CRANFIELD UNIVERSITY

Mustafa Radif

A Learning Management System Adoption Framework for Higher Education: The Case of Iraq

School of Aerospace, Transport and Manufacturing (SATM)

Doctor of Philosophy
Academic Year: 2013 - 2016

Supervisors: Dr Ip-Shing Fan & Dr Patrick McLaughlin
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This thesis is submitted in partial fulfilment of the requirements for the degree of PhD

ABSTRACT

This study focuses on the implementation of Learning Management System (LMS) in the higher education sector in Iraq. Its aim is to develop a policy adoption framework for LMS implementation by scientifically investigating LMS adoption using a model that combines the principles of the Technology Acceptance Model (TAM) and Technology-Organisation-Environment (TOE) framework.

The research methodology comprises of seven stages that adopts the interpretive paradigm and a mixed-methods research design. A case study design is used to investigate LMS integration in the University of Al-Qadisiyah. A TAM-TOE questionnaire is developed for the academic staff of the University of Al-Qadisiyah, in which the perceived usefulness and perceived ease of use of LMS are analysed in the case organisation. The technological, organisational, and environmental aspects of LMS implementation are also examined. The survey received valid responses from 283 academic staff. In-depth semi-structured interviews of 8 academics, administrative staff and IT personnel contributed to the qualitative data. The survey respondents are selected using stratified sampling whilst purposive sampling is used to select the interview participants. The questionnaire data was analysed using correlation analysis, whilst thematic analysis is used for the interview data.

The study identifies the barriers to LMS implementation as: Lack of or limited teachers' training, lack of commitment to constructivist pedagogy, lack of experience to use the new technology, lack of technical support, and lack of appropriate educational software. These results feed into the policy framework design.

The contribution to research knowledge includes the creation of a new adoption model derived from TAM and TOE to examine the LMS implementation barriers in a war recovering economy like Iraq. This approach the integration of academic users' acceptance with macro-level factors like government support. The results lease to the development of the LMS policy framework to guide policy makers to prioritise their limited LMS investments. The novelty of the work is the bringing together the considerations of the individual users and the socio-economic context.

Keywords:

TAM model, TOE model, TPB model, Critical factor, Government support, Technology acceptance, Policy framework, Perceived ease of use, Perceived usefulness, Intention to use, Readiness, Willingness to use.

LIST OF ABBREVIATIONS

ICT	**I**nformation **C**ommunication **T**echnology
IT	**I**nformation **T**echnology
LMS	**L**earning **M**anagement **S**ystem
MOHSER	**M**inistry **O**F **H**igher **E**ducation and **S**cientific **R**esearch
TAM	**T**echnology **A**cceptance **M**odel
TOE	**T**echnology **O**rganization **E**nvironment
TPB	**T**heory of **P**lan **B**ehaviour

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CANDIDATE BACKGROUND

Mustafa Radif is one of the sponsored students by the Ministry of Higher Education and Scientific Research (MOHSER) in Iraq. He is a PhD Researcher at Cranfield University Investigating E-learning in in Iraqi Universities (University of Al-Qadisiyah).

Mustafa holds the following certificates:

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- High diploma degree in computer since from Postgraduate Institute of Computer and Informatics, Baghdad/Iraq.
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Mustafa appointed as a lecturer at the University of AL-Qadisiyah since 2011.

PUBLICATIONS

M. Radif, I.P. Shing Fan, P. McLaughlin (2016) INVESTIGATE THE RELATIONSHIP BETWEEN SOCIO-ECONOMIC CONDITIONS AND IMPLEMENTATION OF LEARNING MANAGEMENT SYSTEM (LMS) IN HIGHER EDUCATION SECTOR IN IRAQ. The Electronic Journal of e-Learning (EJEL), submitted (10th Feb 2016).

M. Radif, I.S. Fan, P. McLaughlin (2016) EMPLOYMENT OF TECHNOLOGY ACCEPTANCE MODEL (TAM) TO ADOPT LEARNING MANAGEMENT SYSTEM (LMS) IN IRAQI UNIVERSITIES, INTED2016 Proceedings, pp. 7120-7130.

M. Radif, I.P. Shing Fan, P. McLaughlin (2015) INTERNAL AND EXTERNAL BARRIERS INFLUENCING LMS IMPLEMENTATION IN IRAQI HIGHER EDUCATION, ICERI2015 Proceedings, pp. 6833-6843.

M. Radif, I.S. Fan, P. McLaughlin (2014) PREPARING IRAQI UNIVERSITIES FOR LEARNING MANAGEMENT SYSTEM – THE CASE OF UNIVERSITY OF AL-QADISIYAH, EDULEARN14 Proceedings, pp. 6726-6736.

Dedication

To my father, who never lived to see the fruits of his advice and dedication.

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1 INTRODUCTION

1.1 Background to the Research Problem

This study deals with the use of Learning Management System (LMS) in Iraq, alongside the technology acceptance of academic staff at the University of Al-Qadisiyah and the technological, organisational, and environmental aspects surrounding LMS adoption. The education domain is an avenue for the widespread use of computers and its continuing influence on many aspects of people's social and work lives. As people and nations move into a technology-based society, it is necessary for classrooms to have computers available for all students to use. A range of conditions could enhance introducing and adopting ICT innovations to further diffuse them through the higher education environment. It is important to acknowledge that the development of technology to improve learning and teaching in higher education is coupled with increasingly complex methods colleges and universities attempt to achieve innovation (Teo et al., 2008; King et al., 2014). Understanding the reason(s) for people's acceptance or rejection of an emerging information or communication technology is a challenging issue in the study of technology acceptance. Technology acceptance is the user's willingness to use technology for tasks that it must support (Teo, 2011). Recent years have shown acceptance researchers being increasingly interested in understanding the factors that influence the use of technologies in various settings. Faculty and students' intention to use new technologies in e-learning systems in higher education has been the focus of researchers and academicians (Susilo, 2014).

Iraq is an interesting research locale for the study, considering that it has been in continuous conflicts (Ismael and Ismael, 2015), which might generate queries about how it fares with its educational system and ICT adoption, ICT is a common utility in education as part of knowledge networking (Baalen and Moratis, 2001). Iraqi higher education is an interesting research topic because the recent sanctions and war that Iraq went through certainly impacted its higher education, and considering that reforms are necessarily expected to take

place in this sphere, the research topic has focused on learning management system. Several higher education institutions in the world are adopting and implementing an online learning platform to aid teachers and keep up with the advancing technology, and the most popular of which is LMS (Liberona and Fuenzalida, 2014).

The origin of LMS can be found in the use of computer technologies in education practice as a result of information revolution. LMS is a full-scale learning platform that supports numerous aspects of educational process (Kats, 2013). It provides education certain classification capabilities in delivering online courses with an objective to manage and monitor the learners' progress and performance across various types of training activities (Dias et al., 2014). In addition, LMS solution for higher education can be obtained from commercial providers or open-source community. Increased reliance on the latter is grounded on pronounced commitment to knowledge that could be accessed by all, regardless of people's economic status. Additionally, LMS resources can be supplied by manufacturers or be designed by a developer according to specific needs. WebCT and Microsoft SharePoint Portal Server are two examples of popular commercial solutions involved in LMS (Lerma, 2007).

LMS is a current learning practice and a way to disseminate knowledge in higher education and across the globe. Technological advancement has not only become a societal phenomenon but also a significant means to improve pedagogical methods in the field of education and a tool to enable universities to become competitive (Lansari et al., 2010).

Within the Arab context, ICT adoption in education is being sought as a forefront, alongside strong national initiatives and implementation of e-learning solutions as a way to reduce the digital divide. It might be noted that students in the Arab world are segregated and are characteristically dependent on teachers for their learning as they have been focused on memorisation and do not encourage critical thinking in the classroom (Lansari et al., 2010). Perceived solutions are directed towards the use of technology and adoption of alternative

educational models to enable students to become independent learners and thereby learn, access resources, and share information (Lansari et al., 2010).

LMS integration is currently being pursued by many higher education institutions in different countries. The importance of this to higher education in Iraq is that it could help improve the quality of education in the country's educational institutions as it pursues economic development (e.g. Cohen, 2012). In Iraq, currently there is limited usage of educational ICT (Abdallah and Albadri, 2011); however, ICT plays an important role in improving the country's education system and the quality of learning. Currently, Iraq has adopted a programme called 'ICT (Information Communication Technology) in Education for Iraq', which intend to integrate ICT in education towards the 'continuing quality improvement of teaching and learning' (Cohen, 2012: 156). This is expected to further lead to revitalisation of education system and improvement in the quality of education and training in the country (Cohen, 2012). At present, Iraq's higher education system comprises all Iraq Arabic governorates in the Federal Government, comprising 20 universities and two commissions (Foundation of Technical Education and Medical Specialization and Computer and Information). The traditional approach to managing the higher education sector in the country is not effective in the midst of the need to reconstruct its educational environment with good academic quality. Iraq's adoption of e-learning has been characterised by student-centeredness and effective ICT infrastructure to build an enriching learning environment (Elameer and Idrus, 2011a).

Relating to the LMS adoption in Iraqi higher education, the Technology Acceptance Model (TAM) covers the role of perceived usefulness and perceived ease of use on systems characteristics (regarded as the external variables), and the likelihood of systems use. Depicting this model here with regard to LMS adoption is relevant because of the study's focus on this adoption vis-à-vis the model, adapted from the Technology-Organisation-Environment (TOE) framework. TAM is the most widely recognised model of acceptance that addresses the reasons for users in accepting or rejecting

technology (Chow et al., 2012). Moreover, the TAM is used to predict technology usage; however, validation is usually carried out by measuring behavioural intention to use instead of actual usage (Turner et al., 2010). The conclusion derived by Legris et al. (2003) about the TAM was that it was useful but needs to be integrated into a broader model that involves variables relating to the processes of both human and social changes. According to Chow et al. (2012), it is important for learners to know and understand that unless they engage and accept e-learning, the intended outcomes will not be favourable for them. Academic staff must also be receptive to using the new technology in order to motivate students on the use of the system.

Higher Education in Iraq

The emergence of higher education in Iraq began in 1950s, with a primary aim of modernising education, focusing on science, technology, and research programmes to meet the political, economic, and social needs of the country; as well as developing citizens towards building knowledge on the country's history and traditions who are likewise well-trained on modern science and technology (Sikhi, 2008). After 2003, higher education sector in Iraq was severely damaged by a sequence of wars and sanctions. The country went through three wars from 1980 to 2003; specifically the Iran-Iraq War (1980-1988), the Gulf War (1990-1991), and the 2003 Iraq war. It also went through a series of embargo and international sanctions for thirteen years after the Gulf War. An increase in the demand for bachelor's degree, master's degree, and PhD was experienced after April 2003 as a result of the social development process, increased family incomes, and rebuilding of the economy (Sikhi, 2008).

The need to redevelop the educational structures in Iraq vis-a-vis high academic quality necessitated more than the traditional approach of managing higher education. Instead, e-learning was adopted as a pedagogical approach that enabled good ICT infrastructure for both teaching and learning to establish a rich learning environment.

The structure of the higher education sector in Iraq is shown in the figure below:

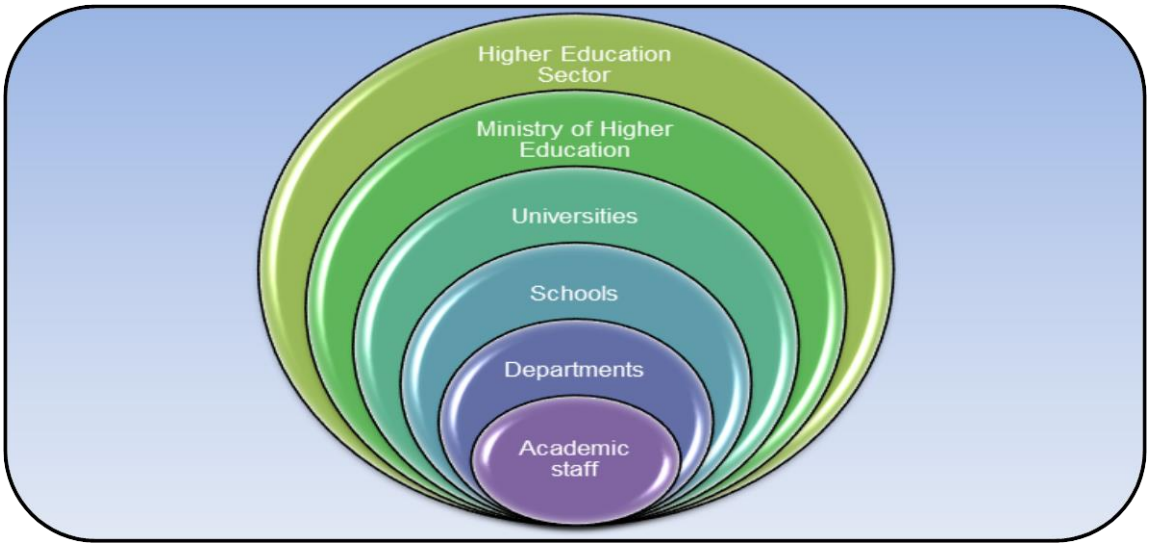

Figure 1-1: Higher education sector in Iraq (Researcher's own construction)

The government agency in Iraq, which is tasked to pursue higher education and scientific research, is the Ministry of Higher Education and Scientific Research (MOHESR). This agency aims to undertake qualitative and quantitative changes in the scientific, technological, and cultural aspects of higher education and direct scientific and research organisations. As the concept of student-centeredness is fostered in the teaching and learning process in Iraqi higher education, the emergence of e-learning was propelled by the combination of learning and technology in the country. This progress led to a resounding claim for technology's capacity to allow high quality education for all (The World Bank, 2009).

The current higher education sector in Iraq consists of 20 universities and 47 technical institutes, which are managed by the MOHESR. Specialised courses for postgraduates are also being offered by the Commission for Computers and Informatics. Additionally, ten private colleges offer programmes in business administration, computer science, and management and economics. Universities offer certain major fields of studies, including education, arts, administration, economics, engineering and technology, medical sciences, and agriculture to name some (Elameer and Idrus, 2010c). The average ratio between staff and students is 1:13, which is more favourable than neighbouring

countries such as Saudi Arabia and Jordan. Extreme variations are however recorded amongst Iraqi universities, i.e. 1:4 and 1:43 (Sikhi, 2008).

Below is a higher education map of Iraq:

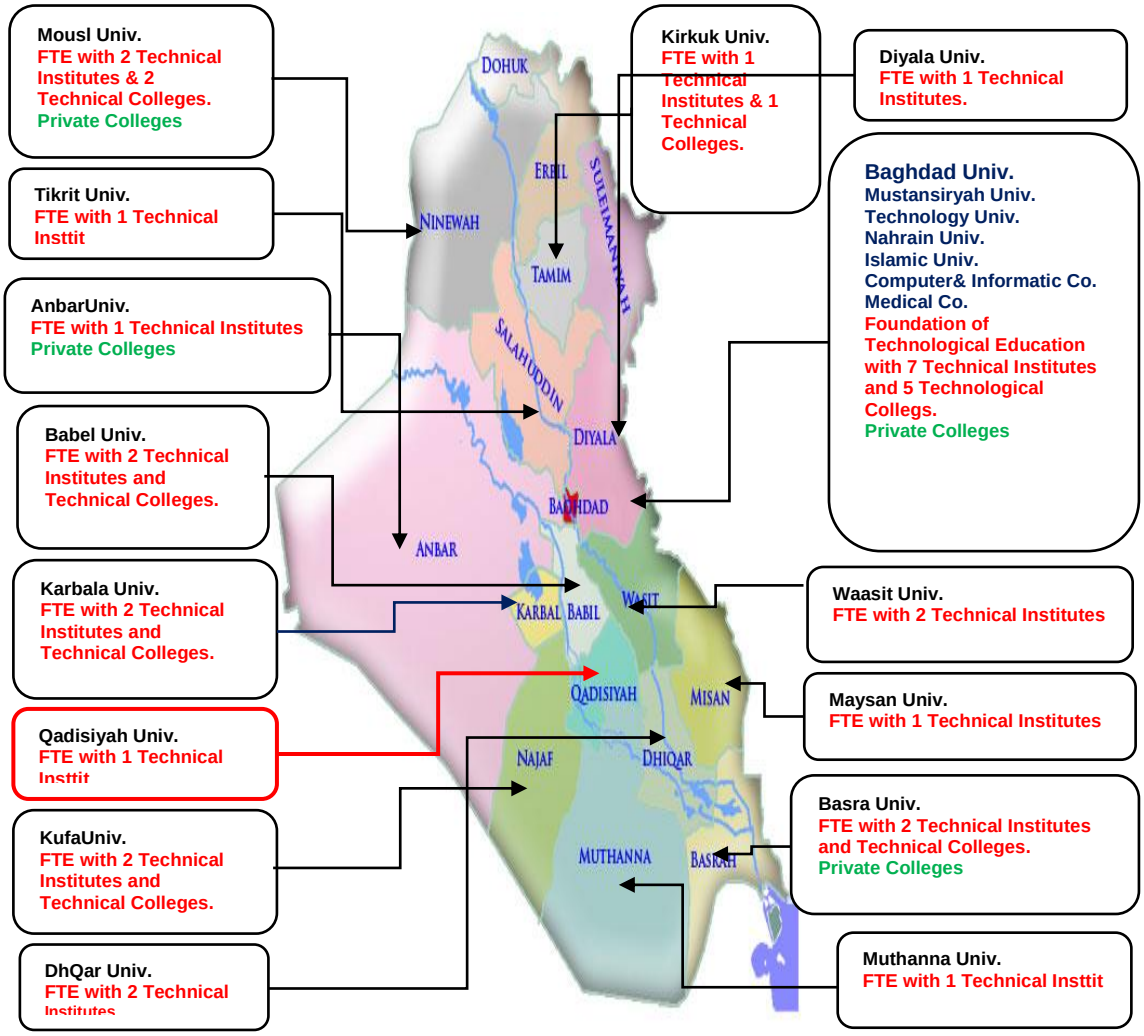

Figure 1-2: Higher education map of Iraq (Source: Elameer and Idrus, 2010)

1.2 Rationale and Justification of the Research

The research problem of this study considers the fact that neglect, sanctions, and rampant looting after the downfall of the Saddam Hussein rule led to the deterioration of Iraq's educational system, specifically higher education institutions, which became severely damaged by under-investment and rampant looting. Academics and students in higher education became targets of

violence, resulting in them fleeing to other countries to find safety (UNESCO Institute for Statistics, 2010; UNESCO Iraq Office, 2014). Thus, these socio-economic factors affected Iraq's higher education system.

The joint Iraq needs assessment in 2003 indicated that the severe damage of higher education infrastructure has reached 84 percent (Elameer and Idrus, 2011a). Further, there was a lack of ICT equipment and inter-departmental computer systems in universities (UNESCO Iraq Office, 2014). Although an authoritarian regime was ended in 2003, a peaceful environment for the renewal of educational sector continues to be a failure, coupled with pre-existing structural problems, aggravated by violence and shortages (Ranjan and Jain, 2009). Despite these, the Kurdistan regional government has prioritised reform in teaching methods by incorporating the use of ICT in education (UNESCO Iraq Office, 2014). After April 2003, an increase in demand for all types of higher education courses was experienced as an outcome of the country's social development process. The current higher education sector is driven by new technology and conviction to remove all limitations, promote innovation, and uphold student-centeredness in all areas of the teaching-learning process. Hence, the emergence of the e-learning concept in the country is espoused by the combined use of learning and technology that is expected to provide high quality education for all (Radif et al., 2014, Elameer and Idrus, 2011a).

Furthermore, addressing specific barriers to teaching and learning has been the goal of Iraqi higher education sector in identifying technology integration strategies (Dell and Hakeem, 2012). Despite the numerous usages of learning management system, several barriers preventing its full adoption in higher education have been identified. Some of these barriers include lack of ICT knowledge; lack of support from teachers and post-secondary level; teaching styles; and technical competency of students (Nasser et al., 2011).

The justification for pursuing the present topic rests on the notion that LMS adoption is a current occurrence in education as educational institutions further advance toward maximising the use of technology. The post-war Iraq is no

exception, as the country is currently trailing the path of ICT adoption in education (Cohen, 2012). LMS in general is being extensively adopted in higher education across the world and takes the form of blended learning and distance education. Looking into how Iraq has so far fared in this domain, considering its participation in bridging the digital divide, and conversely, the institutional resistance to technology acceptance (e.g. Shirazi et al., 2009) would be a worthwhile investigation.

1.3 Researcher Perspective

Given the previous discussion, the current study serves as a systematic attempt to unravel the barriers and socio-economic conditions that might have influenced LMS implementation in Iraq. Identifying the barriers to LMS implementation in this research is included because such identification will enable the study to further investigate the technology acceptance of academic staff vis-à-vis LMS adoption. Socio-economic conditions are included in order for the study to find out how LMS adoption has been impacted by such conditions, taking the perspectives of the academic staff in the case organisation. The barriers and socio-economic conditions are however not in a cause-effect relationship in this research.

This research-based investigation is a contribution to the ongoing studies to improve ICT in the higher education sector, which could provide further contribution to the literature about LMS in education. This research draws uponthe Technology Acceptance Model (TAM) and the Technology-Organisation-Environment (TOE) framework. The resultant framework contributes to research knowledge as it to demonstrate clear application of findings for LMS implementation in higher education in Iraq.

This study is worth a PhD because of its novel focus on technology acceptance using the Technology Acceptance Model and how the technological, organisational, and environmental aspects of LMS implementation influence or determine such acceptance, using the Technology-Organisation-Environment (TOE) framework, and supported by the Theory of Planned Behaviour.

1.4 Aims and Objectives

1.4.1 Aim

Below are the aims of the study:

- To develop an adoption framework that identifies the factors influencing LMS implementation in war recovering economy like Iraq. This will enable decision- makers to take appropriate decisions for LMS adoption in the Iraqi universities.
- To investigate the LMS adoption in the Iraqi higher education sector using the Technology Acceptance Model (TAM) and Technology-Organisation-Environment (TOE) framework.

The framework in this study is needed because it serves as an outcome of the empirical investigation that can be used as a policy guideline for MOHESR and higher education institutions in Iraq in their effective implementation of LMS. The users of the policy framework are therefore the MOHESR and higher education institutions, including academic staff and students. Elameer and Idrus (2010c) stated that the Iraqi government, the MOHESR, and technology are the three key thrust areas of the strategy framework of e-learning in the higher education in Iraq.

Studying the case of Al-Qadisiyah within the context of LMS adoption deserves a PhD because it enables the study to investigate an actual LMS implementation, the barriers to this implementation, the technology acceptance of the academic staff, and the technological, organisational, and environmental aspects surrounding this acceptance.

1.4.2 Objectives

This research intends to address the following objectives:

1. To identify how the socio-economic conditions in Iraq influence learning management system implementation in the higher education sector.
2. To identify and analyse the barriers in adopting LMS as a higher education initiative in the country.
3. To analyse the LMS acceptance of higher education staff using the Technology Acceptance Model (TAM).
4. To analyse the LMS adoption in higher education staff through the lens of the Technology-Organisation-Environment (TOE) framework.
5. To develop and validate a LMS framework to guide decision-makers at headquarters of the Ministry of Higher and Higher Education and Scientific Research (MOHESR) in improving the outputs of the educational process, using initiatives from Iraqi universities.

1.5 Research Questions

The research questions that this study aims to address in its entirety are:

1. What is the extent of technology acceptance exhibited by the higher education sector of the in terms of perceived ease of use, perceived usefulness, and willingness to use LMS?
2. Taking the perspective of the higher education staff, how have the socio-economic conditions in Iraq impacted the LMS implementation in their institution?
3. What are the barriers encountered by the higher education staff in their adoption of LMS?
4. What are the enabling actions, their impact and timeliness that must be included in a policy adoption framework for LMS implementation in higher education in Iraq?

1.6 Case Study Design

Case study is used as this research attempts to uncover the issues leading to LMS integration in higher education in Iraq. The justification of using the case study design for the present research is its emphasis on drawing an in-depth understanding of LMS integration in the higher education sector in Iraq(Yin, 2009)..

The advantages of case study method are as follows: it is able to ascertain new or omitted variables; it examines intervening variables in the set of cases; it allows historical details to develop; and it tends to identify new hypotheses, which can be done through combined inductive and deductive approaches (Bennett, 2007).

This study investigates a phenomenon with very little information available, case study allows a rich source of information to be brought in, beneficial for future research (Mangal and Mangal, 2013). Case studies also enable generalisation on the topic being studied, indicating the idea that ‘if it is valid for this case, it is valid for all (or many) cases of a similar nature’ (Mangal and Mangal, 2013: 192).

Based on the researcher’s access to intimate perception and opinion of a large number of higher education staff, the University of Al-Qadisiyah was chosen as the representative case of Iraqi higher education.

1.7 Research Steps

Figure 1.3 shows the steps of the research

Step 1 is the empirical design steps to confirm the research background, and define the research questions, aims and objectives. The preparedness of University of Al-Qadisiyah for LMS was reported in the first publication (M. Radif, I.S. Fan, P. McLaughlin, 2014). Step 2 is the literature review, which is continuously updated during the research. Step 3 is the creation of the initial conceptual framework. Step 4 uses survey and in-depth semi-structured

interviews, with the associated thematic analysis, to establish the model of factors that influence LMS integration in higher education in Iraq. Step 5 uses the model of factors and propose a policy framework for Iraqi decision makers. The work is validated by the triangulation of the research data captured, and the confirmation of validity of the policy framework. Step 6 draws together the conclusions.

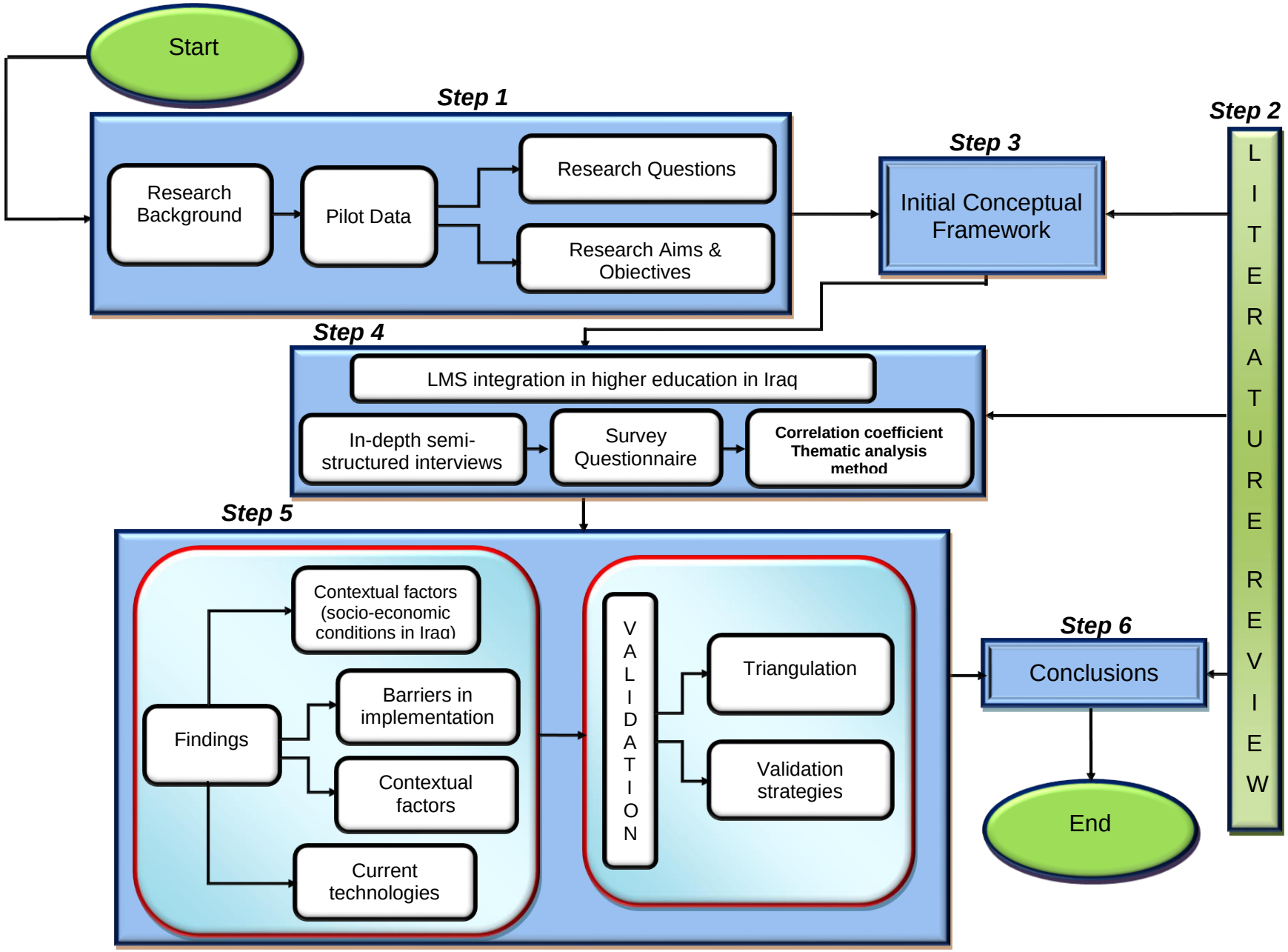

Figure 1-3: Research design steps

1.8 Significance of the Research

The significance of this study is seen in its contribution to the field of education and how LMS as a current pedagogical trend and practice could be relevantly and successfully integrated in higher education toward improved learning process in Iraqi universities. In Dahlstrom et al.'s (2014) findings, it was revealed that despite the positive benefits of LMS as a teaching and learning enhancement tool, only a few utilise its advanced features, and even fewer adopt it to its full capacity. Moreover, the previous war in Iraq led to lack of proper ICT skills and infrastructures for ICT adoption. Training and support help academic staff to enhance their commitment to ICT adoption, thereby enabling them to become empowered (Elameer and Idrus, 2010b; Avidov-Ungar and Shamir-Inbal, 2013; Palahicky, 2014). Thus, the study is also significant in terms of its adoption of an empirical and practice-based situation on how LMS has been adopted using the case of higher education sector in Iraq.

Another significance of this study is its combined use of the Technology Acceptance Model (TAM) and the technology-Organisation-Environment (TOE) framework to investigate the technology acceptance of academic staff regarding LMS adoption.

Further, the study's significance is seen in its attempt to bridge the gap in knowledge and research on LMS practice and actual use of ICT in the country, whereby it contributes to the extant literature on the subject. It therefore contributes to research knowledge by demonstrating how a policy adoption framework, which is a product of a systematic investigation, could be used to spearhead LMS implementation in higher education.

The study is also significant to future researchers pursuing similar topic as it could be used as a valuable and helpful reference material, from which various insights on LMS adoption and practice could be generated.

1.9 Structure of the Thesis

Chapter 1 – Introduction

This chapter provides a discussion of the background to the research problem; rationale and justification of the research; researcher perspective; aims and objectives; research questions; gaps in knowledge; and significance of the research. The purpose is to provide an overview of the research topic.

Chapter 2 – Learning Management Systems

This chapter presents the definition of 'learning management systems' by various authors. The purpose is to establish an understanding of the concept.

Chapter 3 – Theories and Models of LMS Integration

The theories and models of LMS integration are discussed in this chapter, aiming to provide the theoretical underpinning of the study.

Chapter 4 – Theoretical Framework

The theory of planned behaviour, TOE, and TAM comprise the theoretical framework of the study, which is discussed in this chapter. It also provides a discussion of the LMS framework.

Chapter 5 – Research Methodology

This chapter presents the methods of research, including the research design, research philosophy, data collection methods, research models (TAM and TOE), sampling techniques, method of data analysis, etc. It provides a direction on how to address the research questions.

Chapter 6 – Results, Discussion and Analysis

The results of the survey and the interview are presented in this chapter, as well as the analysis of the data. The purpose is to directly answer the research questions identified in Chapter 1.

Chapter 7 - The LMS Strategic Policy Adoption Framework

This chapter provides a discussion of the aims and objectives of the policy adoption framework, its desired outcomes, aspects of implementation, enforcement of the policy, and contribution to research knowledge.

Chapter 8 – Conclusion and Recommendations

This chapter provides the conclusion based on the analysis, as well as the recommendations for future research.

1.10 Summary

This study highlights the use of learning management system in higher education in Iraq and the technology acceptance of the academic staff of the University of Al-Qadisiyah using the TAM and the TOE. It explains the concept of learning management system, the relevance of ICT utilisation in education, and the likewise general purpose of higher education institutions to improve the teaching-learning approach through this system. LMS is described as an instructor-and-institutionally-controlled tool that could support a traditional approach to learning and teaching. Its emergence is traced back to basic training management systems that later on evolved into e-learning platforms. In Iraq, ICT is used in limited manner in education but however plays a significant role in improving the country's education system and quality of learning.

The study intends to investigate how the socio-economic conditions in the country impact the adoption of LMS in higher education, taking the points of view of the academic staff in the case organisation. It also identifies the barriers to this implementation and suggests necessary inclusions in the policy adoption framework for the use of the MOHESR and higher education institutions in Iraq.

The rationale and justification provide the reasons for undertaking this research, which are summed up to the current technological advancement and technology utilisation in education. The aim and objectives clarify what the research intends to achieve in its entirety whilst the research questions signify where the research is trailing. The study also identifies its significance to the field of education, the current education practice, and future researchers.

2 LITERATURE REVIEW: LEARNING MANAGEMENT SYSTEM

This chapter presents a collection of works and studies related to the topic being investigated. The review of literature covered in this chapter is a systematic and replicable method of integration of existing published works relative to LMS adoption in higher education in Iraq. Through the literature review, the researcher is able to conduct a critical assessment of collected information vis-a-vis the research questions being identified (Blaxter et al., 2006), such as identifying the extent of technology acceptance exhibited by the academic staff of the University of Al-Qadisiyah; how the socio-economic conditions in Iraq impacted the LMS implementation in their institution; the barriers encountered by the academic staff of the University of Al-Qadisiyah in their adoption of LMS; and the enabling actions that must be included in a policy adoption framework for LMS implementation in higher education in Iraq.

The purpose of this chapter is to provide a discussion of various authors' views on the definitions of LMS and e-learning; barriers to LMS adoption in higher education; and higher education in Iraq.

2.1 Inclusion and Exclusion Criteria

Certain inclusion and exclusion criteria for studies are used in this study. In the search process for the literature, it was decided to include only academic journals and online peer-reviewed journals. Although much of the works were recent, a decision to include articles published earlier was considered; however, there were only a few of them. These earlier works were published in 2000, 2005, and 2006. Most of the articles involved in the study were published in 2012 to 2015. The purpose of including early references on LMS adoption is to discuss older sources and provide a link to the recent ones. However, no discrepancies in claims were found between the old and recent works. The oldest study used in the literature review was published in 2000 whilst the most recent ones were published in 2015. There were articles on learning management system that did not focus on Iraq, which were also included

because of their relevant discussion on how higher education in these countries adopted LMS, which could then be used for the analysis.

Below are the inclusion criteria for the literature search:

- Articles published in 2000 onwards;
- Academic journal articles and online peer-reviewed articles;
- Articles discussing LMS in higher education;
- Articles discussing the Technology Acceptance Model , the Theory of Planned Behaviour and The technological, organisational, and environmental Model.

The exclusion criteria, on the other hand, are identified as follows:

- Unpublished studies
- Articles published earlier than 2000
- Articles on LMS in primary or secondary education

The systematic search for the literature is thus carried out using these inclusion and exclusion criteria. In order to obtain more relevant studies on LMS, the term “Iraq” was eliminated since only a few studies could be generated when this term was attached to the key words. Such elimination does not however mean excluding the Iraqi setting in the inclusion criteria but expanding the possible searches for more related articles.

Furthermore, the abstracts of the articles found were read in order to assess whether they were indeed suitable to the topic being investigated. The reference list of the articles also served as a helpful and potential source of relevant articles.

2.2 Search Methodology

The search for the literature was conducted online, and no physical libraries were used to supplement what had been gathered about the integration of

learning management system in higher education in Iraq. This is because the study maintains that using online databases is enough to search the relevant literature that serves as evidence to any claims covered by the research objectives, and that the researcher no longer needs to visit physical libraries to conduct secondary research.

The study searched for academic journals and peer-reviewed online sources for the literature review. The initial plan had been to look for a range of studies pertaining to the topic of research and save them in a file for actual writing. The study was able to find a number of electronic search tools from which to carry out the search for these articles. The abstracts of these studies alone provided useful information about what the articles were about. The articles themselves were often presented in an abstract, whilst others could be viewed completely through a PDF format. The specific website from which various research databases were found for the study is Scholar Google. The databases that thus sprang from this are the following:

1. JSTOR
2. EditLib
3. Ascilate
4. ProQuest
5. IGI Global
6. IEEE Xplore
7. Open Praxis
8. Springer Link
9. SAGE Journals
10. Science Direct
11. Emerald Insight
12. ACM Digital Library
13. Taylor Francis Online
14. Athabasca University
15. Wiley Online Library
16. Informing Science Institute

17. Hindawi Publishing Corporation
18. International Knowledge Sharing Platform
19. Education Resources Information Center (ERIC)
20. Loughborough University Institutional Repository

Further, certain key words were entered into the search engines for the initial pilot searches. These key words were: *"Learning management system," "socio-economic conditions in Iraq," "current technologies in Iraqi universities," "Technology Acceptance Model," and "Theory of Planned Behaviour".*

To find out the current state of technology adoption in Iraqi universities, the search was expanded to "*learning management system in higher education in Iraq", information communication technology in Iraqi universities," "effects of socio-economic conditions in Iraq on its higher education," "barriers in adopting learning management systems in higher education," "Technology Acceptance Model in learning management system,"* and *"Theory of Planned Behaviour" in learning management system".*

2.3 Defining LMS and e-learning

According to Del Giudice et al. (2014), LMS is software aimed at automating the administration of training events. It functions as a tool in managing the log-in of register users, recording data, managing course catalogues, and providing reports. The term is used to describe a variety of applications that monitor student training and might likewise include such functions as authoring, knowledge management, and discussion boards, to name a few, albeit their use is not always pursued. This is the similar to the definition of Lerma (2007) in Chapter 1, that LMS can be generally defined as a software tool aimed to manage educational resources stored in a repository so that such resources could be delivered to users in a controlled learning environment.

