the factors affecting students' adoption of CBEL, the most important predictor of behavior intention (BI) is user satisfaction (US), followed by SI, relative advantage (RA), and perceived ease of use (PEOU), BI had a significant impact on user behavior.

Kayali et al [17], investigated the influence of individual factors (PE, EE, SI, and SA) on the BI's adoption of CBEL, as well as the mediating effect of TR and the moderating effect of IT Knowledge (ITK), the findings indicate that individual factors significantly influence BI toward CBEL, the most influential determinant is SA, followed by PE, SI, and EE, the BI has a beneficial effect on the UB, and TR partially mediates the effect of individual factors on BI, whereas ITK does not.

Researcher Lew et al [122], Examined the factors of usability in connection with the continued intention to use Cloud eLearning applications, they found that computer efficiency and enjoyment, as intrinsic motives, significantly predict the future intention, whereas perceived utility, usability, and user perception are insignificant this finding means that self-efficacy and computing enjoyment of the students have a major effect on their willingness, in their study, to continue utilizing cloud e-learning apps.

According to Hussein and Hilmi [3], the findings suggest that the CBEL adoption is driven by need and perceived utility, but that innovation has no effect on the intention to embrace CBEL, who has done a study to build a theoretical research template for cloud-based adoption in a Malaysian university.

researchers Al Ajmi et al [6], examined the important elements that might be used to exploit the cloud in the improvement of E-learning in HEIs, with the result being the development of a model for using E-learning that is based on CC.

According to Bhatiasavi and Naglis [123], They proposed that the model of technology acceptance should be extended to include subjective standards, perceived comfort, confidence, computer self-efficiency, and software functionality in order to better understand how each factor influence Cloud

adoption in an educational environment, however, the link between computer self-efficacy and the subjective standard was not favorable, as was the case in the majority of research.

Researchers Almazroi et al [124], In Saudi Arabia, researchers investigated the effect of trust on undergraduate students' use of cloud services, Perceived usefulness, perceived ease of use, and trust were found to be significant predictors of cloud adoption, to encourage student adoption of cloud services, University decision-makers, and cloud providers should be concerned with the perceived utility, simplicity of usage, and confidence.

According to Mehta et al [125], In the context of digital education, values were linked with technological adoption models, and a unique conceptual model was implemented empirical findings demonstrated the model's influence on self-enhancement values via SI, PV, and PE, the UTAUT2 base model was partially validated in that worker intention to use e-learning was primarily influenced by PE, PV, and habit.

Researchers Sharma et al [126], The research offers a novel model by complementing the TAM with three external dimensions, namely computer self-efficacy, employment opportunity, and trust, to forecast the factors impacting the adoption of cloud computing services by IT professionals, However, the results of the New model indicated that the best predictors of CC adoption include employment opportunities, perceived usefulness, trust, self-efficacy, and perceived simplicity of use, the findings of this study demonstrate the need of extending the fundamental TAM when examining a new technology such as CC.

Bian et al [127], The objective of this study is to define how the costs and values of incumbent IT and the equivalent new CC impact a company's dual decision of discontinuation and acceptance of information technology (IT) adoption via the lens of dual decision-making, the findings indicate that organizations frequently use a dual decision-making process when it comes to IT deployment, with non-cloud, hybrid, and full-cloud considering incumbent, these findings suggest that enterprises may adopt cloud computing as a result of its perceived ease of use and reduced support expenses, Meanwhile, security concerns continue to be the fundamental impediment to a cloud-based business.

According to Alblooshi and Hamid [128], they examined the direct effect of the UTAUT's four major components (PE, EE, SI, and FCs) on respondents' behavior intention to use e-learning, the

findings indicated that respondents are more likely to use e-learning as part of their learning activities, Similarly, the findings indicate that there is a high correlation between PE, EE, SI, and the FCs and BI to utilize e-learning.

Researchers Jaradat et al [129], looked into what motivates students to use cloud computing, in Jordan's higher education system, cloud technology can improve learning and teaching agility while lowering infrastructure and IT costs, the empirical findings show that PE, EE, SI, FCs, and TR affect students' intention to use CC, empirical data also show that students' purpose and supportive factors influence actual user behavior, gender, age, experience, and voluntary use all have moderating impacts.

Amponsah et al [130], established an acceptable theoretical framework for evaluating and validating technology adoption, following that, a quantitative survey was conducted to ascertain organizations' intentions regarding the adoption and use of CC technology, using the framework employed, it was discovered that facilitating condition, habit, performance expectation, and price value were all significant positive factors influencing cloud technology adoption in Ghana, on the other hand, EE, HM, and SI all have a negative effect on cloud technology adoption in Ghana, while security did not affect.

Nikolopoulos and Likothanassis [131], using the second iteration of UTAUT, found that user adoption of CC can be explained and predicted by factors such as PE, EE, habit, SI, PV, and FCs, these findings contribute to the advancement of the theory and lay the groundwork for future research aimed at increasing our understanding of CC technology adoption, additionally, they serve as a starting point for businesses and governments interested in adopting and successfully integrating cloud technologies.

Odeh et al [18], utilized an interpretative paradigm and a qualitative research approach to explore the major facilitators and barriers to CC adoption at universities in developing countries in general and in the developing world in particular CC adoption is aided by a variety of enablers, including cost-effectiveness, simplicity of use, improved knowledge sharing, device, and software compatibility, and geographical decentralization capability to utilize cloud services, However, some concerns have emerged as barriers to adoption, including security and privacy, top management

awareness of the technology's benefits and limitations, cloud compatibility with on-premises technology in the event of migration, and resistance to using new technology.

According to Cheng [19] Who has suggested an expectation confirmation model (ECM) that will study if interactivity and quality of courses (i.e. design quality of courses, quality of course material) impact the satisfaction and intention of students to use the CBEL system inside an educational institution can affect, the results have significantly validated the ECM-based research model by identifying as drivers the main structures and showing the importance of all predicted linkages.

The researchers Shana and Abulibdeh [20], used the TAM and SEM to examine the readiness and basis for CC adoption in higher education in the UAE, they observed that perceived ease of use influenced future intention to use the technology, and that intention to use was demonstrated by the instructors' actual usage.

Alajlan et al [21], the variables that influence the student's adoption of CBEL by the University of Qassim (QU) have been examined, the proposal has been made for a model to evaluate the efficiency of the present e-learning system and to identify important criteria for the motivation of students to continue using it, suggesting that they have a substantial influence on the intention to use (ITU) the CBEL, but other characteristics such as cooperation, accessibility, and intrinsic motivation have a minimal or no effect on the ITU the CBEL.

According to Lew and Lau [22], A complete integrated framework for acceptance of technology has been created and experimentally discovered characteristics that indicate the intention of using cloud e-learning, a total of 11 determinants, including learning object criteria, technical acceptance, motivation, social cognitive values, and expected values, from various sources of IS success were unified and analyzed in an integrated manifold by incorporating the criteria for success of IS, acceptance and technological acceptance of learning objects, social cognitive values, motivations and expectations.

Researcher Sabi et al [132], A survey of ICT specialists and decision-makers at universities in Sub-Saharan Africa (SSA) revealed that sociocultural factors, utility, result demonstrability, and data security all played a part in the spread, acceptance, and usage of CC.

According to Noor [133], A two-dimensional model research was presented to analyze the usage and acceptability of CC technologies in Saudi Arabia, namely the motivators and inhibitors, the findings indicate that the two most compelling reasons for Saudi Cloud consumers to use CC are ubiquitous network access and on-demand (self-service), while the top five inhibitors are availability, reliability, compliance, security, and privacy, this information can assist decision-makers in large Saudi Arabian organizations in making more informed decisions regarding the aforementioned.

Researchers Wang et al [134], investigated the factors of consumers' BI to upgrade as a key to effective technology innovation adoption through their investigation of the drivers of BI to upgrade, this combines the notion of SQB with Warshaw's Purchase intention model (PIM), the findings indicate that users' BI to upgrade to a next-generation system were influenced by perceived necessity (in a positive way) and inertia (in a negative one), inertia's indirect effects on BI to upgrade mediated the effect of incumbent system habit, procedural switching costs, and benefit loss costs, additionally, perceived need modulated the behavioral intention to upgrade effects of procedural switching costs, social norms, and benefit loss costs, finally, inertia decreased the favorable connection between perceived need and BI to upgrade by a significant amount.

According to Park [135] who created and tested a model for cloud computing adoption behavior from an SQB standpoint, according to the research model, both the status quo in incumbent systems, such as transition costs, sunk costs and opposition to cloud services, have a negative effect on an individual's perceived relative advantage, which has a favorable effect for cloud service uptake, the findings reveal that established systems linked with the status quo have a considerable impact on resistance to CC, additionally, this study discovered that relative advantage had a beneficial effect on cloud adoption.

Researcher Putri et al [14] recommended To increase e-learning usage, it is critical to identify the factors that discourage academic staff from using e-learning, these variables were evaluated utilizing the SQB and UTAUT theories, the results indicated that a lack of organizational support and computer self-efficacy promote inertia, however, a lack of individual computer experience and a lack of resources had no significant effect on inertia, the inertia has been demonstrated to have a detrimental effect on behavioral attitudes, hence lowering the intention to embrace e-learning

indirectly, expectations about performance and effort had a beneficial effect on user intentions to utilize e-learning.

Despite the great efforts made in the relevant studies discussed above, which dealt with the study of factors affecting the adoption of CBEL by academic staff. It was found that few of the above studies have developed a research model that takes into account two views about the acceptance of CBEL and its resistance in developing country especially Iraq, so this study came to fill this research gap, as this study used the Dual Factor theory to study the factors that motivate of technology adoption by academic staff using UTAUT 2 theory, and the factors that motivate them not to use this technology or to resist it using SQB theory at the same time.

2.5 PROPOSE FRAMEWORK

The earlier study found perception as a significant element in user behavior, the intents of the user and the conduct of the user toward the system, and the design and function of a system that supports or discourages the use of IS referred to as the dual-factor theory, the dual-factor theory consists of Enablers and Inhibitors that promote or inhibit the use of technology, respectively[136]. Acceptance of technology was defined as "a person's psychological state in relation to his or her voluntary or intended use of a particular technology"[137]. According to the literature, technology acceptance research has spawned several theories, including the UTAUT, which incorporates four variables: PE, EE, SI, and FCs [138][139]. After that, this theory is developed became UTAUT2 by adding two factors HM, and PV, [140]. Each of the previous factors considered enablers factors that positively affect BI to use technology[138] [141] [142] [143] [144].

While earlier investigations have investigated why we resist, there are gaps in our understanding of how users assess and decide to oppose change connected with a new ISs, the SQB theory is missing from the explanation of user decision making; that is, user resistance can be motivated by a bias or preference to maintain the current situation[145].SQB contains the six factors are SC, RA, PV, IN, PT, and TC [146].Each of the previous factors considered Inhibitors factors that negatively affect behavioral intention to use technology [147] [148] [149] [150][151] [152] [153].

2.5.1 Dual Factor Theory

As the [154] concluded and coined the term enablers and inhibitors, which relates to behavioral views, enablers and inhibitors are external perceptions regarding system features that impact both the adoption and rejection decisions. Dual factor theory is founded on rationalizations and assertions that the relationship between positive and negative components must be examined for a variety of reasons, including the following: To begin, there is a negative view that promotes system use, and this bad perception is distinct from a positive perception, Second, in dual-factor theory, inhibitors and facilitators are not mutually exclusive, but can coexist, thirdly, inhibiting and pushing perceptions are characterized by distinct antecedents and consequences [155]. The dual factor theory was discovered by Herzberg's influential needs theory of the 1960s, which suggested that humans have two distinct sets of requirements or factors and that the many elements of the work setting either meet or frustrate these demands [156]. According to [154], The dual-factor theory was consists of two basic factors:

- a. Enablers: or factors that promote system use and adoption, such as perceived ease of use and perceived usefulness.
- b. Inhibitors: or factors that hinder system use; when these inhibiting factors are present, they can result in system rejection; when they are absent, increased system use cannot be encouraged, for example, system errors can result in a user's negative perception of the system's quality, even if the system has previously performed well.

2.5.2 The Unified Theory of Acceptance And Use of Technology (UTAUT)

It is critical to remember that user acceptance and confidence are critical components of any new technology's development, additionally, acceptance has been viewed as a function of the degree to which users are involved in the development of systems, Acceptance, in general, is defined as "an antithesis to the term refusal and refers to the affirmative decision to use an innovation"[157]. Recently, UTAUT identified four significant antecedents to IS acceptance: effort expectancy (EE), performance expectancy (PE), social influence (SI), and facilitating conditions (FCs), additionally, four moderating variables were identified: gender, experience, age, and volitional use[158]. The UTAUT, developed by Venkatesh et al in 2003, Explains how

behavioral beliefs about performance and effort, social influence (normative convictions), and situations supporting behavioral intention and use of competencies (control convictions), Although these convictions are utilized to explain new ISs user assessments for technological acceptability, this study expands on these concepts to explain user resistance behavior[138]. In 2012, Venkatesh et al [140] proposed the second iteration of UTAUT, referred to as UTAUT2, which is aimed at consumers, UTAUT2 improves on the previous version by including three critical factors: hedonic motivation (HM), price value (PV), and habit (H), while removing the variable, the voluntariness of use, on the assumption that consumers act voluntarily[131]. This study anticipates that "habit" will not play a role in determining adoption and acceptance of new technologies, and hence exclude it from our model [158] [159]. The model extends the UTAUT by incorporating a direct relationship between facilitating conditions and behavioral intention, similarly, in addition to these changes, Venkatesh et al (2012) discovered that experience moderates the effect of behavioral intention on use, UTAUT2 is a well-established methodology widely used to assess technology acceptance; empirical data is analyzed using factor analysis by cloud developers, cloud users, IT professionals, and managers [131]. As a consequence of its validity and strength in contrast to other models, UTAUT2 was chosen as the foundation for this investigation [161]. The purpose of this study is to expand the UTAUT2 model by including a new variable, "trust," in the realm of technology acceptance and adoption, it is an essential issue for a nation like Iraq which has clearly underlined its vital role in numerous prior studies, for example it has been evident from earlier literature that the lack of trust among the population is a big barrier to the adoption in Iraq of new technologies [162].