In a separate work, LMS was defined as an information system that functions to administer e-learning and instruction-based courses and likewise monitors learners' progress. It is also useful in monitoring the effectiveness of the

organisation's training and education system (Clement-Okooboh, 2012). This is similar to the definition of Dias et al. (2014) where LMS is described as an instructor-and-institutionally-controlled tool that could support a traditional teaching approach based on the instructor's control, management, and transfer of information to the learner. Further, Yueh and Hsu (2008) mentioned that offering instructional support to academic staff is the objective of a learning management system, which an increasing number of tertiary institutions have designed. However, elusive support was recorded for the actual use of these programmes. By the example exhibited by National Taiwan University, the authors demonstrated how a higher education institution can enhance faculty utilisation through improved LMS design.

LMS is a recently coined term that describes the incorporation of computer systems into instruction provision, management of resources, and tracks the achievement of both students and organisations (Neto and Brasileiro, 2007). It can be generally defined as a software tool aimed to manage educational resources stored in a repository so that such resources could be delivered to users in a controlled learning environment (Lerma, 2007). It is generally referred to as software adopted to tackle certain functions in the academic sphere, including class management, document tracking, report generation, and online courses delivery (Nelson and Staggers, 2014). According to Dias and colleagues (2014), LMS is an instructor-and-institutionally-controlled tool that could support a traditional teaching approach based on the instructor's control, management, and transfer of information to the learner. LMS is also an initiative that allows higher education institutions to supplement their traditional approach to teaching, thereby enabling learners to obtain online access at their own pace (Landry et al., 2006). Some researchers emphasised the relevance of integrated learning systems as antecedents to LMS (Kats, 2013). It works as a rule-based method and often functions with virtual classroom software using web services. The emergence of LMS could be traced back to basic training management systems, which eventually developed into e-learning platforms (Kats, 2013).

In order to benefit fully from the potential outcomes of LMS, it is necessary for research to focus on addressing LMS' role in learning success. Task-technology fit demonstrates the influence on the use and performance impacts of information systems. The framework of technology-to-performance chain was utilised in McGill and Klobas' (2009) study to tackle the ways in which task-technology fit has some bearing on LMS' performance impacts, with their results offering strong support for the importance of such fit. It must be noted that the task-technology fit influences LMS' perceived impact on direct and indirect learning through level of utilisation. On the other hand, amidst the scenario showing task-technology fit having a strong influence on LMS' perceived impact on learning, a weak outcome was shown in terms of student grades. LMS' performance impacts do not involve the role of common social norms, contrary to expectations (McGill and Klobas, 2009).

An important point is that there is presently a very marginal contribution that e-learning LMS provides to higher education institutions, and the main challenges include building awareness and providing the needed services to all faculties that integrate multiple systems (Liberona and Fuenzalida, 2014). According to Mavengere and Ruohonen (2010), some of the issues that must be dealt with in the use of LMS are computer literacy, availability of computer infrastructure, competent IT personnel, collaboration, and leadership support. With regard to usability issues, there are systems considered by users as having an intuitive navigation system, such as the LMS Moodle (Dias et al., 2014). Chang (2008) emphasised that the actual and perceived properties of technology must be recognised in the successful implementation of educational technology. With the deficient learning process management and difficult-to-measure educational values, e-learning systems must exhibit educational values through resonant and flexible pedagogical structure; whose emphasis is not only the delivery but also on the teaching and learning process (Issa et al., 2014). The field of web-based education has found renewed interest through the development of collaborative learning approaches embodied by LMS. The incorporation of LMS

system to education is shown to be successful when merged with an advanced collaborative method (Cavus and Ibrahim, 2007).

Below is a figure showing different aspects of LMS:

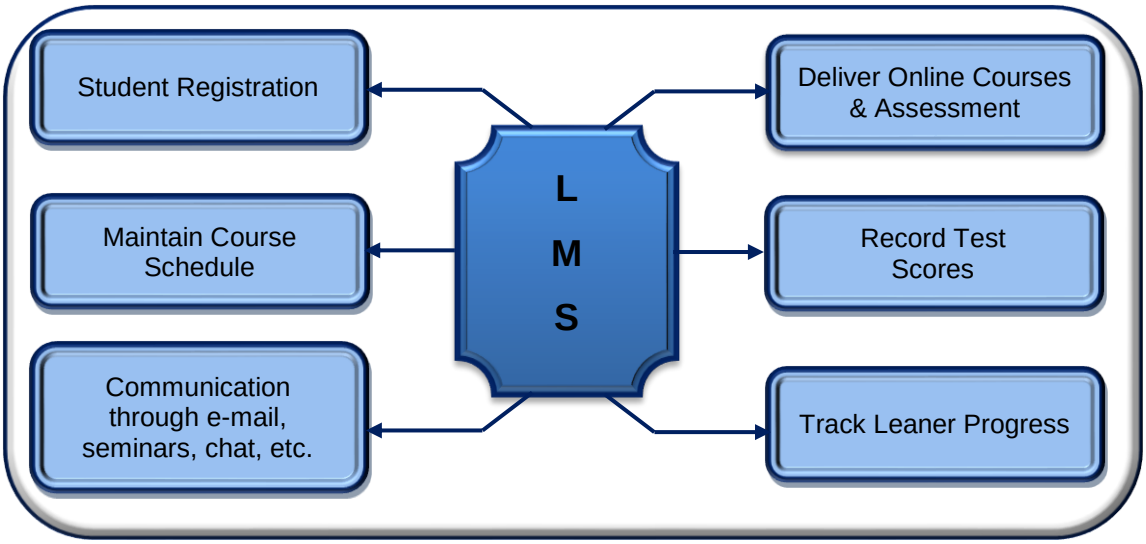

Figure 2-1: Various aspects of learning management system focused on the learner (Source: Life Safety Associates, 2014)

On the other hand, the term e-learning describes the form of education associated with online and web-based instructions. E-learning is not the same as distance learning and computer-assisted learning but their delivery methods sometimes overlap. E-learning is differentiated from computer-assisted learning through its emphasis on the use of web-specific technologies. E-learning refers to online training whose delivery is through synchronous (real-time, instructor-led) format or asynchronous (self-paced) one. It is an educational approach that uses electronically-mediated delivery and interactive learning environments through internet and digital technologies (Chang, 2008). In their work, Bullen and Janes (2007) stated that e-learning refers to all computer and internet-based activities that provide direct or indirect support to teaching and learning, either within the campus or at a distance. This definition acknowledges the reliance of e-learning on other available computer-based services, including the library and information systems. Another similar definition was forwarded by Prabowo (2007), in which he referred to e-learning as adults' incessant knowledge and skills assimilation through the stimulation of synchronous and

asynchronous learning activities - and on occasional basis – knowledge management, with the use of internet technologies that enable authoring, delivery, support, engagement, and administration.

Below is a figure showing the many features covered by e-learning:

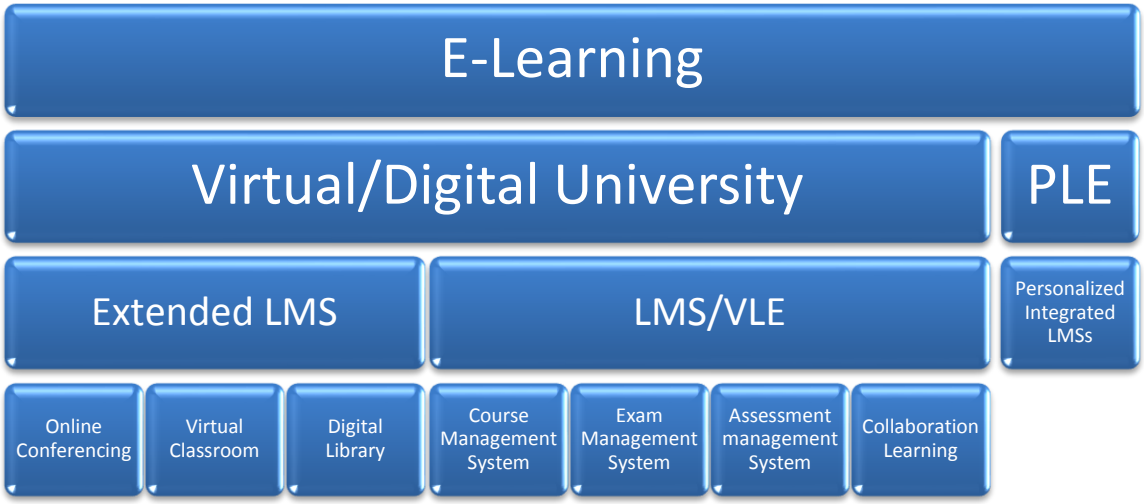

Figure 2-2: Features of e-learning (Source: El-Ghareeb, 2009)

2.4 Learning Management System in Iraq

Kakbra and Sidqi (2013) stressed the importance of active involvement of both teachers and students through ICT and e-learning in online collaborative work to transform and restructure traditional learning methods. The study was focused on Kurdistan Iraq where students and teachers could enter their university web portals but not have interaction because of the lack of LMS. The purpose of the study was to measure the impact of ICT on higher education systems in Kurdistan, Iraq using a survey via online questionnaires with students and teachers in which LMS MOODLE was adapted into the system. However, despite the positive attitude of teachers and students on the use of ICT and e-learning methods, those who effectively used these techniques comprised only a small number. It was therefore inferred that Kurdistan should begin with distance and e-learning system. The relevance of this study to the research is its discussion of current technologies used in LMS, such as LMS

MOODLE, which provides insights on how it is being carried out in an Iraqi university.

Further, collaboration in LMS integration is required both at the level of blending the traditional learning approaches and e-learning methods together, as well as the academic staff and technical personnel to work as a team for knowledge sharing and dissemination. What is needed in Iraqi universities is to strengthen their teaching and learning approaches with the use of multifaceted technical collaboration and support. Therefore, IT and academic staff must develop self-efficacy; provide emphasis to teaching styles, attitude towards LMS, technical data management, and personal innovation to ensure a clear vision of academic-technological collaboration (IREX, 2014). The relevance of this work is seen in its focus on pedagogy-technical collaboration, which is the subject of this research.

The Iraqi higher education sector has initially pursued quality assurance strategies, such as a quality development process emphasised on training senior academic staff. The goal of the University of Baghdad, in which the pilot study on quality assurance strategies was held, was to serve as a pioneer in quality assurance in Iraq (Kaghed and Dezaye, 2009). This study provides a useful insight into the manner in which tertiary institutions in Iraq pursue LMS.

Berge and Muilenburg (2000), who examined technologies for distance learning, posited that a broader range of teaching methods also emerged vis-à-vis changes in technologies; thus, pointing out the necessary change management system that goes along with the implementation. Adoption of new technologies via distance education developed several barriers, including organisational change resistance; absence of strategic planning; slow implementation; and difficulty in sustaining technological changes. The usefulness of Berge and Muilenburg's (2000) study is found in its provision of necessary insights into how higher education might encounter barriers to the implementation of LMS due to a range of factors, which might be applied to the analysis of LMS adoption in Iraqi universities. It is worthy of note that Iraq has

recorded the lowest internet penetration in the Middle East, with only more than one percent of the population being able to access the internet. The reasons for such low usage are political instability and destruction of ICT infrastructure, the latter being now on the process of restoration (Garcia et al., 2011).

Elameer and Idrus (2010c) stated that the three key thrust areas on which the strategy framework of e-learning in the higher education in Iraq are based are the following: The government (first thrust), the Ministry of Higher Education and Scientific Research (MOHESR) (second thrust), and the implementation aspect (third thrust), the latter being emphasised on technological aspects. The first thrust – the government – plays a supporting role by supplying the needed policies and funds for e-learning adoption, i.e. the establishment of a commission of e-learning in Iraq. MOHESR, on the other hand, plays the role of formulating the technical and instructional standards for ICT in Iraqi higher education, whilst the third thrust involves setting up networks for academic staff and students, installing the internet in all universities, and providing updated IT supplies (e.g. computers, etc.) to all classrooms. Elameer and Idrus (2010c) furthered that capacity building involves sharing the necessary budget for training between government and ministry. The use of ICT in Iraq is no longer restricted in the face of increasing technology utilisation in university management and academic affairs, so that greater efficiency and productivity may be fostered. It is apparent that the authors tackled the ways through which improved technological and e-learning strategies may be developed in Iraq, contributing to its relevance in the study.

On a similar fashion, Latchem and Jung (2010) mentioned that university distance and e-learning in Iraq are two of the areas that must be focused on in rebuilding the physical and academic capabilities and resources in the country, which resulted from bombing and looting during the recent war. Alongside this is setting up an efficient high-bandwidth digital infrastructure and providing course development training. Similarly, Garcia et al. (2011) highlighted that the lack of technological IT skills, specifically in Iraqi universities, poses barriers to sharing best practice in ICT. It is expected that as Iraq develops fully its technological

infrastructure, it will correspondingly become more technologically capable. Important consideration institutions must pay attention to training, assistance, and technology promotion. The authors mentioned that budget constraints and broader investment within Iraq will to some extent become the basis of this pursuit. Al-Radhi and Al-Din (2008) discussed the same thing in their article that focused on the significance of distance learning and e-learning for Iraq, as they noted that the physical hazards brought about by the previous war paved the way for challenging conditions in the country. Information professionals may participate in rebuilding Iraq's intellectual competence and as such would help in re-establishing its place in the global economy. Distance learning was cited by the authors as having great advantages for Iraq due to its being a strong option for capacity development in the country.

The encompassing factors in e-learning (pedagogical, technological, interface design, resource support, etc.) are shown in the figure below:

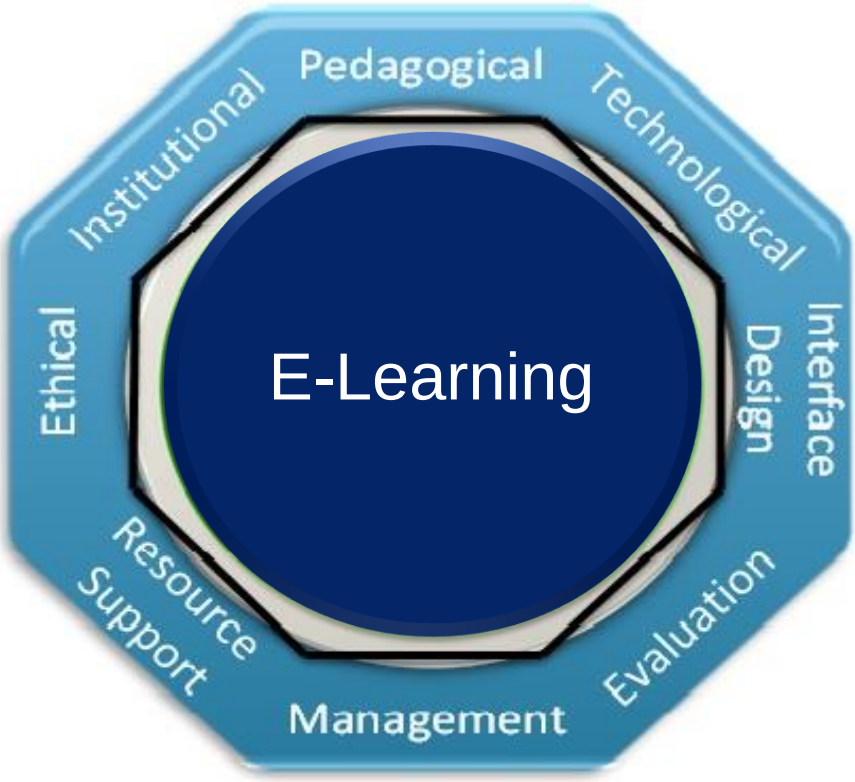

Figure 2-3: Interplay between various factors in e-learning (Source: Khan and Ealy, 2001 cited in Suhail and Mugisa, 2006, p. 304)

Further, the United Nations Educational, Scientific, and Cultural Organisation (UNESCO) is currently helping Iraq to improve its educational system through the development of e-learning resources and training courses. At present, the country has very weak ICT facilities and applications, with teachers/educators having very little ICT skills or none at all. The plan for ICT delivery in its educational system is seen as a way to overcome this challenge through the promotion of greater ICT literacy amongst educators, students, school administrators, and personnel of Ministry of Education (UNESCO Office for Iraq, 2014). This article provides a better light for the enhancement of Iraq's technological condition, evidently providing factual evidence to concrete solutions to the challenging technology issues mentioned in Al-Radhi and Al-Din (2008), Latchem and Jung (2010), Elameer and Idrus (2010c), and Garcia et al. (2011).

2.5 Socio-Economic Conditions Affecting Higher Education in Iraq

After major impediments in all aspects of educational sector in Iraq due to previous unstable social and political conditions, e-learning utilisation was adopted by the University of Mustansiriyah in Baghdad, Iraq to invigorate the educational environment. Some aspects of development of an e-learning model thus carried out were skills, training, and selection of relevant software for the e-learning system. The study administered a survey to 250 academic personnel of the university to gather feedback on their readiness to the adoption and utilisation of e-learning systems. The results revealed that the academic staff did not have fear from adopting an e-learning LMS for the proposed model (Elameer and Idrus, 2010a). This was opposed to the earlier study carried out by Garrote (2012) about fear towards LMS adoption amongst LMS users because of perceived demands on their time.

On the other hand, the study of Asunka (2012) was focused on a participatory action research approach as it aimed to identify and tackle a variety of cultural factors contributing to the hindrance of adopting and using LMS for online

collaborative learning in a Ghanaian university. This was followed by findings that the university's adoption of LMS for online collaborative learning for five years had kept on being largely unutilised by instructors despite training, motivation, and adequate resources being provided to them. The potential role of cultural factors opened the door for the study's adoption of Hofstede's theory to engage ten instructors in a study. Findings demonstrated that instructors can significantly change their attitudes and become more inclined to utilising online collaborative learning resources. The relevance of this study to the current research is seen in the role of culture and social environment in the manner by which LMS users accept and utilise LMS tools.

Noteworthy to mention is the work of Elameer and Idrus (2010b), who said that the war in March-April of 2003 led Iraq to lose many of its infrastructures and to require ample time to recoup the lost resources and renew plans and policies. The higher education sector was one that received the most damage, with no forthcoming future solutions being demonstrated. Limited budgets made ICT use difficult to obtain. Although the teaching-learning solution for higher education problems in Iraq was directed toward the e-learning approach, plans for implementations remained undone. The authors conducted a pre-survey showing a very clear perspective of lack of experience-related human resource (HR) for ICT skills as well as lack of proper infrastructures for ICT adoption. Clearly, the authors presented a clear picture of the impact of political and social situations in Iraq on the adoption of LMS, much less on the normal operation of its higher education.

Similarly, Radif et al. (2014) stressed that the lack of security and political stability in Iraq was the cause of the occurring 'brain drain' and exit of trained and educated citizens from the country. In turn, there is lack of initiative in introducing new technologies and software as well as LMS tools in the higher education sector. Elameer and Idrus' (2010b) work is noteworthy in this regard as the authors described the presence of several modern technologies in Iraq, but the corresponding lack of needed infrastructures through which to use them. Clearly, the authors showed the impact of lack of political stability that used to

beset Iraq on LMS' effective integration, just as what Elameer and Idrus (2010b) pointed out.

A case in point which could be a source of knowledge to socio-economic factors impacting the higher education sector in Iraq is that of Rhema and Miliszewska (2012) whereby the political crisis - the armed conflict and destruction – in Libya were discussed against ICT adoption. The effect of such armed conflict in higher education was the necessity of rebuilding and re-development of the sector. The authors pointed out that ICTs serve as major elements of universal response to crises as they function as fundamental enablers of coordination mechanisms that educational institutions must restore in their pursuit to assist the affected students and teachers. The recent armed conflict caused setbacks to Libya's ICT efforts; however, e-learning deployment in the country through the efforts of international community can serve as an opportunity to significantly rebuild its educational system; modernise and update instructional approaches and methods; and improve access to higher education. Similarly, post-war Iraq saw ICT playing an important role in the improvement of its educational system and quality of learning. The study discussed how ICT could be utilised as a reconstructive measure to support the affected students and teachers in war-stricken countries. It concluded with a proposition to pursue an integrated approach toward advancing the concept of e-learning in Libya's higher education sector. The relevance of this study to the present research is its discussion of the impact of armed conflict on higher education and the role of ICT in this context, which provide substantial insights for Iraq's own social context being a country that also dealt with armed conflict and is now reconstructing its higher education sector.

Thus, based on the above discussion, below is the list of socio-economic factors influencing LMS implementation in Iraqi universities:

Unstable social and political conditions that brought physical and moral damage to Iraqi higher education sector	Elameer and Idrus, 2010a Elameer and Idrus, 2010b

Inadequate physical resources caused by war damage	Asunka, 2012 Rhema and Miliszewska, 2012
Limited government budget for LMS allocation in higher education	Elameer and Idrus, 2010b
Lack of focus on higher education development in the country due to previous political conflicts, leading to inadequate experience-related HR for ICT skills and proper infrastructures for ICT adoption	Elameer and Idrus, 2010b Radif et al., 2014
Brain drain' and exit of trained and educated citizens due to lack of security and political stability in Iraq	Radif et al., 2014

Table 2-1: List of socio-economic factors influencing LMS implementation in Iraqi universities

2.6 Barriers to Adopting LMS in Higher Education

This section provides a discussion of the barriers to LMS adoption within the context of higher education in general, and in Arab countries and in Iraq in particular.

The structure of this section includes a discussion of barriers to a broader adoption of LMS and its seldom use; effective LMS use in course delivery; dissatisfaction of Arab educators with their LMS interaction; barriers preventing teachers from using LMS tools; and barriers to LMS implementation.

The study of Garrote (2012) examined the barriers to a broader adoption of a LMS and identified the reasons for the seldom use of some LMS tools in the midst of claims of the importance of interaction and collaboration through LMS to improve students' performance. The study conducted an interview with 17 lecturers in 2006 and 2011 and did not indicate any significant changes in their

attitude in terms of LMS adoption. Their use of LMS was recorded to be for the purposes of course administration and document distribution. The study analysed the apparent hesitation amongst lecturers to use interactive features by emphasising expected effects on the work situation. The author argued that the primary barrier to a broader LMS adoption and use is the fear amongst lecturers that adoption might place additional demands on their time. Garrote's (2012) study is apparently related to the current research as it tackled a range of issues associated with LMS' barriers in implementation.

Similarly, a university in Ghana deployed a web-based LMS that remained largely unutilised by instructors, in which the university's management took over. The university aimed to increase access to its educational resources by using ICTs. With due acknowledgment of the pivotal role played by instructors in this goal, they were given training, motivation, and appropriate resources to prepare and enable them toward effective use of LMS in course delivery. After five years however, most instructors remained hesitant in utilising LMS software. One suggested approach was engaging all instructors in participatory activities designed to identify and tackle the challenges connected to LMS adoption. Asunka's (2013) study is different from that of Garrote's (2012) in such a way that the former identified fear with additional demands on lecturers' time as a barrier to LMS integration, whilst the latter identified hesitation to utilise LMS software, which could be traced back to lack of skills or LMS-related training activities amongst the teachers in the study. Garrote's study is certainly relevant to this research as it pointed out a significant barrier to LMS implementation in higher education.

Below is a diagram showing IT integration into traditional mode of teaching:

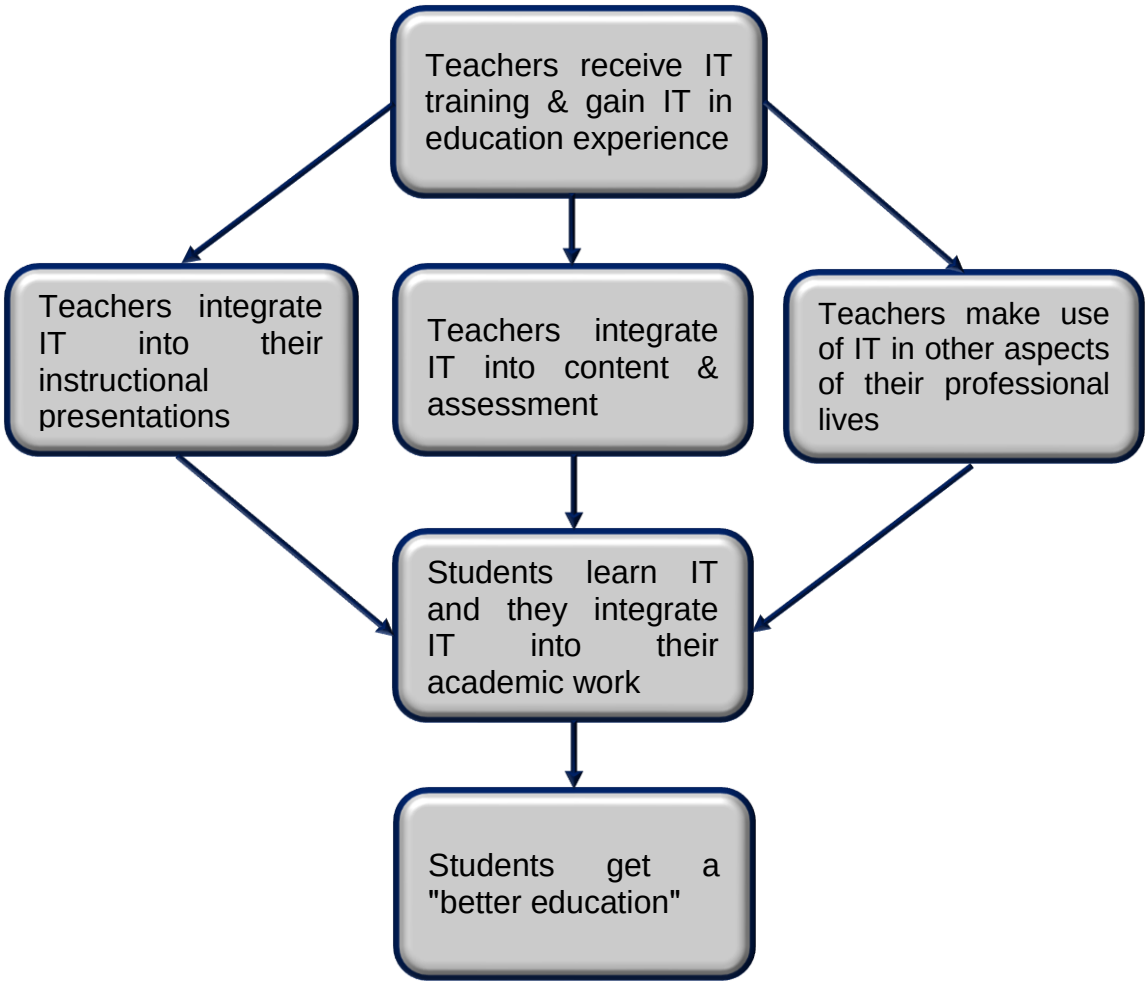

Figure 2-4: IT adoption into the teaching-learning process (Wentworth, et al., 2004)

The direction of discussion of Tahseen Consulting Ltd. (2012) is however different from those of Garrote (2012) and Asunka (2013) as Tahseen Consulting was focused on the dissatisfaction of Arab educators with their LMS interaction, from which barriers to LMS implementation could be found. Arab educators were generally dissatisfied with their LMS interaction, but such dissatisfaction was particularly high in the Levant region (Cyprus, Israel, Jordan, Turkey, Lebanon, and Palestine). The study indicated that 24 per cent of Arab educators reported daily interaction using LMS but those in the Gulf and North Africa tended to report using the same system several times a week or daily. Higher education institutions with a student population of 500 or more reported more frequent interaction with LMS, but those institutions with more than 10,000

students were likely to have lower frequency of LMS use. This scenario presents a situation whereby LMS is not fully utilised to its optimum level to be able to provide the best benefits to Arab educators. The barrier to its full implementation is therefore the infrequent and insufficient use of its tools. The relevance of this work to the current research is its focus on the extent of LMS utilisation in higher education to find out its limitations and barriers to thereby construct a policy framework that facilitates effective and efficient LMS utilisation in Iraqi universities, which is of important consideration to this research report.

The previous work is parallel to that of Palahicky (2014), which also identified some barriers preventing teachers from using LMS tools, including 'lack of teachers' training, lack of commitment to constructivist pedagogy, lack of experience to use the technology, lack of technical support, and tendency to utilise traditional approaches and teaching styles' (Palahicky, 2014 : 28). The barriers were classified as internal and external, and the internal ones were identified as pedagogy, attitudes, and teaching styles. On the other hand, the external barriers were pointed out as lack of training, lack of time (also mentioned by Garrote (2012) earlier), and administration support. In order to facilitate an effective use of LMS tools, instructors must obtain the needed expertise for technology utilisation, which is equivalent to experience and training. An example of this is learning definite skills to design the differentiated release of quiz and test results to facilitate feedback for students' academic performances. Palahicky's (2014) study is useful to this research as it clarifies several barriers to LMS implementation as well as a corresponding measure that could be adopted in order to facilitate an effective use of LMS tools.

Additionally, Mirza and Al-Abdulkareem (2011) stated that the Middle East situation of making parents accept and adapt to the e-learning concept is still in the early phase. Various success levels in this regard have been achieved by different universities within each country in which they identified barriers to implementation.

In Buabeng-Andoh's (2012) study, the barriers to LMS implementation were identified as the following: Lack of ICT skills and confidence amongst instructors; lack of pedagogical training for teachers; lack of appropriate educational software; limited ICT access; and rigid structure of traditional school systems. Notice that some of these barriers were also identified by Garrote (2012); Asunka (2013); and Palahicky (2014). According to Munkvoid (1999), Iraq is hindered by financial constraints in its adoption of new technologies in the educational sector, including higher education. Munkvoid also agreed with Radif et al. (2014) in terms of the lack of needed infrastructures and technologies for enforcing new ICT approaches, including LMS. Mukvoid's study was focused on the barriers to LMS implementation, and identified these as resistance from organisational units, lack of incentives, and technological incompatibility. Rivard and Lapointe (2012) added user resistance as a barrier that serves as a crucial issue during ICT adoption, and which must be necessarily tackled without regard to the nature of resistance.

In the same manner, Eriksson (2010) claimed that the lack of functional central governance in Iraq serves as a hindrance to its sustainability of information management systems for coordination and standardisation of data collection and analysis in pre-MIS adoption. Governance continuity also lacks time and effort in terms of required transition of technology. The author identified the importance of responding to complexity in the face of administrative interface. Certainly, Eriksson (2010) focused on the internal aspect of technology adoption and lack of governance continuity as a key factor for the several inadequacies encountered in LMS implementation.

2.7 Modelling Collaboration in Implementing Effective LMS

A case study written by Marcum-Dietrich and Dreon (2013) dealt with an examination of the way an instructional technology course was established in an industrial model of teaching that is developed to mirror and model the necessary pedagogy in the modern classroom. This model involves the crucial development of course structure and content, enabling the students to create

solutions to problems in a collaborative manner. This new focus allowed the students to change their role from being passive actors to becoming actively engaged in understanding class works and lectures.

In the study of Al-alak and Alnawas (2011), a positive relationship was demonstrated between perceived usefulness, computer knowledge, management support, and willingness to adopt in the investigation of lecturers' attitudes towards LMS implementation. However, a negative relationship was found to exist between computer anxiety, normative pressure, and willingness to adopt. The study used structural equation modelling to test its validity. The findings suggested that the strongest indicators to predict behavioural intentions were experience and computer knowledge. The reason why experience was amongst the strongest predictors was because of the compatibility of new computers with users' prior experience and current work practices. Lecturers' level of computer knowledge allows them to overcome the difficulties relating to e-learning adoption and thus forms positive reactions toward such adoption. A significant impact was also demonstrated by management support on lecturers' attitudes towards LMS adoption. The significance of this work to the present study is found in its emphasis on factors contributing to LMS adoption.

In the same way, Avidov-Ungar and Shamir-Inbal (2013) provided a clear example of LMS collaboration involving IT and academic staff using the Ministry of Education in Israel as a case in point. The commitment of academic staff to ICT adoption was accompanied by training and support, which enabled them to become empowered as a result. The findings indicated the importance of providing professional guidance to teachers who likewise act as agents of pedagogical innovation alongside ICT implementation in higher education. The relevance of Avidov-Ungar and Shamir-Inbal's (2013) study is seen in its focus on the collaboration between IT and academic staff, which is an element of LMS integration. This study could also provide further support to the assertions made by IREX (2014) which also dealt with such collaboration.

Correspondingly, Moukali (2012) study was emphasised on the factors affecting instructors' attitudes toward the adoption of blended learning, and stated that the transition from using traditional face-to-face instruction to the use of blended learning to enhance and augment such form of instruction is a worldwide phenomenon. The author pointed out that facilitating this transition requires examining how well multicultural settings accept and adopt well-blended learning strategies. He investigated the factors impacting the attitudes of academic staff toward such adoption at Jazan University, Saudi Arabia. Significant considerations included incentives, technology experience, and demographic variables such as gender and rank amongst academic staff of the university. A mixed method design was adopted for the study, with 303 academic staff serving as research participants. Positive attitudes were reported amongst these faculty members towards the use of blended learning. Female faculty members demonstrated more barriers to the implementation than male counterparts. A negative correlation was revealed between attitudes towards blended-learning adoption and perceived barriers whilst a positive correlation was demonstrated between attitudes and perceived incentives for such adoption. Eriksson (2010) earlier discussed such transition from traditional learning methods to the use of blended learning through LMS, which may be pointed out as congruent to this study by Moukali (2012).

Likewise, in their study discussing a model for instructors' adoption of LMS, Coskuncay and Ozkan (2013) stressed that the rapid expansion of information technologies allowed LMS to functions as one of the most valuable innovations for delivering education. However, LMS' successful implementation and management are largely based on the adoption of the instructor. The authors conducted a comprehensive survey with 224 academicians along with interviews with ten of them, and likewise applied structural equation modelling to assess the multi-dimensional research model being proposed. The results demonstrated that the research model significantly predicts the behavioural intention of instructors toward LMS utilisation (Coskuncay and Ozkan, 2013). This study could serve as an explanation to the earlier studies (e.g. Eriksson,

2010; Buabeng-Andoh (2012); Asunka, 2013) mentioning lack of willingness and interest amongst instructors to use LMS habitually.

The graph below shows results of a study on faculty and administrator perceptions of LMS use:

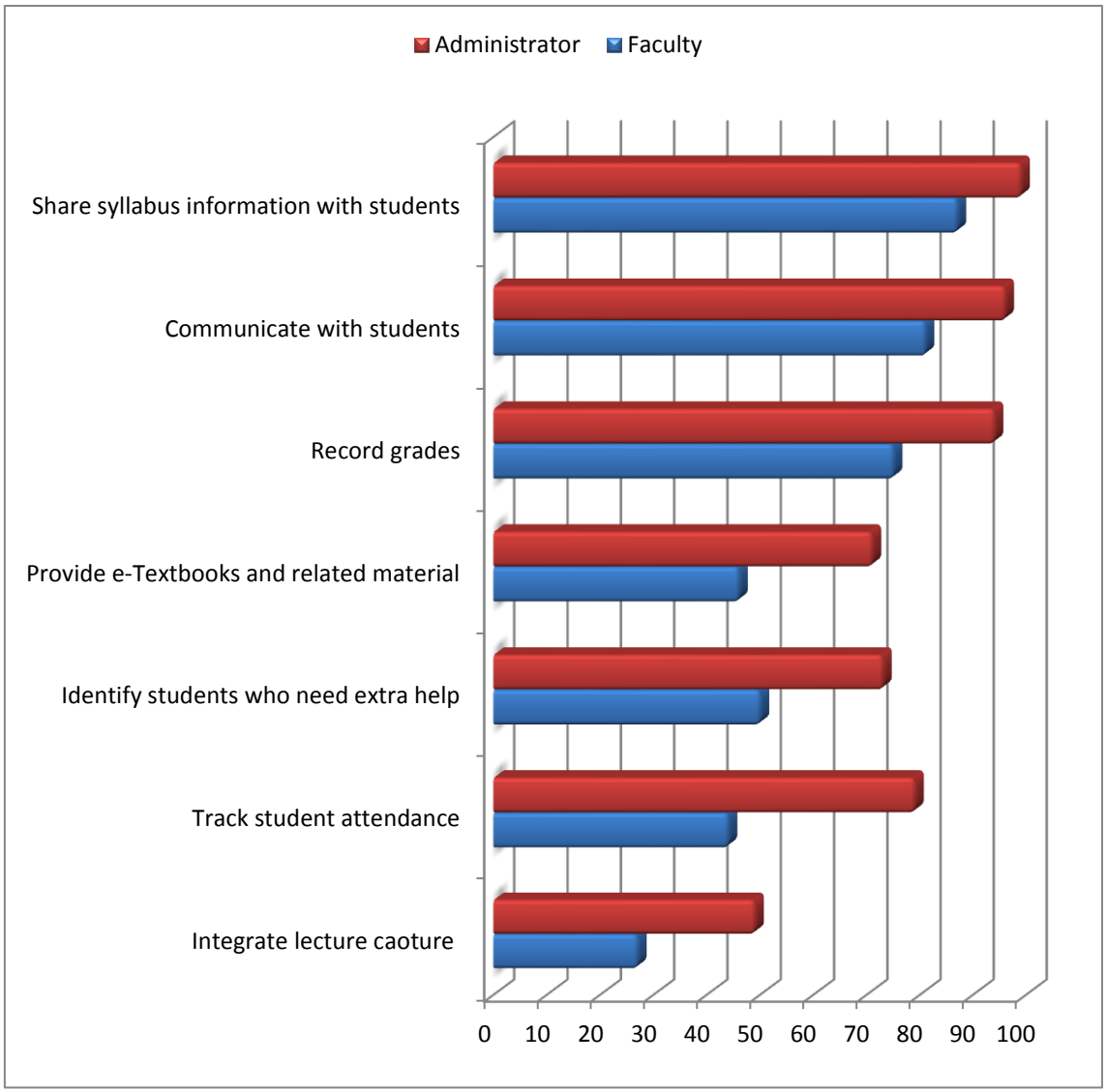

Figure 2-5: Faculty and administrator perceptions of LMS use (Source: Kolowich, 2012)

The figure above shows that sharing syllabus information with students is the most frequently performed LMS activity by administrators and faculty staff. Integrating lecture is however the least frequent activity.

2.8 Current Technologies in LMS Integration

Chung and colleagues (2013) pointed out the importance of evaluating LMS to ensure that it meets the current requirements and demands of universities and colleges. The objective of their study was to present a model incorporating the research findings on LMS adoption in higher education. The Technology Acceptance Model (TAM) was the basis for modifying the alternative model. Additionally, LMS categories for higher education were discussed, including transference of course content; student evaluation; course and teacher evaluation; creation of class discussions; and development of computer-based instruction. The study proposed a model of development of LMS for higher educational environments. This study is relevant to this current research because of its discussion of LMS models that provides further clarification of the LMS concept.

Below is a diagram showing IT integration to the learning-teaching process:

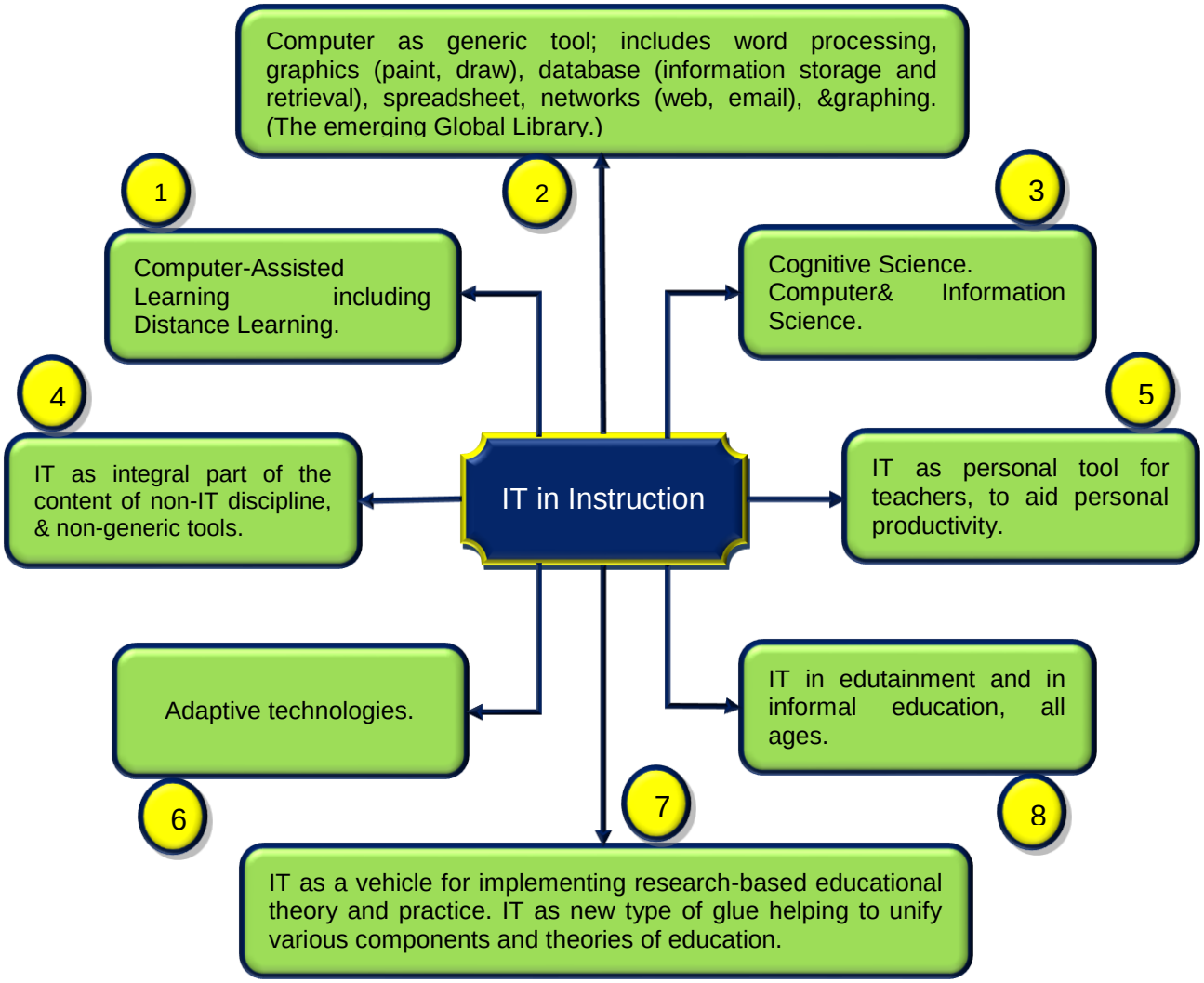

Figure 2-6: ICT uses in instruction (Source: Iskander, 2007)

Furthermore, the study of Dahlstrom and colleagues (2014) was centred on the perspectives of students and academic staff on LMS in the context of institutional investments. It adopted a triangulation of data, specifically the experiences of LMS user populations and data from the Core Data Service on institutional practices. Their study stated that eight years is the recorded average age of an LMS. LMS is seen by both faculty and students as a teaching and learning enhancement tool; however, only a few number of people utilise its advanced features, and even fewer adopt it to its full capacity. In addition, the basic LMS features recorded the highest user satisfaction, whilst those designed to promote collaboration and engagement had the lowest. Faculty and

students claimed of being more effective in teaching and learning respectively only if they were more LMS-skilled. Both faculty and students agreed that LMS must have enhanced and operational features and functions; be designed on a personalised level, and use analytics to improve learning outcomes (Dahlstrom et al., 2014). This study is parallel to those of Tahseen Consulting Ltd. (2012) and Asunka (2013) which also made mention of underutilisation of LMS tools, thereby not utilising their best benefits.

Below is a graph showing levels of satisfaction with LMS adoption in education:

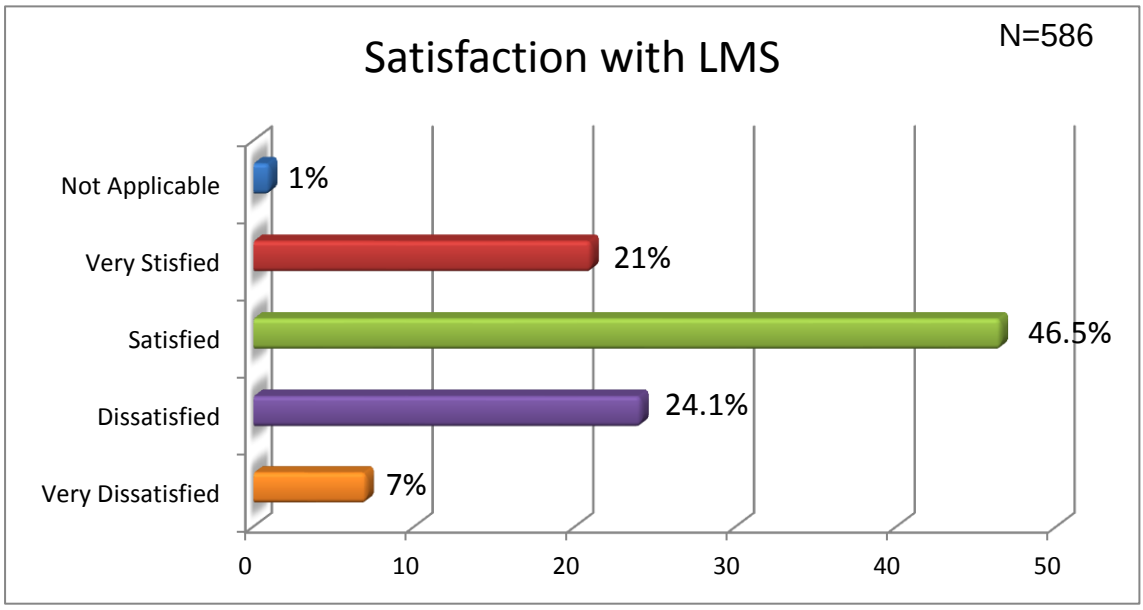

Figure 2-7: Satisfaction with LMS (Source: Grocott, 2013)

Beatty and Ulasewicz (2006) talked about Moodle in their article, a course management system presented as an open source software package that uses pedagogical principles intended to aid educators design effective learning online environments, which can be downloaded and used on any computer. The authors indicated that the emergence of this course management system is propelled by transition in online teaching and learning, alongside the rapid growth of the number of courses for distance learning.

Dalziel (2007) stressed that with learning (particularly from interaction with teachers and peers) being the key dimension of education, an important blind spot that needs to be addressed is the lack of well- developed approach to the

sequencing of multi-learner activities. Ironically, lesson planning - the sequence of activities to be adhered to by teachers and students -is a well-established practice in education, but is missing in e-learning. Nevertheless, a growing body of work addresses this concern through the ‘Learning Design’ concept, which is focused on multi-learner activity sequences and required tools to pursue these.

The use of LMS has been prevalent in many higher education institutions in an aim to manage online learning and teaching and to provide various levels of support to staff and students. However, it was found that only little investigation was carried out into the use of several support structures being offered in e-learning. Weaver et al. (2008) conducted an institutional survey that examined the use of WebCT by educators and students in the learning-teaching process. The survey revealed directions on how a higher education institution used WebCT in teaching and learning, citing quality control as a key issue. The findings presented student opinions that reflected the utilisation of the technology by educators. Students reporting a positive experience with the technology were those who received timely feedback, good dealing with staff, and well-designed resources. Rather than focusing on teaching issues, the responses of the staff in the survey were centred on the technical and administrative areas of WebCT utilisation. The implications of findings dealt with quality teaching and technology as an aid to learning, as well as the manner in which higher education institutions support academic staff.

3 LITERATURE REVIEW: LMS IMPLEMENTATION

This chapter provides a review of the theories and models relevant to the acceptance of LMS in Iraqi universities. The area of LMS implementation has been studied by researchers from different communities. LMS researchers look the how and why some LMS works better and others fail. Related in the topic is the study of enabling factors in implementation of new technology, represented by communities that use the at TOE (Technology-Organisation-Environment) Framework. Also important are the researchers who study individual person's acceptance to new information technology, creating psychological concepts like Theory of Planned Behaviour and User Acceptance Models. The works pertaining to these sub-topics took on a descriptive method. This chapter fits in the study in this way. These topics are reviewed in the following sections.

3.1 Theories and Models Supporting LMS

The LMS integration problem is emphasised on the lack of needed ICT skills and the lack of support and training provided by higher education organisations (Elameer and Idrus, 2010b; Oye et al., 2011; Al-Mushasha, 2013; Bousbahi and Alrazgan, 2015). On the other hand, the LMS acceptance problem is the academic staff's limited experience with the use of LMS, perceived lack of ease of use of the LMS, perceived lack of usefulness, and lack of willingness to use it (Al-Mushasha, 2013; Bousbahi and Alrazgan, 2015).

Diffusion and Innovations Model involves five adoption stages in LMS integration: knowledge, persuasion, decision, implementation, and confirmation (Moukali, 2012: iii). A number of factors is said to influence the amount of time that takes place prior to adoption, such as adoptees' readiness, perceived incentives, perceived barriers, and knowledge of technologies. This must be taken into account vis-à-vis the current study's focus on LMS integration in higher education of Iraq.

The study of Stefano (2011) explored the relevant factors influencing higher education teachers to use teaching models based on online social interaction

when utilising an e-learning platform. The context of technology utilisation and post-adoption behaviour apparently considers the adoption of online teaching model. The Theory of Planned Behaviour was used in his study as a model to investigate behaviour. Twenty-six university teachers were invited for a semi-structured interview based on this theory. The study identified three different levels of online social interaction: (1) 'Uploading teaching material', in which the primary intention of teachers in using LMS is to upload teaching materials; (2) 'Online discussion', where a discussion forum is created to promote learning but which is not incorporated into the formal course design; and (3) integration of collaborative learning activities based on online social interaction in the course design. The study demonstrated that teachers in the third group hold onto the value of classroom-online teaching integration, whilst for the second group, classroom teaching is complemented by online teaching. Teachers in the first group - 'uploading teaching material' – are less confident about LMS adoption and are likely to prefer face-to-face teaching. These results are explained by environment conditions, such as support and training provided by higher education organisations (Stefano, 2011). This discussion clarifies the contextual reason of instructors' preference for using certain levels of learning management system (i.e. underutilisation of LMS tools), which were earlier tackled.

Conversely, Mlitwa (2007) stressed the presence of a growing body of literature claiming that technology tends to improve teaching and learning processes in colleges and universities. The adoption of LMS is also increasing amongst higher education institutions, with incoherent and inconsistent patterns though. The use of Activity Theory is encouraged to discover a possible framework for analysing goal-oriented applications of technology in education environments, alongside implications thereof. Activity Theory is found to be helpful in analysing practical applications of technology and recognises the presence of shortcomings. It embodies 'understanding technology as an aspect of the larger scope of human activities' (Plakitsi, 2013: 75). Moreover, the theory tends to take on an instrumentalist view of technology as a neutral tool. Mlitwa (2007)

furthered that the contextual embedded nature of technology is maintained both by Activity Theory and Actor Network Theory. The latter supports the view that technology is value-laden and thus encourages the concept of critical engagement with technology in social contexts.

3.2 Technology-Organisation-Environment Framework

This section presents a discussion of the Technology-Organisation-Environment (TOE) framework. The reason for choosing this framework to study is its necessity to discuss it, considering that the research aims involve an investigation of LMS adoption at the University of Al-Qadisiyah using the TOE framework, alongside withe TAM. The researcher takes this framework to use in the PhD research.

The TOE model was initially developed by Tornatzky and Fleischer in 1990 through an adoption of the Theory of Organisational Contingencies (Muda and Yusof, 2015). The model understands organisational functions along the dimensions of technology, organisation, and environment (TOE), which have various influences on the ability of the organisation to retain or reject new technology (Namisiko et al., 2014). This description provides a necessary insight about the applicability of the model in the LMS implementation in higher education sector in Iraq, and in particular, in the University of Al-Qadisiyah. In addition, existing research shows that the TOE model can be applied broadly across several technological, industrial, and cultural frameworks (Baker, 2012). The TOE model was used in the study of Muda and Yusof (2015) in developing a conceptual framework since it is compatible with the factors influencing knowledge sharing, organisation, technology (ICT), and environment, which are being investigated in their study. Dwivedi et al. (2012; cited in Muda and Yusof, 2015, p. 73) claimed that the TOE framework is suitable to be utilised for conducting research on the organisation due to the fact that the TOE framework is based on contingency theory, which is purported to coordinate and plan organisation activities. Similarly, the current study involves looking at the

various related aspects of LMS implementation in higher education in Iraq, including coordination and planning for the technology adoption.

3.2.1 Technological Context

According to Baker (2012), the technological context comprises all relevant technologies in relation to the organisation, including those that are already being used internally and those that are available externally but are not currently in use within the organisation. Similarly, the technological context consists of internal and external technologies pertinent to University of Al-Qadisiyah. An organisation's existing technologies are important in the technology adoption process because of their role to establish a broad limit on the scope of technological change being undertaken by the organisation. Existing innovations that are not yet in use in the organisation have an influence on the innovation process through the distinction of the possible limits and demonstration of ways that may enable the organisation to evolve through technology (Baker, 2012).

According to Namisiko et al. (2014), factors of cost and competence are involved in some higher education institutions in terms of the technological context. Namisiko et al. (2014), however stated that the technology dimension also involves reliability, complexity, compatibility, and performance expectancy, aside from these two other factors. Further, Gibbs and Kraemer (2004) emphasised that the available internal technological resources in these institutions reflect their technology competence, which are exhibited by ICT infrastructure, ICT competent academic staff, bandwidth, and Internet connections. This is linked to the claim of Namisiko et al. (2014) about technological context having the factor of competence. Further, the technical competence of a higher learning institution is an effective enabler for IT adoption as it develops the basis for building such initiatives (Gibbs and Kraemer, 2004).

3.2.2 Organisational Context

According to Micheni (2015), the organisational context includes the size, innovativeness, organisational culture, and top management support of the institution. Organisational culture is linked to the core values and sense of identity of the institution. In the case of the University of Al-Qadisiyah, a higher learning institution covers the vision, norms, and values that the school members share with one another. School leadership has a strong influence on decision-making participation, promotion of professional development, and lessening of uncertainly perceptions (Van den Berg et al., 1999). On the other hand, school culture takes on a mediating role in technology adoption, and the school innovativeness has a link to the extent of readiness of the school in terms of IT adoption (Tearle, 2003). Scott (2007) observed that the institution's readiness to adopt a specific technological innovation is dependent on technical skills of the users, which implies that an equipped IT staff will lead to an effective partnership between IT and other IT-dependent functions in an institution. This may be linked to the assertion of Van den Berg et al. (1999) that the school leadership strongly influences decision-making, promotional development, and reduced uncertainly perceptions within the organisation.

Namisiko et al. (2014) also emphasised that firm size has been known to be the facilitator of adoption; thus, in terms of LMS adoption, this would mean that the bigger educational institutions have more advantages than smaller ones in terms of adopting a new technology. Further, bigger institutions are more likely to have more slack resources for technology adoption and tend to attain economies of scale, which is considered an important matter, considering that IT infrastructure requires substantial investments. In addition, Namisiko et al. (2014) stated that the factors in organisational dimension are human resources, financial resources, competitiveness, and innovativeness, which must be taken into account as the current study investigates LMS adoption in Iraqi higher education.

3.2.3 Environmental Context

The environmental dimension covers factors of the institution's surroundings, such as the government, the community, and other stakeholders, which may influence the organisation's need for technology adoption and its ability for resource acquisition and the actual deployment of these resources (Angeles, 2013). According to Baker (2012), the aspects of the environmental context are the structure of the sector where the organisation belongs, the presence or absence of technology provisions, and the regulating bodies affecting the technology adoption. Moreover, it was furthered that the factors in organisational dimension are government, customers, competitions, industry/sector, and suppliers (Namisiko et al., 2014), which must be looked into when considering the TOE model for the current study.

3.3 Theory of Planned Behaviour in LMS Implementation

The theory of planned behaviour was proposed by Icek Ajzen in 1985. This theory is chosen for the study because of its appropriateness to LMS adoption, considering that the study deals with technology acceptance, which could be linked to the theory's aim to provide an association between beliefs and behaviour (Hiraoka, 2009).

The theory of planned behaviour provides a link between beliefs and behaviour whose aim is to enhance the predictive capacity of reasoned action by considering perceived behavioural control. The theory maintains that the behavioural intentions of an individual are shaped by subjective norms and perceived behavioural control (Hiraoka, 2009).

Below is a diagram illustrating how the theory operates vis-à-vis LMS implementation:

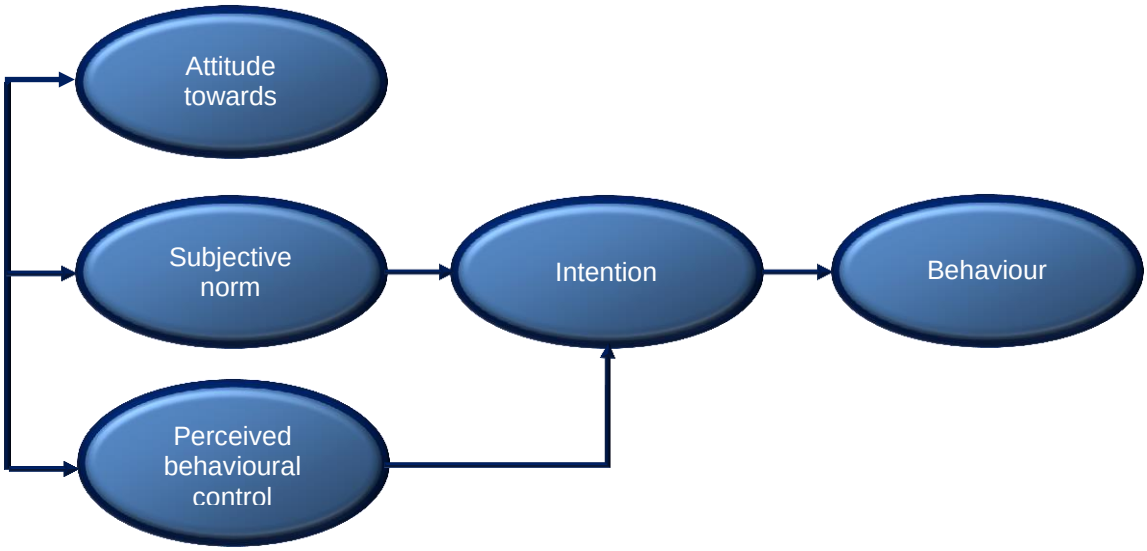

Figure 3-1: Theory of Planned Behaviour (Hiraoka, 2009, p. 18)

The Theory of Planned Behaviour involves the construct of behaviour control, which measures whether there is alignment between resources, required skills, and other requirements to perform the intended behaviour. There are several studies on the application of this theory in predicting behaviour and intention in various contexts (Hiraoka, 2009).

In Knabe's (2012) study, the Theory of Planned Behaviour was applied to the intention of academic staff to teach online. Statistical significance at varying degrees was demonstrated by all key predictor variables such as perceived behavioural control and subjective norms to determine intention to teach public relations online. The study identified subjective norms as the strongest predictor of intention. The study revealed a lack of significant relationship between demographic variables (age, gender, etc.) and academic staff's intentions to teach public relations online. It is relevant to the proposed research as it provides essential insights into faculty intention as a main determinant of successful online teaching. Similarly, LMS integration to higher education could be investigated using the Theory of Planned behaviour as a theoretical basis of intention.

Renzi (2011) was also centred on the Theory of Planned Behaviour to explain the adoption of LMS by universities. He stressed the current assertion of literature about university teaching; that online social learning with social interaction as basis is required in online teaching in order to be effective. This would mean a pedagogical shift based on collaboration rather than focusing on face-to-face teaching in online learning. This shift can usher several benefits to higher education, including productive environments, interactive utilisation of educational technology, and reflective learning, to name a few. When an e-learning platform is adopted by the university, the tendency of most teachers is to replicate their conventional teaching, which they deliver through the LMS material (Renzi, 2011). The usefulness of Renzi's (2011) study in the proposed research is founded on the idea that LMS can lead the higher education institution to take a shift from traditional face-to-face learning to collaboration, which can thus aid in answering the research questions.

Emphasis on the use of quantitative methods in studies employing the Theory of Planned Behaviour is highlighted in Renzi and Klobas (2008). However, there are times that studies utilise a qualitative method because they need to consider the nature of available data (i.e. interview data) or the available cases that can be used. The authors described the use of qualitative methods vis-a-vis Theory of Planned Behaviour to explore the differences in university teaching. There were 26 faculty members who served as participants on whom a semi-structured interview was conducted based on the Theory. The findings identified three approaches to e-learning use. These are material upload, use of e-forums, and collaborative learning through computer support. The use of these approaches enables identification of substantial differences in the attitudes and perceived behavioural control of the participants. The usefulness of Renzi and Klobas' (2008) study to the proposed research is its focus on determining teachers' behaviour intention of the use of new technologies, which is also being considered in the study as it focuses on LMS as an effective tool in higher education learning.

Just like Renzi and Klobas (2008), Renzi (2011) and Knabe (2012), the use of the Theory of Planned Behaviour as a theoretical basis of studying adoption behaviour was validated in Barnett and Presley (2004). They emphasised the role of Internet technologies as having an increasing significance to the design and delivery of courses in higher education institutions. They mentioned that the Internet does not replace traditional classroom instruction but merely enhances and adds value to the delivery methods of traditional classroom setting. However, Internet technologies in the classroom are not yet accepted universally. A survey and interviews were conducted with professors, which initially validated the use of the Theory of Planned Behaviour in investigating adoption behaviour. Barnett and Presley's (2004) study is relevant to the current research as it focuses on the adoption behaviour of users in terms of internet technologies in the classroom, using the Theory of Planned Behaviour as its theoretical foundation.

Shroff et al. (2011) mentioned an increasing interest amongst instructors in incorporating Internet-based technologies into classroom teaching. According to them, the behaviour of student users towards e-portfolios has not been assessed; thus, the authors made an analysis of the TAM in order to study the behavioural intention of students with the use of e-portfolio system. There were 72 research participants who completed a questionnaire on e-portfolio usage with scales from TAM instruments, which measured responses to perceived ease of use of the e-portfolio system, attitudes towards its utilisation, and behavioural intention to utilise it. A strong correlation was emphasised between perceived ease of use and perceived usefulness of e-portfolio. The results revealed a positive direction toward TAM as a solid theoretical model that validates the use of e-portfolio in the classroom setting. Shroff et al.'s (2011) study is relevant to the proposed research as it considers behavioural intention towards the adoption of an e-learning tool such as e-portfolio and could thus be applied to the analysis of instructors' preparedness and acceptance of the LMS in higher education in Iraq.

The content of Wong et al.'s (2013) study is similar to that of Shroff et al. (2011) and Ng et al. (2013) as Wong et al. focused on validating and testing the TAM in the integration of technology in teaching and learning amongst Malaysian student teachers. Data were collected from 302 respondents and were then tested against the TAM. Confirmatory factor analysis (CFA) and SEM were used alongside TAM to compare the models and test the hypotheses. Behavioural intention and users' attitude towards the use of computer were found to have significant relevance to perceived usefulness. The study is related to the proposed research since it is focused on technology integration in the learning environment, which is essentially the nature of LMS.

There was similarity between the study of Shroff et al. (2011) and that of Ng et al. (2013) as the latter also focused on e-portfolio implementation for student teachers using a modified TAM to qualitatively analyse the factors influencing such implementation. The number of participants for the study was 77, whereby they electronically sent their field experience portfolios for the analysis. Focus group discussions were conducted by inviting student teachers through email. The results revealed that attitude towards using e-portfolios were directly related to behavioural intention to use. Further, perceived use served as the determining factor for mixed attitude to use (Ng et al., 2013). Ng's study serves as an insightful tool for the proposed study in its consideration of e-portfolio implementation in education setting, which is related to LMS.

3.4 Technology Acceptance Model (TAM)

Technology Acceptance Model is one of the most influential extensions of Ajzen and Fishbein's theory of reasoned action (TRA) in the literature. Davis's technology acceptance model (Davis, 1989; Davis, Bagozzi, & Warshaw, 1989) is the most widely applied model of users' acceptance and usage of technology (Venkatesh, 2000). TAM is used in this section for the study because of the necessity to discuss it, given that the research aims involve investigating LMS adoption in the case organisation using this model, alongside from the TOE

framework. The model itself is taken from this section to be used in the PhD research.

The TAM is a theory that demonstrates how users are led to accept and utilise a certain technology. This model indicates that when a new technology is presented to users, they are faced with its perceived usefulness and perceived ease of use, which serve as influencing factors to their decision on how and when to utilise such technology (Ku, 2009).

Below is a diagram showing how TAM operates:

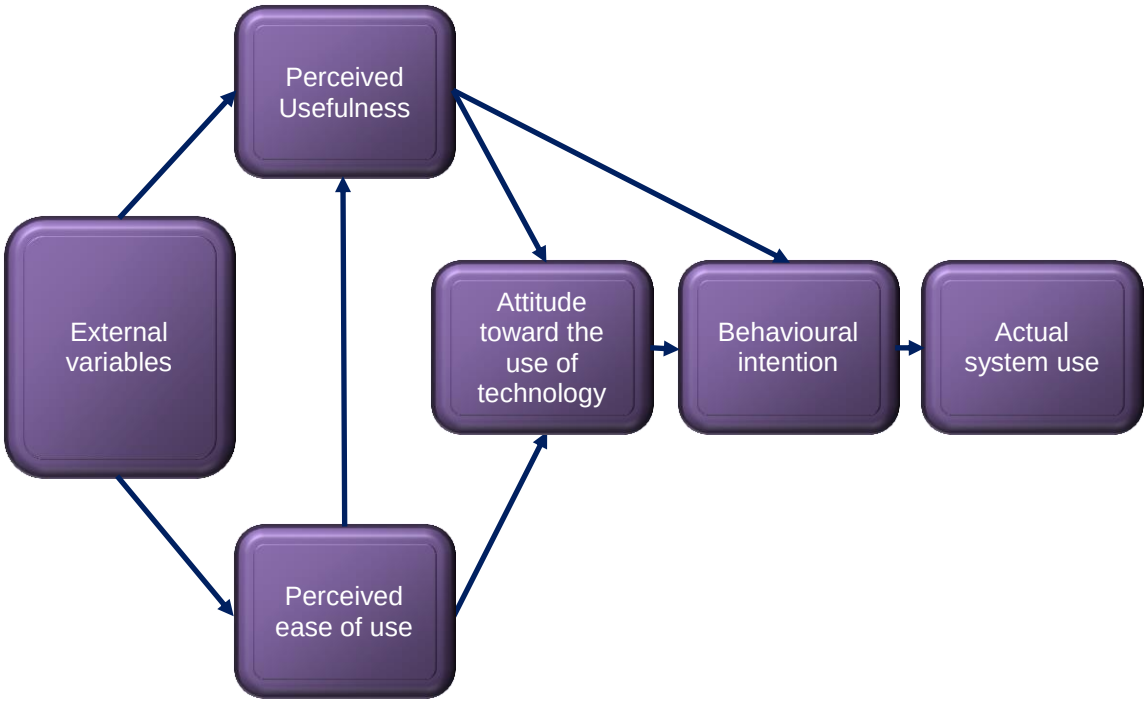

Figure 3-2: TAM Overview (Ku,2009)

Al-Adwan, et al. (2013) pointed out that technological developments in higher education institutions provide rich opportunities that entrench technological innovations within the learning environment. Developing countries are faced with huge pressures to similarly adopt appropriate technologies within the curriculum and resultantly improve their learning experiences. Although Internet-based learning systems have been made to integrate into many universities across the world, there is a need for extensive understanding of the acceptance of end-users in order to ensure the success of technology

implementation. The technology acceptance model is used in the study to investigate students' e-learning acceptance process. The study is useful to the proposed research as it highlights the importance of e-learning acceptance as a precursor to LMS adoption in higher education, which can then help the study address the research problem.

Fathema and Sutton's (2013) study draws on the Technology Acceptance Model (TAM) to identify how the attitude of academic staff toward the LMS influences their adoption of such technology. The focus of the study is toward LMS Blackboard whereby 36 faculty members were made to complete a web-based survey. The survey responses used directive content analysis and revealed that design flaws and system problems are some of the specific challenges for efficient overall utilisation of the LMS by academic staff. The relevance of this study is found in its focus on LMS acceptance by academic staff that are primarily tasked to utilise them. It can help answer the research questions through this focus.

On the other hand, the study of Stewart et al. (2010) employed the Technology Acceptance Model in predicting intention to teach online. This is different from Renzi's (2011) study which used the Theory of Planned Behaviour in explaining such intention. In Stewart et al.'s (2010) study, an online survey was conducted, in which 127 academic staff and administrators of a public university served as respondents. Results showed that the model predicts intention to teach online and does not predict perceptions about the value and legitimacy of e-learning. These data indicated that a relationship prevails between technology acceptance and behaviour intentions. The study could help the proposed research as it establishes evidence on the importance of technology acceptance in order for LMS users to demonstrate behaviour intentions to use the technology, and thus helps in framing the research problem.

Another pilot study was conducted by Siragusa and Dixon (2009) wherein they determined the attitudes of undergraduate students in a university towards ICT engagement and those of students in a pre-service teaching course. A

quantitative questionnaire was filled in by participants, after which the participants worked through an ICT-based activity and then accomplished a qualitative questionnaire. The items in the questionnaire were related to the components of Theory of Planned Behaviour to enable the determination of their attitudes and planned utilisation of ICT-specific instruction. The quantitative data revealed that engagement with ICT can lead to enhanced learning and can boost participants' planning to engage with ICT during their teaching career. On the other hand, the qualitative data demonstrated their overwhelming feeling and confidence with the ICT-based activity. The study is useful to the proposed research since it covers ascertaining users' attitudes and planned use of ICT-based teaching through the Theory of Planned Behaviour, which could aid it in explaining LMS acceptance within the higher education setting.

On the other hand, Park (2009) used the structural equation modelling (SEM) technique to explain the LMS adoption process where they used a sample of 628 university students. The study developed the general structural model, which included attitude, self-efficacy in e-learning, perceived usefulness and ease of use, etc., based on the TAM. It revealed that TAM serves as an effective theoretical tool in understanding the e-learning acceptance of users. Moreover, the most important construct in explaining the model's causal process is e-learning efficacy (Park, 2009). The study is relevant to the proposed research as it provides insightful information on the acceptance of LMS through SEM, which can help answer the research questions.

Conversely, Alharbi and Drew (2014), who focused on e-learning in Saudi Arabia, provided a clear insight into the great interest of the Kingdom in the adoption of learning tools. The authors pointed out that it is necessary to determine the significance of a specific tool and predict the success of the implementation before the actual adoption. Hence, their study presented and modified the TAM in order to aid state-operated universities in Saudi Arabia in predicting teachers' behaviour intention of the use of LMS. The theoretical framework thus utilised had TAM in the core constructs of perceived usefulness and ease of use, as well as attitude toward the use of e-learning technologies.

The study employed additional external variables, such as non-availability of LMS, prior experience with LMS use, and relevance of LMS use to the job. The initial findings revealed that the use of TAM in measuring behaviour intention is applicable to LMS use. This is therefore relevant to the proposed study whose aim is to consider the factors that influence the implementation of learning management system in the higher education sector.

Alternatively, Chuttur (2009) said that the TAM appears to be the only model that captured the most attention of information systems (IS) research. This is worthy of note considering that many studies identify the Theory of Planned Behaviour as the underlying theory to explain technology adoption. Chuttur thus draws attention to that fact that it has become important for individuals willing to study technology acceptance to have an understanding of the TAM. Current observations suggest having mixed opinions amongst researchers on the theoretical assumptions embodying TAM despite its being highly cited. Chuttur's conclusion pointed out that TAM however lacks rigour and relevance that would enable it to become well-utilised in IS research. The study is relevant to the proposed research because it focuses on technology acceptance, which is significantly considered in the research as it determines an adoption framework for LMS in the higher education sector of Iraq.

3.4.1 Students Acceptance

Chuttur's (2009) study is related to that of Akbar (2013) as the latter mentioned that the success of LMS technologies is founded on students' acceptance and use of these technologies. The authors used a model of technology acceptance and utilisation - the Unified Theory of Technology Acceptance and Use - as a theoretical foundation of their research. Although a range of studies adopted this theory in different organisational and cultural settings, the implementation of the full model has been very few. Some of the important determinants of technology acceptance are performance and effort expectancy, attitude toward technology use, and assisting conditions. Akbar's (2013) study is related to the proposed research as it highlights the use of technology acceptance as a

determining factor for successful technology adoption, which is also emphasised in the proposed research.

Similarly, Aypay et al. (2012) emphasised that the level of technology acceptance by pre-service education students in higher education in Turkey was predicted through a model. His study offered an investigation of the relationship amongst influencing technology acceptance factors. A questionnaire design was adopted to collect the data from 754 participants. The study carried out ANOVA, correlation, and regression analysis and showed in the results a good fit between the model and the data. Aypay et al.'s (2012) study is relevant to the proposed research since it focuses on technology acceptance that must be taken into account in developing a technology implementation framework.

On the other hand, the study of Huntington (2011) stressed that the use of computer-based ICTs can provide positive impacts on learning and motivation. It focused on examining ICT adoption in the classroom by expanding the TAM to identify factors that add to teacher acceptance. A survey method was conducted, in which 57 high school teachers were invited to act as participants. Results revealed that the variables teacher efficacy and belief system can predict acceptance of ICT technologies. Thus, Huntington's (2011) study is useful to the proposed research as it delves on ICT adoption and technology acceptance by teachers, which is also the same direction of the proposed study vis-à-vis LMS implementation.

Al-Busaidi and Al-Shihi (2010) said that it has become imperative to use IT tools, including LMS in the knowledge age. LMS involves several tools that offer efficiency and effectiveness to distance education and supplement the traditional methods of teaching in academic and training institutions. The authors pointed out that the success of LMS adoption begins with instructors' acceptance, which consequently promotes learners' LMS utilisation. Thus, Al-Busaidi and Al-Shihi's (2010) study was aimed at developing a theoretical framework to evaluate instructors' LMS acceptance based on the TAM. The

study's framework was focused on the critical factors influencing the instructors' perceived LMS usefulness and ease of use, and resultantly the actual use. The study is related to the proposed research as it highlights the importance of instructors' acceptance of LMS adoption, which is crucial to its effective implementation.

In the study of Turner et al. (2010), it was emphasised through a systematic literature review that behavioural intention has a likely correlation with actual use. However, perceived usefulness and perceived ease of use, which are TAM variables, have less likelihood of correlation with actual use. The method used by the authors was vote-counting meta-analysis along with the systematic review of the literature. Their study provides a useful stance to the current research as it highlights the TAM variables that correlate with actual use of technology (e.g. LMS), which therefore offers a good insight on how the study will deal with its approach in the variables to be adopted for the hypothesis.

Chow and colleagues' (2010) study was focused on the development and evaluation of 3D world Second Life (SL), a virtual environment used for learning a method of acute airway management in the healthcare domain. The study explored the learners' motive in using the system based on the TAM, utilising 206 nursing students as participants. The findings revealed that the respondents' perception of the system was that it was useful, and the students were confident to work with computers and aimed to review the method in SL as the situation necessitated. This study is helpful to the current research in terms of identifying evidence to the positive impact of technology acceptance.

Similarly, the purpose of Teo and colleagues'(2008) study is to provide an investigation of the attitude of pre-service teachers towards computers. The TAM framework was used in the study, with external variables identified as facilitating conditions and subjective norm. Results revealed that pre-service teachers' attitudes on computers are determined by subjective norm as well as perceived usefulness and ease of use. Computer attitude is not directly influenced by facilitating conditions but by perceived ease of use. These

findings showed that extending the TAM for studies on computer attitudes may use facilitating conditions and subjective norm as potential variables. The study is different from that of Turner et al. (2010) who focused on perceived usefulness and perceived ease of use as TAM variables in technology acceptance.