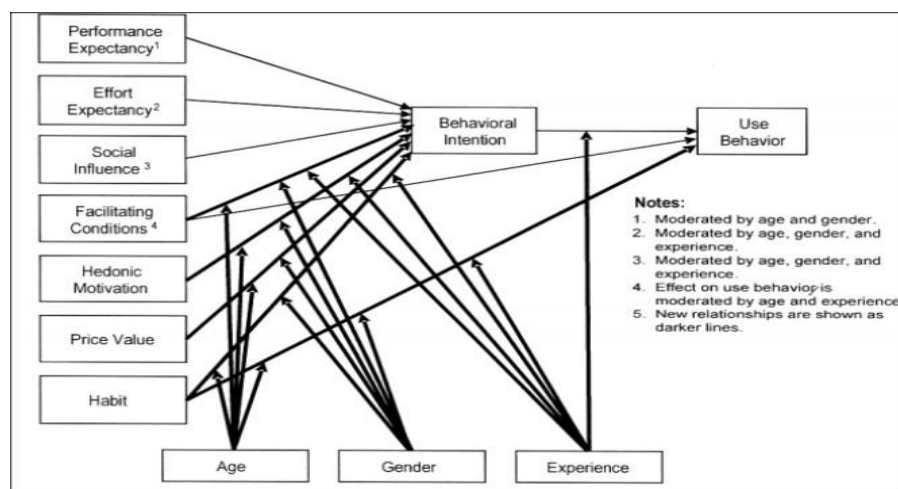


Figure 2.6: UTAUT2 by Venkatesh et al [140]

2.5.2.1 Performance expectancy (PE)

Is defined as "the extent to which an individual believes that utilizing the system will assist him or her in improving job performance" [138]. According to [163] PE refers to a user's conviction that using a specific technology will improve job performance; it is a predictor of Behavioral Intention (BI) for technology use because users often aim to forecast the extent of benefits achieved from using a specific technology. PE is equivalent to perceived usefulness in the TAM and relative advantage in the Diffusion of Innovations model; PE was expected to be a direct predictor of BI in the UTAUT [138]. UTAUT studies predict university personnel to oppose education technology, in contrast, if they have dubious views of their educational worth, if they consider that CBEL is beneficial and adds value to their educational experience, the following theory was proposed:

H1: Performance expectancy has a positive influence on the behavioral intention to the actual use of CBEL in Iraq.

2.5.2.2 Effort expectancy (EE)

Is described as "the degree of ease with which a system may be used," and is equivalent to TAM's ease of use [138]. EE Previous study has demonstrated that this construct has a considerable effect on the intention to employ a specific technology [164]. The user's intention to accept new technology is predicted not only by how highly the technology's performance is valued but also by how simple it is to use and how little effort is required to operate it[141]. In the UTAUT, EE was proposed as a direct predictor of BI [165]. Furthermore, the purpose of this study was to explore academic views about the freeness of the system and forecast their behavioral intent in CBEL. It is predicted that academics will be more inclined to adopt and utilize the system if the system is found easy to use, As a result, we suggest the following hypothesis:

H2: Effort expectancy has a positive influence on the behavioral intention to the actual use of CBEL in Iraq.

2.5.2.3 Social influence (SI)

Is defined as "the extent to which an individual believes that influential others believe he or she should use the new system" [138]. It is also defined as the degree to which users perceive that an influential person believes an IS should be adopted, SI will have a positive effect on the adoption of new technology [141]. It is comparable to the social norm in Theory of Reason Action (TRA), Theory of Planning Behavior (TPB), and TAM2 in that it refers to the social pressure put on individuals by an external environment and its ability to impact their perceptions and behaviors when engaging in a certain action [138]. The direct effect of SI on BI is justified by the fact that people might be influenced by other people's ideas and so become involved in activities they do not plan to engage in. As a result, we propose the following hypothesis:

H3: Social influence has a positive influence on the behavioral intention to the actual use of CBEL in Iraq.

2.5.2.4 Facilitating conditions (FCs)

Is defined as "the degree to which an individual feels that an organizational and technical infrastructure exists to enable the use of the system" [138]. In other words, it is the provision of external resources required to carry out a given activity [166]. In several circumstances, FCs were seen as an efficient technology acceptance predictor that has a substantial and direct impact on real technological uses and is described as "the level to which a person believes that the system is used to support organizational and technical infrastructures"[163]. FCs relate to the availability and favorable effect on the intent of end-users of the technology resources and technical infrastructure [142]. Therefore, The next hypothesis is proposed:

H4: Facilitating conditions have a positive influence on the actual use of CBEL in Iraq.

2.5.2.5 Hedonic motivation (HM)

Its definition is the enjoyment or pleasure experienced as a result of utilizing a technology [140]. Theoretically, HM has been found to be an important predictor of technology use in IS study [167]. Consequently, we propose the following hypothesis:

H5: Hedonic motivation has a positive influence on the behavioral intention to the actual use of CBEL in Iraq.

2.5.2.6 Price value (PV)

is defined as the cognitive interchange between the perceived advantages and the monetary costs connected with the usage of applications; that is, the price value is positive when the perceived benefits of a certain system outweigh the monetary costs of its use [140]. In ISs research, it was discovered that the price value of technology has a beneficial effect on a business's decision to adopt it [143]. Accordingly, the following hypotheses are proposed in this study:

H6: Price value has a positive influence on the behavioral intention to the actual use of CBEL in Iraq.

2.5.2.7 Behavioral intention (BI)

The connections between all individual and environmental backgrounds and AU are mediated according to common technological acceptance and application models by behavioral intention, which means the intensity of the desire of an individual to perform conduct which aims at capturing acceptance-like processes [168][169]. In this study, the primary indicator of acceptance is the intention, or BI, the higher the BI, the more likely the technology will be accepted [170][171]. Understanding individuals' intentions and motivations for utilizing a product or service are critical, as individuals' attitudes are linked to their perceptions [172]. Therefore, the following hypothesis is concluded in the context of CBEL:

H14: The behavioral intention of individuals is positively associated with the actual use of CBEL in Iraq.

2.5.2.8 Usage behavior

Behavior is unconscious action taken by a human, that is, the action performed by a person, in relation to IT behavior, the use of technology refers to the AU of technology, such that the behavior is related to the technology used integrally[173]. AU is modeled as a direct function of (BI); extensive empirical research has validated this idea [174]. According to [120] found BI to be a factor significantly affecting AU.

2.5.3 Additional Variable

In addition to the variables listed in UTAUT2, this study included the addition of one variable (Trust) as a driving factor for behavioral intent.

2.5.3.1 Trust (TR)

Is defined as an individual's readiness to tolerate vulnerability in exchange for positive prediction of another's intentions or behaviors in a situation characterized by dependency and risk [175]. According to [7] it is recommended that technological factors such as trust be examined. Trusting public infrastructure to store critical and confidential data is a significant barrier to cloud computing adoption in an educational institution's e-learning environment [34]. In developing countries, TR was shown to be a major predictor of behavioral intention following a review of the literature on technology adoption [176]. Hence, we propose the following hypothesis:

H7: Trust has a positive influence on the behavioral intention to the actual use of CBEL in Iraq.

2.5.4 Status Quo Bias Theory (SQB)

An important cause for failing new systems was user opposition to the deployment of IS and therefore had to be recognized and handled [145]. Samuelson and Zeckhauser (1988) established the idea of SQB to explain resistance or rejection in the use of technology, according to the SQB, the more the number of choices, the greater is the relative bias towards the status quo, and the greater the decision-making status quo, the inclination of making is to remain inactive or to maintain existing or prior decisions, which explains why individuals choose decisions overwhelmingly to repeat previous acts rather than to seek new ones [146]. The SQB theory aims to explain people's desire to retain their present status and position by integrating the literature on technology adoption and resistance to the point of view of SQB and explaining user resistance before adopting a new IS[145]. According to [177] user resistance to a system manifests itself in three distinct attitudes: aggression (in the form of system attack or destruction), projection (in the form of user attitudes that constantly blame the system for the

difficulties they encounter while using the system), and avoidance (in the form of an attitude the user always avoids interacting or using the system). According to [146] SQB explanations in three principal categories have been described:

- a. Psychologically committed value and regret avoidance due to misperceived value costs.
- b. cognitive perceptions when inertia is present and when value is sensed.
- c. logical decision-making with regard to cost-shifts and perceived threats.

2.5.4.1 The psychological commitment

The first explanation from SQB is based on psychological commitment; three key elements affect psychological engagement: sunk costs, social norms, and efforts to feel in control[145][146]. The psychological engagement might arise because it is wrong to take into consideration low costs, to pursue a coherent decision-making approach, to wish to restore social status, to prevent remorse in the absence of a bad choice, or to preserve control[178][149]. Sunk costs refer to a person's reluctance to reduce its losses and the tendency to justify previous commitments, social norms relate to changing standards that can strengthen or weaken an individual's status quo distortion that is driven by the will of an individual to guide or define his or her own situation, the social norms refer to the rules that are applicable in the workplace, this want may enhance or weaken the SQB of an individual.[145][146].

Sunk costs (SC)

Sunk costs are related to past commitments that contribute to apprehension about switching to a new alternative [146]. According to [147], a Sunk cost is described as "the cost that has been paid, regardless of the option made".The Previous study implies that user resistance is caused by a decline in the value of marketable skills [179]. Sunk costs are divided into two categories based on the kind of prior investment by consumers: money, material, and other monetary sunk costs; and time, effort, expectation, and other behavioral sunk costs [147]. We thus make the following hypothesis:

H8: Sunk costs have a negative influence on the behavioral intention to the actual use of CBEL in Iraq.

Regret avoidance (RA)

Regret avoidance education, such as experience teachings, trains individuals to avoid painful events whenever possible [146]. As Kahneman and Tversky [156] noted, people express greater remorse for negative outcomes caused by newly adopted technology than they do for equivalent outcomes caused by the status quo. Additionally, regret avoidance may increase the user's reluctance to adopt the new technology [148]. Hence, we propose the following hypothesis:

H9: Regret avoidance has a negative influence on the behavioral intention to the actual use of CBEL in Iraq.

2.5.4.2 The cognitive misperception

The SQB is also due to the fact that losses are greater than the gains in value perception, loss aversion may lead to status quo bias and even modest losses connected with change from the present condition may be seen as greater than those associated with the current state[146][149]. Persistence, from the perspective of cognitive misperceptions, enables the status quo to adapt to a new method despite having better options or benefits to change [180].

Inertia (IN)

refers to the proclivity of beliefs or sets of beliefs to persist after formation [181]. Inertia also is used to refer to the often seen phenomena in the management and organization, when managers do not update and rework their understandings of the changing circumstances, a condition that functions as a psychological barrier to corporate achievement [182]. Inertia, despite the existence of superior alternatives or incentives to shift, is described as a user attachment to and continued usage of a system of the incoming system [149]. Hence, we propose the following hypothesis:

H10: Inertia has a negative influence on the behavioral intention to the actual use of CBEL in Iraq.

Perceived value (PEV)

Consumer behavior study revealed that the views of customers about the value of their products (or services) are an important predictor of consumer decisions [183]. Due to its importance, researchers have given various interpretations and definitions from different viewpoints on the notion of perceived value according to [184] the difference between the maximum cost the consumer wills to pay for a product (or service) and the amounts actually payable is defined as the difference between the quality perceived as quality and the difference between the amount paid in the money (or service) of a customer and the quality actually received from a monetary point of view, the perceived value may be described in social psychology as the enhanced usefulness of a social self-concept that is created by the acquisition of a commodity (or service) of special importance[150][151]. Furthermore, from a benefits standpoint, the [185] defined PEV as the entire consumer evaluation of what was received (benefits or profits obtained) and what was provided (perceived sacrifices or costs). Prior research has usually adopted the definition of Zeithaml since it is the basis for understanding the perceived worth [186]. We thus make the following hypothesis:

H11: Perceived value has a negative influence on the behavioral intention to the actual use of CBEL in Iraq.

2.5.4.3 Rational decision making

Prior to changing to the new alternative, a sensible decision-making process involves assessing the relative cost and advantages of change (i.e. net profit), costs above benefit lead to SQB, and there are two sorts of costs from a rational decision-making perspective: identified transitional costs and uncertainty costs [145][187]. According to rational choice theory (RCT), Decision makers generally start with discovering alternatives and then weighing each solution's costs and values through preference functionality [188]. The decision-makers analyze the cost and advantages of all measures before making a choice [189]. RCT is a neoclassical method that gives a theoretical basis for understanding decision-making in organizations [190].

Transition costs (TC)

Transition Costs are the expenses incurred during the process of acclimating to a new situation [145][187]. Previous research indicates some negative transitions, such as a loss of power or an increase in an effort [179] [191]. Occasionally, as a result of a deficient system [192]. Alternatively, user resistance might be due to changes in the nature of work/security requiring new skills [153]. Hence, the following hypothesis we propose:

H12: Transition costs have a negative influence on the behavioral intention to the actual use of CBEL in Iraq.

Perceived threat (PT)

A widely known and essential notion for customer behavior has been the potential negative effects of buying a new product or service: Threats perceived [193]. The impression of a threat consists of two crucial components: insecurity (opportunity for harmful effects) and loss (the seriousness of consequences)[194]. In consumer behavior research, threat perception is a significant impediment to consumer decision-making [195]. Although the gathering, transfer, and storage of sensitive information necessary to accept consumers might expose consumers to risks in security and possible privacy, lack of personal connection leads to considerable imbalance and confusion amongst consumers[196]. These characteristics help the impression of Internet-based services (for instance) as a threat to conventional offline purchases, making the customer more cautious regarding Internet-based services' usage and acceptance [152]. Hence, we propose the next hypothesis:

H13: Perceived threat has a negative influence on the behavioral intention to the actual use of CBEL in Iraq.