In the study of Ahmed (2014), factors influencing students' intentions to use e-portfolios were examined. A significant amount of literature provided evidence to the role of e-portfolios in students' personal and academic developments. However, higher education institutions continue to have students' acceptance of these tools as a challenge. Models and theories on technology acceptance are considered one of the approaches to understanding acceptance of e-portfolios. A theoretical framework was developed in the study based on subjective norm, attitude towards behaviour, and perceived behavioural control as determining factors of the behavioural intention of students to adopt the use of e-portfolios. A cross-sectional survey method was conducted along with the Structural Equation Modeling (SEM) to generate and analyse the data from 204 participants. The results revealed that the acceptance of e-portfolio was significantly influenced by the model's proposed personal and social factors. The similarity between Ahmed (2014) and Teo et al.'s (2008) studies was that both used subjective norm as a variable for technology acceptance. Ahmed's study is relevant to this research as it points to the importance of understanding a new technology adoption in higher education.

Van de Bogart and Wichadee (2015) aimed to find out if the LINE application, which is used for instant communications on electronic devices, could be used for academic purposes and thus examined students' acceptance of LINE in terms of utilising it for classroom activities, such as for the submission of assignments, downloading academic materials, etc. The authors also explored the factors that could likely affect students' intention to use the tool. One hundred forty-four students served as participants to the study; they were enrolled in an English programme that used LINE-based activities. A TAM questionnaire was utilised and data were analysed to determine whether

relationships exist amongst factors when LINE was utilised in classroom experiences. The findings showed a positive relationship between perceived usefulness and attitude towards use with intention to use. The results also found a positive relationship between perceived ease of use and perceived usefulness of LINE app. Contrary to TAM assertions, no relationship was found between perceived ease of use and attitude towards use of the tool. The study proposed the adoption of some types of learning activities based on LINE application that the students themselves preferred. This study by Van de Bogart and Wichadee (2015) is useful the current research as it emphasised the adoption of a technology to facilitate learning, which can thus be used in analysing LMS adoption in Iraqi higher education.

Similar to Van de Bogart and Wichadee's study, the study of Chen and Chen (2014), the impact of system and information quality on attitude and intention to use School Administration Information System (SAIS) based on the TAM was explored. The results of the study demonstrated a positive impact of SAIS system and information quality on its perceived usefulness and ease of use. User attitude is found to be positively influenced by the perceived usefulness of SAIS. It may be noticed that Chen and Chen's study found that SAIS system impacts perceived usefulness and ease of use positively, which was different from the study of Van de Bogart and Wichadee (2015) who found no relationship between perceived ease of use and attitude towards use of LINE application.

In exploring the acceptance of e-learning through extended TAM by the academic staff of Yarmouk University, Abu-Shanab (2015) assumed that the intention to use e-learning systems is predicted by age, job satisfaction, and perceived usefulness and ease of use. However, the results showed that intention to use e-learning is not predicted by age and job satisfaction. It therefore offers a significant insight on academicians' prospective use of a new technology (e.g. adoption of LMS in higher education), specifically pointing to an idea that aged faculty members must not be hindered by the idea that they

could not learn a new technology anymore because of their age or because they are not satisfied with their jobs.

The applicability of the TAM as a model to determine the e-learning acceptance in higher education was analysed by Rodriguez-Jaime (2012). Rodriguez-Jaime stressed that considering the emergence of e-learning activities as a business prospect, many higher education institutions are moving to this growing trend in education. In implementing e-learning initiatives, colleges and universities adopt new technologies that allow academic staff, administrators, and students to correspond in a virtual environment whereby managing the institutional resources may be carried out appropriately. The study revealed that TAM is a successful model in predicting the systems success and can be utilised in systems evaluation. This study is relevant to the current research as it was emphasised on the TAM as a model of technology acceptance.

Conversely, King et al. (2014) proposed five factors impacting effective evaluation of educational technology; namely: premature timing, unsuitable software evaluation models and strategies, absence of shared understanding of the terminologies of education technology, the increasing complexity of open development, and the commercialisation of higher education. The authors suggested that evaluating the success or lack of success of the outcomes of educational technology projects is no longer helpful for policymakers, but that they should instead use responsive evaluation techniques to fully grasp the impact of the process and outcomes. Asking the question, “Did the software work?” is no longer suitable; rather, it is best to ask “What type of software works? In which conditions does it work? For whom does it work?” King et al. emphasised that in order to understand this, it is important to pay attention to adopting evaluation techniques from the social science field. The study is relevant to the current research as it highlighted the important direction of policymakers in adopting a new technology in education, such as focusing on the software (technology) that works, for whom, and the conditions allowing it to work, rather than the classical focus on whether it worked or not. It guides the current study in terms of the same direction to be utilised for selecting LMS

tools for higher education in Iraq and for evaluating the acceptance of faculty members, IT personnel, and the university administrations to this tool.

In the study conducted by Farahat (2012), the determining factors for students' acceptance of the use of e-learning technologies were identified alongside how students' intention to use e-learning is shaped by these factors. The study made a modified conceptual framework based on the TAM and developed a questionnaire to generate data from 153 undergraduate students using e-learning. The results showed that the significant determinants for using e-learning amongst the students were perceived ease of use, perceived usefulness, attitude towards e-learning usage, and the influence of students' reference groups. These determinants also served as predictors to students' behaviour intention to use e-learning. The relevance of Farahat's (2012) study to the current research is its attention to user acceptance of e-learning technologies in the classroom, which could aid it in developing factors to be considered in such acceptance.

3.4.2 Instructors/Teachers Acceptance

On a similar fashion, Al-Suqri's (2014) study aimed at extending the use of the TAM to teachers' acceptance of electronic books (e-books) at a higher education institution in the Sultanate of Oman. E-books are becoming increasingly important to teachers along with the increasing growth of handy electronic devices that assist in the reading of e-books. The study conducted a survey of 332 faculty members of Sultan Qaboos University (SQU), which was used in examining the effects of language, age, and gender vis-à-vis perceived usefulness and ease of use of e-books for academic tasks amongst the respondents. The findings demonstrated that younger male faculty members with Arabic as their first language were likely to use e-books more than their female counterparts, older faculty members, and those with Arabic not being their first language. Additionally, faculty members in the fields of business, arts, humanities, engineering, and physical sciences were likely to have higher levels of e-book usage behaviour than those in the fields of social science and health

sciences. The results of this study in terms of age are contrary to that of Abu-Shanab (2015), who earlier said that intention to use e-learning systems is not predicted by age. However, Al-Suqri's (2014) study is useful to the current research as it revealed the importance of demographic factors as determinants in technology acceptance amongst faculty members.

Al-Mushasha's (2013) study aimed at identifying the determinants of students' e-learning acceptance and in examining how students' intention to adopt e-learning can be shaped by these determinants. The study made a modification of a conceptual framework based on the TAM. The research model was tested through a survey of 224 students. The results suggested that university support, computer self-efficacy, perceived usefulness, and ease of use determine the acceptance of e-learning in the higher education setting. The results are similar to Huntington and Worrell (2013) in terms of computer self-efficacy as a determinant of technology acceptance; and to Teo and colleagues' (2008), Turner et al. (2010), Farahat (2012), Chen and Chen (2014), Al-Suqri's (2014), Van de Bogart and Wichadee (2015), Abu-Shanab (2015), and Bousbahi and Alrazgan's (2015) in terms of perceived usefulness and ease of use as determinants.

According to Schoonenboom (2014), faculty members in colleges and universities fulfil some instructional tasks more often using a LMS tool than other tasks. The TAM perspective is missing in studies that intend to provide an explanation of these differences. In Schoonenboom's study, LMS usefulness and ease of use as well as intention to use a LMS for instructional tasks were measured using a TAM questionnaire. The results indicated that the explanations for low intention to use a LMS are low task performance, low LMS usefulness, and low level of LMS' ease of use. There was no substantial relationship amongst the LMS tools and tasks within the three groups. Schoonenboom's (2014) study is useful to the current research as it identified the factors to low intention for LMS use, which the current study considers in addressing the research problem.

Moreover in Susilo‘s (2014) study, tutors and students’ intention to use new e-learning systems in distance education are found to be relatively low. Their study aimed at investigating the factors affecting tutors and students’ intention to use new technologies in e-tutorials. A web-based survey was conducted to make an empirical assessment of the impact of the mentioned constructs on tutors and students’ willingness to adopt new technologies in e-tutorials. The results demonstrated that tutors and students’ intention to use new technologies in e-tutorials were successfully predicted by the theoretical model. This study is relevant to the current research as it took into account the factors that affect the use of technology in education, which could thus aid the current research on quantitatively investigating teachers’ acceptance of LMS.

On the other hand, Teo’s (2010) study intended to investigate the attitudes of pre-service teachers to computers and extended the TAM framework by adding more external variables, including technological complexity, facilitating conditions, and personal norms. Results revealed that these additional external variables determined the attitudes of pre-service teachers to computer use using a multiple square correlation. Teo’s study is useful to this research as it explored how the additional external variables affect users’ acceptance of technology. These variables could be considered in this research in developing a TAM questionnaire for faculty members in an Iraqi higher education institution.

Alternatively, Oye et al. (2011) used the TAM and Unified Theory of Acceptance and Use of Technology (UTAUT) to explore the behavioural intention of teachers in accepting and using a new information or communication technology. A survey questionnaire was developed by the authors containing 23 questions of UTAUT and was distributed to 100 university teachers. The results showed that performance expectancy serves as having the most influence amongst the constructs on respondents’ acceptance and use of a new technology. The study is useful to the current research as it provides it with an insight to take into account the performance expectancy of teachers as they attempt to adopt and use a new technology, which could then be made to link to their levels of ICT skills, which this study on LMS adoption also considers.

Selim (2007) stated that many higher education institutions integrate e-learning to their university programmes. A number of factors must be taken into account in the development or implementation of university curricula offering e-learning related programmes. The critical success factors of e-learning as perceived by students were examined in the study. The results indicated that these success factors have certain categories, which all involved success measures and acceptance of critical e-learning methods. The relevance of this study is seen in its focus on technology acceptance, which is an underpinning theoretical model for the current research. Similarly, Jan and Contreras (2011) were focused on identifying the factors that influence university students on accepting an academic and administrative information system. The TAM was used to identify these factors wherein the relationship between variables was shown.

The study of Teo et al. (2009) provided an assessment of the future intentions of pre-service teachers to adopt technology with the use of the TAM framework and a survey of 495 respondents. The constructs embodied in the TAM questionnaire were intention to use, perceived usefulness and ease of use, and attitude towards using the computer. The study used the Structural Equation Modelling (SEM) to analyse the findings, which suggested that the items in the TAM may be strong across cultures. This study validates the relevance of the TAM framework in determining users' perception of technology's usefulness and ease of use.

Teo (2009) conducted a study that aims to build a model that foresees the level of technology acceptance by teachers. The relationships between variables pertaining to technology acceptance factors were examined by this model using a questionnaire method. The findings revealed that teacher's technology acceptance is influenced by perceived usefulness, computer self-efficacy, and attitude towards using the computer. On the other hand, technology acceptance was found to be indirectly influenced by technology complexity and perceived ease of use. Moreover, the study indicated that behaviour intention to use technology is strongly determined by perceived usefulness. This study is related to that of Teo et al. (2009) which tested the TAM framework across cultures and

hence validated perceived usefulness and attitude to use the computer (computer self-efficacy) as factors for technology acceptance.

On the other hand, Gibson et al. (2008) made a survey of the attitudes of university faculty members toward online education using the TAM. The findings suggested that perceived usefulness is a strong determinant of technology acceptance. Perceived ease of use, on the other hand, contributes little predictive capacity to technology acceptance by faculty members. This study provides specific levels of correlation for perceived usefulness and perceived ease of use on technology acceptance vis-à-vis the TAM framework and is therefore useful for the current research.

Worthy of note is the study of Park et al. (2009) which was related to the findings of Gibson et al. (2008) and which aimed to find out the factors influencing the adoption of a digital library system using the TAM. Sixteen institutions in Asia, Africa, and Central America were used to gather data. The findings demonstrated a significant impact of perceived ease of use on perceived usefulness of the new technology. The study emphasised that it is necessary to consider the external variables affecting perceived usefulness and ease of use in developing and operating the new technology since such consideration will address the mismatch between system design and capacity of the user to successfully facilitate the adoption process of the new technology.

Sanchez-Franco (2010) claimed that perceived attractive quality has been the focus of information systems (IS) research, as it highlights the individual factors and impacts of interaction influencing the acceptance of ICT in higher education. In Sanchez-Franco‘s (2010) study, the SEM was proposed to examine the relationship amongst the constructs of the TAM. The findings showed that learners’ intention to use the WebCT is influenced by their perceived usefulness and ease of use of this technology. The findings are similar to those of Teo et al. (2009) who likewise found the relevance of the TAM framework in determining users’ perception of the usefulness and ease of use of the adopted technology.

According to Liu et al. (2009), developments in e-learning technologies harmonise with computer users' increasing sophistication of technology usage. Studying the intended use of e-learning technologies does not suffice the use of just one theory or model, such as the TAM; rather, the combination of theories or models must be adopted so that e-learning complexities may be fully captured and investigated. Thus, the study presented an integrated theoretical model to examine users' acceptance of e-learning via streaming media. The findings showed that perceived usefulness was predicted by perceived ease of use whilst intention to use was predicted by perceived usefulness and ease of use. Teo's (2009) study could be compared to this, which pointed a similar direction for their findings and claimed that technology acceptance was found to be indirectly influenced by technology complexity and perceived ease of use and that behaviour intention to use technology was strongly determined by perceived usefulness. Both sets of authors offered relevant insights for determining technology acceptance using the TAM framework.

Moreover, the position of Liu et al. (2009) in terms of using more than one theory or model to study the technology acceptance of users is similar to that of Ahmad et al. (2010) who validated the use of extended TAM on data gathered from the faculty members in a computer-mediated work setting. The original TAM was extended in the study through the inclusion of computer self-efficacy, which hence allowed it to assess the direct and indirect effects of such efficacy on technology adoption through perceived usefulness and intention to use. The study also intended to assess age and gender invariants of the extended TAM's causal structure. The results of the SEM suggested that extended TAM was adequate to assess the direct and indirect effects of computer self-efficacy on technology adoption and that the model was applicable to both male and female staff (Ahmad et al., 2010), and that the model was applicable to both male and female staff (Ahmad et al., 2010). However, the findings suggested that intention to use e-leaning systems is not predicted by age, which is the same as the findings made by Abu-Shanab (2015). The relevance of this study to the current research is seen in the applicability of the extended TAM framework in

finding out how technology adoption is influenced by computer self-efficacy and its application across genders.

In as much as a number of studies focused on the causal structure of the TAM (e.g. Liu et al., 2009), Sumak et al. (2011) was directed towards the same way. Sumak et al. stated that several studies on the acceptance of e-learning technologies depict the technology acceptance theory, such as the TAM, in investigating causal relationships relating to technology acceptance. Thus, the authors made a systematic literature review of independent journal-published studies. The key findings suggested that the TAM framework is the most widely utilised model in technology-acceptance research; and that the type of user and e-learning technology are the basis of the causal effects between individual factors embodied in the model. The study also inferred based on the systematic review that the attitudes of users towards e-learning acceptance are mostly influenced by perceived usefulness and ease of use. This supports the findings made by Gibson et al. (2008), Teo et al. (2009), and Liu et al. (2009).

3.5 Technology Acceptance in Iraqi Universities

This section relates to the discussion of higher education in Iraq (1.1) in that it provides a further discussion of LMS acceptance in the country. It is also linked to the Technology Acceptance Model, which is chosen to examine the technology acceptance level of the academic staff in the case organisation.

This section is structured logically according to theories and models of technology acceptance, such as the Unified Theory of Acceptance and Use of Technology (UTAUT) (Oye et al., 2011; Abu-Al-Aish and Love, 2013); modified Khan's learning framework (Elameer and Idrus, 2010b); e--learning system model (Anter et al., 2014); and TAM (Basha, 2013). This section takes the TAM to be used in the PhD research.

Similar to Oye et al. (2011), Al-Imarah and Zwain's (2013) study dealt with adopting the UTAUT model in exploring the factors that determine Iraqi higher education adoption of e-government services. Four hundred thirty academic

personnel were surveyed in a higher learning institution using the model. The results showed that the behavioural intention of the academic personnel to use e-government services was determined by effort expectancy and performance expectancy. The results on effort expectancy are similar to the study of Oye et al. (2011) who found that performance expectancy is influential on users' acceptance and use of a new technology. It was also parallel to that of Teo et al. (2009) in that the authors emphasised intention to use, which could also be associated with performance expectancy in Al-Imarah and Zwain's (2013) study.

It must be noted that higher education sees the growing significant role of mobile learning (m-learning) in developing teaching and learning methods. However, users' acceptance of this technology determines its successful implementation in higher education. Thus, Abu-Al-Aish and Love's (2013) study was centred on the factors affecting university students' intention to accept and use this technology. The study proposed a model based on the UTAUT model in order to find out these factors and to examine if students' previous experience with mobile devises bears an effect on their acceptance of m-learning. The study invited 174 participants to collect the data, which were analysed through the structural equation model. The results suggested that the significant factors affecting intention to accept the technology are performance and effort expectancy, lecturer influence, service quality, and user's personal innovativeness. The results are similar to Oye et al. (2011) and Al-Imarah and Zwain's (2013) in terms of performance expectancy, and to Al-Imarah and Zwain's (2013) alone in terms of effort expectancy. The usefulness of Abu-Al-Aish and Love's (2013) study dwells on its evidence showing conformation of these two factors to technology acceptance, which could be used in the current research in addressing its research questions.

Of an important focus is that the study of Elameer and Idrus (2010b) showed that human resource in higher education in Iraq is lacks information and communication technology (ICT) skills or infrastructure for adopting e-learning. However, the e-learning approach is viewed as a prospective way to teach and

learn as well as a learning solution for all higher education problems in Iraq. The study employed a modified Khan's learning framework for higher learning in the country. It is relevant to the current research as it provides information on the general lack of ICT skills in Iraqi higher education, which must be considered in developing a LMS policy framework.

Anter et al. (2014) found that a number of challenges present themselves in the learning systems of Iraqi universities. Efficient learning services could not be properly delivered because of restrictions in university budgets. There is a need for universities to effectively manage their learning environment systems in order to minimise resource-related costs and benefit from the effectiveness of the learning environment management. Thus, in the study of Anter et al., an e-learning system was proposed to reduce the costs and manage such environment effectively using the Internet as platform. Acceptance interviews were utilised in order to ensure the validity of the proposed model. The study is relevant to the current research as it discussed the state of higher education in Iraq and an e-learning adoption proposal.

Conversely, Basha (2013) stressed that the teaching and learning environments in Iraq should be changed into a competitive actor, and this could be done through sustainable capacity building to use e-learning, with particular focus on ICT as a transformative and integrative force. The TAM was used to determine such transformation of the learning system in Iraq. This study is therefore useful to the current research as it involved the TAM framework for e-learning adoption in learning systems.

Below is an illustration of an e-learning map of Iraqi higher education based on Elameer and Idrus' (2010b) study:

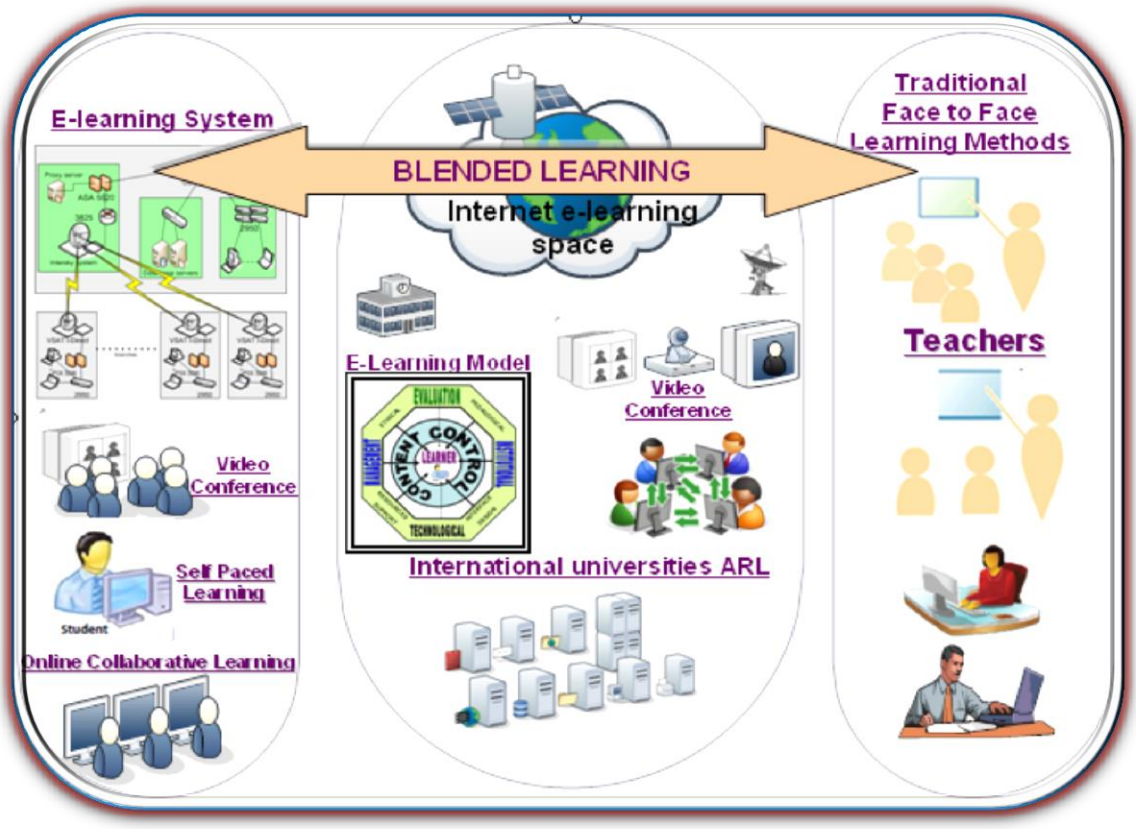

Figure 3-3: The e-learning map of Iraqi higher education (Source: Elameer and Idrus, 2010b)

Elameer and Idrus' (2011b) study clearly demonstrated many pedagogical and ethical problems stemming from technology, management, and security in education.

The need to pursue an e-education system was proposed by the authors based on the results of a pre-questionnaire survey and interviews. Continuous study of the Iraqi higher education provides a clear understanding of the need for the domain to be more reinforced with the authors' modified Khan Framework, which involves the dimensions of time, stability, standardisation, and modularisation, to name some. The authors came up with the Elameer-Idrus orbit re-education framework which was accepted positively. The study is useful to the current research as seen in its emphasis on installing an e-education system in Iraq, which relates to the current study that aims at developing a LMS policy framework for Iraqi higher education.

3.6 Summary of Literature Views

Table 3.1 shows the summary of authors' views, covering the chapters 2 to 3. They fit into a purposeful research process as they present varying views about LMS adoption, barriers to LMS implementation, socio-economic conditions in Iraq, LMS technology acceptance, technological, organisational, and environmental aspects surrounding LMS technology acceptance, and theory of planned behaviour.

No	Authors	Views
1	Abu-Al-Aish and Love (2013)	The significant factors affecting intention to accept the technology are performance and effort expectancy, lecturer influence, service quality, and user's personal innovativeness.
2	Abu-Shanab (2015)	Intention to use e-learning is not predicted by age and job satisfaction.
3	Ahmad et al. (2010)	Extended TAM is an adequate framework in assessing the direct and indirect effects of computer self-efficacy on technology adoption.
4	Ahmed (2014)	The results revealed that the acceptance of e-portfolio was significantly influenced by the TAM's proposed personal and social factors such as subjective norm, attitude towards behaviour, and perceived behavioural control as determining factors of the behavioural intention.
5	Akbar (2013)	The success of LMS technologies is founded on students' acceptance and use of these technologies.
6	Al-Adwan, et al. (2013)	Although internet-based learning systems are being used widely across several universities, an extensive

		understanding of the acceptance of end-users is necessary to ensure the success of technology implementation.
7	Al-alak and Alnawas (2011)	The strongest indicators to predict behavioural intentions to LMS adoption are experience and computer knowledge.
8	Al-Busaidi and Al-Shihi (2010)	The success of LMS adoption requires instructors' acceptance, which consequently promotes learners' LMS utilisation.
9	Alharbi and Drew (2014)	The use of TAM in measuring behaviour intention is applicable to LMS use.
10	Al-Imarah and Zwain (2013)	The behavioural intention of the academic personnel to use e-government services is determined by effort expectancy and performance expectancy.
11	Al-Mushasha (2013)	University support, computer self-efficacy and perceived usefulness and ease of use determine the acceptance of e-learning in higher education setting.
12	Al-Radhi and Al-Din (2008); Sikhi (2008); Rhema and Miliszewska (2012)	The participation of information professionals in rebuilding the intellectual competence of Iraq would help in rebuilding its position in the global economy. ICT can serve as a reconstructive measure to support affected students and teachers in war-stricken countries such as Libya and Iraq.
13	Al-Suqri (2014)	Younger male faculty members with Arabic as their first language were likely to use e-books more than their female counterparts, older faculty members, and those with Arabic not being their first language.

		Faculty members in the fields of business, arts, humanities, engineering, and physical sciences were likely to have higher levels of e-book usage behaviour than those in the fields of social science and health sciences.
14	Anter et al. (2014)	Learning systems can reduce the costs and effectively manage the learning environment systems in Iraq using the Internet as platform.
15	Asunka (2012; 2013)	Using a participatory action research approach, it was revealed that instructors can significantly change their attitudes and become more inclined toward utilising online collaborative learning resources through participatory activities designed to identify and tackle associated challenges.
16	Aypay et al. (2012)	Using ANOVA, correlation, and regression analysis, a good fit was found between TAM and the data.
17	Barnett and Presley (2004)	Internet technologies have an important role in an increasing significance of the design and delivery of courses in higher education institutions.
18	Basha (2013)	The teaching and learning environments in Iraq should be changed into a competitive actor, and this could be done through sustainable capacity building to use e-learning, focused on ICT.
19	Beatty and Ulasewicz (2006)	Transition in online teaching and learning, combined with the rapid growth of the number of courses for distance learning, propelled the emergence of a course management system presented as an open source software package that uses pedagogical

		principles that aims to help educators design effective learning online environments.
20	Berge and Muilenburg (2000)	Change management system must be put in place along with LMS implementation.
21	Bousbahi and Alrazgan (2015)	Motivation, organisational support, and load anxiety were important factors for faculty members' perceived usefulness of LMS.
22	Huntington (2011)	Teacher efficacy and belief system can predict acceptance of ICT technologies.
23	Munkvoid (1999); Garcia et al. (2011); Buabeng-Andoh (2012);Garrote (2012)	The barriers to LMS implementation are lack of ICT skills and confidence amongst instructors; lack of pedagogical training, lack of appropriate software; limited ICT access; rigid structure of traditional school systems; resistance from organisational units, lack of incentives, technological incompatibility; lack of infrastructures and technologies; and fear amongst lecturers that the adoption might place additional demands on their time.
24	Bullen and Janes (2007)	E-learning refers to all computer and internet-based activities that provide direct or indirect support to teaching and learning, either within the campus or at a distance.
25	Chen and Chen (2014)	The results of the study demonstrated a positive impact of School Administration Information System (SAIS) and ease of use. User attitude is found to be positively influenced by the perceived usefulness of SAIS.

26	Chang (2008)	E-learning is an educational approach that uses electronically-mediated delivery and interactive learning environments through internet and digital technologies.
27	Chow et al. (2010)	The respondents' perception of the 3D world Second Life (SL) system was that it was useful, and the students were confident to work with computers and aimed to review the method in SL as the situation necessitate.
28	Chung et al. (2013)	LMS must be evaluated to ensure that it meets the current requirements and demands of universities and colleges.
29	Chuttur (2009)	TAM is the only model that captured the most attention of information systems (IS) research; however, it lacks rigour and relevance that enables it to become well-utilised in IS community.
30	McGill and Klobas (2009); Coskuncay and Ozkan (2013)	Instructors' LMS adoption is the basis of LMS' successful implementation and management. Research must focus on addressing LMS' role in learning success in order to benefit fully from its potential outcomes.
31	Dahlstrom et al. (2014)	Faculty and students view LMS as a teaching and learning enhancement tool but only a few utilise its advanced features, and even fewer adopt it to its full capacity.
32	Dalziel (2007)	An important blind spot that needs to be addressed in learning is the lack of well- developed approach to the sequencing of multi-learner activities.

33	Elameer and Idrus (2010a)	Based on a survey, the academic staff of the University of Mustansiriyah in Baghdad did not have fear from adopting an e-learning LMS for a proposed LMS model.
34	Elameer and Idrus (2010b); Avidov-Ungar and Shamir-Inbal (2013); Palahicky (2014)	The previous war in Iraq caused the country to encounter lack of experience-related HR for ICT skills and lack of proper infrastructures for ICT adoption. There are several modern technologies in Iraq but lack the needed infrastructures through which to use them. Training and support help academic staff to enhance their commitment to ICT adoption, thereby enabling them to become empowered.
35	Elameer and Idrus (2010c)	The Iraqi government, the MOHESR, and technology are the three key thrust areas of the strategy framework of e-learning in the higher education in Iraq.
36	Elameer and Idrus (2011b)	Continuous study on the Iraqi higher education provides a clear understanding of the need for the domain to be more reinforced with the authors' modified Khan Framework, which involves time, stability, standardisation, and modularisation dimensions.
37	Eriksson (2010)	It is important to respond to complexity in the face of administrative interface in LMS implementation.
	Fathema and Sutton (2013)	LMS implementation is faced with design flaws and system problems, which serve as its challenges.
38	Farahat (2012)	The significant determinants of using e-learning amongst students are perceived ease of use,

		perceived usefulness, attitude towards e-learning usage, and the influence of students' reference groups.
39	Gibson et al. (2008)	Perceived usefulness strongly determines technology acceptance whilst perceived ease of use contributes little predictive capacity to technology acceptance by faculty members.
40	Hiraoka (2009)	The Theory of Planned Behaviour states that the behavioural intentions of an individual is shaped by subjective norms and perceived behavioural control.
41	Huntington and Worrell (2013)	Teacher acceptance of ICT can be determined by their efficacy and belief profiles, when added to the TAM.
42	Jan and Contreras (2011)	Factors that influence university students on accepting an academic and administrative information system could be identified through the TAM framework.
43	Kakbra and Sidqi (2013)	Distance and e-learning systems must be utilised in Kurdistan Iraq in order to increase the number of teachers and students utilising ICT and e-learning methods.
44	Kaghed and Dezaye (2009)	A pilot study on quality assurance strategies was held in Baghdad, whose goal was to serve as a pioneer in quality assurance in Iraq.
45	King et al. (2014)	Evaluating the success or lack of success of the outcomes of educational technology projects is no longer helpful for policymakers, but that they should

		instead use responsive evaluation techniques to fully grasp the impact of the processes and outcomes.
46	Knabe (2012)	Using the Theory of Planned Behaviour, it was found that there is no significant relationship between demographic variables (age, gender, etc.) and faculty members' intentions to teach public relations online.
47	Ku (2009)	TAM indicates that when a new technology is presented to users, they are faced with its perceived usefulness and perceived ease of use.
48	Latchem and Jung (2010)	University distance and e-learning must be focused on rebuilding the physical and academic capabilities and resources of Iraq.
49	Liu et al. (2009)	Perceived usefulness was predicted by perceived ease of use whilst intention to use was predicted by perceived usefulness and ease of use.
50	Marcum-Dietrich and Dreon (2013)	An industrial model of teaching was introduced to enable students to create solutions to problems in a collaborative manner through development of course structure and content.
51	Mirza and Al-Abdulkareem (2011)	Adoption of the e-learning concept by parents in the Middle East is still in its early phase.
52	Mlitwa (2007)	There are inconsistent and incoherent patterns in the increasing adoption of LMS amongst higher education institutions.
53	Ng et al. (2013)	Attitude towards the use of e-portfolios is directly related to behavioural intention to use.

54	Oye et al. (2011)	Performance expectancy serves as having the most influence among the constructs on respondents' acceptance and use of a new technology.
55	Park (2009)	TAM is an effective theoretical tool in understanding the e-learning acceptance of users.
56	Park et al. (2009)	There is a significant impact of perceived ease of use on perceived usefulness of the new technology.
57	Prabowo (2007)	E-learning pertains to adults' incessant knowledge and skills assimilation through synchronous and asynchronous learning activities and knowledge management, with the use of internet technologies that enable authoring, delivery, support, engagement, and administration.
58	Radif et al. (2014)	Iraq experienced 'brain drain' and departure of trained and educated citizens that led to lack of initiative in introducing new technologies and LMS tools in the higher education sector.
59	Renzi (2011)	Effective online teaching requires online social learning with social interaction.
60	Renzi and Klobas (2008)	Using the Theory of Planned Behaviour, three approaches to e-learning use were found: Material upload, use of e-forums, and collaborative learning through computer support.
61	Rodriguez-Jaime (2012)	TAM is a successful model in predicting the systems success and can be utilised in systems evaluation.
62	Sanchez-Franco (2010)	Learners' intention to use the WebCT is influenced by their perceived usefulness and ease of use of this

		technology.
63	Schoonenboom (2014)	The explanations for low intention to use a LMS are low task performance, low LMS usefulness, and low level of LMS' ease of use.
64	Selim (2007)	The critical success factors of e-learning have certain categories, which all involved success measures and acceptance of critical e-learning methods.
65	Shroff, et al. (2011)	The use of TAM as a solid theoretical model validates the use of e-portfolio in the classroom setting.
66	Siragusa and Dixon (2009)	Engagement with ICT can lead to enhanced learning and can boost teachers' planning to engage with ICT during their teaching career.
67	Stefano (2011); Moukali (2012)	Using the Theory of Planned Behaviour, teachers' confidence or non-confidence in LMS adoption is explained by environment conditions, such as support and training provided by higher education organisations. A negative correlation was revealed between attitudes towards blended-learning adoption and perceived barriers to such adoption. Conversely, a positive correlation existed between attitudes and perceived incentives for such adoption.
68	Stewart et al. (2010)	Results of the study showed that the TAM predicts intention to teach online but not perceptions about the value and legitimacy of e-learning.
69	Sumak et al. (2011)	The attitudes of users towards e-learning acceptance are mostly influenced by perceived usefulness and ease of use.

70	Susilo (2014)	Tutors and students' intention to use new technologies in e-tutorials were successfully predicted by the TAM.
71	Teo et al. (2008)	Results revealed that pre-service teachers' attitudes on computers are determined by subjective norm as well as perceived usefulness and ease of use, whilst computer attitude is not directly influenced by facilitating conditions but by perceived ease of use.
72	Teo (2009)	Teacher's technology acceptance is influenced by perceived usefulness, computer self-efficacy, and attitude towards using the computer. Technology acceptance is indirectly influenced by technology complexity and perceived ease of use whilst behaviour intention to use technology is strongly determined by perceived usefulness.
73	Teo et al. (2009)	Intention to use, perceived usefulness and ease of use, and attitude towards using the computer, which are items in the TAM, may be strong across cultures.
74	Teo (2010)	Technological complexity, facilitating conditions, and personal norms determine the attitudes of pre-service teachers to computer use using a multiple square correlation.
75	Turner et al. (2010)	Behavioural intention has a likely correlation with actual use; however, perceived usefulness and perceived ease of use, which are TAM variables, have less likelihood of correlation with actual use.
76	Van de Bogart and Wichadee	The results also found a positive relationship between perceived ease of use and perceived usefulness of

	(2015)	LINE application. Contrary to TAM assertions, no relationship was found between perceived ease of use and attitude towards use of the tool.
77	Weaver et al. (2008)	WebCT utilisation is focused on quality teaching and technology as an aid to learning, as well as the manner in which higher education institutions support academic staff.
78	Wong et al. (2013)	Users' behavioural intention and attitude towards the use of computer have significant relevance to perceived usefulness.

Table 3-1: Summary of authors' views

3.7 Gaps in Knowledge

There is little research being conducted on the actual use of ICT in Iraq (Elameer and Idrus, 2010d; Abdallah and Albadri, 2011; Mahmood and Othman, 2013), resulting in limited material immediately usable for this research.

Determine the extent of technology acceptance of faculty members is considered as gap in knowledge.

Adoption of the TOE framework in relation to TAM in order to examine the extent in which the academic staff perceives how LMS is being implemented in their University.

Attempt to solicit attention from the larger research community contributes to knowledge creation in the broader use of LMS and ICT

Cover macro-level consideration of the factors that might be affecting the implementation of LMS through the study's inclusion of socio-economic factors for Technology Acceptance Model.

Consider government support and continuity in ensuring an effective and efficient LMS implementation in a conflict-stricken country like Iraq.

Shows how the Theory of Planned Behaviour is established as the theoretical underpinning of the study, which is directly linked to the technology acceptance of LMS users

McGill and Klobas (2009) emphasised that much of the research about LMS has been focused on technology or studies of adoption rather than the technology acceptance of the target users themselves. Furthermore, current observations suggest that there are mixed opinions amongst researchers on the theoretical assumptions that embody TAM, despite its being highly cited (Chuttur, 2009). In addition, although a range of studies adopted the Unified Theory of Technology Acceptance and Use in different organisational and cultural settings, the implementation of the full model has been very few (Akbar, 2013). These identified gaps in knowledge must therefore be addressed through further research.

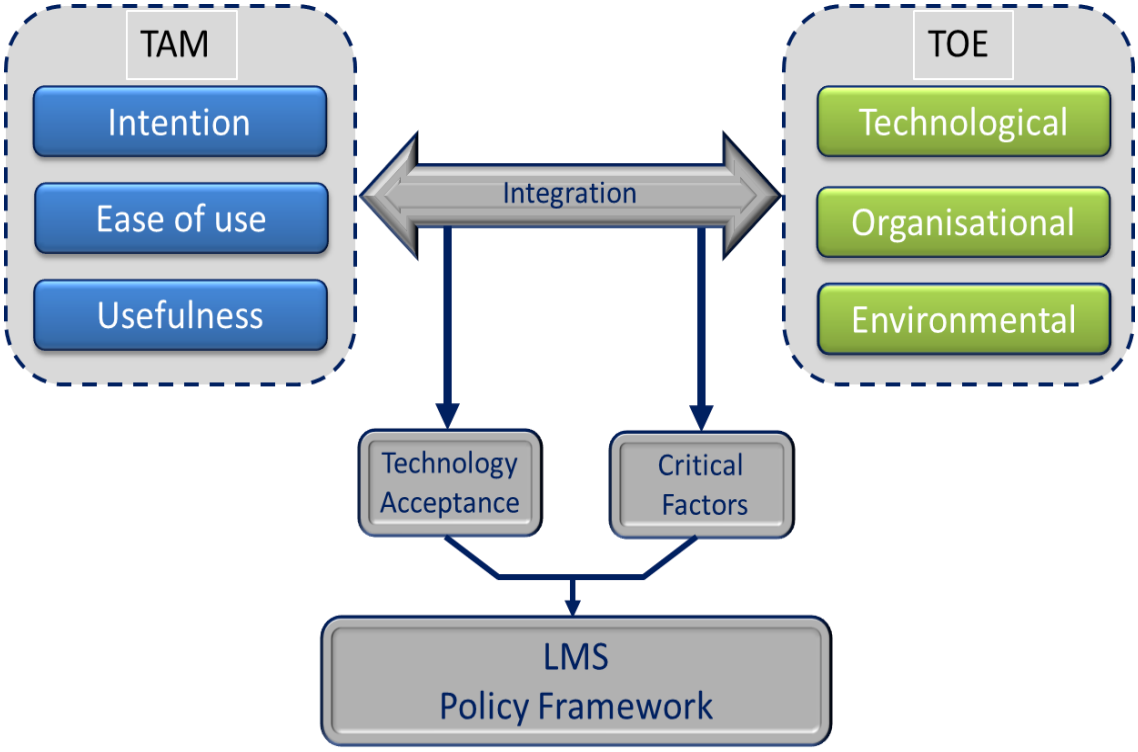

Figure 3-4: Integration between TAM and TOE

4 INITIAL FRAMEWORK

This chapter focuses on the development of theoretical framework. The theories being used here are the Theory of Planned Behaviour (TPB), Technology-Organisation-Environment (TOE) Model, and the Technology Acceptance (TAM) Model.

This chapter fits in the flow of the whole thesis logic in that it presents the theoretical underpinning of the research topic and explains how LMS adoption in Iraqi higher education is supported by the Theory of Planned Behaviour, TAM, and TOE.

The creation of the theoretical framework using the Theory of Planned Behaviour (TPB), TAM, and TOE is justified by their direct link to the research aims, which made mention of technology acceptance model in investigating the technology acceptance of the higher education staff, and the suitability of the TPB in explaining the behaviour of users towards LMS adoption. These reasons made the TAM, TOE, and the TPB to fit together within this research for its theoretical framework. The advantages of fitting them together include the comprehensiveness of offering understanding about LMS adoption; and the expanded exploration of technology adoption because of the integration between the TPB, the TAM, and the TOE. No disadvantages were seen in the use of these elements for fitting them together in this study. The study does not identify other means that could be done to achieve the same effect.

4.1 Joining TPB and TAM

Understanding what comprises user acceptance is necessary in the determination of the challenges in deploying and adopting LMS in higher learning institutions in Iraq. The factors that influence technology acceptance have been studied thoroughly in an aim to explain the different variables affecting the intention to use such technology (Namisiko et al., 2014).

The relationship between the Theory of Planned Behaviour and TAM is shown in the diagram below:

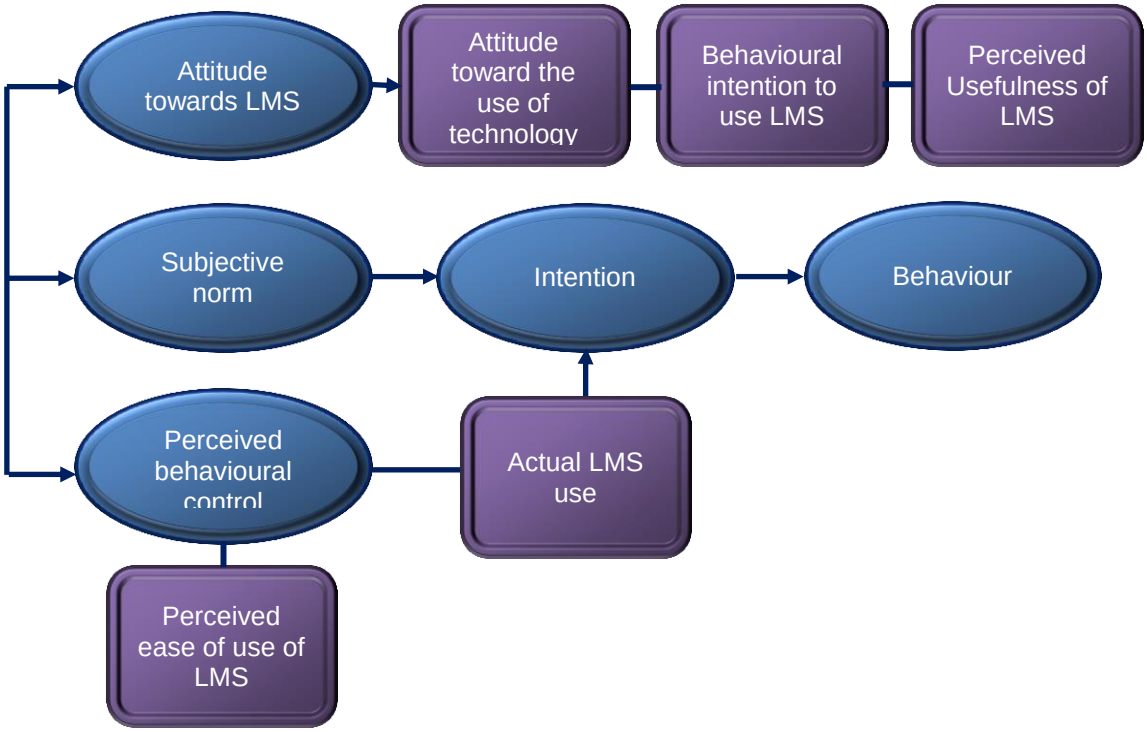

Figure 4-1: Relationship between Technology Acceptance Model and Theory of Planned Behaviour (Researcher's own construction)

The above figure shows that attitude towards LMS (Theory of Planned Behaviour) is linked to attitude toward the use of the technology, behavioural intention to use LMS, and perceived usefulness of LMS (TAM). Perceived behaviour control (Theory of Planned Behaviour) is linked to actual LMS use (TAM), which is facilitated by intention to use the technology, as well as to perceived ease of use (TAM).

4.2 TAM LMS Factors

According to Bousbahi and Alrazgan's (2015) study, enhancing instruction in higher education led many universities in the Middle East to choose to introduce LMS to their domains. However, LMS is not fully used to its potential due to resistance by faculty members. The authors conducted an empirical study to reveal the factors that influence faculty members' lack of acceptance of LMS. A survey on IT faculty members was undertaken to better understand their views on LMS integration into their courses. The results demonstrated that motivation, organisational support, and load anxiety were important factors for faculty members' perceived usefulness

of LMS. These findings can be used to extend the TAM for LMS acceptance, which can assist stakeholders in implementing the adoption of this system, which can ultimately lead to planning and evaluation of e-learning usage. Below is an illustration of McFarland and Hamilton model of technology acceptance based on Bousbahi and Alrazgan's (2015) study.

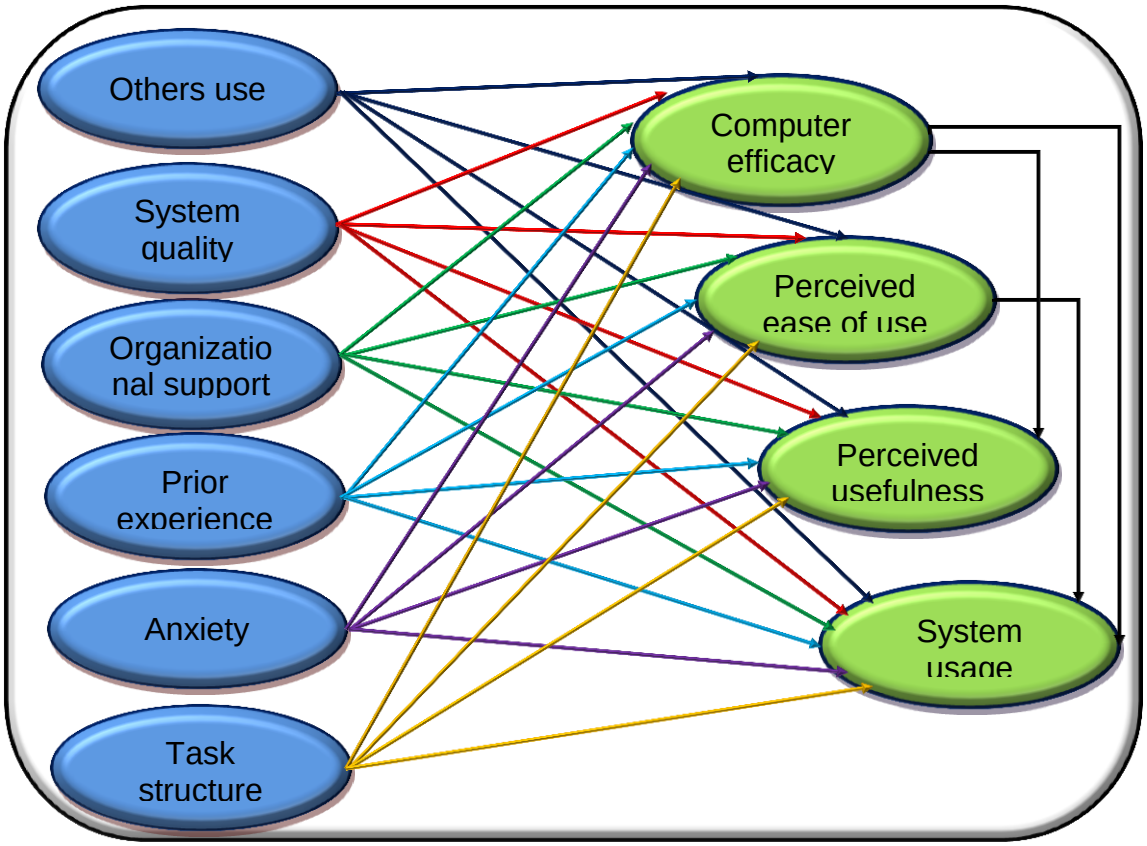

Figure 4-2:McFarland and Hamilton model of technology acceptance (Source: Bousbahi and Alrazgan, 2015)

The illustration above shows the intertwined links between a range of factors in technology acceptance, governed by computer efficacy (technology), perceived ease of use, perceived usefulness, and system usage (environment), which are all influenced by task structure, anxiety, user's prior experience, organisational support, system quality, and other's use (organisation). The illustration offers an important insight that user's acceptance of a new technology operates on these factors, which hence provides an understanding of the importance to prepare users for the technology to be adopted.

4.3 TAM and TOE

For the purpose of this research, the TAM is utilised but does not include 'actual use', which is included in the original model. The reason for this is because the learning management system is a new concept in Iraq (e.g. Elameer and Idrus, 2010a). Intention is defined as the degree to which an individual has formed a conscious plan to do or not to do some specified future action (Ramayah et al., 2002). Technology, Organisation, and Environment are made to link to the user's intention to use the LMS. Thus, the TOE framework is being integrated into TAM in the study's investigation of LMS adoption in the University of Al-Qadisiyah.

The Figure below shows the research model.

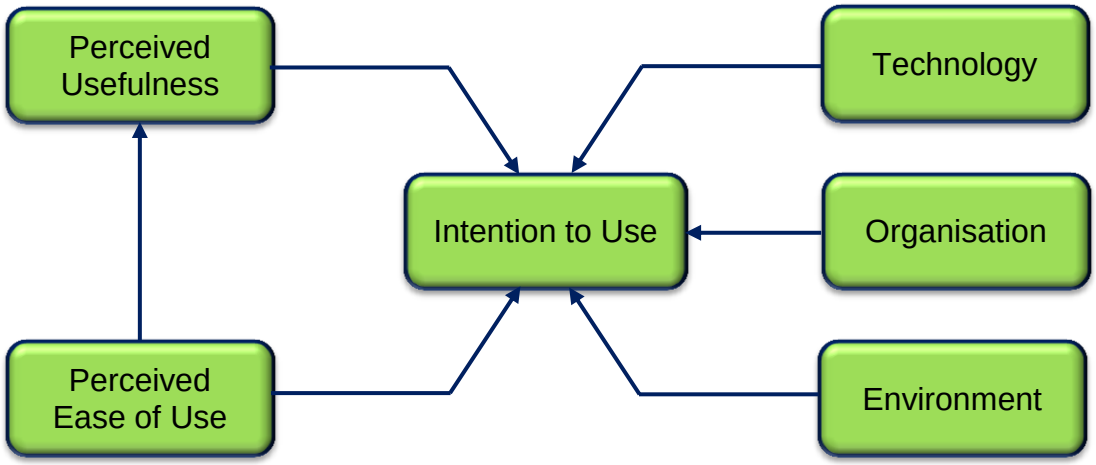

Figure 4-3: The TOE Framework in TAM

Huntington and Worrell (2013) emphasised that the use of ICTs has a positive impact on motivation and learning amongst students, as evidenced by studies. Huntington and Worrell's study was focused on investigating ICT adoption in the classroom by expanding the TAM in order to identify the contributing factors to teacher acceptance and adoption of these technologies in the classroom. The study conducted a survey of 57 faculty members and revealed that teacher acceptance of ICT can be determined by their efficacy and belief profiles, when added to the TAM. In addition, the study confirmed the claims of previous

research that perceived media richness is an important variable to be considered in the TAM research of ICTs. Huntington and Worrell's study is useful to the current research as it was directed to the importance of teachers' efficacy and belief profiles to technology acceptance, and this importance serves as a guide on how this study should address its research problems.

4.4 Initial Conceptual Framework

The three diagrams (Figures 4.4, 4.5, and 4.6) relate or build on each other as seen in the integration between LMS technology acceptance and technology, organisation, and environment surrounding LMS use (See Figure 4.4); the components of technology acceptance model (perceived LMS usefulness, perceived ease of use of LMS, and external variables (See Figure 4.5); and TOE framework linked to attitude towards LMS, subjective norms, and perceived usefulness and ease of use of LMS (See Figure 4.6).

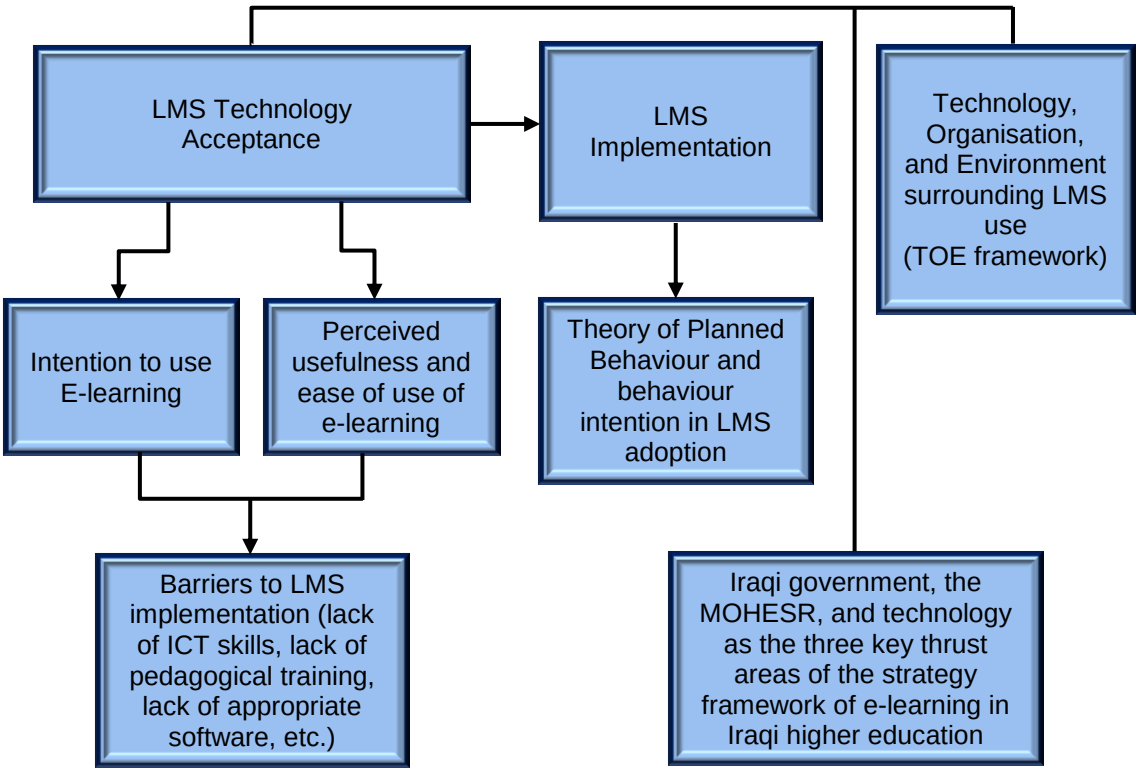

Figure 4-4: Implementation factors consisting of the literature work and field study

The diagram above helps the study to propose the framework by identifying the features of the literature review and providing a brief overview of the LMS-related assertions based on this review. On the other hand, the second diagram helps the study propose the framework by presenting the concept of technology acceptance and its elements

Meanwhile the diagram below shows the operation of the TAM with regard to the users' behaviour towards LMS technology and their acceptance of this technology, taking into account their perceived LMS usefulness, received LMS ease of use, and external variables (prior experience with LMS use and relevance of LMS use to the job).

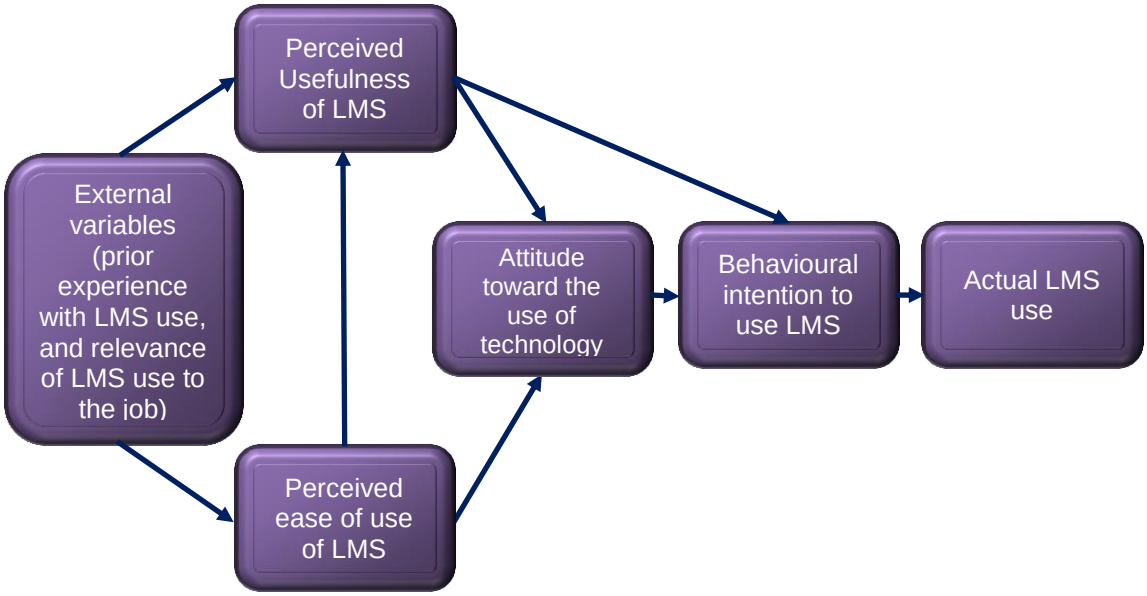

Figure 4-5: Technology Acceptance Model (TAM) (Researcher's own construction based on Ku, 2009 p. 40)

The derivation of perceived usefulness of LMS, attitude toward the use of technology, perceived ease of use of LMS and actual LMS use are from the Technology Acceptance Model. The derivation of external variables is also from this model, specifically in the discussion of Ku (2009). The logic of the layout of boxes and direction of arrows is that perceived usefulness of LMS leads to attitude towards the use of technology, behavioural intention to use LMS, and actual LMS use. External variables (prior experience with LMS use and

relevance of LMS use to the job leads to perceived ease of use of LMS, which in turn dictates the attitude towards the use of technology.

On the other hand, Figure 4.6 shows that attitude towards LMS (Theory of Planned Behaviour) is linked to attitude toward the use of the technology, behavioural intention to use LMS, and perceived usefulness of LMS (TAM). Perceived behaviour control (Theory of Planned Behaviour) is linked to actual LMS use (TAM), which is facilitated by intention to use the technology, as well as to perceived ease of use (TAM).

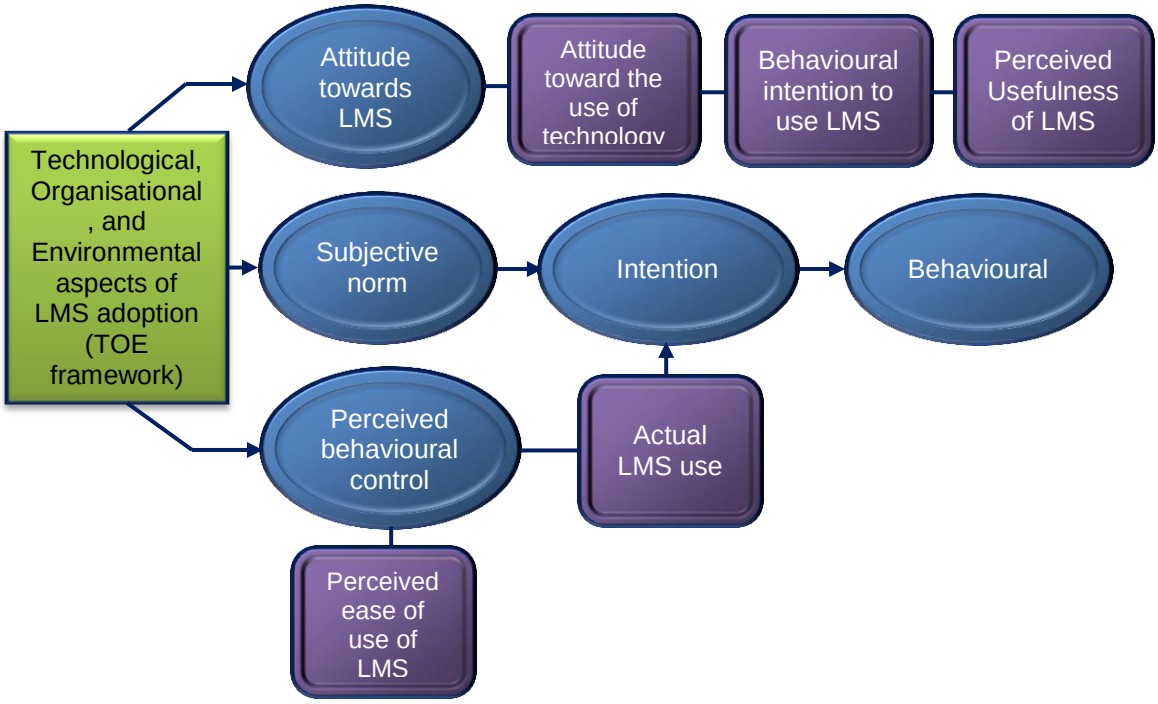

Figure 4-6: Relationship between TAM, TOE, and Theory of Planned Behaviour (Researcher's own construction)

The TAM framework is the derivation of the boxes and arrows of the attitude towards LMS, subjective norm, and perceived behavioural control.

As for the derivation of the boxes and arrows of the TOE framework, the framework in this study is used to determine the attitude towards LMS, subjective norm, and perceived behavioural control. Attitude towards LMS is linked to attitude towards the use of technology, behavioural intention to use LMS, and perceived LMS usefulness. Subjective norm is linked to intention and

behaviour. Perceived behavioural control is however linked to perceived ease of LMS use and actual LMS use.

The implementing process to achieve effective learning system involves the introduction of new technologies and software; the influence of pedagogical - technological collaboration on the utilisation of teaching methods; and collaboration between academic and IT sector.

Barriers in implementation are centred on the current levels of ICT skills and training amongst academic personnel; adequacy of time; awareness on the prevailing pedagogical and technological collaboration; readiness, commitment, and willingness to model collaboration; and technical assistance and professional development.

5 RESEARCH METHOD

Research methodology is a systematic method intended to address the research problem identified in a research endeavour (Kumar, 2008). The current study is aimed at providing the means through which the research aims and objectives might be addressed using a specific choice of research philosophy, research design, methods of data collection, sampling techniques, and method of research analysis. It also covers a discussion of ethical considerations that safeguard the study from possible ethical pitfalls. The justification of the selected research design (mixed methods) and research philosophy (interpretive-positivist combination) is linked to the nature of the research aims, which are to develop an adoption framework for Iraqi higher education, and to investigate the LMS adoption at Iraqi higher education using the TAM and TOE

Figure 5.1 shows the current research methodology stages:

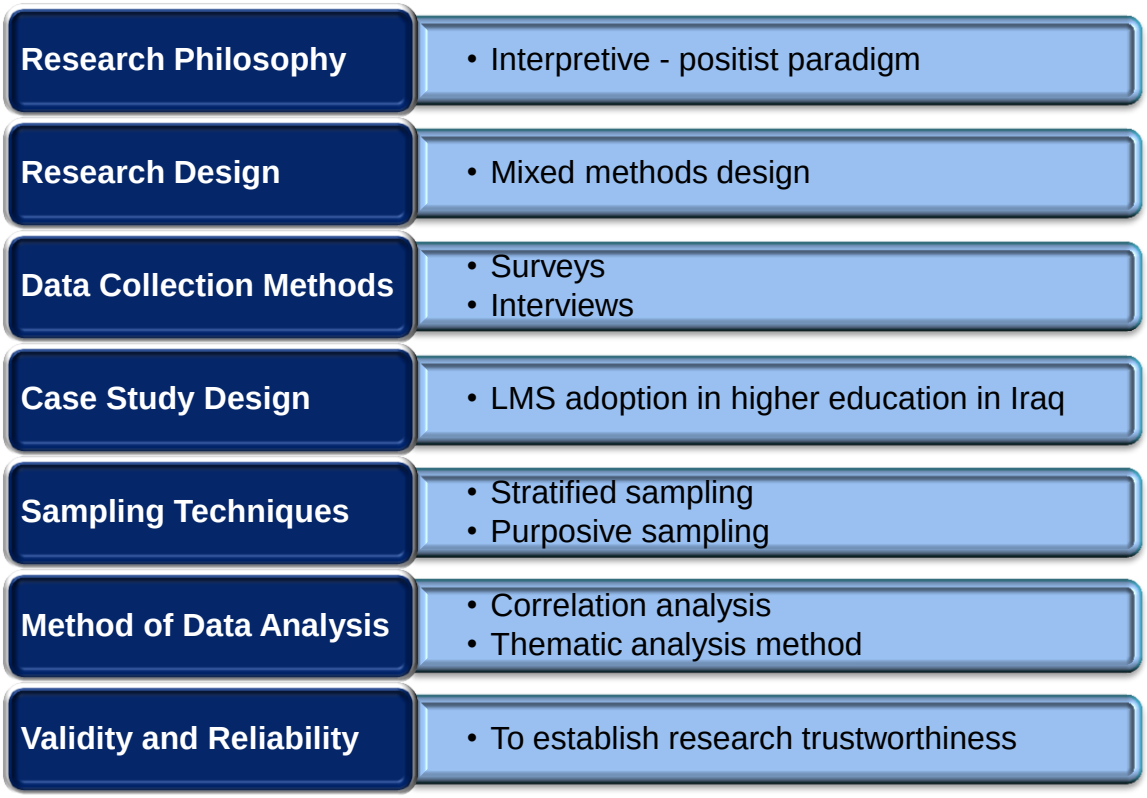

Figure 5-1: Research methodology stages

5.1 Research Philosophy

The interpretive and positivist paradigms are adopted for this study. Interpretivism holds that people socially create intangible realities and thus view these realities as both a social and personal construct as a way to make sense of the world (Chilisa and Preece, 2005; Schwartz-Shea and Yanow, 2012). The aim of interpretive philosophy is to understand people's experiences in their attempt to construct subjective and inter-subjective meanings (Cohen et al., 2011). The way interpretivism views knowledge is one that links to its view of reality being socially constructed, and thus claims that knowledge is not objective but subjective. It therefore regards social enquiry as being value-bound, suggesting that the researcher is himself influenced by his/her own set of values with regard to his/her chosen research paradigms, methods, analysis of findings, and ways to report these findings (Chilisa and Preece, 2005).

The justification for adopting the interpretive paradigm as an appropriate paradigm to address the research questions is its emphasis on discovering potential problems faced by IT and academic staff in LMS integration in higher education in Iraq and developing a LMS framework to facilitate collaboration between the pedagogical and technological learning aspects. This overall aim of the study could only be properly and thoroughly tackled using the interpretive philosophy, as hereto described as being focused on constructing subjective realities of the phenomenon being investigated. It therefore connotes that these realities are created in the minds of the research participants and are retrieved by the researcher. It might thus be noted that participants' perceptions reflect the subjective view of knowledge being focused on social construction, suggesting knowledge generation through interpretivism (Chilisa, 2012; Cohen et al., 2011).

The positivist philosophy is also applied to this study, which maintains that external realities are tangible (Chilisa and Preece, 2005; Potter, 2013). Although the positivist philosophy is the opposite of interpretivism, the study however involves some positivist elements, such as the analysis of the survey data,

which involves some statistical procedure (Migiro and Oseko, 2010). Positivism therefore offers appropriate application to discovering technology acceptance by academic staff at the University of Al-Qadisiyah.

5.2 Research Design

This study takes on the mixed methods research design to answer the research questions. This research design is characterised by the collection and analysis of both qualitative and quantitative forms of data in an epistemologically sound manner. The data involved in this research design are also rigorous, which means that they are collected and analysed thoroughly. The qualitative and quantitative data are integrated in a way that underscores the advantages of utilising both research designs to clarify and further one's understanding of the phenomenon being investigated (Watkins and Gioia, 2015). Therefore, the mixed methods research is one that combines elements of quantitative and qualitative approaches in an aim to provide breadth and depth of understanding the research topic (Creswell and Clark, 2011).

Qualitative research includes the use of non-quantitative methods. It is emphasised on the collection, analysis, and interpretation of data pertaining to a specific phenomenon, in which any attempt to reducing the analysis of such phenomenon to numbers might result in data being obliterated (Bradley, 2005).

The qualitative research design has a multi-method focus, incorporating a naturalistic and interpretive position in the topic of investigation (Mujis, 2011). It is focused on studying a certain event or person and is emphasised on the everyday life of such person or event (Neergaard and Ulhoi, 2007). The evidence of the presence of naturalistic or interpretive stance embodying the qualitative design is the qualitative focus on the natural settings of certain phenomena, in which such phenomena are being understood in relation to the meanings people attach to them (Denzin and Lincoln, 2011; Cohen et al., 2011). Being multi-method in focus, qualitative research adopts a number of empirical materials, such as interviews, case studies, focus groups, participant

observations, diaries, field notes, visual texts, etc. (Neergaard and Ulhoi, 2007; Denzin and Lincoln, 2011).

The context embodying the phenomenon being investigated warrants a qualitative approach; however, a uniform perspective is not signified. Rather, application of different qualitative techniques can be carried out. Qualitative research commonly presents the researcher as someone being relegated into being an internal observer, who moves around to look from within the phenomenon being studied. Thus, qualitative researchers adopting a subjective approach to social science operate within the realm of interpretive enquiry (Neergaard and Ulhoi, 2007). It therefore implies that the adoption of qualitative approach harmonises with the interpretive philosophy of this study (Yanow and Schwartz-Shea, 2014).

On the other hand, the quantitative research design is one in which a specific phenomenon is explained through the collection of numerical data and the likewise analysis of these data using statistical methods (Mujis, 2011). The quantitative method allows the presentation of data in a numerical form alongside using mathematically based methods. It also involves devising research instruments in which non-quantitative phenomena are transformed into quantitative ones, capable to be analysed statistically, with results also capable to be summarised statistically (Lodico et al., 2010).

It is important to note that creating an operational definition describing the way variables are measured is an aspect of doing quantitative research. Additionally, conclusions are generated beyond a particular group of research participants despite the use of such participants in investigating certain quantitative variables. In a quantitative study, participants are selected using a systematic approach, necessitating a sample, in which generalisation of results is expected (Lodico et al., 2010).

The justification for using a combination of qualitative and quantitative research designs for this study is directed to its aim to go beyond mere description of an empirical investigation at a generalisable manner, and quantify data as well to

support the qualitative data. As it has been mentioned that qualitative research correspondingly takes on an interpretive paradigm, needlessly indicating the use of interpretivism as the selected paradigm, certain measurements are also employed to indicate levels of ICT skills, training, and respondents' commitment to LMS integration, etc. to harmonise with qualitative methods (i.e. in-depth semi-structured interviews) (e.g. Katsirikou and Skiadas, 2010).

5.3 The case of University of Al-Qadisiyah

The University of Al-Qadisiyah in Iraq was founded in 1987 in Al-Qadisiyah Province (Jeffries, 2003). Similar to other state universities, it operates under the administration of MOHESR. It was not exempted from the burning, looting, and destructions experienced in the March-April 2003 war. By 2013, the University comprised 14 schools, such as School of Education, School of Business and Economics, School of Agriculture, School of Arts, and School of Engineering, to name a few.

Below is the general information about the University of Al-Qadisiyah:

No.	schools	postgraduate students							Academic Staff							Undergraduate Students			Employee		
		PhD			Msc			T.	PhD			Msc			T.						
		Male	Female	sum	Male	Female	sum		Male	Female	Sum	Male	Female	Sum		Male	Female	sum	Male	Female	sum
	University Presidency	0	0	0	0	0	0	0	5	2	7	5	3	8	15				627	371	998
1	Education	15	15	30	46	59	105	135	79	15	94	103	79	182	276	3894	4733	8627	107	144	251
2	Administration and Economics	0	0	0	37	24	61	61	28	2	30	35	23	58	88	2694	1294	3988	88	88	176
3	Art	16	11	27	61	40	101	128	36	11	47	41	19	60	107	1104	1339	2443	66	86	152
4	Medicine	3	2	5	25	12	37	42	10	3	13	47	42	89	102	312	357	669	103	124	227
5	Veterinary Medicine	0	0	0	32	28	60	60	9	3	12	49	42	91	103	160	94	254	68	87	155
6	Physical Education	39	6	45	27	5	32	77	28	5	33	35	1	36	69	600	93	693	87	53	140
7	Applied Science	0	0	0	20	43	63	63	14	2	16	24	23	47	63	728	492	1220	34	52	86
8	Law	0	0	0	13	7	20	20	6	1	7	24	13	37	44	631	303	934	36	22	58
9	Engineering	0	0	0	0	0	0	0	24	2	26	46	11	57	83	474	414	888	62	56	118
10	Computer Science and Mathematics	0	0	0	16	25	41	41	11	3	14	23	15	38	52	429	440	869	33	24	57
11	Agriculture	0	0	0	0	0	0	0	10	0	10	15	6	21	31	437	305	742	67	20	87
12	Pharmacology	0	0	0	0	0	0	0	5	4	9	7	4	11	20	50	92	142	25	17	42
13	Nursing	0	0	0	0	0	0	0	5	3	8	2	3	5	13	80	147	227	17	22	39
14	Dentistry	0	0	0	0	0	0	0	6	1	7	1	5	6	13	26	32	58	8	14	22
SUM.		73	34	107	277	243	520	627	276	57	333	457	289	746	1079	11619	10135	21754	1428	1180	2608

Table 5-1: General information of the University of Al-Qadisiyah (Source: Al-Qadisiyah offline data)

The table shows that there are post-graduate programmes at the University without enrolees, including Engineering, Agriculture, Pharmacology, Nursing, and Dentistry.

5.4 Data Collection Methods

Data collection for this study is centred on collecting both primary and secondary data. Primary data are those collected by the researcher for the first time and are specifically intended for the purpose of his/her study, indicating that they are original or first-hand (Kothari, 2004; Thyer, 2010). Conversely, secondary data are those already collected by somebody else (e.g. by other researchers, scholars, authors, etc.) and are cited again for another purpose (Mooi and Sarstedt, 2011). These data are usually published and are found in academic journals, books, online resources, corporate reports, government statistics, etc. Whilst primary data deal with the collection of original data, secondary data involve mere data compilation (Kothari, 2004).

The primary methods of data collection used in this study are survey questionnaire and in-depth semi-structured interviews.

5.4.1 Questionnaire Design

The use of survey method is justified by its appropriateness to determining the extent of existing ICT skills, ICT-related training, commitment, and readiness of academic and IT staff in LMS integration. The purpose is to support the qualitative data generated from the interview method.

A survey was conducted on faculty members of the University of Al-Qadisiyah; which was designed to solicit the views of the respondents on LMS adoption, training and technical assistance, LMS perceived usefulness, perceived ease of use, and intention to use LMS tools, which are TAM constructs (e.g. Fathema and Sutton, 2013). The survey questionnaires were distributed to the target respondents by the researcher himself. The survey consisted of Likert-type scale questions and binary questions to collect empirical data. In addition, open-ended questions were added in order for the respondents to express their personal views

on LMS adoption. The TAM survey is aimed to elicit responses about teaching using the online LMS. It includes four sections; namely: (1) demographic characteristics of participants, such as the number of years in teaching, the respondents' level of education, and the number of students in their IT class; (2) assessment of faculty perception regarding LMS in terms of perceived usefulness, perceived ease of use, and intention to use (the technology acceptance of faculty members); and (3) Technology, Organisation, and Environment (TOE) framework. The relationships between the variables of perceived usefulness, perceived ease of use, and intention to use are measured by the TAM questionnaire. The TAM survey adopts the Technology, Organisation, and Environment (TOE) framework.