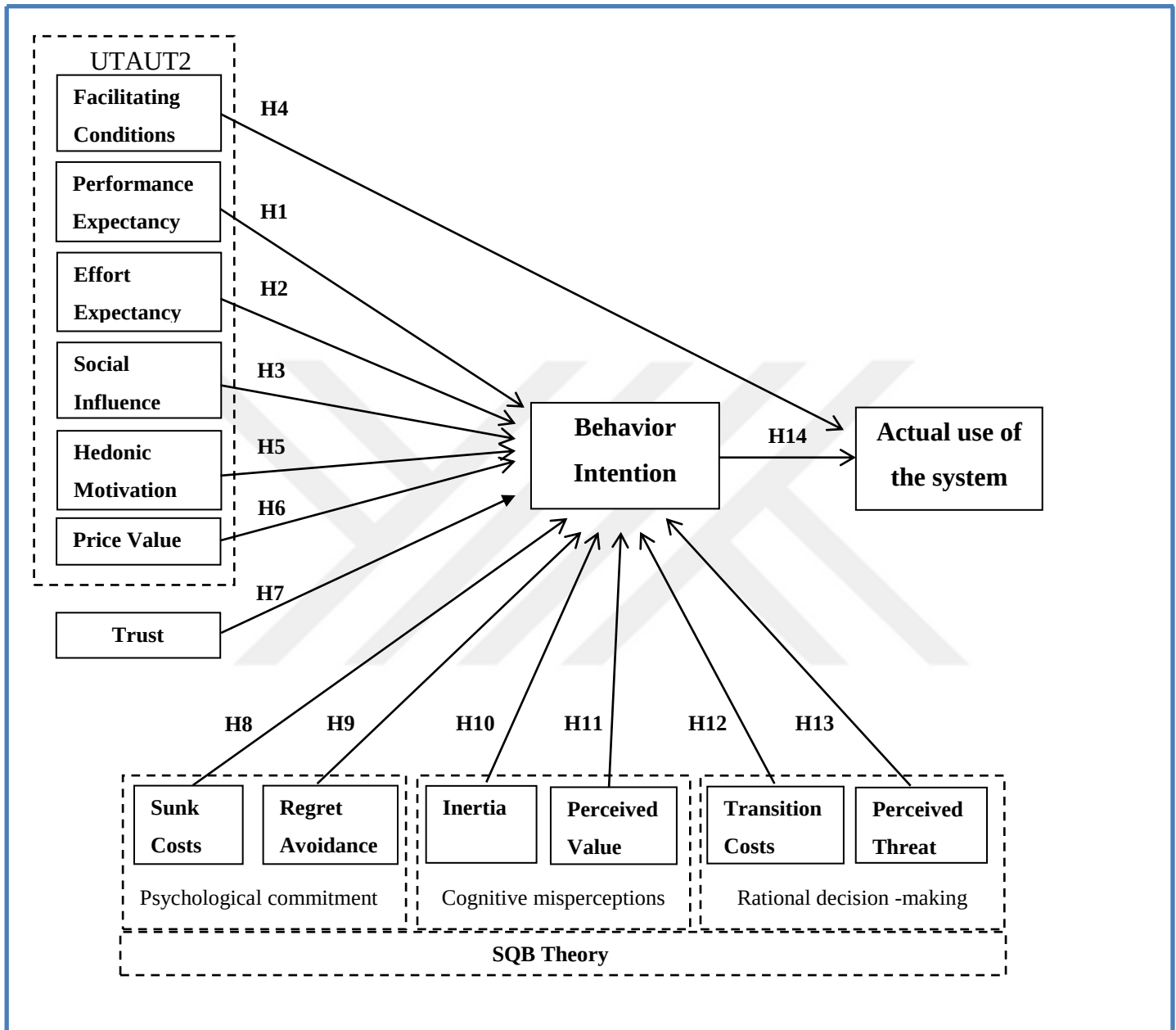


Figure 2.7: Conceptual research model

3. METHODOLOGY

3.1 INTRODUCTION

This section entails the study methodology applied in conducting this research. Specifically, it outlines the research strategy, research design and method, sample selection, data collection procedure, statistical analysis, research quality, and build reliability and validity.

3.2 RESEARCH STRATEGY

To be able to gain insight into the mechanisms behind the intent to actually use a CBEL system in Iraq, and thus, the next step was to determine whether to use a qualitative or quantitative research strategy, This study adopted a quantitative approach because the purpose of this thesis is to investigate and gain a broad understanding of a real-world phenomenon, rather than delving into the details, we sought to gain a broad understanding and knowledge of what are representative and common factors of intent in the qualitative research strategy [197].

3.3 RESEARCH DESIGN AND METHOD

There are many different approaches to research design; however, in this thesis, we have chosen a quantitative approach with a survey as the tool for gathering data, one of the advantages of conducting a survey with the structured predefined question is that the results provide information that can be used to make generalizations [198]. To collect the quantitative evidence, constructed an online self-completion survey through a Questionnaire Google form. The survey consisted of 61 questions The first section consisted of 5 background questions with the purpose to collect demographic data, the second section consisted of 56 closed questions locked into predefined categories. When closed questions are used, there is a risk that the validity of the results will be compromised because the question can be understood or interpreted differently by the respondents [199]. A five-point Likert scale was used for all questions in the second section, with 1 indicating "strongly disagree" and 5 indicating "strongly agree" on a scale of 1 to 5[200]. (to view it, see appendix A.4.1). Randomly ordered items in the survey were used to reduce the possibility of common method bias [201]. By this approach, the sample group grows and useful data for the research can be collected.

3.4 SAMPLE SELECTION

A sample is a group of people who have been chosen from the general population in order to represent the population [202]. Sample selection is a fundamental process that generally involves five steps: specifying the target population, selecting the sampling frame, selecting the sampling method, selecting the sample size, and putting the sampling plan into action [203]. It aims to examine the connections between different variables in order to evaluate the hypothesis [204]. The sample for this study was chosen at random because, according to the sampling schedule, all respondents have an equal chance of being selected, this is due to the homogeneity of the respondents to the study [205]. This study was conducted in institutions of higher education in Iraq (University of Mosul, Northern Technical College, Baghdad University, Tikrit University, and Maysan University) and it is used questionnaires to collect data. When a researcher needs a large number of responses, a questionnaire is the most effective method of gathering information [205]. Academic staff at the university were selected as sample candidates [174]. The objective of choosing university academics was to win them Different benefits CBEL may carry out a great deal of its activities online: the preparation of test papers; the compilation of more sophisticated learning resources for students through content management, the evaluation of students' tests, assignments and projects[101]. SEM analysis was used, which allows statistically choosing a community sample consisting of (100-200) samples, but Through our review of previous studies related to my topic, this study found researchers who used a community sample consisting of (200-500) sample [7][132][128]. For this reason, (258) samples were selected in our study.

3.5 DATA COLLECTION PROCEDURE

Data were gathered via a structured interview of objects based on the buildings validated in the original UTAUT2 model and SQB model[138]. Data were collected by questionnaire via Google form. The questionnaire is divided into two sections, the first section consists of demographics, such as age, gender, educational attainment, title, qualifications, and general information related to ICT, Meanwhile, the second section consists of questions regarding the factors proposed for this study. The validity of the questionnaire was confirmed by consulting three experts from Northern Technical University, and Maysan University in Iraq (to view it, see appendix A.3)

the experts assessed and adjusted the coherence and interconnectedness of the question, and the respondents received the questionnaires via email. Furthermore, respondents were given about four weeks to fill out the questionnaires. Once the data has been collected, it must be properly treated and distilled; analysis entails several steps in which the data is examined, classified, and tested in order to generate grounded empirical findings[197].

3.6 STATISTICAL ANALYSIS

The study applied the structural equation modeling (SEM) technique to test the hypotheses and the research model developed in the previous chapter. SEM is a statistical technique that uses a confirmatory approach (hypothesis testing) when analyzing data structures that represent specific phenomena [206]. The majority of researchers use SEM which is a statistical technique used for data analysis [8]. Moreover, analyzed the data using the software AMOS.

3.7 RESEARCH QUALITY

It is necessary to have high reliability in order to have high validity [198]. Generally, the data must be relevant to the research question in order to meet the criteria for inclusion, however, it is not enough that the sources that were used are relevant; it is also necessary that the data that was selected from the sources is relevant[197].

3.8 BUILD RELIABILITY AND VALIDITY

In order to reduce measurement errors, it is necessary to address two critical issues: reliability and validity [203]. This study made every effort to meet the following conditions to ensure that responses are as reliable as possible:

- a. Respondents were surveyed using an (Arabic) questionnaire. (to view it, see appendix A.4.2)
- b. Select a clear and precise form of the question that is relevant to the point.
- c. Create a questionnaire in such a way that all the questions are understandable without being ambiguous.
- d. Double-barreled questions are false to avoid misinterpretation.

- e. Emphasize to respondents that their answers will only be to provide services of a CBEL.
- f. Giving the respondents enough time to answer the question without any pressure.

According to [207], a questionnaire is valid if the results are usable and enable us to quantify what we are attempting to quantify. In regards to health, the questionnaire was distributed to several specialists from academic staff in order to ascertain the required level of understanding of the participants' question and to increase the reliability of our scale and research question, the specific tool used is Cronbach's reliability coefficient (α) (Cronbach's alpha), which is the most frequently used method for estimating reliability [208][209].

4. DATA ANALYSES

4.1 INTRODUCTION

As was indicated in the previous chapter, this study followed the deductive approach, which It sequences from the theoretical foundation (which was addressed in the theoretical framework), through the method (which was conducted discussed in the methodological framework), all the way to the data (which will be covered in this chapter). The last stage of that approach is the results that will be reached through the extent analysis. The response of the sample members to the main variables of the study and its dimensions. This aspect will be covered through the preliminary analysis of the variables to ensure the stability and reliability of the structure of the study scale. This chapter will also deal with a statistical description of the responses (arithmetic means and standard deviations), as well as testing hypotheses.

4.2 DEMOGRAPHIC CHARACTERISTIC

Before starting to analyze and discuss the data, we will present the demographic data of the study sample shown in Table (4.1), where it was found that (60.3%) was for males, while the rest was for females. It is also clear that the percentage of academic staff with a master's degree is the largest at a rate (57.3%) and the percentage of those who hold the scientific title of assistant lecturer is the largest at a rate (35.2%) and the largest percentage of the sample was within the middle age group at a rate of (38.9%) As for the level of experience in using technology, It was found that the majority of the sample was good at using technology with a rate of (44.1%).

Table 4.1: Demographic information

Characteristics	Number of Respondents	(N=258)
Gender	Male	155
	Female	103
Age	30- 40	100
	40- 50	87
	<50	71
Academic achievement	PhD	110
	MSc	148
Scientific title	Asst. Lecturer	91
	Lecturer	87
	Asst. Prof	52
	Prof	28
level of experience in using Information Technology IT	Intermediate	48
	Good	114
	V. Good	70
	Excellent	26

4.3 INTERNAL CONSISTENCY AND VALIDITY

The questionnaire was designed based on previous studies (to view it, see appendix A.1), and this helped to obtain a high level of reliability and validity, in addition, the apparent validity and internal consistency of the questionnaire were confirmed by presenting it to a group of arbitrators (as explained in the third chapter) for the purpose of analyzing the stability of the final study scale, which focuses on measuring the homogeneity and coherence of the elements that make up that scale [210]. And in order to know the extent of the stability of the question and its relevance to what it seeks, and the scale aims to measure it to be able to measure what it was designed for [211]. At first, the Correlation Total-Item Corrected test of the final questionnaire was done to

measure the extent of the correlation of each question of the questionnaire with the total correlation of all the questions (0.20) or more, an acceptable and reliable question in statistical analysis[211].

Table 4.2 : The final internal validity coefficient of the data-collection questionnaire items

(Source: Prepared by the researcher based on software SPSS V.22)

Q.N	Corrected Item-Total Correlation	Q.N	Corrected Item-Total Correlation	Q.N	Corrected Item-Total Correlation	Q.N	Corrected Item-Total Correlation	Q.N	Corrected Item-Total Correlation
Q1	0.516	Q13	0.490	Q25	0.534	Q37	0.126	Q49	0.055
Q2	0.475	Q14	0.374	Q26	0.583	Q38	0.105	Q50	0.132
Q3	0.469	Q15	0.375	Q27	0.513	Q39	0.152	Q51	0.037
Q4	0.353	Q16	0.312	Q28	0.494	Q40	0.080	Q52	0.007
Q5	0.446	Q17	0.613	Q29	0.521	Q41	0.021	Q53	0.429
Q6	0.526	Q18	0.605	Q30	0.320	Q42	0.529	Q54	0.505
Q7	0.562	Q19	0.487	Q31	0.263	Q43	0.553	Q55	0.496
Q8	0.536	Q20	0.456	Q32	0.580	Q44	0.601	Q56	0.396
Q9	0.588	Q21	0.625	Q33	0.254	Q45	0.111		
Q10	0.529	Q22	0.437	Q34	0.286	Q46	0.184		
Q11	0.493	Q23	0.514	Q35	0.155	Q47	0.148		
Q12	0.519	Q24	0.492	Q36	0.093	Q48	0.115		

It is clear from the previous -mentioned table that all the questions of the final questionnaire obtained (Corrected Total-Item Correlation)a value higher than (0.20), which confirms that no question has been deleted, and which indicates that the degree of internal consistency is acceptable and reliable in conducting statistical analysis.

Thus, in order to ensure the quality of the questioner, this study used Cronbach's Alpha to verify the questioner Internal Consistency, As shown in table 4.2, the Cronbach's Alpha values of all the questions of the study were between (0.929-0.925), that's mean they are acceptable because they were greater than (0.60) [211], which indicates that it is characterized by internal consistency and stability.

Table 4.3: Reliability coefficient of the study scale

(Source: Prepared by the researcher based on software SPSS V.22)

Factors	Cronbach's Alpha for study	Factors	Cronbach's Alpha for study
Performance Expectancy	0.926	Sunk Cost	0.927
Effort Expectancy	0.926	Regret Avoidance	0.928
Social Influence	0.926	Perceived threat	0.929
Facilitating Conditions	0.926	Perceived Value	0.926
Hedonic Motivation	0.925	Transition costs	0.928
Price Value	0.926	Inertia	0.928
Behavioral Intention	0.925	Actual Use	0.926
Trust	0.926		

4.4 DESCRIBE VARIABLES AND TEST THE HYPOTHESES

The level of responses of academic staff in higher education institutions will be described and discussed in the current study sample using the arithmetic mean and standard deviation S.D for the questions related to CBEL a question distributed over a set of different dimensions. The results were as shown in Table (4.3), which will be discussed afterward according to each factor.