The survey questionnaire (Appendix A) was designed according to the demographic characteristics of the respondents and the level of technology acceptance. The demographics comprised the respondents' gender, level of educational attainment, number of years teaching in one's current organisation, and the average number of students in one's class. The first section of the level of technology acceptance included the extent of experience that the respondents had with virtual classroom, video conferencing, receiving homework online, uploading files, participating in online academic discussions, finding information online, online academic consultations, online examinations, use of ICT to prepare lessons, and use of ICT to communicate with colleagues, students, and school management. The second section of the "level of technology acceptance" included the attitude towards the use of LMS in one's teaching methodology, level of intention to use LMS in the classroom, availability of LMS resources, likelihood to acquire LMS resources, likelihood to introduce ways to improve LMS-related skills, readiness to use LMS tools, willingness to learn new LMS-related skills, extent of security with LMS use, and prioritisation of LMS training. The third section consisted of 18 statements that were to be rated using the Likert scale (to a great extent, to a little extent, to no extent).

It is important to report that while LMS adoption is at an early stage in Iraqi universities, the majority of respondents had received postgraduate education in UK and US. They have first-hand experience in the use of LMS.

5.4.2 Survey Design

The justification for utilising the interview method is seen in the ability of this method to allow a profound examination of issues being considered; thereby expounding the questions that have been devised to advance the research enquiry. Moreover, it allows the researcher to encourage the participants to present additional details not originally covered by the interview schedule but are nonetheless relevant to the study. The interview method is an appropriate method through which to discover the barriers of implementation, socio-economic conditions affecting the higher education sector in Iraq, and current technologies used in the teaching-learning strategies.

In-depth semi-structured interviews was conducted involving eight participants– five faculty members, two IT personnel, and an administrator. The survey enables collection of views, attitudes, and judgments of actual academic and IT staff about LMS integration in Al-Qadisiyah University and two other universities in Iraq.(Appendix B)

The researcher himself conducted the interviews by asking the permission of each target participant and setting an appointment for each.

5.5 Sampling Techniques

Sampling technique refers to the method or approach to selecting the respondents or research participants in a study (Webster et al., 2014). In this study, the sampling techniques being applied are explicitly related to the research objectives and questions. For example, stratified sampling is adopted for selecting the survey respondents, wherein the researcher arranges a ‘stratum’ to analyse the common characteristics or shared attributes of the target population (Webster et al., 2014). For this study, the common shared attributes of the target population are academic staff in Al-Qadisiyah University.

The criteria for selecting a sample number therefore include being a part of the academic department of the university. These are the common shared attributes of the target population, from which the samples are drawn.

Table 5.2 shows that the total number of the members of the academic staff at the University of Al-Qadisiyah is 1,079. The sample size is 283, based on a 95 percent confidence level and a confidence interval of 5.

It is important to explain the stakeholder groups involved in the LMS implementation. These are the university administration (Deans; academic and non-academic department heads), faculty members, IT staff, and students. The university administration is a key stakeholder because of its crucial role in formally launching an LMS programme as well as its authority and capacity to officially monitor and evaluate the implementation, provide training provisions, revise policies, and approve LMS infrastructure.

The faculty members are key stakeholders since they are the ones directly using the LMS technology, in which assessing their level of required ICT skills and LMS-related training is necessary to ensure effective and useful utility of the system.

The IT staff is an important stakeholder as it holds IT-specific knowledge, skills, and expertise needed in the implementation. They possess the capability to assess the technical status or condition of an LMS system and are the ones to run to for technical troubleshooting. They are also the ones to which ICT-related training activities are expected to be coursed through.

Finally, students serve as key stakeholders since it is for them that implementation is being carried out, and successful LMS integration relies on their effective engagement, apart from engagement of the faculty members.

The stakeholders to whom this study is focused for primary data collection are IT staff and faculty and academic department heads because of its emphasis on the LMS adoption in Iraqi higher education, the stakeholders being focused on are.

For the in-depth interviews, purposive sampling is used to select the set of interview participants. This sampling technique is appropriate for this purpose because it allows the researcher to devise a set of criteria that would fit such selection, including participants' knowledge of the issues, their direct participation in LMS integration, and their being a part of the organisation in which the study is conducted; thereby possessing the capacity to respond to the questions relevant to its aims and objectives. The researcher then purposively approaches the target participants bringing these criteria (Saunders *et al.,* 2007; Teddlie and Tashakkori, 2009).

5.6 Validity and Reliability of Research

Explicit discussion of quality originated from social research, especially on issues relating to the concepts of validity and reliability, which initially developed in the scientific tradition, and which moved to qualitative studies (Seale, 1999). Establishing research trustworthiness is necessary, and it lies in validity and reliability concepts - which enable enquiry of truth value, neutrality, consistency, and applicability of research (Lincoln and Guba, 1985 cited in Seale, 1999). Internal validity is a criterion used to measure what a research pursuit aims to measure. It is also referred to as a criterion that determines the extent of congruence between the findings and reality. The use of multiple interviews is a form of triangulation that enhances its credibility and thereby allows generating a more stable view of reality based on a broad range of perspectives (Shenton, 2004).

Research validity in this study is ensured through the use of research triangulation - the application and combination of several research methodologies in investigating LMS integration in the higher education sector in Iraq (e.g. Kelliher, 2005; Strauss and Corbin, 2008). In particular, the interviews validated the survey, which is reported in Section 6.3.3

5.7 Ethical Considerations

Certain ethical considerations covered by this study pertain to the collection and use of both primary and secondary data. In terms of collecting primary data, securing the identities of survey respondents and interview participants is of utmost importance, their names should not be revealed in the presentation of data and must only be cited anonymously (Babbie, 2009).

Confidentiality of data should also be ensured as an ethical consideration, but data may be retrieved anytime upon the request of research participants. It is important to clarify to the participants the purpose of the study and why their participation is being sought in order to foster research consent. They could pull out from participating at any point without having to incur liabilities of any form.

As for the collection and use of secondary data, an ethical consideration that must be taken into account is citing all non-original data into the body of the research and in the references. The idea is that anything not cited is owned by the researcher, and if this is not the case, the validity of the research is being jeopardised (Kuiper, 2009). Acknowledging the authors of secondary data enables the research to foster integrity of data.

Further, the ethical issues mentioned here conform to the Cranfield University research ethics and integrity policy.

5.8 Summary

This chapter presents a systematic method through which to solve the research problem. The study adopts the interpretive philosophy, the mixed-methods design, primary and secondary data collection methods, stratified and purposive sampling techniques; thematic analysis method, case study design, and ethical considerations as parts of a general research methodology.

The interpretive philosophy covers the idea that people socially create intangible realities as a way to make sense of the world, including the corresponding subjective and inter-subjective meanings attached to these

realities. The qualitative character of the study harmonises with this idea. Quantitative method is also employed (i.e. survey), only to support the qualitative research being undertaken; thus the embodiment of the mixed-methods design in this study.

The case study design is also used as a way to discuss in-depth the underlying issues associated with LMS integration in the higher education sector in Iraq, specifically focused on the University of Al-Qadisiyah.

Stratified sampling is identified as the appropriate sampling to select the sample for the survey; whilst for the interviews, it is purposive sampling. Thematic analysis is adopted to enable results analysis, wherein recurrent or most important themes emerging within the evidence review are identified and analysed.

Research validity and reliability are reflected in the study's attempt to establish research trustworthiness, allowing enquiry of truth value, consistency, neutrality and applicability of research. Internal validity serves as a criterion that measures what the study aims to measure. Ethical considerations being identified are those associated with the collection and use of primary and secondary data.

6 FIELD STUDY AND DATA ANALYSIS

The purpose of this chapter is to present the results of the survey and interviews, as well as provide an analysis using a thematic analysis approach and correlation analysis, as mentioned in the previous chapter. The research questions are directly answered in this chapter. The extant literature is used to support the primary data.

The figure below shows the Results, Discussion, and Analysis topic diagram:

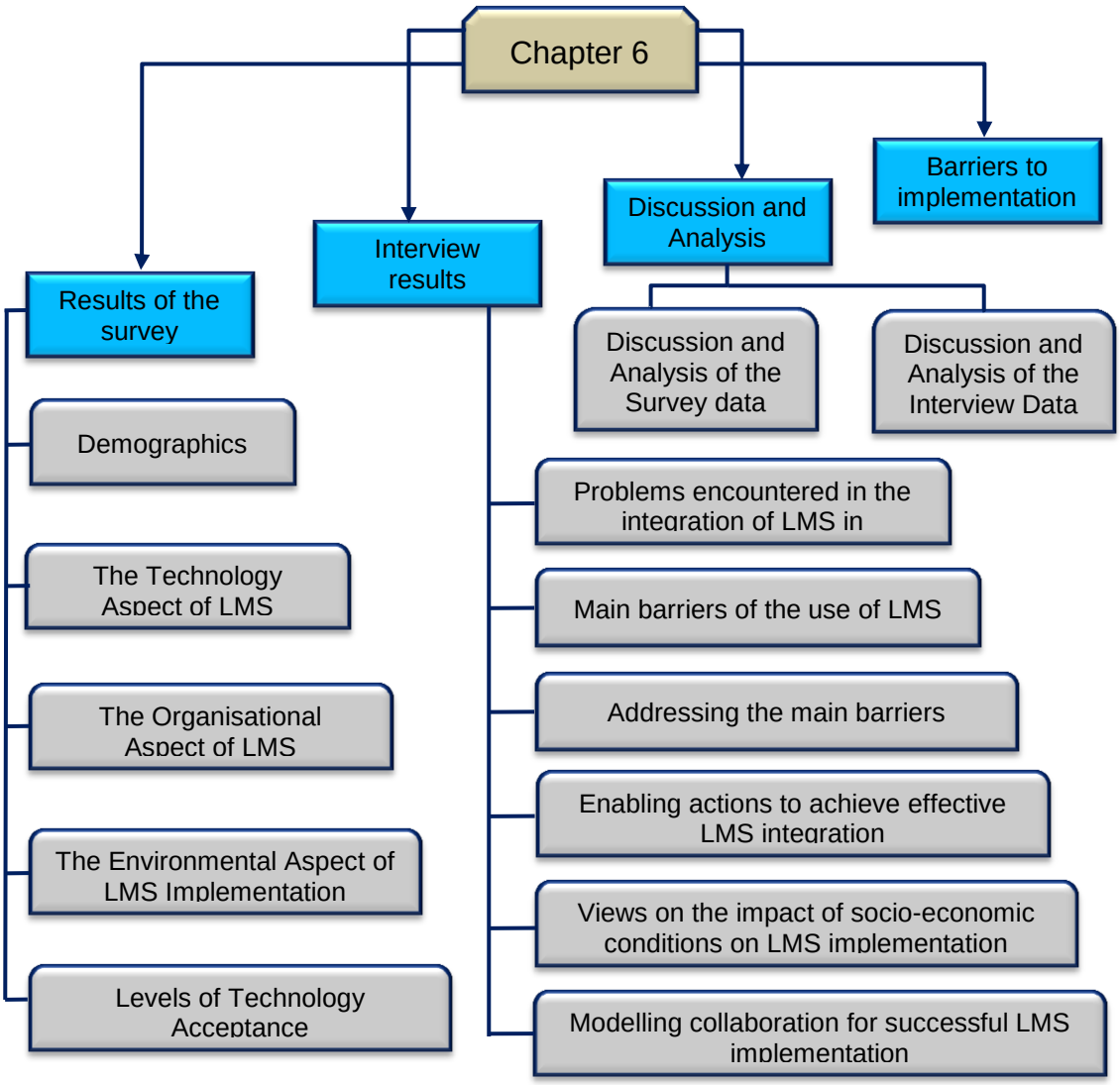

Figure 6-1: Results, Discussion and Analysis topic diagram

6.1 Survey Results

Data from the survey and interviews are presented in this section. The data set is in Appendix C. Charts are used to discuss the views of the survey respondents. Correlation coefficient is used to determine the relationship between variables. The interview data are presented in a descriptive manner. The interpretation and meaning of results in this section are discussed in 6.4

6.1.1 Demographics

There were 55 percent male respondents and 45 percent females respondents in the survey. The most number of responses in terms of level of education were those who obtained some Master's units (43 percent), and the least were those who obtained a Doctorate degree (11 percent). The most number of respondents in terms of the number of years teaching in their current organisation was 34 percent (4-7 years of teaching), and the least was 10 percent (16 years of teaching and beyond).

Moreover, the respondents with the largest average number of students in a class comprised 47 percent (with an average of 31-40 students), and those with the smallest average number of students comprised 3 percent (with an average of 51 and more students).

6.1.2 The Technology Aspect of LMS Implementation

In terms of their experience with the virtual classroom, the respondents with the most number were those with little experience (47 percent), whilst those with the least number were those with a lot of experience (10 percent).

In terms of video conferencing, the most number of respondents were those who had no experience in this activity (53 percent); and the least number involved those with a lot of experience (4 percent).

Moreover, there were 32 percent who had a little experience with online examinations, which was the most number of respondents, whilst 14 percent, which was the least number, had a lot of experience with this activity.

Thirty-eight percent of the respondents - the largest number in terms of the use of ICT to prepare lessons - had a lot of experience with the use of ICT for lesson preparation. Six percent, which was the least number, had no experience with ICT use for this purpose.

Furthermore, 55 percent, which was the most number, declared that they knew how to use the entire MS office to some extent. The least number, 8 percent, claimed that they knew about it to no extent. There were 62 percent who knew how to use the Moodle software to no extent (meaning, they did not know how to use it at all), which was the largest number. Three percent, which was the least number, maintained that they knew how to use it to a great extent. Similarly, 60 percent knew how to use the LAMS software *to no extent* (meaning, they did not know how to use it at all). The least number comprised those who knew how to use it *to a great extent* (2 percent). On the other hand, the most number of responses in terms of knowing how to use the JUSUR software was 51 percent, in which they claimed that they knew how to use the software *to no extent* (meaning, they did not know how to use it at all). Only 4 percent, which was the least number, knew how to use it *to a great extent*.

6.1.3 The Organisational Aspect of LMS Implementation

The survey specified that 49 percent of the academic staff, which was the largest number, viewed that their University must *to some extent* collaborate with the MOHESR for LMS implementation. There were 8 percent who claimed that their organisation must *to no extent* collaborate with the organisation for such purpose. Conversely, the results for the extent of the use of ICT to find digital learning materials were opposed to the respondents' extent of knowing how to use the MOODLE, JUSUR, LAMS, and BLACKBOARD. Forty-nine percent of the respondents, which was the largest number, used ICT *to some extent* to find digital learning resources, whilst 4 percent used ICT *to a little extent* and *to no extent* respectively. In addition, there were 34 percent, which was the largest number, who read up-to-date researches on e-learning *to a little extent.* Eighteen percent, which was the least number, claimed that they read up-to-date researches *to a great extent.*

When the study examined the likelihood of the organisation to ensure the security of the adopted LMS tools, the result showed that 24 percent, which was the largest number, viewed that their organisation was *somewhat likely* to indeed ensure such security. Fifteen percent, which was the least number, viewed that it was *unlikely.* Further, 31 percent of the academic staff believed that it was *likely* that their university administrators will prioritise LMS training to improve the ICT skills of the faculty members. There were 6 percent who said that it was *unlikely. I*n terms of the likelihood for their institution to introduce ways to improve LMS-related skills, 23 percent, which was the largest number, maintained that such was *somewhat unlikely;* whilst 15 percent, which was the least number, believed that this was *somewhat likely.*

Furthermore, 28 percent, which was the largest number, had *more than an average experience* with the use of ICT to communicate with the school management, whilst 13 percent, which was the least number, had *no experience* with using ICT when communicating with the school management.

In terms of receiving homework online, the respondents with the most responses were those with *more than average experience* (34 percent); whilst the least were those with *no experience* (6 percent). On the other hand, the most number of respondents in terms of uploading files was 41 percent, who had *a lot of experience* with this activity, whilst the least number was 4 percent, which had no experience. In terms of finding information online, 47 percent comprised those who had *a lot of experience*¸ which was the largest number, whilst the least number was 3 percent, comprising those who *had no experience.* In terms of online academic consultations, 31 percent, which was the largest number, comprised those with *an average experience.* The least number was 14 percent, comprising those with *no experience* with online academic consultations. Additionally, 25 percent, which was the largest number, claimed to have *more than an average experience* with the use of ICT to communicate with their colleagues. Ten percent, which was the least number, had *no experience* with this activity.

The results for the use of ICT to communicate with students were better than the results of the use of ICT to communicate with colleagues. There were 32 percent who had *more than an average experience* with the use of ICT to communicate with their students. This was also the most number of responses in terms of such ICT use. Twenty-five percent claimed that they had *a lot of experience* with ICT use when communicating with their students; 20 percent claimed to have an *average experience*; 16 percent had *a little experience*; and 7 percent had *no expe*rience.

6.1.4 The Environmental Aspect of LMS Implementation

In terms of availability of resources for LMS implementation, 28 percent, which was the most number of responses, claimed that such resources were *somewhat inadequate,* whilst 24 percent claimed that they were *lacking.* Only 17 percent viewed that their institution had *adequate* LMS resources; 16 percent claimed that the resources were *somewhat adequate*; and 15 percent claimed that they were *very adequate.* The responses in terms of participating in online academic discussions were also diverse. The respondents with a lot of experience comprised the largest number (27 percent); whilst those with no experience comprised the least number (8 percent).

In terms of likelihood of their current institution to acquire the needed resources for LMS, 35 percent said that acquiring such resources was somewhat unlikely; 23 percent claimed that it was unlikely; 17 percent viewed that it was somewhat likely; 13 percent said that it was very likely; and 12 percent viewed that it was likely. Thus, the most number of responses in terms of such likelihood comprised those who believed that acquiring the needed resources for LMS in their institution was somewhat likely, whilst the least number comprised those who believed that it was likely. Moreover, when the respondents' perception about the extent of security with the use of LMS tools was investigated, it was found that 27 percent believed that such use was not secure, which was the most number; whilst 14 percent viewed that it was somewhat secure, which was the least number of responses. Twenty-six percent perceived that the use of LMS tools in their institution was somewhat not secure; and 17 percent believed that it was secure.

6.1.5 Levels of Technology Acceptance

Thirty-one percent of the respondents had a very good attitude towards the use of LMS in their teaching methodologies. Twenty-eight percent had a good attitude towards it; 18 percent had an average attitude; and 8 percent had a poor attitude towards such use. Further, for 36 percent, the use of LMS for teaching methodology was very favourable. Thirty-five percent believed that it was favourable, and 14 percent believed that such was somewhat favourable. Eleven percent perceived that using LMS as a teaching methodology was somewhat unfavourable; whilst 4 percent perceived that it was unfavourable. For the 37 percent, which was the largest number, the use of LMS for teaching methodology was very positive whilst for the 3 percent, which was the least number, its use was negative.

Conversely, 43 percent, which was the largest number, indicated that the information they had about e-learning networks was only to a little extent, whilst 4 percent, which was the least number, held that their information about such was to a great extent.

According to 34 percent, which was the largest number, ICT was easier to use to some extent than traditional methodologies. Sixteen percent maintained that it was easier to use to a little extent and another 16 percent believed that it was easier to use to no extent (meaning, it was not easier to use at all) compared to traditional methodologies.

There were 33 percent who had a *strong intention* to use LMS in the classroom, which was the most number in terms of the level of intention for LMS use. Eight percent had *no intention,* which was the least number of responses

In terms of their readiness to use LMS tools, 30 percent , which was the moist number, indicated that they were *somewhat not ready;* and 13 percent, which was the least number, maintained that they were *ready.*

In terms of their willingness to learn new LMS-related skills, 32 percent, which was the most number, were *willing;* and 10 percent, which was the least

number, were *not willing.* Hence, the respondents with the most number of responses in terms of willingness to learn new LMS-related skills were those who were *willing,* and those with the least number of responses were not willing to learn such skills. Moreover, 43 percent of the respondents were interested to hone their ICT skills *to some extent*, and only 9 percent were not interested to improve their ICT skills at all. Similarly, there were 48 percent who to some extent were interested to learn e-learning technologies, and 7 percent who were interested to learn them to no extent (meaning, they were not interested to learn them at all). Thirty-four percent of the academic staff were *to some extent* confident with ICT and intended to use it more effectively, whilst 15 percent were *to no extent* confident about it, neither did they like to use it more effectively.

Thirty-two percent of the respondents found LMS easy to use *to a great extent*, and 16 percent (which was the least number), found it easy to use *to no extent* (meaning, it is not easy to use at all). LMS was also useful *to some extent* for 35 percent of the respondents, and *to no extent* for 13 percent, which was the least number.

For 47 percent, the socio-economic challenges in Iraq slow down *to some extent* the full implementation of LMS in their institution. For 41 percent, these challenges slow down *to a great extent.* Five percent believed that these economic challenges held back such full implementation *to a little extent*, whilst 7 percent viewed that such challenges delayed its full implementation *to no extent* (meaning, it did not slow down at all).

According to 38 percent, which was the largest number, the government should support the LMS implementation *to some extent* whilst addressing the socio-economic challenges. On the other hand, 11 percent, which was the least number, believed that the government must do it *to no extent; meaning,* the government must not at all support the LMS implementation whilst addressing the socio-economic challenges.

On the other hand, 33 percent of the academic staff believed that their university can still promote LMS usefulness *to some extent*, even with the presence of socio-economic challenges. Furthermore, 19 percent, which was the least number, said that LMS usefulness can be promoted *to no extent.*

Almost half of the respondents (49 percent), which was the largest number, believed that the socio-economic challenges did not affect -*to some extent* – their willingness to use LMS tools in their teaching. Five percent, which was the least number, believed that the socio-economic challenges affected their willingness to use LMS use, as indicated by their response of "*to no extent."*

6.2 Analysis and Discussion of the Survey Data

This section provides a discussion and analysis of the survey data. These data are analysed against the literature tackled in the literature review. The proposed model for this report represents the integration of technology-organisation-environment LMS aspects and Technology Acceptance Model, guided by the Theory of Planned Behaviour. The TAM operates using perceived LMS usefulness, perceived ease of use, and external variables (e.g. prior experience with LMS use, etc.). Perceived LMS usefulness is linked to attitude towards technology use, which is then linked to perceived LMS use. This then leads to behavioural intention to use LMS and actual LMS use. Intention to use is influenced by technology, organisation, and environment. It is linked to perceived usefulness and perceived ease of use. The research model is shown in Figure 4.3 in Chapter 4.

6.2.1 Use of LMS tools

Almost half of the respondents had a little experience with the virtual classroom, coupled with 16 percent who claimed to have no experience with this methodology. Added to this is the fact that only 10 percent of the total respondents had a lot of experience with the virtual classroom, and only 13 percent had more than an average experience. There was therefore a need for the academic staff to advance their knowledge, skills, and experience with this methodology since the virtual classroom is a common feature of a learning management system. These results are parallel to Garrote's (2012) study where he found the apparent hesitation amongst lecturers to use the interactive features of LMS and did not indicate any significant changes in their attitude in terms of LMS adoption. Since the virtual classroom is an aspect or tool of LMS, and given that almost half of the respondents had an experience with it, it therefore means that such utilisation may be made to link to the users' perceived usefulness and/or ease of use of the tool, as well as the corresponding technological, organisational, and environmental aspects surrounding its usage.

Further, a hefty response of *no* experience was received for video conferencing, which is commonly encountered in LMS. Added to this was the 27 percent of the academic staff who had little experience with this methodology. There were only a few who had a lot of experience with video conferencing (4 percent), as well as those who had a more than average experience with it (5 percent), and an average experience (11 percent). Just like the generally limited or lack of experience of the academic staff with the virtual classroom, the results for their extent of experience with video conferencing indicated a need to advance their knowledge, skills, and experience with this methodology. These results revealed that video conferencing was an ICT activity not fully utilised in the case university. These results also give an idea about the extent in which the academic staff is familiar with this aspect of learning management system. This is also parallel to Sanchez-Franco's (2010) findings which said that, the users' intention to use a certain technology (e.g. WebCT) is influenced by their perceived usefulness and ease of use of this technology. In addition, Garrote's (2012) study could be utilised to understand these results, as he indicated that the fear towards LMS adoption amongst LMS users (e.g. teachers) is due to perceived demands on their time. On the other hand, Elameer and Idrus (2010a) suggested that the academic staff did not have fear from adopting an e-learning LMS. The varying responses of the research participants only reveal the fact that Internet technologies for education are not yet accepted universally (Barnett and Presley, 2004). Al-Adwan, et al. (2013) stated that an extensive understanding of the acceptance of end-users is necessary to ensure the success of technology implementation. Of an important point to consider is that perceived use determines technology users' mixed attitude to use the new technology (Ng et al., 2013).

Moreover, the results for uploading files were acceptable, as those with little experience with this activity comprised only 10 percent and those with no experience comprised only 4 percent, whilst the rest of the respondents had a lot of experience (41 percent), more than average experience (26 percent), and an average experience (19 percent) with uploading files. It only means therefore

that if there is a gap to fill in, in terms of uploading files, this is only for the 10 percent who had a little experience and the other 4 percent who had no experience. Most of the respondents were therefore familiar with this task of uploading files.

Furthermore, participating in online academic discussions was a popular activity for the 27 percent of the academic staff in the survey who claimed that they had a lot of experience with this activity. There were 23 percent who claimed of having an average experience with online academic discussions and another 23 percent who said that they had a more than average experience with this activity. Most of the improvement that the institution must undertake is towards the 19 percent who had a little experience with online academic discussions, as well as towards the 8 percent who had no experience with this activity. It is worthy of note that even though the responses demonstrated such figures for participating in online academic discussions, the respondents however showed better results for finding information online. This is because only 3 percent claimed of having no experience with this activity (finding information online), whilst only 4 percent indicated their having a little experience with it. Online academic consultations in the institution also needed improvement since 14 percent had no experience with its use whilst 16 percent had just a little experience. The results were congruent with Plakitsi's (2013) assertion that technology is value-laden and encourages people to engage. Relating to the results, an interesting study to cite is that of Renzi and Klobas (2008) who asserted that material upload, use of e-forums, and collaborative learning through computer support are approaches to e-learning, and the use of these approaches enables identifying substantial differences in the attitudes and perceived behavioural control of the users.

Similarly, the academic staff appeared to have been more engaged in the use of ICT to prepare lessons than in online academic discussions, online academic consultations, and conducting online examinations. This is shown by the meagre number of those who had a little experience with preparing lessons using ICT and those with no experience with this activity (8 percent and 6

percent respectively). It means that a larger number of the academic staff used ICT in the preparation of their lessons (86 percent being distributed to having a lot of experience, a more than average experience, and an average experience). The results for the use of ICT to communicate with colleagues were however not as good. This is indicated by 20 percent respondents who had a little experience with using ICT to communicate with their colleagues, and another 10 percent who had no experience with using it at all. There is therefore a need for the case organisation to improve this domain as a part of its LMS. This may be related to Renzi's (2011) study, which highlighted effective online teaching requiring online social learning with social interaction.

The entire MS Office, a basic operating system known to many, was not known to some respondents. For example, there were 15 percent who knew how to use the entire MS Office only to a little extent, and there were 8 percent who knew its entirety to no extent. This may mean that the academic staff might be limited to using some parts of the MS Office only, like the Word and the Excel, and might not be familiar with the other aspects.

There is a similar direction that the academic staff exhibited in terms of the use of the Moodle software, LAMS software, JUSUR software, and the BLACKBOARD – all of the respondents appeared not to be very familiar with these sets of LMS software. However, they demonstrated a high degree of utilisation of digital learning resources for their teaching activities. The respondents were nevertheless not generally engaged in reading up-to-date researches on e-learning, as shown by their large number of responses indicating their engagement in reading up-to-date researches on e-learning to a little extent (34 percent) and to no extent (31 percent). Noteworthy here is the claim of McGill and Klobas (2009), that benefitting fully from the potential outcomes of LMS necessitates research on addressing LMS' role in learning success. The authors claimed that the task-technology fit influences LMS' perceived impact on direct and indirect learning through level of utilisation.

Although the results for the *use of ICT to communicate with students* had been almost similar to the results for the *use of ICT to communicate with colleagues,* it may be observed that the former had fewer respondents who had no experience and had a little experience with this activity compared to the latter. Of a worth-mentioning point here is that, engagement with ICT can lead to enhanced learning and can boost teachers' planning to engage with ICT during their teaching career (Siragusa and Dixon, 2009).

6.2.2 Easy to use

Alternatively, more than half of the academic staff found LMS easy to use (the responses were split into finding LMS easy to use to a great extent and to some extent). The same was demonstrated for finding LMS useful (the responses were split into finding it useful to a great extent and to some extent). This is consistent with the idea forwarded by Liu et al. (2009), that perceived usefulness and ease of use of a certain technology determine the user's intention to use such technology. The results also matched the findings made by Gibson et al. (2008) in their study - that perceived usefulness is a strong determinant of technology acceptance. Of an important point in this regard is the relevance of the TAM framework, which suggests that users are faced with the perceived usefulness and perceived ease of use of a new technology (Ku, 2009), which could explain why those who were not yet fully attuned to LMS adoption and use will eventually learn it.

6.2.3 Readiness

It was shown that majority of the respondents did not have a lot of information about e-learning networks. There were more respondents who believed that ICT is easier to use than traditional methodologies, demonstrating their responses in two levels of extent (to a great extent and to some extent). It was note-worthy that majority of them exhibited their positive intention (of various levels) to use LMS in the classroom. Kakbra and Sidqi (2013) earlier stressed the importance of active involvement of both teachers and students through ICT to transform and restructure traditional learning methods. The participants' active

involvement in LMS implementation was linked to Ng et al.'s (2013) study, which found that the use of technology was directly related to behavioural intention to use. An important point to raise here is that prior experience with LMS use and relevance of LMS use to the job (Alharbi and Drew, 2014) could be used to understand the participants' active LMS involvement.

On the other hand, there were some 22 percent and 30 percent who were not ready and somewhat not ready respectively to use LMS tools. This would indicate a need for a training programme to improve the LMS-related skills of the academic staff. The respondents were similarly interested to hone their ICT skills, in which 38 percent denoted that they were interested to a great extent, and 43 percent demonstrated that they were interested to some extent to indeed improve their ICT skills. Likewise, they were generally interested to learn e-learning technologies. Their response to being confident with ICT and willingness to use it more effectively was lower however, compared to their interest to hone their ICT skills.

6.2.4 Correlation of attitude towards LMS and LMS use

A strong positive relationship was revealed between good/bad attitude towards LMS use on one hand, and favourable/unfavourable attitude towards its use, on the other hand, when correlation coefficient was conducted to see their link. The resulting *r* was 0.71261 to indicate this relationship. The result means that the two variables moved in tandem. The responses on good/bad attitude towards LMS increased whilst the responses on favourable/unfavourable attitude towards its use also increased. Hence, as good/bad attitude increased, there was a high likelihood of it being related to favourable/ unfavourable attitude towards LMS use.

The uphill trend in the scatter chart below shows this relationship:

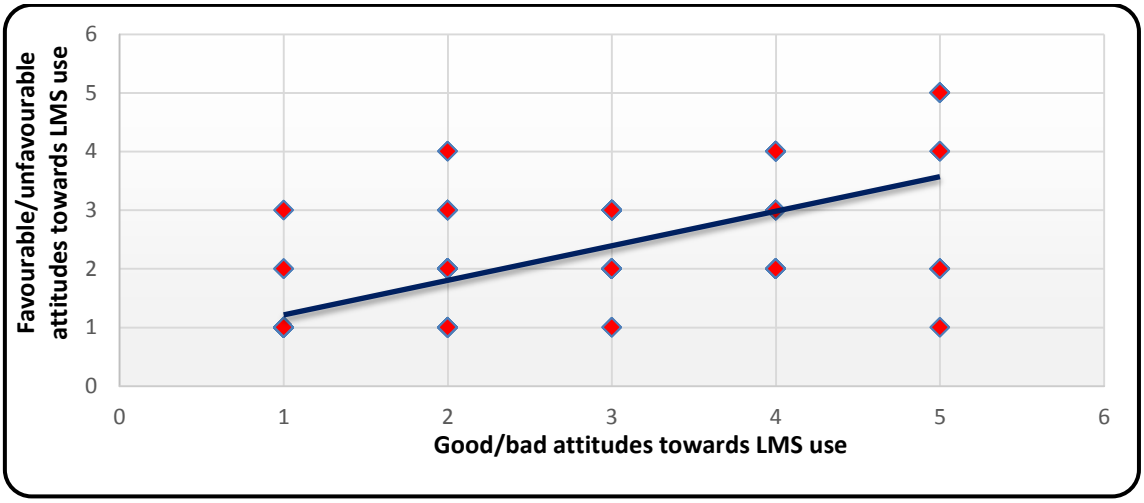

Figure 6-2: Good/bad vs. favourable/unfavourable attitudes towards LMS use

6.2.5 Correlation of perceived ease of use and usefulness

A strong positive correlation was signified by perceived ease of use and perceived LMS usefulness. The result of the correlation coefficient that was performed for this was r = 0.90525. It means that as ease of perceived use increased, so did the perceived LMS usefulness. This strong positive relationship is indicated in the scatter plot below, through its uphill trend line.

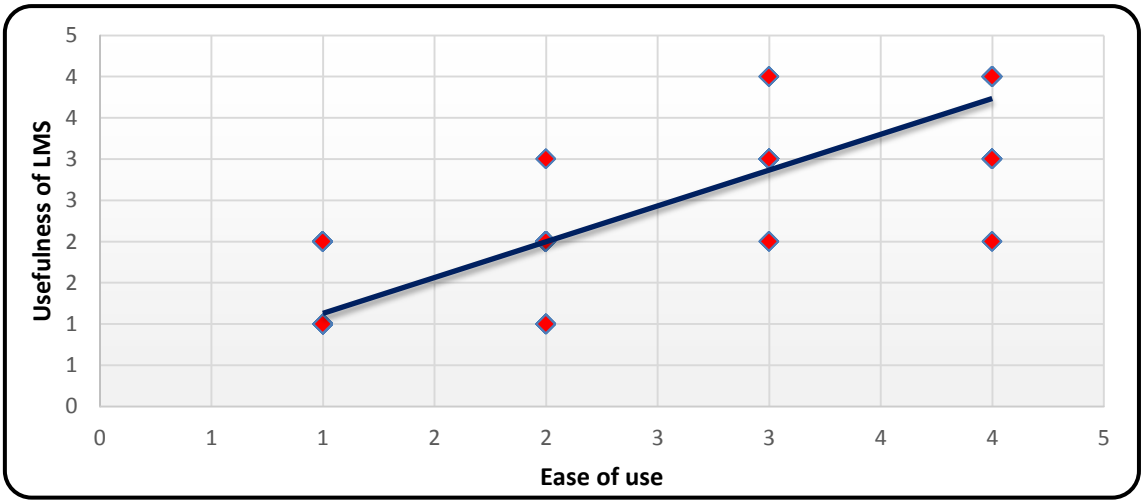

Figure 6-3: Ease of use vs. Usefulness of LMS

Thus, the above result shows that whilst the respondents perceived that LMS was easy to use, it was also useful. This is also supported by the study of Chen and Chen (2014).

The study of Chen and Chen (2014) is note-worthy in this aspect, in which the authors cited that the School Administration Information System (SAIS) impact perceived usefulness and ease of use of technology positively, and this is parallel to the view of the academic staff on the usefulness and ease of use of LMS in their institution. This was supported by Al-Mushasha (2013) in which he identified university support, computer self-efficacy, perceived usefulness, and ease of use as determinants of e-learning acceptance in higher education. Park et al. (2009) also pointed to perceived ease having a positive influence on the use and perceived usefulness of a new technology.

6.2.6 Correlation of Ease of Use and LMS easier than traditional teaching

Correlation coefficient was performed to find the relationship between perceived ease of LMS use and perceived easier use of ICT over traditional methodologies. A strong positive correlation was derived, which was signified by r = 0.87645. This result indicates that as perceived ease of LMS use increased, so did the perceived easier use of ICT over traditional methodologies.

The scatter chart bearing an uphill trend line shows this strong positive relationship between the two:

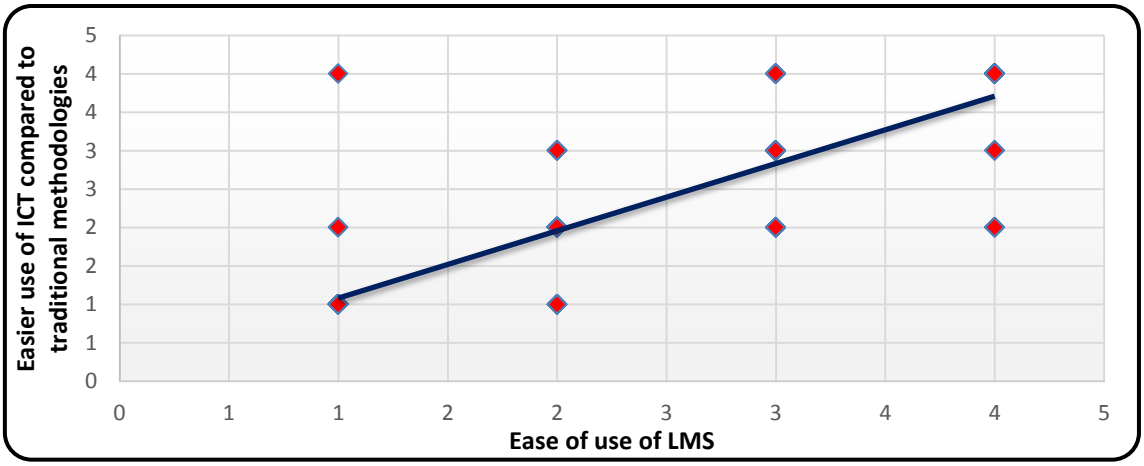

Figure 6-4: Ease of use of LMS and Easier use of ICT compared to traditional methodologies

6.2.7 Regression of Ease of use and LMS usefulness

In addition, the result of a multiple regression revealed that perceived ease of use of LMS (p-value = 0.018626 had no effect on LMS usefulness (p-value = 2.59E-10), given the significant level of 0.05. This is shown below:

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
INTERCEPT	0.9864	0.1523	6.4751	4.23E-10	0.6866	1.2863	0.6866	1.2863
EASE OF USE of LMS	-0.3367	0.1423	-2.3667	0.018626	-0.6167	-0.0567	-0.6167	-0.0567
LMS usefulness	0.9727	0.1483	6.5601	2.59E-10	0.6808	1.2646	0.6808	1.2646

In addition, the group means are not equal, as suggested by the F-value (56.852426).