Table 4.4: Arithmetic mean and standard deviation of response level towards CBEL

(Source: Prepared by the researcher based on software SPSS V.22)

Factors	Q.N	Question	Mean	S.D
Performance Expectancy (PE)	1	A CBEL will be useful to me in education.	3.8566	0.87706
	2	Using a CBEL will increase my chances of receiving better information.	4.1163	0.90074
	3	Using a CBEL will help me in learning more quickly.	4.0581	0.88684
	4	Using a CBEL will give me more knowledge and less effort in education.	3.9341	0.92916
Effort Expectancy (EE)	5	Learning how to use a CBEL will be easy for me.	3.8333	0.81291
	6	Education requires less effort by adopting a CBEL.	3.7054	0.96558
	7	I see that the CBEL is easy to use.	3.7868	0.83985
	8	It is easy for me to become skilled in using a CBEL.	3.8411	0.84265
Social Influence (SI)	9	I think that people who care about me will think that I should use a CBEL in education (for example, friends, relatives, parents, colleagues, etc.).	3.5620	0.76272
	10	People that have an impact on my conduct believe that I should utilize a CBEL system in schooling (for example, academic staff, partners, managers, etc.).	3.6628	0.79312
	11	I think that the people whose opinions I care about would prefer if I used a CBEL.	3.5930	0.80434
	12	People who use the CBEL system in my community have more prestige than those who do not use it.	3.6550	1.01026
Facilitating Conditions (FCs)	13	I have the necessary resources to use the CBEL.	3.6977	0.90914
	14	I have the necessary knowledge to use the CBEL.	3.6008	0.84125
	15	The CBEL is interoperable with other information technologies that I employ.	3.6977	0.78015
	16	When I am having difficulty utilizing the CBEL, I can seek assistance from others.	3.9302	0.89256

Hedonic Motivation (HM)	17	Using a CBEL in education is interesting.	3.7674	0.92532
	18	Using a CBEL is exhilarating.	3.6822	0.91664
	19	Using a CBEL is fun.	3.5775	0.98025
Price Value (PV)	20	The cost of a CBEL is reasonable.	3.4729	0.82827
	21	The CBEL represents good value for money.	3.5891	0.86984
	22	At the current price, a CBEL system offers good value.	3.5310	0.86040
Behavioral Intention (BI)	23	I intend to use the CBEL in the future.	3.9690	0.99366
	24	I will try to replace the traditional methods and tools in education by using a CBEL in the future.	3.9109	1.00379
	25	I plan to use a CBEL system in the future.	3.9264	0.99727
	26	I expect that I will use the CBEL in the future on an ongoing basis.	3.7791	1.08116
Trust (TR)	27	I think that the CBEL is trustworthy.	3.4109	0.97128
	28	I trust the CBEL.	3.4109	0.97926
	29	I do not doubt the sincerity of the CBEL.	3.4109	0.95919
	30	I am satisfied that the legal and technological frameworks properly protect me against issues in the CBEL system.	3.2519	0.94318
	31	I would like to trust that the CBEL does the job right, even if it is not under supervision.	3.1938	0.99475
	32	The CBEL has the ability to perform its task.	3.6899	0.85345
Sunk Cost (SC)	33	I have spent a lot of time teaching by relying on traditional methods and tools.	3.9341	0.92075
	34	I spent a lot of effort in education by relying on traditional methods and tools.	3.9109	0.92301
	35	Using a CBEL requires a lot of time and effort to learn how to rely on it in education, meaning that the previous time and effort you spent to learn the traditional methods and methods of education will be useless.	3.1705	1.02971

Regret Avoidance (RA)	36	I will not change the traditional methods and tools for education, because I am afraid that I will feel regret if the new system (CBEL) does not meet my requirements.	2.6705	1.10005
	37	I will not change to a CBEL because I am afraid of the consequences of using a new technology that I have not tried, and I am afraid of getting bad results from it, and I feel sorry for having switched to it.	2.6202	1.06733
	38	I will not change to a CBEL, because I am afraid of technical problems in the system that will lead to the suspension of education, even temporarily, and therefore this makes me regret using the new system.	2.8062	1.05179
Perceived Threat (PT)	39	I am worried that I will lose the ability to teach if I switch from traditional methods and tools to a CBEL.	2.5969	1.16712
	40	I am concerned that if I use a CBEL, I will lose control over educational decisions.	2.6783	1.10235
	41	I am worried that I will lose the participation and interaction of the recipients of education in case of using the CBEL.	3.0775	1.04463
Perceived Value (PEV)	42	Given the time and work required to switch to a CBEL, it is worthwhile.	3.6589	0.87326
	43	Given the loss that I must endure, the shift in educational technique via the employment of a CBEL is worthwhile.	3.6744	0.87475
	44	Given the difficulties I have, the transition to the new manner of interacting with the CBEL system is advantageous to me.	3.6628	0.92871
Transition Costs (TC)	45	I would not want to use a CBEL system because installing this system as a new technology for me and running it would likely present problems.	2.9186	1.00445
	46	It will take a significant amount of time and effort for me to abandon traditional teaching approaches and transition to the CBEL.	2.9147	1.00992
	47	In general, it is difficult to switch to the new system, which is by using a CBEL.	2.7907	1.01102
	48	Leaving the traditional methods and tools for teaching and using the CBEL will cause me a lot of unexpected troubles.	2.9031	0.96349
Inertia (IN)	49	I will continue to rely on the traditional methods and tools of education because it has become a part of my life and I have become accustomed to it.	2.8217	1.03216
	50	Although the traditional tools and methods of education are not very effective, I will continue to apply them.	2.8256	1.00418
	51	I am already accustomed to using traditional methods and tools of education and will not abandon their use.	2.6628	1.07982
	52	I will continue to rely on traditional methods and tools of education because change will be stressful for me.	2.4070	1.02169

Actual use (AU)	53	In general, I would like to use the services of a CBEL in education.	3.7519	0.89990
	54	I will always try to use the services of the CBEL in education.	3.7248	0.92829
	55	I will plan to continue using the CBEL in education.	3.7791	0.93027
	56	I intend to continue using the CBEL in education.	3.7519	0.98258

Performance Expectancy (PE): This factor included four questions (1-4), as shown in table (4.3). Question (2) which refers to “Using a CBEL will increase my chances of receiving better information” got the highest arithmetic mean by (4.1163) which is an indication that the use of the CBEL by academic staff will increase the chances of receiving better information. Also, the standard deviation for this question was (0.90074), which indicates the consistency and convergence of the responses of the study sample towards this question. As for question (1), which included “A CBEL will be useful to me in education”, it got the lowest average score compared to the rest of the questions of this factor by (3.8566) and this is an indication that. The CBEL computing may not be useful for academic staff in the field of education The standard deviation for this question was (0.87706) confirming that there is consistency and congruence between the responses received towards this question.

Effort Expectancy (EE): This factor included four questions (5-8), as shown in table (4.3). Question (8) which refers to “It is easy for me to become skilled in using a CBEL” got the highest arithmetic mean by (4.8411) which is an indication that It is easy for academic staff to become skilled in using a CBEL. Also, the standard deviation for this question was (0.84265), which indicates the consistency and convergence of the responses of the study sample towards this question. As for question (6), which included “Education requires less effort by adopting a CBEL”. it got the lowest arithmetic mean compared to the rest of the question of this factor by (3.7054) and this is an indication that teaching requires more effort from the academic staff by adopting a CBEL. The standard deviation for this question was (0.96558) confirming that there is consistency and congruence between the responses received towards this question.

Social Influence (SI): This factor included four questions (9-12), as shown in table (4.3). Question (10) which refers to “People who influence my behavior think that I should use a CBEL in education (for example, academic staff, partners, managers, etc.” got the highest arithmetic mean by (3.6628) which is an indication that People who influence the behavior of academic staff such as managers motivate them to use the CBEL in education. Also, the standard deviation for this question was (0.79312), which indicates the consistency and convergence of the responses of the study sample towards this question. As for question (9), which included “I think that people who care about me will think that I should use a CBEL in education (for example, friends, relatives, parents, colleagues, etc.).” it got the lowest arithmetic mean compared to the rest of the question of this factor by (3.5620) and this is an indication that the academic staff thinks that people who care about them like friends will think that should not use a CBEL in education. The standard deviation for this question was (0.76272) confirming that there is consistency and congruence between the responses received towards this question.

Facilitating Conditions (FCs): This factor included four questions (13-16), as shown in table (4.3). Question (16) which refers to “I can get help from others when I have difficulties using the CBEL.” got the highest arithmetic mean by (3.9302) which is an indication that Academic staff can get help from others when they encounter difficulties in using the CBEL. Also, the standard deviation for this question was (0.89256), which indicates the consistency and convergence of the responses of the study sample towards this question. As for question (14), which included “I have the necessary knowledge to use the CBEL.” it got the lowest arithmetic mean compared to the rest of the question of this factor by (3.6008) and this is an indication that the Academic staff does not have the necessary knowledge to use a CBEL. The standard deviation for this question was (0.84125) confirming that there is consistency and congruence between the responses received towards this question.

Hedonic Motivation (HM): This factor included three questions (17-19), as shown in table (4.3). Question (17) which refers to “Using a CBEL in education is interesting.” got the highest arithmetic mean by (3.7674) which is an indication that for academic staff, the use of a CBEL in education is very interesting. Also, the standard deviation for this question was (0.92532), which indicates the consistency and convergence of the responses of the study sample towards this question. As for question (19), which included “Using a CBEL is fun” it got the lowest

arithmetic mean compared to the rest of the question of this factor by (3.5775) and this is an indication that using CBEL for Academic staff is not fun. The standard deviation for this question was (0.98025) confirming that there is consistency and congruence between the responses received towards this question.

Price Value (PV): This factor included three questions (20-22), as shown in table (4.3). Question (17) which refers to “Using a CBEL in education is interesting.” got the highest arithmetic mean by (3.7674) which is an indication that for academic staff, the use of a CBEL in education is very interesting. Also, the standard deviation for this question was (0.92532), which indicates the consistency and convergence of the responses of the study sample towards this question. As for question (19), which included “Using a CBEL is fun” it got the lowest arithmetic mean compared to the rest of the question of this factor by (3.5775) and this is an indication that using CBEL for Academic staff is not fun. The standard deviation for this question was (0.98025) confirming that there is consistency and congruence between the responses received towards this question.

Behavioral Intention (BI): This factor included four questions (23-26), as shown in table (4.3). Question (23) which refers to “I intend to use the CBEL in the future.” got the highest arithmetic mean by (3.9690) which is an indication that the academic staffs intend to use the CBEL in the future. Also, the standard deviation for this question was (0.99366), which indicates the consistency and convergence of the responses of the study sample towards this question. As for question (26), which included “I expect that I will use the CBEL in the future on an ongoing basis.” it got the lowest arithmetic mean compared to the rest of the questions of this factor (3.7791) and this is an indication that Academic staffs do not expect to use a CBEL in the future continuously. The standard deviation for this question was (1.08116) confirming that there is consistency and congruence between the responses received towards this question.

Trust (TR): This factor included six questions (27-32), as shown in table (4.3). Question (27) which refers to “I think that the CBEL is trustworthy.” got the highest arithmetic mean by (3.4109) which is an indication that the academic staffs think that the CBEL is trustworthy. Also, the standard deviation for this question was (0.97128), which indicates the consistency and convergence of the responses of the study sample towards this question. As for question (31), which included “I would like to trust that the CBEL does the job right, even if it is not under

supervision.” it got the lowest arithmetic mean compared to the rest of the question of this factor by (3.1938) and this is an indication that Academic staffs do not trust that a CBEL does the right job, even if it is supervised. The standard deviation for this question was (0.99475) confirming that there is consistency and congruence between the responses received towards this question.

Sunk Cost (SC): This factor included three questions (32-35), as shown in table (4.3). Question (32) which refers to “I have spent a lot of time teaching by relying on traditional methods and tools.” got the highest arithmetic mean by (3.9341) which is an indication that Academic staff has spent a lot of time teaching by relying on traditional methods and tools. Also, the standard deviation for this question was (0.92075), which indicates the consistency and convergence of the responses of the study sample towards this question. As for question (35), which included “Using a CBEL requires a lot of time and effort to learn how to rely on it in education, meaning that the previous time and effort you spent to learn the traditional methods and methods of education will be useless.” it got the lowest arithmetic mean compared to the rest of the question of this factor by (3.1705) and this is an indication that the use of CBEL does not require a lot of time and effort to learn how to rely on it in education, which means that the time and effort previously spent by academic staffs in teaching using traditional methods was beneficial. The standard deviation for this question was (1.02971) confirming that there is consistency and congruence between the responses received towards this question.

Regret Avoidance (RA): This factor included three questions (36-38), as shown in table (4.3). Question (38) refers to “I will not change to a CBEL, because I am afraid of technical problems in the system that will lead to the suspension of education, even temporarily, and therefore this makes me regret using the new system.” got the highest arithmetic mean by (2.8062) which is an indication that Academic staffs will not change to CBEL, because they fear that there are technical problems in the system that will lead to the suspension of education, even temporarily, and therefore this makes them regret using the new system. Also, the standard deviation for this question was (1.05179), which indicates the consistency and convergence of the responses of the study sample towards this question. As for question (37), which included “I will not change to a CBEL because I am afraid of the consequences of using a new technology that I have not tried, and I am afraid of getting bad results from it, and I feel sorry for having switched to it.” it got the lowest arithmetic mean compared to the rest of the question of this factor by (2.6202) and this is

an indication that Academic staffs will consider changing to a CBEL because they are not afraid of the consequences of using a new technology they have not tried or got bad results from it. The standard deviation for this question was (1.06733) confirming that there is consistency and congruence between the responses received towards this question.

Perceived Threat (PT): This factor included three questions (39-41), as shown in table (4.3). Question (41) which refers to “I am worried that I will lose the participation and interaction of the recipients of education in case of using the CBEL.” got the highest arithmetic mean by (3.0775) which is an indication that Academic staffs fear that they will lose the participation and interaction of the learners if they use a CBEL. Also, the standard deviation for this question was (1.04463), which indicates the consistency and convergence of the responses of the study sample towards this question. As for question (39), which included “I am worried that I will lose the ability to teach if I switch from traditional methods and tools to a CBEL.” it got the lowest arithmetic mean compared to the rest of the question of this factor by (2.5969) and this is an indication that Academic staffs are not worried that they will lose the ability to teach if they switch from traditional methods and tools to a CBEL. The standard deviation for this question was (1.16712) confirming that there is consistency and congruence between the responses received towards this question.

Perceived Value (PEV) : This factor included three questions (42-44), as shown in table (4.3). Question (43) which refers to “Considering the loss that I have to bear, the change to the method of education through the use of a CBEL is of good value.” got the highest arithmetic mean by (3.6744) which is an indication that Considering the loss that academic staffs have to bear, a change in the way of teaching through the use of an CBEL is of good value. Also, the standard deviation for this question was (0.87475), which indicates the consistency and convergence of the responses of the study sample towards this question. As for question (42), which included “Given the time and effort that I have to take to change to a CBEL, it is worth it.” it got the lowest arithmetic mean compared to the rest of the questions of this factor (3.6589) and this is an indication that Considering the time and effort academic staffs have to put in to change to CBEL, it's not worth it. The standard deviation for this question was (0.87326) confirming that there is consistency and congruence between the responses received towards this question.

Transition Costs (TC) : This factor included four questions (45-48), as shown in table (4.3). Question (45) which refers to “I would not want to use a CBEL system because installing this system as a new technology for me and running it would likely present problems.” got the highest arithmetic mean by (2.9186) which is an indication that Academic staffs do not want to use a CBEL because installing this system as a new technology for them and running it is likely to cause problems. Also, the standard deviation for this question was (1.00445), which indicates the consistency and convergence of the responses of the study sample towards this question. As for question (47), which included “In general, it is difficult to switch to the new system, which is by using a CBEL” it got the lowest arithmetic mean compared to the rest of the question of this factor by (2.7907) and this is an indication that in general, who has no difficulty switching to the new system, which is using CBEL. The standard deviation for this question was (1.01102) confirming that there is consistency and congruence between the responses received towards this question.

Inertia (IN) : This factor included four questions (49-52), as shown in table (4.3). Question (50) which refers to “Although the traditional tools and methods of education are not very effective, I will continue to apply them.” got the highest arithmetic mean by (2.8256) which is an indication that Although the traditional tools and methods of teaching are not very effective, academic staffs will continue to apply them. Also, the standard deviation for this question was (1.00418), which indicates the consistency and convergence of the responses of the study sample towards this question. As for question (52), which included “I will continue to rely on traditional methods and tools of education because change will be stressful for me.” it got the lowest arithmetic mean compared to the rest of the question of this factor by (2.4070) and this is an indication Academic staffs will no longer rely on traditional teaching methods and tools because change will be easy for them. The standard deviation for this question was (1.02169) confirming that there is consistency and congruence between the responses received towards this question.