ANOVA

	df	SS	MS	F	Significance F
Regression	2	130.8164593	65.40822965	56.852426	1.89765E-21
Residual	280	322.1376043	1.150491444		
Total	282	452.9540636			

6.2.8 Regression of Ease of Use and Availability of Resources

A multiple regression analysis was performed between perceived ease of LMS use and perceived availability of LMS resources. The resulting p-value for perceived ease of LMS use was 2.6118E-35, whilst the p-value for perceived availability of LMS resources was 2.7237E-07. It means that the latter had no effect on the former or that they were not statistically significant.

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
INTERCEPT	0.1946	0.1572	1.2382	0.2166623	-0.1148	0.5040	-0.1148	0.5040
EASE OF USE	0.7406	0.0517	14.3301	2.611E-35	0.6389	0.8424	0.6389	0.8424
Availability of LMS resources	0.2059	0.0391	5.2703	2.723E-07	0.1290	0.2827	0.1290	0.2827

The F-value (145.2339) indicates that the group means are not equal. See the table below:

ANOVA

	df	SS	MS	F	Significance F
Regression	2	228.4917199	114.24586	145.2339	5.36742E-44
Residual	280	220.2573967	0.78663356		
Total	282	448.7491166			

6.2.9 Correlation of Likelihood to improve skills and readiness to use

There was a moderately positive relationship between the likelihood to improve LMS-related skills and readiness to use LMS tools. This was indicated by the result of the correlation coefficient (r = 0.65160), when such correlation coefficient was performed on the two variables. It means that the increase in the responses about the perceived likelihood for the university administration to introduce ways to improve LMS-related skills was alongside an increase in their responses for perceived readiness to use LMS tools. Hence, the respondents generally perceived that the University in which they were connected was likely to introduce ways to improve their LMS-related skills and were likewise generally ready to use LMS tools. The trend line below shows the moderately positive relationship between the likelihood to improve LMS-related skills and readiness to use LMS tools , as perceived by the respondents.

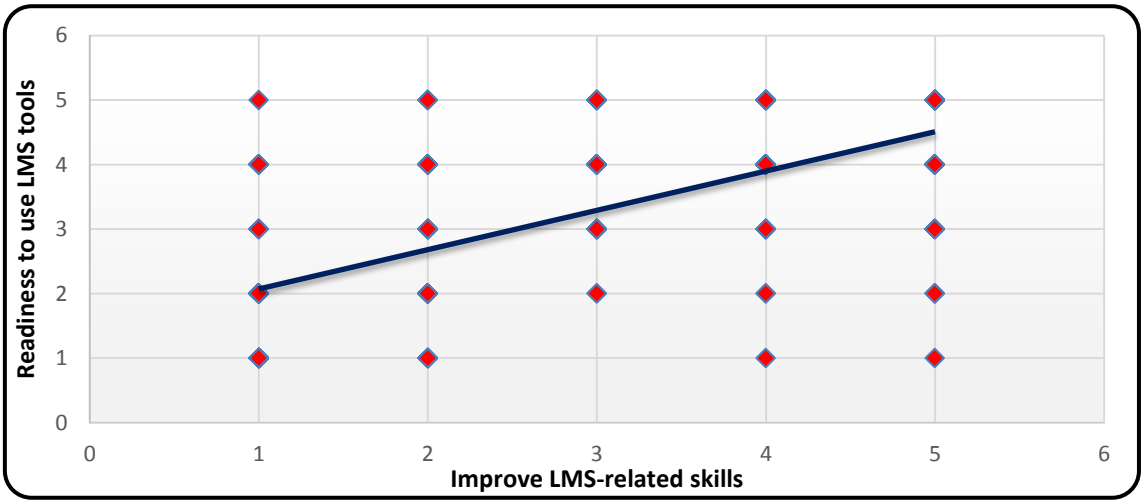

Figure 6-5: Likelihood to improve LMS-related skills vs. Readiness to use LMS tools

Similar to the correlation result above, Stewart et al. (2010) denoted a positive relationship between technology acceptance and behaviour intentions. Further, in their study which drew on the Technology Acceptance Model, Fathema and Sutton (2013) identified how LMS adoption was influenced by the attitude of faculty members toward this technology. This would explain why LMS is not

overwhelmingly accepted in the case organisation. Park (2009) also indicated that TAM, which is a theoretical construct of this study, serves as an effective theoretical tool in understanding the e-learning acceptance of LMS users.

6.2.10 Correlation of Readiness to use and Willingness to learn

A weak positive relationship was also revealed by the correlation coefficient involving readiness to use LMS tools and willingness to learn new LMS-related skills, as shown by r = 0.36948. This result indicates that as respondents' readiness to use LMS tools increased, there was a lower likelihood for their willingness to learn new LMS-related skills to likewise increase. Hence, as they were generally ready to use LMS tools, there was a weak likelihood for them to be also willing to learn new LMS-related skills. The scatter plot below also demonstrates this weak correlation.

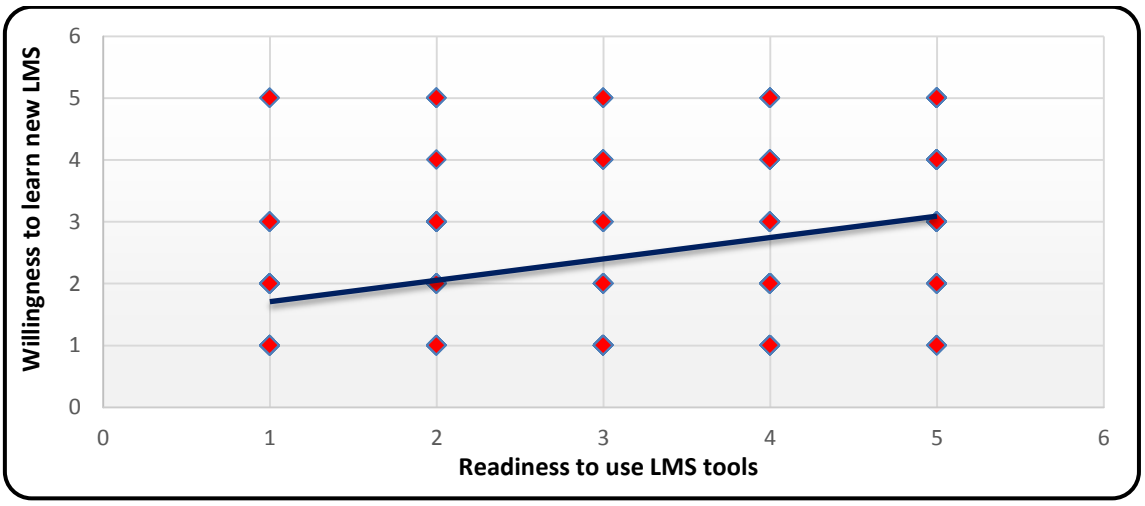

Figure 6-6: Readiness to use LMS tools and Willingness to learn new LMS-related skills

The result of the correlation coefficient above therefore indicates a further need for the university administrators to motivate the academic staff to develop an interest to learn new LMS-related skills.

6.2.11 Correlation of online discussion and attitude to LMS

This study also made a correlation coefficient analysis on the relationship between participation in online academic discussions and the respondents'

positive/negative attitude towards LMS use. The corresponding *r* was 0.86599, thereby suggesting a strong positive correlation. The strong positive correlation between participating in online academic discussions and positive/negative attitude towards LMS use indicates this: as the respondents' experience with participating in online discussions increased, their positive attitude towards the use of LMS in their teaching methodology likewise increased. Hence, they generally participated in online academic discussions and viewed that the use of LMS in their teaching methodology was a positive thing.

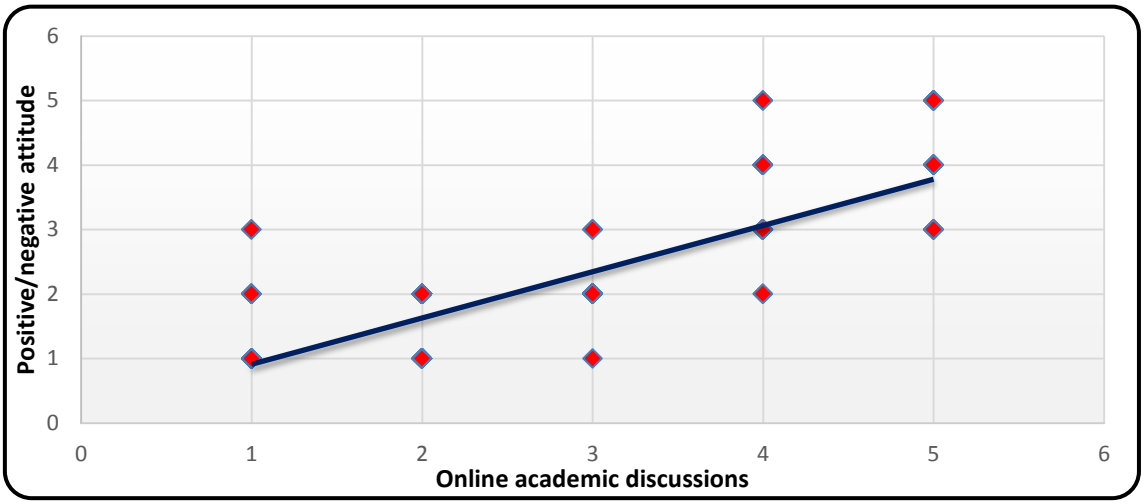

Figure 6-7: Online academic discussions vs. Positive/negative attitude towards LMS use

6.2.12 Correlation of online examination and training

A larger percentage of the respondents demonstrated an even further need for training the academic staff in conducting online examinations, which are a feature of a learning management system. This need is shown by the 20 percent response of "I have no experience" and 32 percent response of "I have a little experience". It is related to Palahicky's (2014) assertion that in order to facilitate an effective use of LMS tools, instructors must obtain the needed expertise for technology utilisation. This would likewise mean being familiar with the technology being adopted, which accounts for the users' technology acceptance. It is also parallel to the study of Al-Busaidi and Al-Shihi (2010), which emphasised that the success of LMS adoption requires instructors'

acceptance of the technology, which consequently promotes learners' LMS utilisation.

6.2.13 Correlation between Intention to Use and Likelihood of Resource

A moderate uphill relationship was demonstrated by the correlation between intention to use LMS and perceived likelihood for the university administrators to acquire the needed LMS resources. This moderate uphill relationship was shown by the result of the correlation coefficient, which was r = 0.51790. The interpretation that could be derived from this is that as there was an increase in intention to use LMS, there was also a corresponding increase in the respondents' perceived likelihood for the university administrators to acquire the needed LMS resources. However, such increase was in a moderate manner. Thus, they generally intended to use LMS, and likewise perceived that the university administrators were likely to acquire the needed LMS resources. The trend line in the scatter chart below reveals this moderate relationship between respondents' intention to use LMS and perceived likelihood for the university administrators to acquire the needed LMS resources.

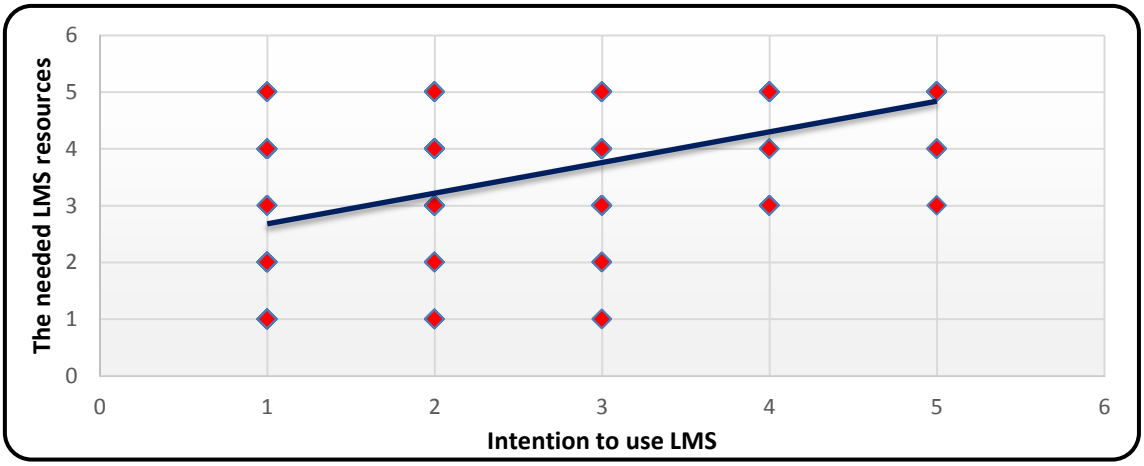

Figure 6-8: Intention to use LMS vs. Likelihood to acquire the needed LMS resources

6.2.14 Correlation between Intention to Use and Perceived Availability of Resource

A moderate uphill relationship was also revealed between intention to use LMS and perceived availability of LMS resources, when a correlation coefficient was performed on the two variables. The result was r = 0.61320, which means that the moderate increase in the respondents' level of intention to use LMS in the classroom was also coupled with an increase in their view of the availability of resources for LMS implementation in their university. Hence, as there was generally an intention to use LMS, respondents also perceived that the available LMS resources in their institution were generally adequate. Thus, they generally intended to use LMS and likewise perceived that there were available LMS resources in their institution. The moderately positive relationship between intention to use LMS and perceived availability of LMS resources is demonstrated by the scatter chart below, which takes on an uphill trend.

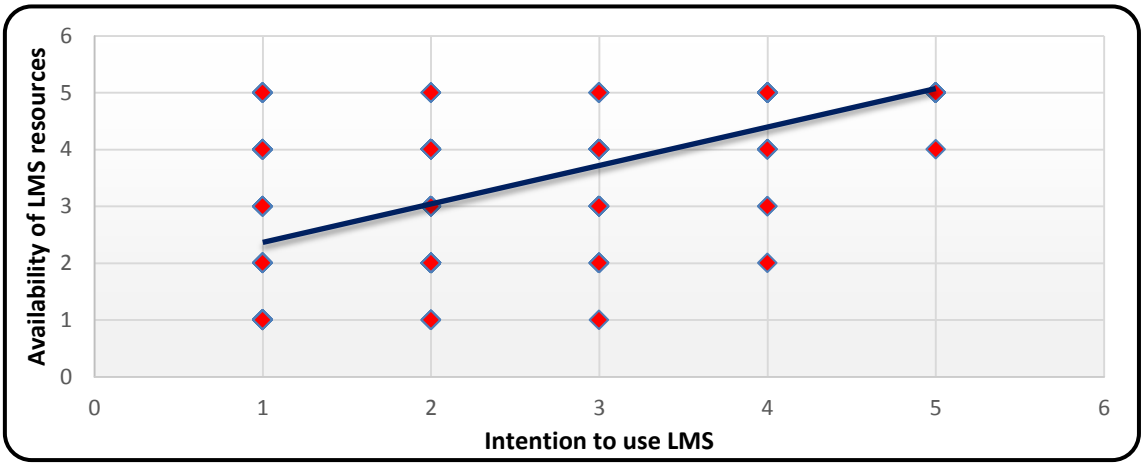

Figure 6-9: Intention to use LMS vs. Availability of LMS resources

The above denotes that as the respondents had an intention to use LMS, there were adequate available LMS resources in their institution. This is congruent with Teo's (2009) claim that behaviour intention to use technology is strongly determined by perceived usefulness.

6.2.15 Correlation of Willingness to learn and Likelihood of university support

The respondents' willingness to learn new LMS-related skills was also investigated vis-à-vis perceived likelihood for the university administrators to introduce ways to improve LMS-related skills using the correlation coefficient. A weak positive relationship was indicated, as demonstrated by the corresponding *r,* which was 0.32761. This relationship denotes that there was a lower likelihood for an increase in the willingness to learn new LMS-related skills being associated with perceived likelihood for the university administrators to introduce ways to improve LMS-related skills. Hence, as the respondents were generally willing to learn new LMS-related skills, there was a weak likelihood for them to perceive that the university administrators will introduce ways to improve their LMS-related skills.

The uphill trend line in the scatter chart below reveals this weak correlation between willingness to learn new LMS-related skills and perceived likelihood to introduce ways to improve LMS-related skills.

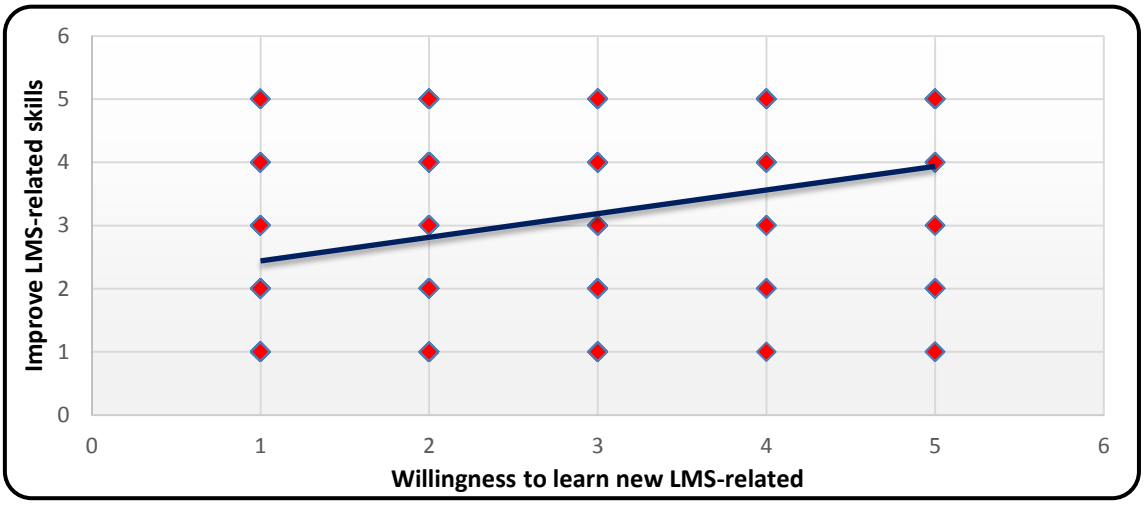

Figure 6-10: Willingness to learn new LMS-related skills vs. Likelihood to introduce ways to improve LMS-related skills

The result suggests that as the respondents were generally willing to learn new LMS-related skills, the university administrators were likely to introduce ways to improve these skills. In the literature, the lack of ICT skills was identified as a

barrier to LMS implementation (e.g. Munkvoid (1999); Garcia et al. (2011); Buabeng-Andoh (2012);Garrote (2012).

6.2.16 Correlation of LMS Usefulness and Socio-economic challenges

Correlation coefficient was also performed to find out any relationship between LMS usefulness and the perceived full implementation of LMS being slowed down by Iraq's socio-economic challenges. The corresponding result was r = 0.24093, indicating a weak positive relationship between the two. It denotes that as perceived LMS usefulness increased, there was a lower likelihood for it to be correlated with the perceived full implementation of LMS being slowed down by Iraq's socio-economic challenges.

The scatter plot below shows this weak correlation:

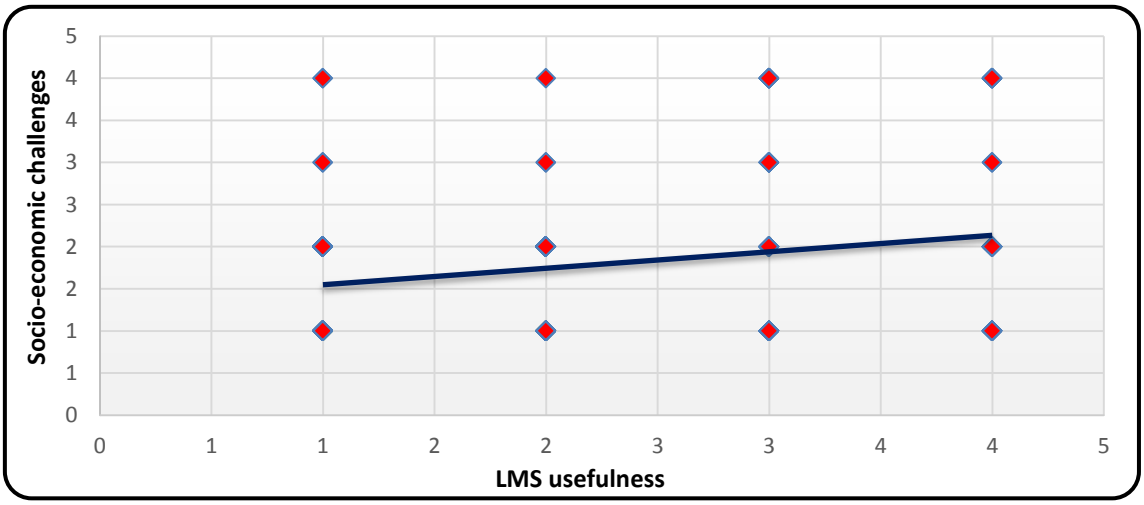

Figure 6-11: LMS usefulness vs. Socio-economic challenges slowing down the full implementation of LMS

6.2.17 Regression of Perceived Availability of Resource and Likelihood of university support

A multiple regression was conducted on perceived availability of LMS resources and perceived likelihood for the University to introduce ways for LMS-related skills. Given the significant level of 0.05, the result revealed that the perceived

availability of LMS resources had no effect on the perceived likelihood that LMS-related skills will be introduced in the University.

	Coefficients	Standard Error	t Stat	P-value	Lower 95%	Upper 95%	Lower 95.0%	Upper 95.0%
INTERCEPT	0.6780	0.1164	5.8271	1.5475E-08	0.4490	0.9070	0.4490	0.9070
Availability of LMS resources	0.8243	0.0501	16.4505	5.17048E-43	0.7257	0.9229	0.7257	0.9229
Likelihood to introduce ways for LMS-related skills	-0.0314	0.0486	-0.6458	0.518955004	-0.1271	0.0643	-0.1271	0.0643

Further, the group means are not equal, as suggested by the F-value.

ANOVA

	df	SS	MS	F	Significance F
Regression	2	352.6629792	176.3314896	309.3974	1.22924E-71
Residual	280	159.5773034	0.569918941		
Total	282	512.2402827			

6.2.18 Correlation of Availability of resources and training

On the other hand, the environmental aspect of LMS represented by the availability of LMS resources was correlated with the organisational aspect represented by the likelihood of prioritising LMS training. Thus, when correlation coefficient was performed between the two variables, the result was r = 0.75569, which signified a strong positive relationship. This result suggests that as perceived availability of LMS resources increased, so did the perceived likelihood that LMS training will be prioritised. The strong positive relationship between the two variables is demonstrated by the scatter plot below:

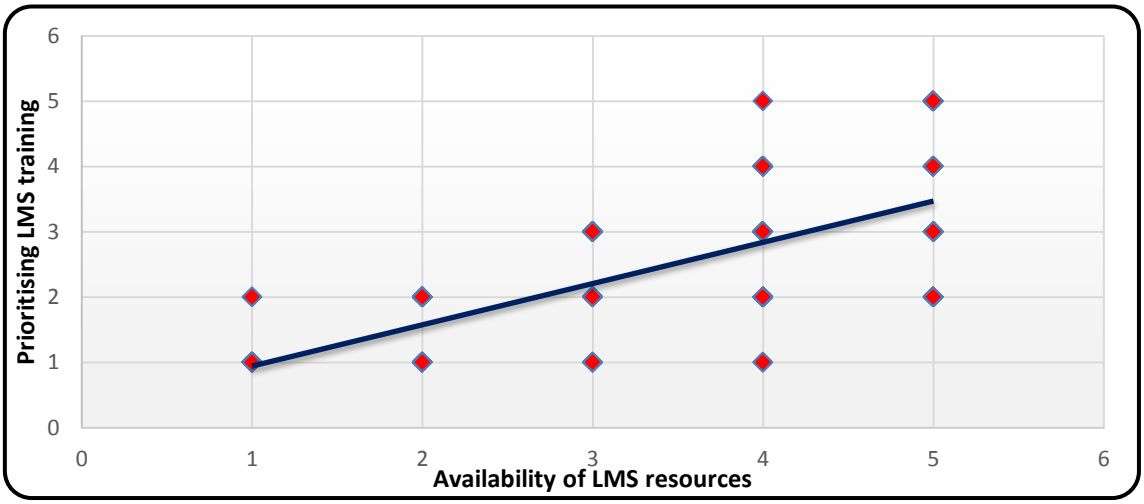

Figure 6-12: Availability of LMS resources vs. Likelihood of prioritising LMS training

As had been pointed out in the literature review, the environmental dimension covers factors of the institution's surroundings (e.g. the government, the community, and other stakeholders) that may bear an influence on the organisation's need for technology adoption and its ability for acquiring resources a (Angeles, 2013).

Most of the respondents perceived that the socio-economic challenges in Iraq slow down the full implementation of LMS in their University (the responses were split into perceiving this to a great extent and to some extent). Most of them also perceived that the Iraqi government should to some extent and to a great extent support LMS implementation as these challenges are being

addressed by the government. They were similarly confident that their University can still promote the usefulness of LMS even with the presence of socio-economic challenges to a great extent and to some extent. More importantly, their willingness to use LMS tools in teaching was to a great extent and to some extent not affected by the socio-economic challenges that the country was facing. Radif et al. (2014) mentioned that Iraq has several modern technologies but is lacking in the needed infrastructures through which to utilise them. This aspect shows a need for the Iraqi government to provide support for the LMS adoption in higher education in the country.

6.2.19 Organisation Factors

More respondents also perceived that it was more likely than not for their organisation to introduce ways to improve LMS-related skills. Further, communicating with the University management using ICT had been performed by majority of the respondents. Relating to this, the majority had an acceptable attitude (good, very good, and average) towards LMS use for their teaching methodologies. This is coupled by their constructive view of LMS use in teaching methodology, wherein most responses were distributed to their having a favourable, somewhat favourable, and very favourable attitude towards this. Furthermore, they were generally optimistic (in various levels) – positive, somewhat positive, and very positive – in their attitude towards the use of LMS for teaching methodology.

6.2.20 Environment Factors

The academic staff generally believed that their university must collaborate with the MOHESR for LMS implementation. It was also generally perceived that the resources for LMS implementation were not adequate. More than half of the respondents also believed that it was *unlikely* and *somewhat unlikely* for their institution to acquire the needed LMS resources, indicating their lack of confidence with their organisation for its willingness or capability to acquire these resources. Moreover, more than half or the respondents viewed that the use of LMS tools in the institution was *not secure* and *somewhat not secure*, as

shown by 27 percent and 26 percent responses respectively. Majority however believed that it was more likely than not for the organisation to ensure the security of these LMS tools. Most of them also perceived that the university administrators will prioritise LMS training to improve the ICT skills of the academic staff (in the variations of likely, very likely, and somewhat likely responses).

In terms of necessity of these resources, Asunka (2012; 2013) stressed the importance of collaborative learning resources through participatory activities, which must be implemented in a learning management system.

6.2.21 Correlation of MOHESR relationship and socio-economic challenges

A moderately positive relationship was indicated for perceived collaboration between the University and the MOHESR vs. perceived socio-economic challenges affecting willingness to use LMS tools. This was suggested by the result of correlation coefficient, which was r = 0.68862. It means that an increase in the respondents' perceived collaboration between the University and the MOHESR also had a corresponding increase in their perception of the socio-economic challenges affecting willingness to use LMS tools. Below is a scatter chart that shows this correlation through an uphill trend line.

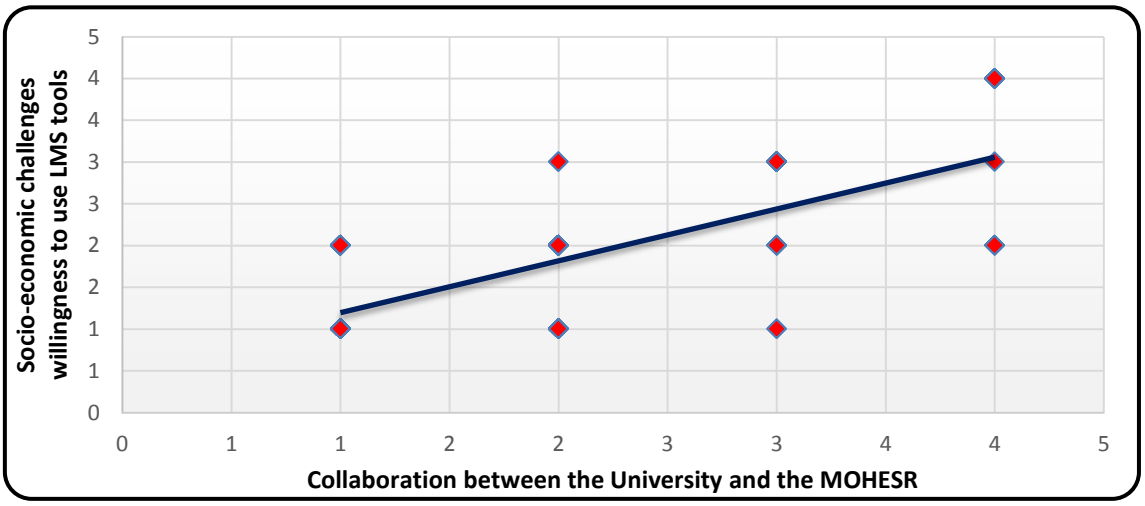

Figure 6-13: Collaboration between the University and the MOHESR vs. Socio-economic challenges willingness to use LMS tools

6.2.22 Discussion the Initial Conceptual Framework

The findings about the aspects of LMS adoption could be linked to Figure 4.6 (in Chapter 4), which demonstrates the relationship between TAM and TOE in LMS implementation. As this study attempts to investigate the technology acceptance of the academic staff of the University of Al-Qadisiyah, it may be posited that they generally lack experience in terms of video conferencing, virtual classroom, participating in online academic discussions, use of some parts of the MS Office, and knowledge about LMS software, such as Moodle, LAMS, JUSUR, and BLACKBOARD. The limitation or inadequacy in all of these - which could be linked to the technological, organisational, and environmental aspects of the LMS implementation - indicates a need to enhance the technology acceptance of the academic staff. The technological aspect of the LMS adoption at the University of Al-Qadisiyah involves the availability of the needed technologies and software and the existing knowledge of the users about the technology. Similarly, Garcia et al. (2011) mentioned that technological incompatibility is a barrier to LMS implementation.

Moreover, the perception of more than half of the respondents that it was unlikely and somewhat unlikely for their institution to acquire the needed LMS resources explains the limited exposure of the respondents to the LMS tools mentioned above. This is part of the organisational aspect of LMS adoption in the University. The organisational aspect of the implementation also points to the unlikelihood of the University administrators to prioritise training, as perceived by the academic staff.

An environmental aspect of LMS implementation, taking the TOE in point, is lack of information about e-learning networks. Given this scenario, it is not surprising that there are those who are not ready to use LMS tools, as indicated in the survey.

6.3 Interview Results

As mentioned in the previous chapter, anonymity of respondents was ensured in the collection of survey data and interview data. Thus, the real names of the interview participants were disguised in this research due to ethical considerations already described. There had been eight participants in the interviews – five were faculty members; two were IT personnel; and one was an administrator. The five teaching personnel were givens named as Mr. Ahmed, Dr. Arshed, Mrs. Naijar, Mr. Helal, and Mrs. Mashi. The IT personnel were Mr. Daher and Mr. Haddad, whilst the administrator was Dr. Touma as shown in the table below:

Interviewees	Male	Female	Total
Teachers	3	2	5
IT Personnel	2	0	2
Administration Personnel	1	0	1
Total respond	6	2	8

Table 6-1: Interviewees' job positions and gender

The interviews result is in Appendix D.

6.3.1 Problems encountered in the integration of LMS in education

The interview participants were asked about the problems being encountered in their university's LMS integration. Teacher 1 stated that these were lack of e-textbooks and related LMS materials, students having a hard time and needing extra help, and integrating lecture to the system. He also needed to study how things must be done with the new technology and had to spend much longer time familiarising himself with it. Teacher 2 identified these problems as lack of needed skills and training. At first, he did not welcome the idea of using LMS in his subject and was using the computer only to record students' grades and communicate within his colleagues.

Teacher 3 mentioned that the problems in the LMS integration in education had been inadequate technologies and support, as well as lack of ICT skills on his part. For Teacher 4, the major problem he encountered was lack of knowledge and skills about the new technology; and as a result, he did not have willingness and interest to implement LMS integration. He tended to delay its adoption in his classes, until he had to face the problem and learn the needed technologies. He mentioned that it was hard in the beginning.

For Teacher 5, the problems she encountered were how to facilitate effective communication with students, the need to provide e-books and other e-materials, and old computers that needed replacing. IT personal 1 also mentioned that the problems he encountered were outdated computers and software. On the other hand, IT personal 2 said that these problems were lack of adequate computer software and hardware, and lack of ICT skills amongst teachers. He furthered that the classrooms could not be adequately designed as an environment with ICT technologies because of lacking computers and computer software.

On the point of view of Administration Personal, the problems were expensive technologies that needed to be purchased for the adoption, and lack of ICT-related skills of the academic department.

The diagram below summarizes the interview participants' answers relative to question one:

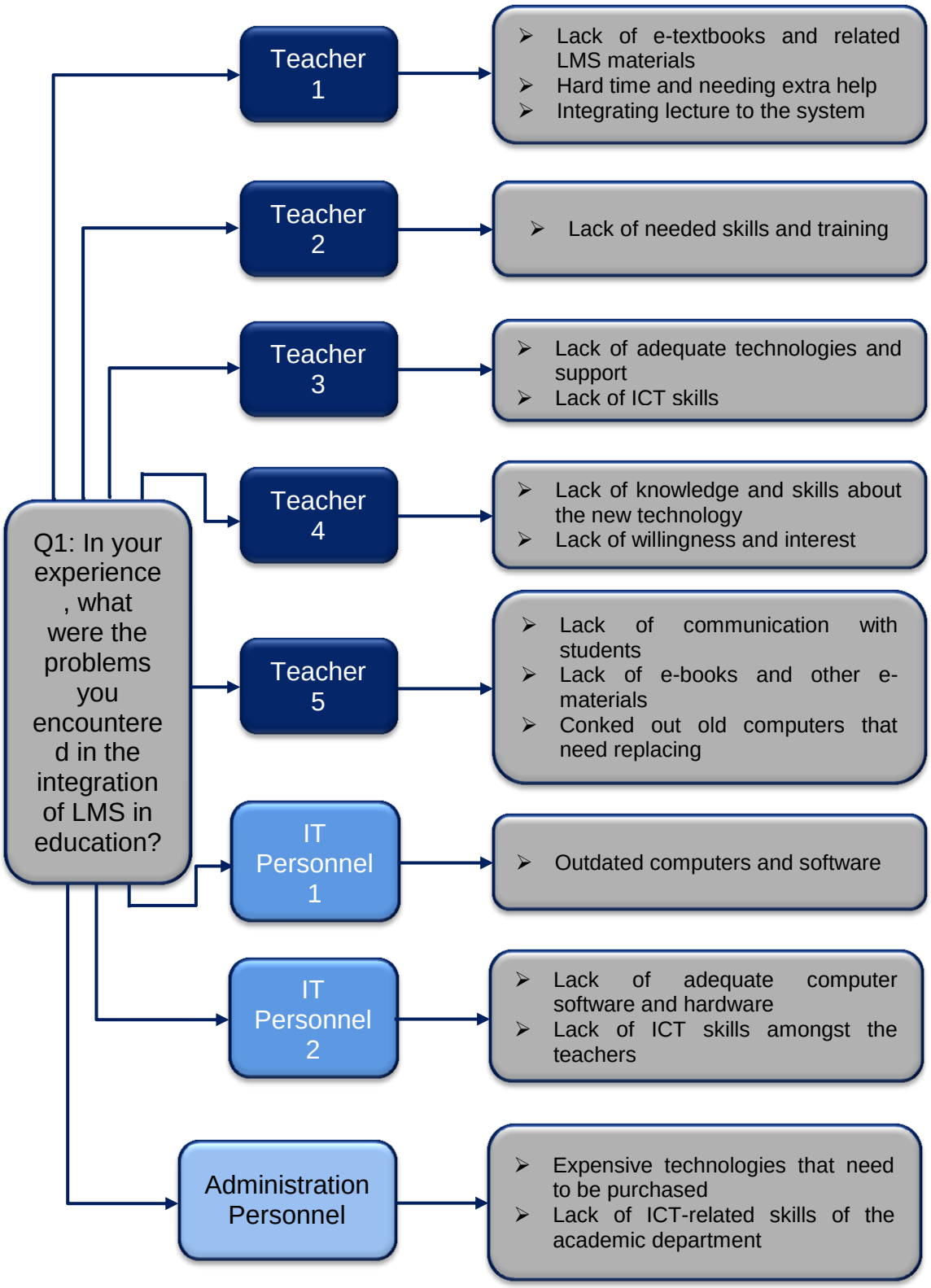

Figure 6-14: The interview participants' answers related to Question 1

6.3.2 Main barriers with the use of LMS

When asked about the main barriers with the use of LMS, Teacher 1 stated that these were lack of training amongst teachers; lack of interest to add to this; lack of time; and lack of support from the organisation. He noted, “If these barriers are properly addressed, then we could probably have a successful LMS integration in our university.” Teacher 2 claimed that the main barriers were his lack of adequate knowledge to use the new system and his likewise lack of interest because of this inadequacy. “I also observed that the entire university was not prepared logistically and technologically when it implemented the LMS,” he added. Teacher 3, on the other hand, stated that the barriers to the implementation were lack of adequate technologies and support, and lack of ICT skills, similar to his identified problems earlier. Lack of ICT skills was also cited by Teacher 4 as a barrier, alongside lack of ICT skills and lack of preparedness for such implementation. Teacher 5 specified these barriers as unprepared classrooms and teachers for LMS utilisation.