Actual use (AU) : This factor included three questions (53-55), as shown in table (4.3). Question (55) which refers to “I will plan to continue using the CBEL in education.” got the highest arithmetic mean by (3.7791) which is an indication that The academic staff will plan to continue using the CBEL in education. Also, the standard deviation for this question was (0.93027), which indicates the consistency and convergence of the responses of the study sample towards this

question. As for question (54), which included “I will always try to use the services of the CBEL in education” it got the lowest arithmetic mean compared to the rest of the question of this factor by (3.7248) and this is an indication Academic staffs will sometimes try to use the services of a CBEL in education. The standard deviation for this question was (0.92829) confirming that there is consistency and congruence between the responses received towards this question.

4.5 INFERENCE STATISTICS

Statistics Inferential refers to the statistics that enable us to Obtain conclusions from the sample data and circulating them to the study population[212]. And then estimate the values of the study community and testing the hypotheses [213]. Which determines whether the findings are statistically significant A complement to the descriptive statistics (which provides a description of the response of the study sample) with the aim of reaching conclusions about that response by knowing the correlation of the variables and the nature of the relationship between them[214].

4.5.1 The Correlation Between Variables :

Positive correlations between the two variables have shown that the rise of one variable is an increase of the other variable, while the negative correlation indicates that the growth of one variable is a reduction of the second variable; the correlation between two results from a reduction in the other variable.[214]. The correlation is positively strong when it is (+ 0.3 to + 0.7) and positively weak when it is (0 to +0.3), while the correlation is negative strong when it is (-0.3 to -0.7) and negatively weak when it is (0 to -0.3), but if the correlation coefficient is (+1), this indicates a positive correlation Complete, and (-1) indicates a perfect negative correlation, and (0) indicates no correlation [215].Table(4.4) shows that

Table 4.5: Correlation of hypothetical schema factors

(Source: Prepared by the researcher based software SPSS V.22)

factors	Performance Expectancy	Effort Expectancy	Social Influence	Facilitating Conditions	Hedonic Motivation	Price Value	Behavioral Intention	Trust	Sunk Cost	Regret Avoidance	Perceived threat	Perceived Value	Transition costs	Inertia	Actual Use
Performance Expectancy	1														
Effort Expectancy	0.397**	1													
Social Influence	0.490**	0.573**	1												
Facilitating Conditions	0.396**	0.547**	0.512**	1											
Hedonic Motivation	0.502**	0.633**	0.589**	0.435**	1										
Price Value	0.579**	0.384**	0.520**	0.413**	0.492**	1									
Behavioral Intention	0.686**	0.288**	0.517**	0.379**	0.463**	0.531**	1								
Trust	0.481**	0.305**	0.444**	0.295**	0.376**	0.490**	0.413**	1							
Sunk Cost	0.241**	0.015	0.220**	0.131*	0.121	0.213**	0.407**	0.360**	1						
Regret Avoidance	-0.0290**	-0.119-	-0.085-	-0.065-	-0.198**	-0.077-	-0.240**	-0.117-	-0.041-	1					
Perceived threat	-0.314**	-0.056-	-0.090-	-0.018-	-0.251**	-0.098-	-0.281**	-0.203**	-0.049-	0.673**	1				
Perceived Value	0.441**	0.571**	0.544**	0.348**	0.534**	0.390**	0.453**	0.365**	-0.038-	-0.167**	-0.188**	1			
Transition costs	-0.219**	0.025	-0.005-	-0.113-	-0.035-	-0.150*	-0.331**	-0.251**	-0.151*	0.519	0.506**	0.058	1		
Inertia	-0.330**	0.165**	-0.062-	-0.078-	-0.193**	-0.167**	-0.294**	-0.264**	-0.052-	0.561**	0.577**	-0.157-	0.634**	1	
Actual Use	0.550**	0.454**	0.519**	0.277**	0.535**	0.413**	0.556**	0.470**	0.065	-0.318**	-0.363**	0.612**	-0.207**	-0.362**	1

**. Correlations of level 0.01 are significant (2-tailed).

*. Correlations of level 0.05 are significant (2-tailed).

And based on what was stated in Table (4-4) and through what was shown by the previous points, we can arrive at the following:

- a- There is a correlation between most of the factors of the study, depending on what Shown by Correlation Pearson's test results.
- b -No pair of factors is associated with a relationship (Multicollinearity) higher than ($r=0.90$) [215][216]. This indicates the absence of bias problems in statistical tests or An overlap between the factors leads to problems and difficulty in measuring the effects of the change brought about by each Factor with other factors[217]. It is also clear that there is no connection between Factors higher than 70.0, and this confirms and motivates the retention of all factors as they are[216].
- c- The contribution of the obtained results in providing preliminary support for the main hypotheses of the study.

4.5.2 The Hypothesis Testing

Since the type of hypotheses for this study are the hypotheses of an effect relationship (measurement of direct effects between factors), the researcher will use AMOS 25 software for the purpose of testing the hypotheses by path analysis, as the parameters of this type From the analysis, it is similar to coefficients of regression analysis in the sense that path analysis provides the same results as regression analysis, So there is no reason to present the same results again by regression analysis [218]. Path analysis is based on the idea of Least Square used in regression analysis, as path analysis includes weights for regression weights, whose outputs include path coefficients Estimate, which are weights similar to Weights Regression (B or β) and path coefficients may be normal such as regression coefficients (B) or standard path coefficients, and path analysis also includes the Critical Ratio (CR), which shows the level of differences between the weights of the deviations and corresponding to the value (t) in the regression analysis and for the hypothesis to be Acceptable, CR values should be greater than (1.96), at the level of morale

(0.05)[219] Table (4-5) and Figure (4-1) It shows the influence relationships between the factors of the study.

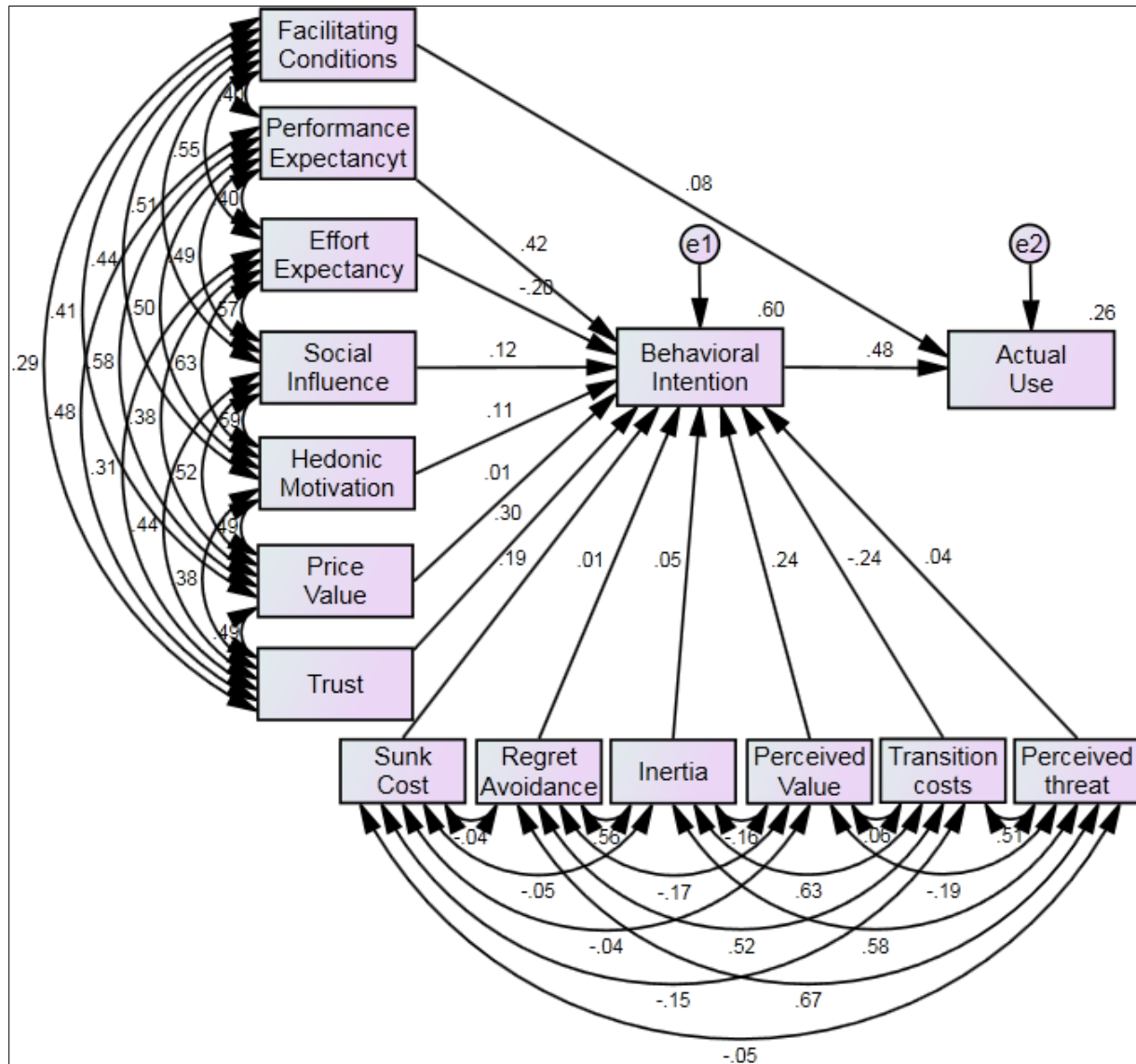


Figure 4:1: Impact relationships between factors and actual use of CBEL

(Source: program output AMOS.V.25)

Table 4.6: The relationship of influence between factors on the behavioral intention of the actual use of CBEL

(Source: output AMOS software.V.25)

			Estimate	S.E.	C.R.	P	Result
Behavioral_Intention_BI	<---	Effort_Expectancy_EE	-.211	.057	-3.738	***	Reject
Behavioral_Intention_BI	<---	Social_Influence_SI	.154	.069	2.234	.025	Acceptance
Behavioral_Intention_BI	<---	Hedonic_Motivation_HM	.104	.052	1.996	.046	Acceptance
Behavioral_Intention_BI	<---	Price_Value_PV	.015	.059	.262	.793	Reject
Behavioral_Intention_BI	<---	Sunk_Cost_SC	.189	.040	4.763	***	Acceptance
Behavioral_Intention_BI	<---	Regret_Avoidance_RA	.008	.046	.173	.863	Reject
Behavioral_Intention_BI	<---	Inertia_IN	.049	.052	.940	.347	Reject
Behavioral_Intention_BI	<---	Perceived_Value_PEV	.228	.039	5.825	***	Acceptance
Behavioral_Intention_BI	<---	Transition_Costs_TC	-.217	.049	-4.408	***	Reject
Behavioral_Intention_BI	<---	Perceived_Threat_PT	.036	.047	.771	.441	Reject
Behavioral_Intention_BI	<---	Trust_TR	.317	.051	6.232	***	Acceptance
Behavioral_Intention_BI	<---	Performance_Expectancyt_PE	.457	.058	7.936	***	Acceptance
Actual_Use_AU	<---	Facilitating_Conditions_FCs	.099	.069	1.428	.153	Reject
Actual_Use_AU	<---	Behavioral_Intention_BI	.481	.055	8.688	***	Acceptance

4.5.3 The Results

It appears from the preceding table, which depicts the effect relationships, that the effect significance was determined using the significance level (0.05), as the calculated significance level was compared to the value of the approved significance level (0.05), and the effects are statistically significant. If the calculated significance level is less than (under the level) the approved significance level (0.05), and vice versa, the calculated significance level was also used. As a result of these findings, the following conclusions can be drawn: the path "there is a

significant relationship between EE and BI.", reached (-3.738) which is not statistically significant at the level of significance (0.000). And the path "there is a significant relationship between SI and BI.", reached (2.234) which is statistically significant at the level of significance (0.025). And also, the path "there is a significant relationship between HM and BI.", reached (1.996) which is statistically significant at the level of significance (0.046). While the path "there is a significant relationship between PV and BI.", reached (0.262) which is not statistically significant at the level of significance (0.793). Also, the path "there is a significant relationship between SC and BI.", reached (4.763) which is statistically significant at the level of significance (0.000). As for, the path "there is a significant relationship between RA and BI.", it reached (0.173) which is not statistically significant at the level of significance (0.863). The path "there is a significant relationship between IN and BI.", reached (0.940) which is not statistically significant at the level of significance (0.347). And the path "there is a significant relationship between PEV and BI.", reached (5.825) which is statistically significant at the level of significance (0.000). And also, the path "there is a significant relationship between TC and BI.", reached (-4.408) which is not statistically significant at the level of significance (0.000). While the path "there is a significant relationship between PT and BI.", reached (0.771) which is not statistically significant at the level of significance (0.441). Also, the path "there is a significant relationship between TR and BI.", reached (6.232) which is statistically significant at the level of significance (0.000). As for, the path "there is a significant relationship between PE and BI.", it reached (7.936) which is statistically significant at the level of significance (0.000). the path "there is a significant relationship between FCs and AU.", reached (1.428) which is not statistically significant at the level of significance (0.153). And the path "there is a significant relationship between BI and AU.", reached (8.688) which is statistically significant at the level of significance (0.000).

Finally, it is clear that most of the study hypotheses are supported. Since some factors have a positive effect on the behavioral intention of the AU of CBEL, and therefore, the main hypotheses are accepted the seven (H1, H3, H5, H7, H8, H11, and H14).

5. CONCLUSIONS

5.1 INTRODUCTION

This chapter presents the conclusion, limitations of the study, and future work based on the data analyzed in the previous chapter. The main results that confirm the objectives of the research will be discussed. The researcher will suggest future work for this study.

5.2 CONCLUSION

This study aimed to examine the factors affecting the behavioral intention of the actual use of the e-learning system based on cloud computing in higher education institutions in Iraq. After reviewing the previous literature, our study model was proposed, where the dual-factor theory was used, which combines two theories, the first one is UTAUT2 which included the factors (performance expectancy, effort expectancy, social influence, facilitation conditions, hedonic motivation, and price value) with the addition of the trust factor as a variable additional, all of the above are enabling factors that encourage the use of new technology, and the second one is the SQB theory, which includes factors (sunk costs, regret avoidance, inertia, perceived value, perceived threat, transition costs), which are considered disincentive factors impede the use of technology. A random sampling technique was used to select 258 academic staff from five universities in Iraq as a sample. the questionnaire was used to collect data and analyzed using SEM based on AMOS software. The results confirm that performance expectancy (PE) is the most important factor regarding the (BI) and AU of CBEL, followed by the trust (TR), perceived value (PEV), Sunk costs (SC), social influence (SI), and hedonic motives (HM).where the Hypotheses were accepted (H1, H3, H5, H7, H8, H11, H14) and hypotheses were rejected (H2, H4, H6, H9, H10, H112, H13).

5.3 LIMITATION OF STUDY AND FUTURE WORK

Despite the efforts that have been made in this study, there are a set of limitations that it faced, and this is one of the nature of the different studies, which requires taking into account the limitations found in this study, where the time factor is one of the determinants faced by this study by considering the allotted time For behavioral studies it may be insufficient to obtain data,

information, and documentation related to the study. The current study also dealt with a number of factors that have been identified based on what is commensurate with the actual reality of higher education institutions in Iraq, the study sample, which may differ from one institution to another and from one country to another depending on cultural factors. With regard to the society and sample of the study, it was limited to the government sector) for institutions of higher education in Iraq, and therefore the inclusion of other sectors may contribute to reaching more clear results.

We advise the authorities and decision-makers in higher education institutions in Iraq to use this technology in the private sector and to increase their awareness of the benefits and ease of use of this technology. We also advise applying this technology in other institutions such as the Ministry of Education.

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APPENDIX A

A.1 LIST OF MEASURER

Constructs	Items	statement	sources
Performance Expectancy	PE1	An e-learning system based on cloud computing will be useful to me in education.	[140] [138] [163]
	PE2	Using an e-learning system based on cloud computing will increase my chances of receiving better information.	
	PE3	Using an e-learning system based on cloud computing will help me in learning more quickly.	
	PE4	Using an e-learning system based on cloud computing will give me more knowledge and less effort in education.	
Effort Expectancy	EE1	Learning how to use an e-learning system based on cloud Computing will be easy for me.	[164] [140]
	EE2	Education requires less effort by adopting an e-learning system based on cloud computing.	
	EE3	I see that the e-learning system based on cloud computing is easy to use.	
	EE4	It is easy for me to become skilled in using an e-learning system based on cloud computing.	
Social Influence	SI1	I think that people who care about me will think that I should use an e-learning system based on cloud computing in education (for example, friends, relatives, parents, colleagues, etc.).	[138] [140]
	SI2	People who influence my behavior think that I should use a cloud based e-learning system in education (for example, academic staff, partners, managers, etc.).	
	SI3	I think that the people whose opinion I care about would prefer it if I used an e-learning system based on cloud computing.	
	SI4	People who use the CBEL system in my community have more prestige than those who do not use it.	

Constructs	Items	statement	sources
Facilitating Condition	FCs1	I have the necessary resources to use the e-learning system based on cloud computing.	[140] [142]
	FCs2	I have the necessary knowledge to use the e-learning system based on cloud computing.	
	FCs3	The e-learning system based on cloud computing is compatible with other information technologies that I use.	
	FCs4	I can get help from others when I have difficulties using the e-learning system based on cloud computing.	
Hedonic Motivation	HM1	Using an e-learning system based on cloud computing in education is interesting.	[140] [167]
	HM2	Using an e-learning system based on cloud computing is exhilarating.	
	HM3	Using an e-learning system based on cloud computing is fun	
Price Value	PV1	The cost of an e-learning system based on cloud computing is reasonable.	[140] [143]
	PV2	The e-learning system based on cloud computing is of good value for money.	
	PV3	At the current price, a CBEL system offers good value.	
Behavioral Intention	BI1	I intend to use the e-learning system based on cloud computing in the future.	[170][171][172]
	BI2	I will try to replace the traditional methods and tools in education by using an e-learning system based on cloud computing in the future.	
	BI3	I plan to use a CBEL system in the future.	
	BI4	I expect that I will use the e-learning system based on cloud computing in the future on an ongoing basis..	
Trust	TR1	I think that the e-learning system based on cloud computing is trustworthy.	[34][175][176]
	TR2	I trust the e-learning system based on cloud computing..	
	TR3	I do not doubt the sincerity of the e-learning system based on cloud computing.	
	TR4	I feel reassured that legal and technological structures adequately protect me from problems in the CBEL system.	

Constructs	Items	statement	sources
	TR5	I would like to trust that the e-learning system based on cloud computing does the job right, even if it is not under supervision.	
	TR6	The e-learning system based on cloud computing has the ability to perform its task.	
Sunk Cost	SC1	I have spent a lot of time teaching by relying on traditional methods and tools.	[179][147]
	SC2	I spent a lot of effort in education by relying on traditional methods and tools.	
	SC3	Using an e-learning system based on cloud computing requires a lot of time and effort to learn how to rely on it in education, meaning that the previous time and effort you spent to learn the traditional methods and methods of education will be useless.	
Regret Avoidance	RA1	I will not change the traditional methods and tools for education, because I am afraid that I will feel regret if the new system (e-learning based on cloud computing) does not meet my requirements.	[156] [148]
	RA2	I will not change to an e-learning system based on cloud computing because I am afraid of the consequences of using a new technology that I have not tried, and I am afraid of getting bad results from it, and I feel sorry for having switched to it.	
	RA3	I will not change to an e-learning system based on cloud computing, because I am afraid of technical problems in the system that will lead to the suspension of education, even temporarily, and therefore this makes me regret using the new system	
Perceived Threat	PT1	I am worried that I will lose the ability to teach if I switch from Traditional methods and tools to an e-learning system based on cloud computing.	[196] [152].
	PT2	I am worried that I will lose the ability to control education decisions in case of using an e-learning system based on cloud computing.	
	PT3	I am worried that I will lose the participation and interaction of the recipients of education in case of using the e-learning system based on cloud computing.	
Perceived Value	PEV1	Given the time and effort that I have to take to change to an e-learning system based on cloud computing, it is worth it.	[185][186].
	PEV2	Considering the loss that I have to bear, the change to the method of education through the use of e-learning system based on cloud computing is of good value.	
	PEV3	Considering the hassles I have to go through, the change to the new way of dealing with the CBEL system is beneficial for me.	

Constructs	Items	statement	sources
Transition Costs	TC1	I would not want to use a CBEL system because installing this system as a new technology for me and running it would likely present problems.	[191] [153]
	TC2	I will need a lot of time and effort to leave the traditional methods of teaching and move to the e-learning system based on cloud computing.	
	TC3	In general, it is difficult to switch to the new system, which is by using an e-learning system based on cloud computing.	
	TC4	Leaving the traditional methods and tools for teaching and using the e-learning system based on cloud computing will cause me a lot of unexpected troubles.	
Inertia	IN1	I will continue to rely on the traditional methods and tools of education because it has become a part of my life and I have become accustomed to it.	[182][149]
	IN2	Although the traditional tools and methods of education are not very effective, I will continue to apply them. 51- I am already accustomed to using traditional methods and tools of education and will not abandon their use.	
	IN3	I will continue to rely on traditional methods and tools of education because change will be stressful for me.	
Actual use	AU1	In general, I would like to use the services of an e-learning system based on cloud computing in education.	[173][174]
	AU2	I will always try to use the services of the e-learning system based on cloud computing in education.	
	AU3	I will plan to continue using the e-learning system based on cloud computing in education.	
	AU4	I intend to continue using the e-learning system based on cloud computing in education.	

A.2 QUESTIONNAIRE SUBJECT TO THE OPINION OF THE ARBITRATORS

I kindly ask you to review the questionnaire that will be distributed to a sample of faculty members in Iraqi universities related to the tagged study (E-Learning system based on cloud computing in higher education institutions in Iraq), which is part of the requirements for the master's thesis / Altınbaş University / Turkey, and express Your valuable comments and modifications, which will guide the researcher to prepare an amended questionnaire highlighting the efforts of all those who contributed to it, which is what they aspire to as a successful step of our thesis, and we thank you very much.

Researcher

MOHAMAD AHMAD

Questionnaire

Sequence	Question details	measurable	Invalid	Suggested modification
1				
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.				
.				
.				
.				
.				
.				
.				
56				

A.3 QUESTIONNAIRE ARBITRATION EXPERTS

Sequence	scientific title	Arbitrator's name	Specialization	Workplace
1-	Assistant Professor Dr.	ALAA ABDULSALAM MUSTAFA	Business Administration	Maysan University/ College of Management and economy
2-	Lecture Dr.	NOOR DIYA AZZEZ	Management Information Systems	Mosul University/ College of Administration and economy

A.4 QUESTIONNAIRE FORM

To the honorable researchers

Subject / Questionnaire Form

Good greeting

This questionnaire form is part of the requirements for preparing a master's thesis tagged (E-Learning system based on cloud computing in higher education institutions in Iraq), and given the experience and scientific ability we entrust you with, and you're being the best able to deal with the questionnaire's questions, and your participation in presenting the real picture is considered to have an impact. Positive in the output of this message at the required level, so we kindly ask you to choose the answer you deem appropriate for each question. The questionnaire items are answered through a five-point scale (1 - 5) so that one of these scores is chosen to represent the degree of approval of each item. We would like to inform you that it is not necessary to mention the name or address and that the results of the answers will appear in the form of statistical groups that have nothing to do with your honorable person.

Thank you for your cooperation with us, and accept the utmost respect and appreciation.

MOHAMAD AHMAD

Student

Dr. Abdullahi Abdu Ibrahim

Supervisor

A.4.1 Google questionnaire form for arbitrators



Questionnaire form

To the honorable researchers...

Subject/questionnaire form

good greeting...

This questionnaire form is part of the requirements for preparing a master's thesis tagged (adoption E-learning based on cloud computing in Iraq), and given the experience and scientific ability we entrust in you and you're being the best able to deal with the questionnaire's paragraphs, and your participation in presenting the real picture has a positive impact on the output This message is at the required level, so we kindly ask you to choose the answer that you deem appropriate for each question.

We would like to inform you that it is not necessary to mention the name or address and that the results of the answers will appear in the form of statistical groups that have nothing to do with your honorable person.

Thank you for your cooperation with us and accept the utmost respect and appreciation.

:   Abstract

E-learning allows people to access learning resources anytime and anywhere using technology. Either online or offline through various electronic devices such as personal computers, smartphones, and tablets.

In the era of information technology, the amount of data and information available on the Internet increases dramatically and files accumulate inside public and private computers, showing the importance of cloud computing, a technology that depends on transferring processing and storage space for a computer or any mobile device to what is termed the cloud. It is a server device that is accessed via the Internet.

It is known that the most effective lectures or educational lessons are those that rely on group learning and peer learning, in addition to the attraction of students towards technology. So a so-called e-learning system based on cloud computing has emerged that allows classmates, in different places or even different countries separated from each other, to work on one file interactively and in real-time. Examples of cloud computing applications used in e-learning are (Microsoft One Drive, Google Drive, Google Forms, Google meet...etc).

* gender

Male ☐

Femle ☐

* Academic achievement

diploma ☐

BSc ☐

MSc ☐

PhD ☐

...

* Scientific title

Asst Lecturer

☐

Lecturer

☐

Asst Professor

☐

Professor

☐

* Age

20-30 years

☐

30-40 years

☐

40-50 years

☐

50 years and over

☐

* Level of experience using information technology (IT) Information Technology)

Acceptable

☐

Intermediate

☐

good

☐

very good

☐

Excellent

☐

...



Performance Expectancy (PE)



It is the degree to which individuals believe that their use of technology (a cloud-based e-learning system) will result in performance gains and will add value to their educational experience, and this can also be seen as the perceived benefit of technology use.



* 1- An e-learning system based on cloud computing will be useful to me in education.

5

4

3

2

1

Strongly agree

☐☐☐☐☐

Strongly disagree

* 2-Using an e-learning system based on cloud computing will increase my chances of receiving better information.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 3- Using an e-learning system based on cloud computing will help me in learning more quickly.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 4- Using an e-learning system based on cloud computing will give me more knowledge and less effort in education.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

Effort Expectancy (EE)

It means ease of use of technology (e-learning system based on cloud computing). For example, individuals may compare the effort and time they spend in computing-based e-learning compared to the traditional method of education.

* 5- Learning how to use an e-learning system based on cloud computing will be easy for me.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 6- Education requires less effort by adopting an e-learning system based on cloud computing.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 7- I see that the e-learning system based on cloud computing is easy to use.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 8- It is easy for me to become skilled in using an e-learning system based on cloud computing.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

...



Social Influence (SI)



It means the extent to which an individual believes that it is important that others think that he should teach based on an e-learning system based on cloud computing. This shows whether the individuals who practice education through the e-learning system based on cloud computing. They expect others to appreciate their use of this system and view them as different.



* 9- I think that people who care about me will think that I should use an e-learning system based on cloud computing in education (for example, friends, relatives, parents, colleagues, etc.).

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

...

* 10. People who influence my behavior think that I should use a cloud-based e-learning system in education (for example, professors, partners, managers, etc.).

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 11- I think that the people whose opinion I care about would prefer if I used an e-learning system based on cloud computing.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 12- People who use the cloud-based e-learning system in my community have more prestige than those who do not use it.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree



Facilitating Conditions (FC)

It includes your belief that you are able to use the e-learning system based on cloud computing in light of your resources and physical, cognitive, technical and social resources and capabilities.

* 13- I have the necessary resources to use the e-learning system based on cloud computing.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 14- I have the necessary knowledge to use the e-learning system based on cloud computing.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 15- The e-learning system based on cloud computing is compatible with other information technologies that I use.

* 16- I can get help from others when I have difficulties using the e-learning system based on cloud computing.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree



Hedonic Motivation (HM)

It means that the extent to which you feel that using the e-learning system based on cloud computing, in addition to the benefits it provides in education, will be a kind of fun to use it compared to the traditional methods of teaching.

* 17-Using an e-learning system based on cloud computing in education is interesting.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 18-Using an e-learning system based on cloud computing is exhilarating.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 19-Using an e-learning system based on cloud computing is fun.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

...



Price Value (PV)



This dimension measures the perceived benefits of using a cloud-based e-learning system compared to the financial cost that you will incur to use and benefit from it.

* 20- The cost of an e-learning system based on cloud computing is reasonable.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 21- The e-learning system based on cloud computing is good value for money..

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 22- At the current price, a cloud-based e-learning system offers good value.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

...



Behavioral Intention(BI)



It is related to the intention to use the e-learning system based on cloud computing in light of all the benefits that are believed to be achieved from its use.

* 23- I intend to use the e-learning system based on cloud computing in the future.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 24- I will try to replace the traditional methods and tools in education by using an e-learning system based on cloud computing in the future.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 25- I plan to use a cloud-based e-learning system in the future.

5 4 3 2 1
Strongly agree ☐ ☐ ☐ ☐ ☐ Strongly disagree

* 26- I expect that I will use the e-learning system based on cloud computing in the future on an ongoing basis.

5 4 3 2 1
Strongly agree ☐ ☐ ☐ ☐ ☐ Strongly disagree

...



Trust(TR)



It depicts a person's level of confidence in a cloud-based e-learning system in their ability to teach and understand.

* 27- I think that the e-learning system based on cloud computing is trustworthy.

5 4 3 2 1
Strongly agree ☐ ☐ ☐ ☐ ☐ Strongly disagree

* 28- I trust the e-learning system based on cloud computing.

5 4 3 2 1
Strongly agree ☐ ☐ ☐ ☐ ☐ Strongly disagree

* 29- I do not doubt the sincerity of the e-learning system based on cloud computing.

5 4 3 2 1
Strongly agree ☐ ☐ ☐ ☐ ☐ Strongly disagree

* 30- I feel reassured that legal and technological structures adequately protect me from problems in the cloud-based e-learning system.

5 4 3 2 1
Strongly agree ☐ ☐ ☐ ☐ ☐ Strongly disagree

* 31- I would like to trust that the e-learning system based on cloud computing does the job right, even if it is not under supervision.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 32- The e-learning system based on cloud computing has the ability to perform its task.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

...

⋮
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Sunk Cost (SC)
•

It refers to the costs that we will lose as a result of leaving the traditional method of education in the event that we switch to an e-learning system based on cloud computing, and in the context of our study, these costs represent: (e-learning system based on cloud computing)

* 33- I have spent a lot of time teaching by relying on traditional methods and tools.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 34- I spent a lot of effort in education by relying on traditional methods and tools.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 35- Using an e-learning system based on cloud computing requires a lot of time and effort to learn how to rely on it in education, meaning that the previous time and effort you spent to learn the traditional methods and methods of education will be useless.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

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Regret Avoidance (RA)
•

The unpleasant and undesirable consequences of a decision made by individuals usually create feelings of regret. Therefore, individuals think a lot about making the decision to switch from the current state to the new system for fear of the failure of the new system to meet their requirements, which will generate a feeling of regret due to the transition to the new system. That is, this factor expresses the feeling of regret resulting from the failure of the new system (e-learning based on cloud computing) to meet their needs and regret over the old system

* 36- I will not change the traditional methods and tools for education, because I am afraid that I will feel regret if the new system (e-learning based on cloud computing) does not meet my requirements.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 37- I will not change to an e-learning system based on cloud computing because I am afraid of the consequences of using a new technology that I have not tried, and I am afraid of getting bad results from it, and I feel sorry for having switched to it.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 38- I will not change to an e-learning system based on cloud computing, because I am afraid of technical problems in the system that will lead to the suspension of education, even temporarily, and therefore this makes me regret using the new system.

5	4	3	2	1
---	---	---	---	---



Perceived Threat (PT)

Represents the psychological uncertainty associated with the new alternative (e-learning system based on cloud computing), i.e. the individual has a reluctance to abandon the traditional method of education for fear of a threat that the new system will not be able to achieve the main goal (education)

* 39- I am worried that I will lose the ability to teach if I switch from traditional methods and tools to an e-learning system based on cloud computing.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 40- I am worried that I will lose the ability to control education decisions in case of using an e-learning system based on cloud computing.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

- * 41- I am worried that I will lose the participation and interaction of the recipients of education in case of using the e-learning system based on cloud computing.

5 4 3 2 1

Strongly agree ☐ ☐ ☐ ☐ ☐ Strongly disagree

...

⋮   Perceived Value (PEV) 

The perceived value indicates whether the benefits derived are worth the costs incurred in changing from the status quo (i.e. the traditional way of education) to the implementation of the new information system (e-learning system based on cloud computing). 

- * 42- Given the time and effort that I have to take to change to an e-learning system based on cloud computing, it is worth it.

5 4 3 2 1

Strongly agree ☐ ☐ ☐ ☐ ☐ Strongly disagree

- * 43- Considering the loss that I have to bear, the change to the method of education through the use of e-learning system based on cloud computing is of good value.

5 4 3 2 1

Strongly agree ☐ ☐ ☐ ☐ ☐ Strongly disagree

...

⋮   Transition Costs (TC) 

It is the permanent expenses or losses associated with the change, for example the time and effort required to adapt to the new system, with the increase in switching costs users become more likely to hesitate about implementing the new system due to the motive of reducing switching losses, and in the case of this study the new system is the existing e-learning system On cloud computing and the legacy system is the traditional way of education. 

* 45- I would not want to use a cloud based e-learning system because installing this system as a new technology for me and running it would likely present problems.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 46- I will need a lot of time and effort to leave the traditional methods of teaching and move to the e-learning system based on cloud computing.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 47- In general, it is difficult to switch to the new system, which is by using an e-learning system based on cloud computing.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 48- Leaving the traditional methods and tools for teaching and using the e-learning system based on cloud computing will cause me a lot of unexpected troubles.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

...



Inertia (IN)



In the context of information systems research, individuals continue to use the existing system either because that is what they have always done, or because changing it may be too stressful or emotionally stressful for them to become attached to it and thus have inertia towards changing the current situation.

* 49- I will continue to rely on the traditional methods and tools of education because it has become a part of my life and I have become accustomed to it.

	5	4	3	2	1	
Strongly agree	☐	☐	☐	☐	☐	Strongly disagree

* 50- Although the traditional tools and methods of education are not very effective, I will continue to apply them.

5 4 3 2 1
Strongly agree ☐ ☐ ☐ ☐ ☐ Strongly disagree

* 51- I am already accustomed to using traditional methods and tools of education and will not abandon their use.

5 4 3 2 1
Strongly agree ☐ ☐ ☐ ☐ ☐ Strongly disagree

* 52- I will continue to rely on traditional methods and tools of education because change will be stressful for me.

5 4 3 2 1
Strongly agree ☐ ☐ ☐ ☐ ☐ Strongly disagree

...



Actual use (AU)



It is the actual use and behavior associated with the use of a cloud-based e-learning system.

* 53- In general, I would like to use the services of an e-learning system based on cloud computing in education.

5 4 3 2 1
Strongly agree ☐ ☐ ☐ ☐ ☐ Strongly disagree

* 54- I will always try to use the services of the e-learning system based on cloud computing in education.

5 4 3 2 1
Strongly agree ☐ ☐ ☐ ☐ ☐ Strongly disagree

* 55- I will plan to continue using the e-learning system based on cloud computing in education.

5 4 3 2 1
Strongly agree ☐ ☐ ☐ ☐ ☐ Strongly disagree

* 56- I intend to continue using the e-learning system based on cloud computing in education.

5 4 3 2 1
Strongly agree ☐ ☐ ☐ ☐ ☐ Strongly disagree



A.4.1 Google questionnaire form for respond



(استمارة استبيان)

إلى / السيدة المحوثن الكرام ...

الموضوع / استمارة استبيان

تحية طيبة...

تمثل استمارة الاستبيان هذه جزءاً من متطلبات إعداد رسالة الماجستير الموسومة (تسلي التعلم الإلكتروني القائم على الحوسبة السحابية في العراق)، ونظراً لما تعهده فهمك من خبرة وإلمامية وكونكم الأقر على التعامل مع فقرات الاستبيان ، كما تعد مشاركتكم في تقديم الصورة الحقيقية ذات أثر إيجابي في إخراج هذه الرسالة بالمستوى المطلوب، لذا نرجو تفضلكم باختيار الإجابة التي ترونها مناسبة لكل سؤال.

نود إعلامكم بأنه لا ضرورة للذكر الاسم أو العنوان، وإن نتائج الإجابات ستظهر بهيئة مجموعات إحصائية لا علاقة لها بشخصكم الكريم.

شاكرين تعاونكم معنا وتقبلوا فائق الاحترام والتقدير.

الخلاصة

يتم التعلم الإلكتروني (E-learning) للاستفادة من موارده التعلم في أي وقت وفي كل مكان باستخدام التكنولوجيا، أما عبر الإنترنت أو دون اتصال بالإنترنت من خلال الأجهزة الإلكترونية المتصلة كالحاسب الشخصي والأجهزة المحمولة والشبكة والأجهزة القوية.

وفي عصر تكنولوجيا المعلومات، يزداد كم البيانات والمعلومات المتوافرة على شبكات الإنترنت بشكل هائل وتتراكم الملفات داخل الموبايل العامة والخاصة، لتتطور أهمية الحوسبة السحابية (Cloud Computing) وهي تكنولوجيا تعتمد على نقل المعالجة ومساحة التخزين الخاصة بالحاسوب أو أي جهاز متصل إلى ما يسميها السحابة، وهي جهاز خادم يتم الوصول إليه عن طريق الإنترنت.

ومن المعروف أن أكثر المعاملات أو الترويس التعليمية تأثيراً في تلك التي تعتمد على التعلم الجماعي والتعلم من الأقران، بالإضافة إلى انجذاب الطلاب نحو التكنولوجيا . لذا ظهر ما يسمى بنظام التعلم الإلكتروني القائم على الحوسبة السحابية (E-learning system based on cloud computing) والذي يسمح للزملاء في الفصل الواحد، في أماكن مختلفة أو حتى دول مختلفة المتصلين عن بعضهم البعض بالعمل على ملف واحد بشكل تفاعلي وأني . كما تمكن المستخدم من الدخول إلى ملفاته وتطبيقاته من خلال السحابة، دون الحاجة لتوفر التطبيق في جهازه . بالإضافة إلى ضمان عمل الخدمة بشكل دائم ، حيث تتوزم الشركة مقدمة خدمة التخزين السحابي بإصلاح أي أعمال فسادية بأسرع وقت ممكن.

ومن الأمثلة على التطبيقات الحوسبة السحابية المستخدمة في التعليم الإلكتروني (Microsoft One Drive , Google Drive, Google Forms, Google meet,...etc).

الجنس *

☐ ذكر

☐ أنثى

110

التحصيل الدراسي *

☐ دبلوم

☐ بكالوريوس

☐ ماجستير

☐ دكتوراه

اللقب العلمي *

☐ مدرس مساعد

☐ مدرس

☐ استاذ مساعد

☐ استاذ

العمى *

30-20 سنة ☐

40-30 سنة ☐

50-40 سنة ☐

50 سنة فأكثر ☐

مستوى الخبرة في استخدام تكنولوجيا المعلومات (IT) Information Technology (IT) *

مقبول ☐

متوسط ☐

جيد ☐

جيد جداً ☐

ممتاز ☐

الأداء المتوقع (Performance Expectancy (PE

ويُقصد به الدرجة التي يعتقد الأفراد أن استخدامهم للتكنولوجيا (نظام التعلم الإلكتروني القائم على الحوسبة السحابية) سوف يؤدي إلى تحقيق مكاسب في أدائهم وسيضيف قيمة إلى تجربتهم التعليمية.

1- نظام التعلم الإلكتروني القائم على الحوسبة السحابية سيكون مفيداً في التعليم. *

5 4 3 2 1

أوافق بشدة ☐ ☐ ☐ ☐ ☐ لا أوافق بشدة

2- استخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية سيزيد من فرصتي في تلقي المعلومات بشكل أفضل. *

5 4 3 2 1

أوافق بشدة ☐ ☐ ☐ ☐ ☐ لا أوافق بشدة

3- استخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية سيساعدني في التعليم بسرعة أكبر. *

5 4 3 2 1

أوافق بشدة ☐ ☐ ☐ ☐ ☐ لا أوافق بشدة

4- استخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية سيعطيني معرفة أكبر و يجهد أقل في التعليم. *

5 4 3 2 1

أوافق بشدة ☐ ☐ ☐ ☐ ☐ لا أوافق بشدة

الجهد المتوقع (Effort Expectancy

ويُقصد به سهولة استخدام التكنولوجيا (نظام التعلم الإلكتروني القائم على الحوسبة السحابية). فعلى سبيل المثال قد يقارن الأفراد الجهد والوقت الذي يبذلونه في التعلم الإلكتروني القائم على الحوسبة مقارنة بالطريقة التقليدية للتعليم.

5- تعلم كيفية استخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية سيكون أمر سهل بالنسبة لي. *

5 4 3 2 1

أوافق بشدة ☐ ☐ ☐ ☐ ☐ لا أوافق بشدة

6- يتطلب التعليم جهد أقل باعتماد نظام التعلم الإلكتروني القائم على الحوسبة السحابية . *

	5	4	3	2	1	
لا أتفق بشدة	☐	☐	☐	☐	☐	أتفق بشدة

7- أرى أن نظام التعلم الإلكتروني القائم على الحوسبة السحابية سهل الاستخدام. *

	5	4	3	2	1	
لا أتفق بشدة	☐	☐	☐	☐	☐	أتفق بشدة

8- من السهل بالنسبة لي أن أصبح ماهراً في استخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية . *

	5	4	3	2	1	
لا أتفق بشدة	☐	☐	☐	☐	☐	أتفق بشدة

Social Influence التأثير الاجتماعي

وبمقدوره أن يمدد الفرد أهمية أن الآخرين يرون أنه ينبغي عليه التعلم بالاعتماد على نظام التعلم الإلكتروني القائم على الحوسبة السحابية.

9- أعتقد أن الأشخاص الذين يهمهم امرى سيعتقدون بأنه ينبغي على استخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية في التعليم (على سبيل المثال الاصدقاء، الأقرباء، الاهل، الزملاء ..الخ). *

	5	4	3	2	1	
لا أتفق بشدة	☐	☐	☐	☐	☐	أتفق بشدة

10- الأشخاص الذين يؤثرون في سلوكي يعتقدون أنه يجب على استخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية في التعليم (على سبيل المثال، الاستاذ، الشركاء، المدراء، وغيرهم). *

	5	4	3	2	1	
لا أتفق بشدة	☐	☐	☐	☐	☐	أتفق بشدة

11- أعتقد ان الأشخاص الذين يهمي رأيهم يفضلون لو اتي استخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية . *

	5	4	3	2	1	
لا أتفق بشدة	☐	☐	☐	☐	☐	أتفق بشدة

12- الأشخاص الذين يستخدمون نظام التعلم الإلكتروني القائم على الحوسبة السحابية في مجتمعي يتمتعون بمكانة مرموقة أكثر من أولئك الذين لا يستخدمونه. *

	5	4	3	2	1	
لا أتفق بشدة	☐	☐	☐	☐	☐	أتفق بشدة

Facilitating Conditions العوامل الميسرة

تتمثل اعطافك بذلك قدر على استخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية في ضوء ما تمتلكه من موارد وامكانيات مادية وسعرية وفضة واجتماعية.

13- لدى الموارد اللازمة لاستخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية . *

	5	4	3	2	1	
لا أتفق بشدة	☐	☐	☐	☐	☐	أتفق بشدة

14- لدى المعرفة اللازمة لاستخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية . *

	5	4	3	2	1	
لا أتفق بشدة	☐	☐	☐	☐	☐	أتفق بشدة

15- يتوافق نظام التعلم الإلكتروني القائم على الحوسبة السحابية مع تقنيات معلومات أخرى أستخدمها. *

	5	4	3	2	1	
لا أتفق بشدة	☐	☐	☐	☐	☐	أتفق بشدة

16- يمكنني الحصول على المساعدة من الآخرين عندما أواجه صعوبات في استخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية . *

	5	4	3	2	1	
لا أتفق بشدة	☐	☐	☐	☐	☐	أتفق بشدة

نوافع المتعة Hedonic Motivation

ويقصد بها -إلى أي مدى تشعر بأن استخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية بالإضافة إلى الفوائد التي يقدمها في التعلم سيكون استخدامه فيه نوع من التمتع مغارة بالطرق التقليدية للتعليم.

17- يجد استخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية في التعليم أمراً ممتع. *

	5	4	3	2	1	
لا أتفق بشدة	☐	☐	☐	☐	☐	أتفق بشدة

18- يجد استخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية أمراً مبهج. *

	5	4	3	2	1	
لا أتفق بشدة	☐	☐	☐	☐	☐	أتفق بشدة

19- يجد استخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية أمراً مسلًى. *

	5	4	3	2	1	
لا أتفق بشدة	☐	☐	☐	☐	☐	أتفق بشدة

قيمة السعر Price Value

يقس هذا البعد الفوائد المتصورة لاستخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية مقارنة بالتكلفة المالية التي ستتطلبها لاستخدامه والاستفادة من خدماته.

20- تكلفة نظام التعلم الإلكتروني القائم على الحوسبة السحابية معقولة. *

	5	4	3	2	1	
لا أتفق بشدة	☐	☐	☐	☐	☐	أتفق بشدة

21- يعد نظام التعلم الإلكتروني القائم على الحوسبة السحابية ذات قيمة جيدة مقابل المال. *

	5	4	3	2	1	
لا أتفق بشدة	☐	☐	☐	☐	☐	أتفق بشدة

22-بالسر الحالي ، يوفر نظام التعلم الإلكتروني القائم على الحوسبة السحابية قيمة جيدة. *

1	2	3	4	5	
☐	☐	☐	☐	☐	لا أتفق بشدة
					أتفق بشدة

النية السلوكية Behavioral Intention

تتعلق بالنية في استخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية في ضوء جميع العوامل التي يعتقد أنها ستتحقق من استخدامها.

23-انوى استخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية في المستقبل. *

1	2	3	4	5	
☐	☐	☐	☐	☐	لا أتفق بشدة
					أتفق بشدة

24-سأحاول استبدال الأساليب والأدوات التقليدية في التعليم باستخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية في المستقبل. *

1	2	3	4	5	
☐	☐	☐	☐	☐	لا أتفق بشدة
					أتفق بشدة

25-أخطط لاستخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية في المستقبل. *

1	2	3	4	5	
☐	☐	☐	☐	☐	لا أتفق بشدة
					أتفق بشدة

26- أتوقع أنني سأستخدم نظام التعلم الإلكتروني القائم على الحوسبة السحابية في المستقبل بشكل مستمر. *

1	2	3	4	5	
☐	☐	☐	☐	☐	لا أتفق بشدة
					أتفق بشدة

الثقة Trust

وهي تصور الشخص عن مستوى الثقة التي يقدمها نظام التعلم الإلكتروني القائم على الحوسبة السحابية فيما يخص قدرته على التعليم والقيم.

27- أعتقد أن نظام التعلم الإلكتروني القائم على الحوسبة السحابية جدير بالثقة. *

1	2	3	4	5	
☐	☐	☐	☐	☐	لا أتفق بشدة
					أتفق بشدة

28- أتق في نظام التعلم الإلكتروني القائم على الحوسبة السحابية. *

1	2	3	4	5	
☐	☐	☐	☐	☐	لا أتفق بشدة
					أتفق بشدة

29- لأمك في صدق نظام التعلم الإلكتروني القائم على الحوسبة السحابية. *

1	2	3	4	5	
☐	☐	☐	☐	☐	لا أتفق بشدة
					أتفق بشدة

30-أشعر بالاطمئنان إلى أن الهياكل القانونية والتكنولوجية تحمي بشكل كافٍ من المشاكل في نظام التعلم الإلكتروني القائم على الحوسبة السحابية . *

لا أتفق بشدة	1	2	3	4	5	أتفق بشدة
☐	☐	☐	☐	☐	☐	☐

31- أود أن أتق في أن نظام التعلم الإلكتروني القائم على الحوسبة السحابية يؤدي المهمة بالشكل الصحيح ، حتى لو لم يكن حاضراً للراعية. *

لا أتفق بشدة	1	2	3	4	5	أتفق بشدة
☐	☐	☐	☐	☐	☐	☐

32- يتمتع نظام التعلم الإلكتروني القائم على الحوسبة السحابية بالقدرة على أداء مهمته. *

لا أتفق بشدة	1	2	3	4	5	أتفق بشدة
☐	☐	☐	☐	☐	☐	☐

التكلفة العارفة Sunk Cost

تشير إلى التكاليف التي سنخسرها جراء ترك الطريقة التقليدية في التعلم في حال تم التحول إلى نظام التعلم الإلكتروني القائم على الحوسبة السحابية . وفي سياق دراستنا تمثل هذه التكاليف : الوقت والجهد الذي تمثله لتعلم الطرق السابقة (التعليم التقليدي) فضلاً عن الوقت والجهد المبذولين لتعلم الطريقة الجديدة (نظام التعلم الإلكتروني القائم على الحوسبة السحابية)

33- لقد قضيت الكثير من الوقت في التعليم بالاعتماد على أساليب وأدوات تقليدية . *

لا أتفق بشدة	1	2	3	4	5	أتفق بشدة
☐	☐	☐	☐	☐	☐	☐

34- لقد قضيت الكثير من الجهد في التعليم بالاعتماد على أساليب وأدوات تقليدية . *

لا أتفق بشدة	1	2	3	4	5	أتفق بشدة
☐	☐	☐	☐	☐	☐	☐

35- استخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية يحتاج وقت وجهد كثير لتعلم كيفية الاعتماد عليه في التعليم ، أي إن الوقت والجهد السابق و الذي أنفقته لتعلم الأساليب والطرق التقليدية للتعليم سيكونان دون فائدة.

لا أتفق بشدة	1	2	3	4	5	أتفق بشدة
☐	☐	☐	☐	☐	☐	☐

شعور الندم Regret Avoidance

النتائج غير السارة وغير المرغوب فيها للقرار الذي يتخذه الأفراد عادة تتعلق بشعور الندم. أي أن هذا العامل يعبر عن شعور الندم الناتج من عدم تلبية النظام الجديد (التعلم الإلكتروني القائم على الحوسبة السحابية) لاحتياجاتهم والندم على ترك النظام القديم.

- 36-لن اقوم بتغير الاساليب والادوات التقليدية للتعليم ، لاني احشى ان اشعر بالندم اذا لم يلبى النظام الجديد(التعلم الإلكتروني القائم على الحوسبة السحابية) متطلباتي.*

لا أتفق بشدة 1 2 3 4 5
 ○ ○ ○ ○ ○
 أتفق بشدة

- 37-لن اقوم بالتغير الى نظام التعلم الإلكتروني القائم على الحوسبة السحابية لاني احشى من عواقب استخدام تقنية جديدة لم اجر بها واحشى الحصول على نتائج سيئة منها وتشعري بالأسف لاني تحولت اليها.*

لا أتفق بشدة 1 2 3 4 5
 ○ ○ ○ ○ ○
 أتفق بشدة

- 38-لن اقوم بالتغير الى نظام التعلم الإلكتروني القائم على الحوسبة السحابية لاني احشى من حدوث مشاكل تقنية في النظام تؤدي الى توقف التعليم ولو بشكل مؤقت وبالتالي يشعري ذلك بالندم على استخدام النظام الجديد .*

لا أتفق بشدة 1 2 3 4 5
 ○ ○ ○ ○ ○
 أتفق بشدة

التهديد المتصور Perceived threat

يمثل عدم اليقين التفسيري المرتبط بالمبدل الجديد (نظام التعلم الإلكتروني القائم على الحوسبة السحابية)، أي يكون للعدد المحام عن التعاطي عن الطريقة التقليدية في التعلم خوفا من وجود تهديد بعدم قدرة النظام الجديد على تحقيق الغاية الرئيسية (التعليم)

- 39-اذا قلق باني سوف افقد القدرة على التعليم في حال التحول من الاساليب والادوات التقليدية الى نظام التعلم الإلكتروني القائم على الحوسبة السحابية.*

لا أتفق بشدة 1 2 3 4 5
 ○ ○ ○ ○ ○
 أتفق بشدة

- 40-اذا قلق باني سوف افقد القدرة على السيطرة على القرارات الخاصة بالتعليم في حالة استخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية.*

لا أتفق بشدة 1 2 3 4 5
 ○ ○ ○ ○ ○
 أتفق بشدة

- 41-اذا قلق باني سوف افقد مشاركة وتفاعل المتعلمين للتعليم في حالة استخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية.*

لا أتفق بشدة 1 2 3 4 5
 ○ ○ ○ ○ ○
 أتفق بشدة

القيمة المتصورة Perceived Value

تشير القيمة المتصورة إلى ما إذا كانت الفوائد المستمدة تتغلب التكاليف المتكبدة في التعبير عن الوضع الراهن (أي الطريقة التقليدية في التعليم) إلى تطبيق نظام المعلومات الجديد(نظام التعلم الإلكتروني القائم على الحوسبة السحابية)

- 42- بالنظر إلى الوقت والجهد الذي يتوجب على ان اتحملهما للتعبير الى نظام التعلم الإلكتروني القائم على الحوسبة السحابية فانه يستحق العناء.

	5	4	3	2	1	
لا أتفق بشدة	☐	☐	☐	☐	☐	أتفق بشدة

- 43- بالنظر إلى الصراحة التي ينبغي ان اتحملها ، فإن التعبير الى طريقة التعليم من خلال استخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية له قيمة جيدة. *

	5	4	3	2	1	
لا أتفق بشدة	☐	☐	☐	☐	☐	أتفق بشدة

- 44- بالنظر إلى المتاعب التي يجب أن أجتازها ، فإن التعبير إلى الطريقة الجديدة للتعامل مع نظام التعلم الإلكتروني القائم على الحوسبة السحابية مفيد بالنسبة لي.

	5	4	3	2	1	
لا أتفق بشدة	☐	☐	☐	☐	☐	أتفق بشدة

تكاليف التحول أو الانتقال Transition costs

وهي التكاليف أو المصارف المادية المرتبطة بالتعبير ، على سبيل المثال الوقت والجهد اللازمين للتكيف مع النظام الجديد، مع زيادة تكاليف التحول يصبح المستخدمون أكثر عرضة الى التردد حول تنفيذ النظام الجديد بسبب دافع تقليص خسائر التحول. وفي حالة هذه الدراسة النظام الجديد هو نظام التعلم الإلكتروني القائم على الحوسبة السحابية والنظام القديم هو الطريقة التقليدية في التعليم.

- 45- لن أحرص في استخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية لأن تكثيف هذا النظام باعتباره تقنية جديدة بالنسبة لي وتشغيله من المحتمل أن يظهر فيه مشاكل.

	5	4	3	2	1	
لا أتفق بشدة	☐	☐	☐	☐	☐	أتفق بشدة

- 46- سأحتاج إلى الكثير من الوقت والجهد لأترك الطرق التقليدية التي اعتمد عليها في التعليم وانتقل إلى نظام التعلم الإلكتروني القائم على الحوسبة السحابية.

	5	4	3	2	1	
لا أتفق بشدة	☐	☐	☐	☐	☐	أتفق بشدة

- 47- بشكل عام من الصعب التحول إلى النظام الجديد والمتمثل باستخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية. *

	5	4	3	2	1	
لا أتفق بشدة	☐	☐	☐	☐	☐	أتفق بشدة

- 48- ترك الأاليب والأدوات التقليدية للتعليم واستخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية سيسبب لي الكثير من المتاعب الغير متوقعة.

	5	4	3	2	1	
لا أتفق بشدة	☐	☐	☐	☐	☐	أتفق بشدة

القصور الذاتي Inertia

في سياق أبحاث نظم المعلومات فإن الأفراد يستمرون باستخدام النظام الحالي إما لأن هذا هو ما فعلوه دائماً ، أو لأنه قد يكون تغييره مرهقاً جداً أو مرهقاً عاطفياً ونفسياً للتعليم به وبالتالي يكون لديهم قصور ذاتي تجاه تغيير الوضع الحالي.

49- سأتستر في الاعتماد على الأساليب والأدوات التقليدية للتعليم وذلك لأنها أصبحت جزء من حياتي وأصبحت معتاد عليها. *

لا أتفق بشدة	1	2	3	4	5	أتفق بشدة
☐	☐	☐	☐	☐	☐	☐

50- على الرغم من أن الأدوات والأساليب التقليدية للتعليم ليست لها فعالية كبيرة ، سأتستر في تطبيقها. *

لا أتفق بشدة	1	2	3	4	5	أتفق بشدة
☐	☐	☐	☐	☐	☐	☐

51- إذا بالفعل معتاد على استخدام الأساليب والأدوات التقليدية للتعليم ولن اتركه استخدامها. *

لا أتفق بشدة	1	2	3	4	5	أتفق بشدة
☐	☐	☐	☐	☐	☐	☐

52- سأتستر في الاعتماد على الأساليب والأدوات التقليدية للتعليم وذلك لأن التغيير سيكون مرهقاً بالنسبة لي. *

لا أتفق بشدة	1	2	3	4	5	أتفق بشدة
☐	☐	☐	☐	☐	☐	☐

الاستخدام الفعلي Actual Use

وهو الاستخدام الفعلي والسلوك المرصط باستخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية.

53- بشكل عام ، ارجب في استخدام خدمات نظام التعلم الإلكتروني القائم على الحوسبة السحابية في التعليم. *

لا أتفق بشدة	1	2	3	4	5	أتفق بشدة
☐	☐	☐	☐	☐	☐	☐

54- سأحاول دائماً استخدام خدمات نظام التعلم الإلكتروني القائم على الحوسبة السحابية في التعليم. *

لا أتفق بشدة	1	2	3	4	5	أتفق بشدة
☐	☐	☐	☐	☐	☐	☐

55- سأعطي لمواصلة استخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية في التعليم. *

لا أتفق بشدة	1	2	3	4	5	أتفق بشدة
☐	☐	☐	☐	☐	☐	☐

56- احترم الاستمرار في استخدام نظام التعلم الإلكتروني القائم على الحوسبة السحابية في التعليم. *

لا أتفق بشدة	1	2	3	4	5	أتفق بشدة
☐	☐	☐	☐	☐	☐	☐