Conversely, IT Personal 1 stated that these barriers were teachers not having enough skills to teach with technology. *He said, “… some of them are hard to train as well, and this is because of their lack of interest.”*

The diagram below summarizes the interview participants’ answers relative to question two:

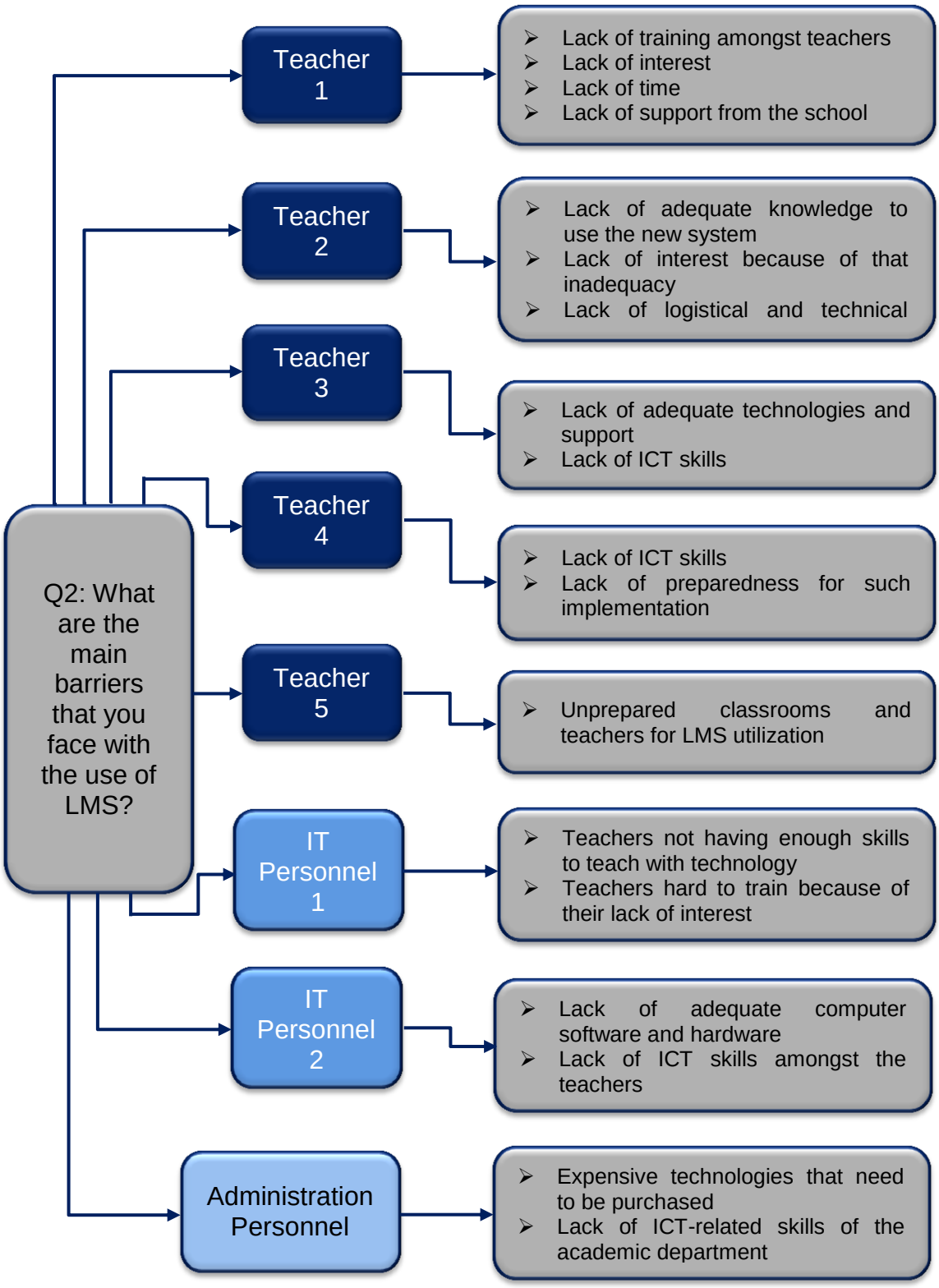

Figure 6-15: The interview participants' answers related to Question 2

6.3.3 Addressing the main barriers

In terms of how their organisation addressed these barriers, Teacher 1 stated that this was by providing training programmes to instructors, but perceived that these training programmes must be in-depth. Teacher 3 also cited the provision of training programmes through the IT department as a way of his university to address the barriers.

Teacher 4 underscored the idea that his organisation was trying as much to help by commissioning the IT department to conduct a training programme to teaching personnel, but the lack of new and modern equipment would sometimes pose as another problem.

Teacher 5 pointed out that his organisation addressed these barriers by taking in talented IT personnel tasked to train teaching personnel on the needed LMS-related skills and expertise that must be learned. Slowly, they were able to adapt to the new culture that LMS integration was posing on them.

IT Personal 1 revealed that lack of interest to learn new ICT skills could be remedied by making the teaching personnel familiar with learning management systems, and ICT in particular. As time went by, he observed that they were eventually able to acquire the needed skills through ICT-related training programmes and seminars.

Similarly, IT Personal 2 pronounced that the IT team was made to identify the problems in the implementation, and they pointed to lack of computers and software amongst the top priority that must be handled immediately. Thus, the university purchased a new set of computers and they installed the needed software as well. They also identified lack of technological skills amongst teachers, and this was addressed by providing them training programmes relating to ICT adoption.

Administration Personal also articulated that they addressed the barriers by assigning the IT department to teach the teachers on acquiring ICT skills. They also determined a supplier with less expensive offering from whom to purchase

all the needed computers and other equipment. He broadened his discussion by saying that the first training programme was on 7th January 2014 for the academic staff working at the Teaching and Academic Development Centre (TADC). Correspondingly, the IT staff working at Computer Centre and Internet Service (CCIS) began a new course – MOODEL - to teach academic staff, although they did not have a good experience and they are not conversant with all aspects relative to free software. Then, they began a new scheme for training academic staff from various disciplines to deploy the benefits of this software and how academic staff can use it effectively to improve the output of the educational process, relying on the principle of training of trainers (TOT).

The diagram below summarizes the interview participants' answers relative to question three:

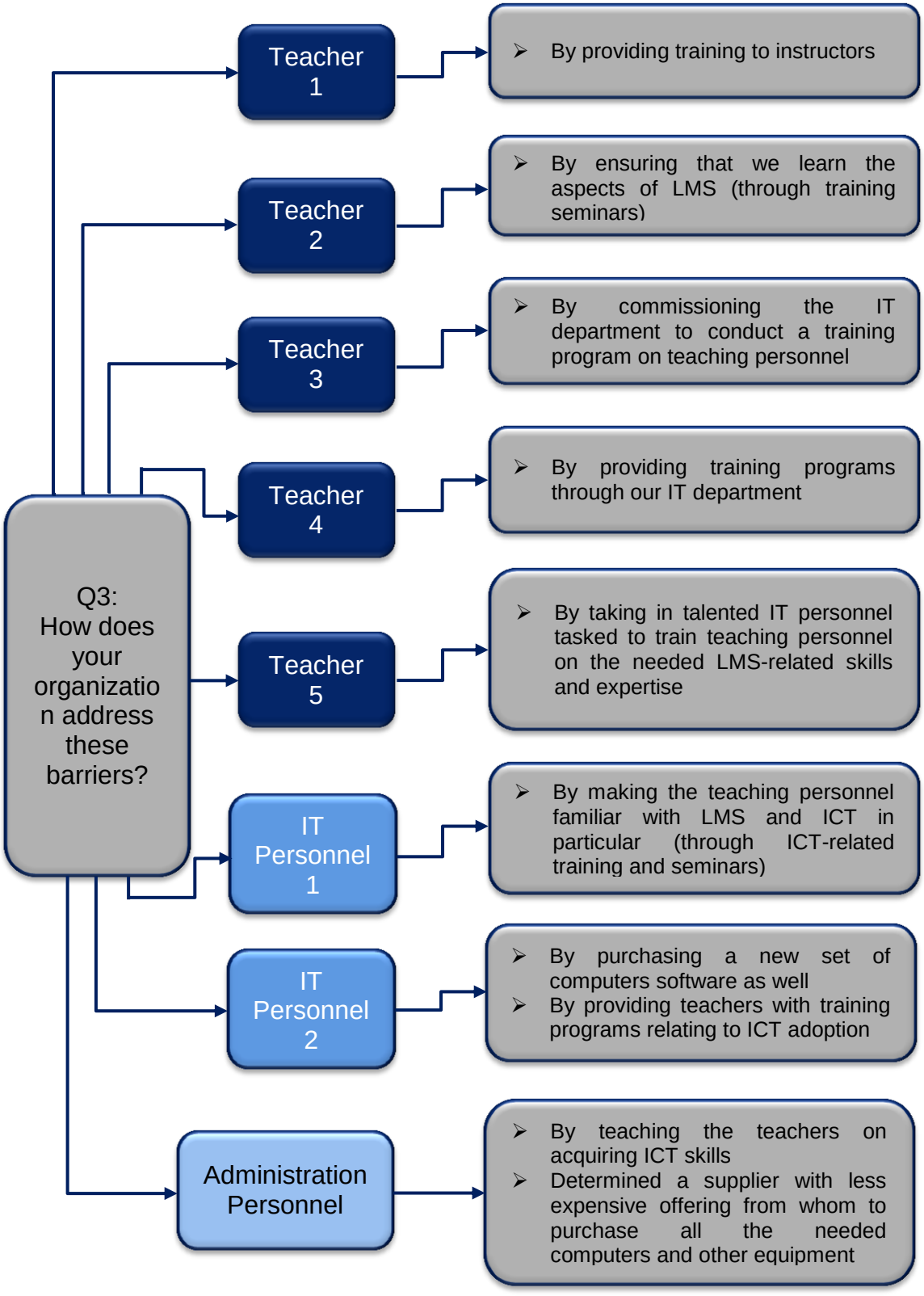

Figure 6-16: The interview participants' answers related to Question 3

6.3.4 Enabling actions to achieve effective LMS integration

According to Teacher 1, the enabling actions in achieving effective LMS implementation are training programmes and regular consultation with faculty members on ICT-related matters. He stated that the impact was certainly improved technological skills on the part of the faculty, better ICT use for students, and enhanced facilitation of learning. For Teacher 2, the enabling actions are the support of the higher education ministry down to higher education institutions, sufficient LMS training to teachers, and adequate ICT infrastructure and technologies to be used by both the faculty and students. He surmised, *"It all boils down to support from the upper organisation down to the lower structures."*

For Teacher 3, these enabling actions are ensuring the adoption of new and modern technologies to facilitate successful ICT utilisation, adequate training and resources for teaching personnel, and continued support from the higher education administration.

Teacher 4 stated that the enabling actions are support from the Iraqi government through the MOHESR; adequate support from the university itself, such as sending off the teaching personnel outside for effective ICT skills acquisition; and provision of bursary for teaching personnel, sponsored by the university for ICT courses. The impact and timeliness of these are certainly improved LMS adoption, more effective ICT-based technology implementation, and increased number of ICT-based educated students.

For Teacher 5, another faculty member, the enabling actions are cooperation and support amongst teaching personnel, IT department, outside stakeholders like the Iraqi government, other higher education institutions, private organisations, and administration offices that are responsible for the implementation. The impact of cooperation and support is certainly effective LMS integration in higher learning.

Meanwhile, IT Personal 1 asserted that the enabling actions are adoption of modern and updated hardware and software technologies, linked to teaching

personnel with expertise at adopting LMS, supported by the Ministry of Higher Education and by the Al-Qadisiyah University itself. IT Personal 2 supported this by saying that their job in the IT department is to help teaching personnel acquire ICT skills and facilitate the installation of computers and computer software. He said that the students, who are the intended recipients of these efforts, must be able to learn with the aid of technology.

Administration Personal affirmed that the enabling actions are effective adoption of LMS within the classroom, backed by administration and IT support.

The diagram below summarizes the interview participants' answers relative to question four:

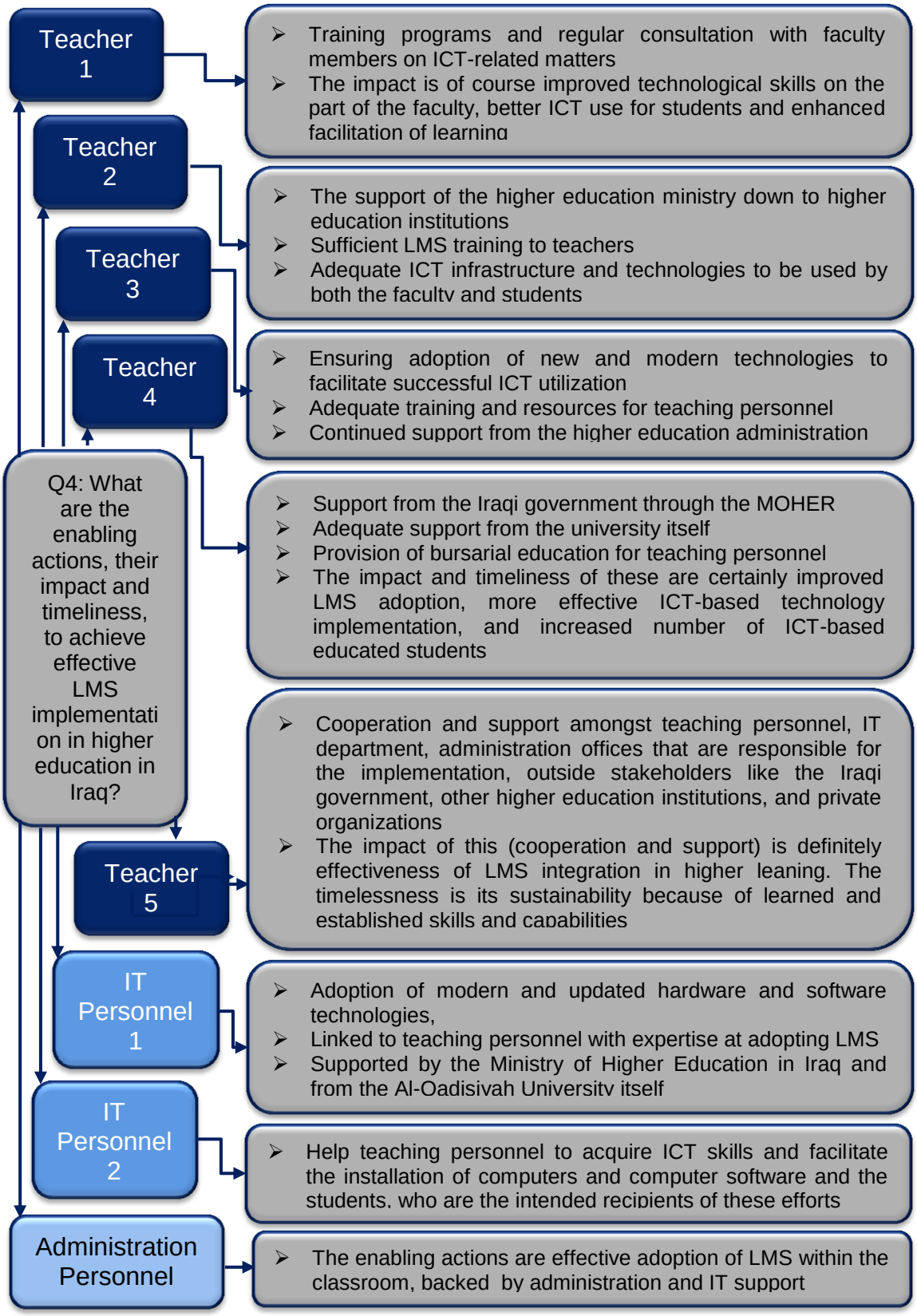

Figure 6-17: The interview participants' answers related to Question 4

6.3.5 Views on the impact of socio-economic conditions on LMS implementation

In terms of his view of the impact of socio-economic conditions on his university's LMS implementation, Teacher 1 averred that Iraq just came out of a long period of war that is indeed devastating, and it affected the higher education system.

Teacher 2 also maintained that Iraq lags behind other Middle Eastern countries in terms of ICT adoption in education. Blended learning has been a common adoption in more developed countries and this method is barely starting in Iraq. He posited that the Iraqi government has not paid much attention to improving ICT in schools as much as it pays attention to other economic issues, but it is understandable because of the priorities set.

According to Teacher 3, the socio-economic conditions of the country reflect the kind of support that the Iraqi government can provide to higher education institutions, and such support is apparently lacking. Compared to other countries, its higher education lacks adequate government support and IT infrastructure for LMS integration, but the university is doing a good attempt at implementing the learning management systems.

Teacher 4 also stated that Iraq's higher education institutions are lacking in good facilities and modern equipment because of the damages of the war, but they are fortunately coping up with this, and are so far successful.

Similarly, Teacher 5 uttered that the socio-economic conditions of Iraq impact Al-Qadisiyah University through the inadequate technological resources being adopted in the university. She said that this is because the Iraqi government needs to take care of what it thinks are more important matters, like economic development and social order.

For IT Personal 1, the impact has been great, and it is on the negative side. "The LMS implementation could not make a complete take-off as a result," he said. On the other hand, IT Personal 2 held that the socio-economic conditions prevented Iraq from focusing on technological development. He said that all

ICT-related endeavours that Al-Qadisiyah University has initiated so far are its own efforts, with minimum help from MOHESR, if any.

Alternatively, Administration Personal stated that there is currently no funding from the national government to allocate to higher education institutions to improve ICT adoption, the reason why the university has to be autonomously in charge of this.

The diagram below summarizes the interview participants' answers relative to question five:

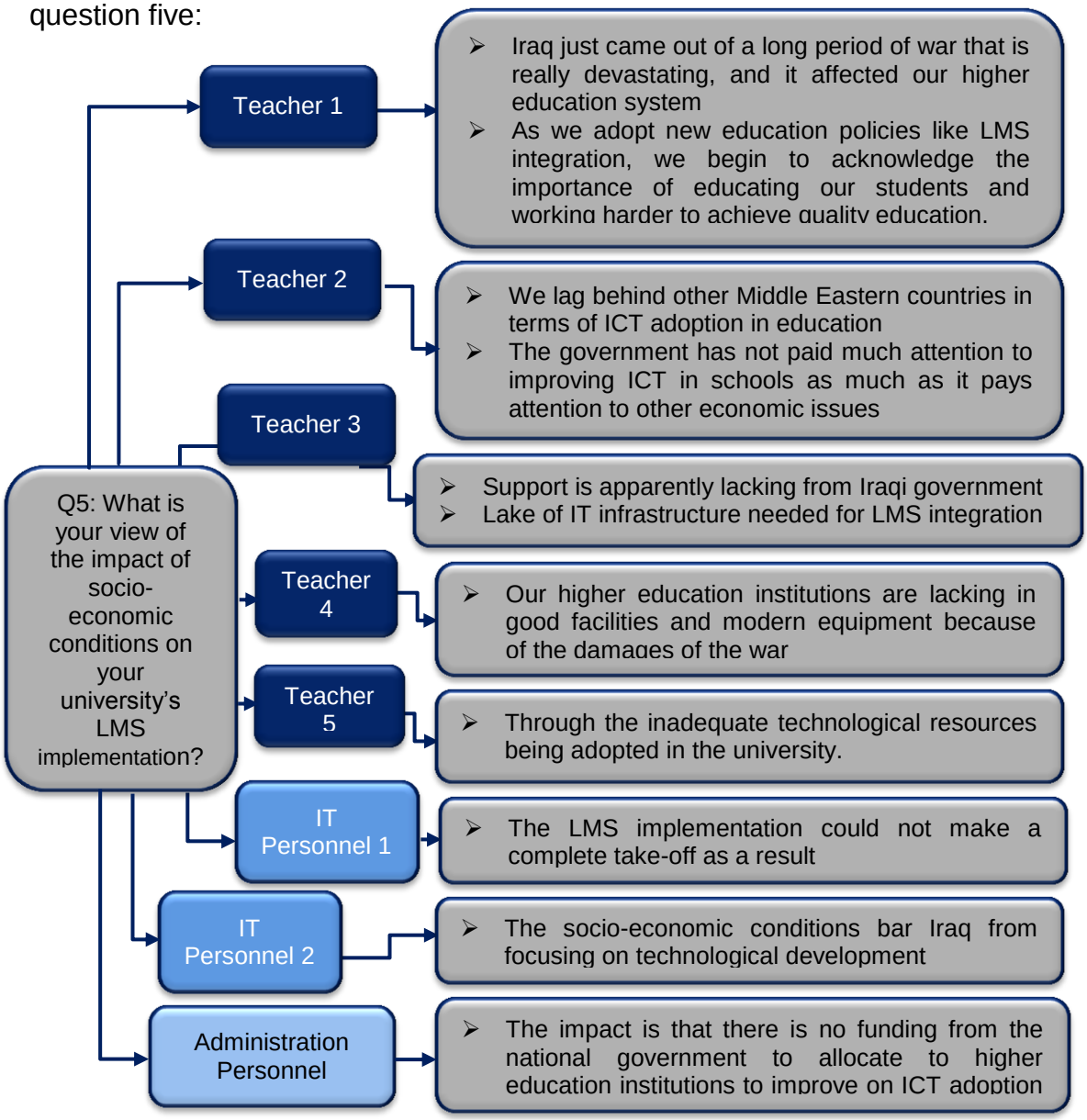

Figure 6-18: The interview participants' answers related to Question 5

6.3.6 Modelling collaboration for successful LMS implementation

The interviewer asked the question, “As a personnel involved in the adoption of LMS, how do you model collaboration for its successful implementation?” Teacher 1 answered the question by saying that modelling collaboration requires knowing the need for collaboration, working for and towards it, and making it a way of life in education. *“I model collaboration by promoting a participatory education both online and offline, meaning, even if students should learn through the traditional and non-traditional methods, they should learn collaboratively by seeking the ideas and help of others, including me, their classmates, and other education personnel.”*

Teacher 2 answered that such collaboration could be modelled by learning it as much as he could and making students learn better through this as well. Teacher 3 said that this is done through shared knowledge and cooperation with other teaching and non-teaching personnel, as well as by fostering a good learning ICT-based environment in his classes. Teacher 4 said that this is through adoption of new technologies for teaching and collaboration with his fellow teachers, the university administration, and students. Teacher 5 demonstrates collaboration by applying and implementing it in his classes to make students work in groups rather than individually. She added, *“In cases that they (students) work individually, I encourage seeking help from their peers and from me or other teaching personnel. All of these are within the context of LMS.”*

IT Personal 1 exhibits collaboration by consistently equipping himself with updated information on the use of technology and new software. This way, he is able to directly support collaboration in LMS implementation. IT Personal 1 stated that modelling collaboration is done by working hand-in-hand with the involved people, and these are the academic personnel, the administration, and students. For Administration Personal, this is done by initiating it to teaching personnel and non-teaching staff like the IT staff, because they have to work closely to effectively implement it. They also promote collaborative learning amongst students as learning management systems are being adopted.

The diagram below summarizes the interview participants' answers relative to question six:

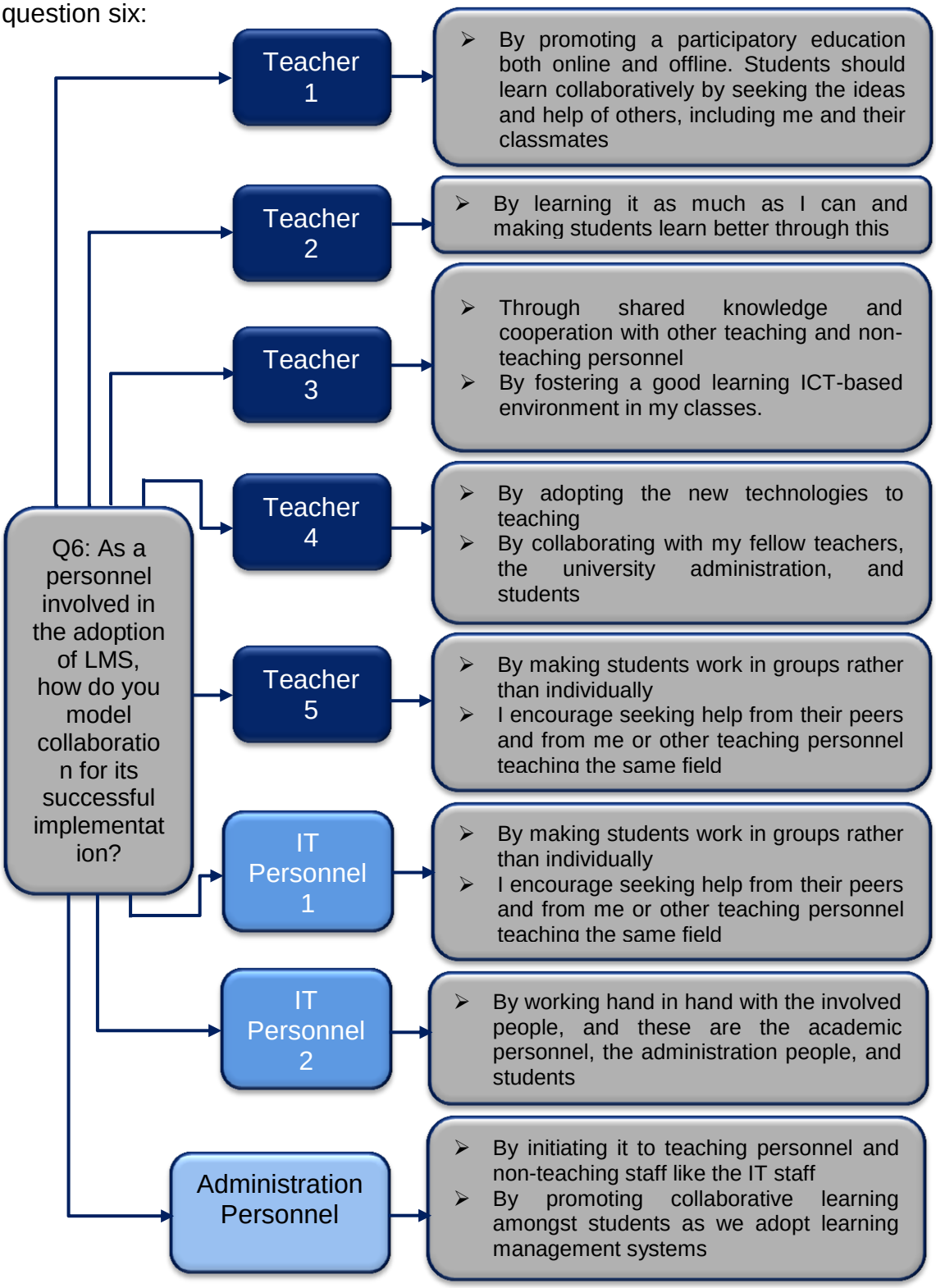

Figure 6-19: The interview participants' answers related to Question 6

6.4 Analysis and Discussion of the Interview Data

The interview data generated the following themes: Provision of training and technical support; technological, organisational, and environmental aspects of LMS adoption, technology acceptance, barriers to LMS implementation; and LMS-led changes in the higher education organisation.

6.4.1 Provision of training and technical support

The interviews thoroughly indicated the reasons why some participants were hostile to LMS implementation. For example, Teacher 3, a faculty member, stated that inadequate technologies and support, as well as lack of ICT skills, were some of the problems she encountered in the LMS integration. Other interview participants responded in this way as well. Despite this, what could be assured about LMS is that, it provides rich opportunities that entrench technological innovations within the learning environment, just as what Al-Adwan et al. (2013) stated about technological developments in higher education. The importance of placing a great consideration on the teachers' awareness and acceptance of LMS tools is shown in the fact that although internet-based learning systems are being integrated into the learning process in many universities across the world, it is important to understand end-users' acceptance of the technology to guarantee the success of its implementation (Al-Adwan et al., 2013). The Theory of Planned Behaviour provides a clear explanation of the importance of online social learning in e-learning in order for LMS to be effective (Renzi, 2011).

An interview with Teacher 4 suggested that improved LMS adoption, more effective ICT-based technology implementation, and increased number of ICT-based educated students were the changes that could be expected from effective training programmes and adequate support from the university. Another faculty member mentioned that the enabling actions for LMS implementation were cooperation and support amongst teaching personnel, IT department, and outside stakeholders (e.g. Iraqi government, other higher education institutions, private organisations, and administration offices) that

were responsible for the implementation. In the literature review, Palahicky (2014) mentioned that lack of technical support is a barrier in effective LMS implementation. On the other hand, Bullen and Janes (2007) stated that e-learning provides direct and/or indirect support to teaching and learning, either within the campus or at a distance.

Noteworthy in this regard was Teacher 1 interview where he said that training programmes and regular consultations with teachers on ICT-related matters were the enabling actions towards effective LMS implementation. Thus, the effectiveness of introducing new LMS technologies and software as emphasised in the survey could be directed toward these. Teacher 1 drew attention to the impact of training programmes and regular consultations with teachers on ICT-related matters. Relating to this, the study of Berge and Muilenburg (2000) posited that a broader range of teaching methods has emerged in relation to changes in technologies, thereby emphasising the needed change management system that goes along with the implementation.

In the interviews, the IT participants also appeared to demonstrate a good level of ICT training, and the teachers denoted having a further need to improve in this area. Moreover, Yueh and Hsu (2008) mentioned that offering instructional support to faculty members is an objective of a learning management system, which could hence address any inadequacy in ICT skills. A worthy emphasis is the importance of e-learning familiarisation; where material upload, use of e-forums, and collaborative learning through computer support are approaches to e-learning use, as emphasised in Renzi and Klobas (2008) using the Theory of Planned Behaviour. Further, of an important focus in terms of ICT training is that of Stewart et al. (2010), which used the Technology Acceptance Model in predicting intention to use e-learning, whereby a relationship between technology acceptance and behaviour intentions could be established. The need for faculty members of the University of Al-Qadisiyah to receive LMS training and support was indicated by this model.

Similarly, Teacher 3 highlighted in an interview that the university commissioned the IT department to conduct a training programme but one problem that must be resolved was the lack of new and modern equipment. Teacher 5 however noted that this had been remedied by taking in talented IT personnel to train teaching personnel to acquire the needed ICT skills. This was in synergy with Asunka's (2013) study, where lecturers were given training, motivation, and appropriate resources to prepare and enable them toward effective LMS use in a course delivery. In the literature review, Palahicky (2014) identified some barriers preventing teachers from using LMS tools, including lack of training, lack of commitment to constructivist pedagogy, lack of experience to use the technology, lack of technical support, amongst others. Buabeng-Andoh's (2012) also identified some barriers to the use of LMS tools, such as lack of ICT skills; lack of pedagogical training for teachers; lack of appropriate educational software; and limited ICT access.

An interview suggested that improved technological skills on the part of the faculty, better ICT use for students, and enhanced facilitation of learning were the impacts of the collaboration between academic and technical staff in LMS. The literature indicates that collaboration in LMS integration is required both at the level of blending the traditional learning approaches and e-learning methods together, as well as the academic staff and technical personnel to work as a team for knowledge sharing and dissemination (IREX, 2014). In addition, teacher efficacy and belief system can predict acceptance of ICT technologies (Huntington, 2011).

Further, what could be considered a relevant point was that LMS-led changes in the higher education organisation pointed to the need to model collaboration by promoting a participatory education, both through traditional and non-traditional methods. An interviewee claimed that this was being carried out through shared knowledge and cooperation with other teaching and non-teaching personnel. Teacher 5 showed collaboration by applying and implementing it in her classes to make students work in groups rather than individually. Consistently equipping oneself with updated information on the use of technology and new software

was IT Personal 1 idea of collaboration. This was parallel to the study of Stefano (2011), who explored the relevant factors influencing higher education teachers to use teaching models based on online social interaction when utilising an e-learning platform.

Further, IT Personnel 1 stated in an interview that enabling the teaching personnel become familiar with LMS, and ICT in particular, could remedy the lack of interest to learn new ICT skills. IT Personnel 2, also pointed to lack of computers and software as one of the top challenges that the university must handle with priority, and it indeed purchased a new set of computers and software. The lack of technological skills amongst teachers was also addressed in the case organisation through the provision of training programmes linked to ICT adoption. This was also the claim of Administration Personal, an administrator, as he claimed that the IT department was tasked to teach lecturers to acquire ICT skills. IT Personnel 1related that as time went by, ICT-related training programmes enabled him to acquire new ICT skills. Conversely, Mukvoid (1999) identified resistance from organisational units, lack of incentives, and technological incompatibility as barriers to implementation, whilst Rivard and Lapointe (2012) added user resistance as a barrier that served as a crucial issue during ICT adoption. The need to respond to complexity in the face of administrative interface was highlighted in Eriksson (2010) vis-à-vis LMS implementation. The literature review pointed out that users' behavioural intention and attitude towards the use of computer have significant relevance to perceived usefulness, which is an element of the TAM (e.g. Wong et al., 2013).

Relating to this, Teacher 2 (a faculty member) posited that the enabling actions for LMS include the support of the higher education ministry down to higher education institutions, sufficient LMS training to teachers, and adequate ICT infrastructure and technologies to be used by both the faculty and students. This was consistent with Al-alak and Alnawas' (2011) study, where they observed a positive relationship between perceived usefulness, computer knowledge, management support, and willingness to adopt LMS

implementation. Avidov-Ungar and Shamir-Inbal (2013) also suggested that training and support accompany the commitment of academic staff in ICT adoption, enabling them to become empowered as a result. An interview participant also affirmed that these enabling actions ensure the adoption of new and modern technologies to facilitate successful ICT utilisation, adequate training and resources for teaching personnel, and continued support from the higher education administration through the MOHESR. Teacher 4, a faculty member, stated that the university could foster increased effectiveness through adequate support, such as sending off the teaching personnel outside for effective ICT skills acquisition; and provision of bursary for them, sponsored by the University for ICT courses. In relation to this, Sikhi (2008) stated that the need to redevelop the educational structures in Iraq vis-a-vis higher academic quality necessitates e-learning as a pedagogical approach that enables good ICT infrastructure for the establishment of a rich learning environment.

6.4.2 Socio-economic conditions

Alongside effective LMS integration was the consideration of the impact of socio-economic conditions on the university's LMS implementation. Teacher 1 related in an interview:

"As we adopt new education policies like LMS integration, we begin to acknowledge the importance of educating our students and working harder to achieve quality education. We have survived the war and we're on the process of picking the pieces all over again, so to speak, and even though our school buildings and equipment have been severely damaged in the past, the LMS is a step forward toward better education for our people."

The interview results provided a basis to Eriksson's (2010) claim that the lack of functional central governance in Iraq serves as a hindrance to its sustainability of information management systems for coordination and standardisation. There is therefore a need to improve the way the Iraqi government provides attention to LMS in higher education. The e-learning utilisation in higher education institutions in Iraq exemplifies a desire to invigorate the educational

environment in the country despite the previous unstable social and political conditions (Elameer and Idrus, 2010a).

The country has been likewise cited to lag behind other countries in the Middle East in terms of ICT adoption in higher learning. Teacher 1 and Teacher 5 inferred in two separate interviews that the Iraqi government has not been paying much attention to improving ICT in schools as much as it pays attention to other economic issues. Teacher 4 emphasised in an interview that the damages of the war also made higher education institutions to lack good facilities and modern equipment; however, the university was catching up with this. An interview with another IT personnel suggested that the socio-economic conditions prevented Iraq from focusing on technological developments. Teacher 3 said that the kind of support provided by the Iraqi government to higher education institutions was reflected by the socio-economic conditions of the country, which the Iraqi government must address. He furthered that apparently; this support was lacking, but also pointed out that the university had done a good attempt at implementing LMS. On a similar fashion, Latchem and Jung (2010) mentioned that university distance education and e-learning in Iraq are two of the areas that must be focused on in rebuilding the physical and academic capabilities and resources in the country. Elameer and Idrus' (2010b) work is notable in this regard as the authors described the presence of several modern technologies in Iraq and the corresponding lack of needed infrastructures through which to use them.

Furthermore, the interviews revealed that the faculty members were experiencing inadequate technological resources and support about LMS implementation, which were the reasons why some participants were hostile to LMS implementation. This is a feature of the organisational aspect of the implementation, taking the TOE framework in point.

6.5 Triangulation

The extent to which the interview results correlate with the questionnaire results is seen in the relatedness of the interview questions and the survey questions.

This is exemplified by the interview question “what were the problems you encountered in the integration of LMS in education?”, which is reinforced by the survey statements, “please indicate how much experience you have with virtual classroom, video conferencing, use of ICT to communicate with colleagues, etc.” and please indicate your answer about your attitude towards the use of LMS in your teaching methodology, your level of intention to use LMS in the classroom, the availability of resources for LMS implementation in your university, the likelihood for the university administrators to acquire the needed resources for LMS and to introduce ways to improve LMS-related skills, the extent of security of the use of LMS tools in your organisation, etc.” The interviews’ inclusion of the main barriers that the participants faced with LMS use is related to the survey questionnaire regarding the potential responses of lack of available LMS resources, lack of intention to use LMS in the classroom, unlikelihood to acquire the needed LMS resources, lack of readiness and willingness to use LMS tools, and the like.

6.6 Barriers to implementation

The interviews indicated the lack of needed skills and training as a problem encountered in the implementation. The main barriers to implementing LMS in higher education sector in Iraq are:

6.6.1 LMS

Teacher 1, a faculty member, believed that if these barriers were properly addressed, then they could probably have a successful LMS integration in their university. Teacher 2 likewise considered his lack of adequate knowledge to use the new system and his lack of interest because of this inadequacy to use LMS. He linked these barriers to lack of preparedness for such implementation. The interview participants stated that those barriers were addressed in the university through the provision of in-depth training programmes facilitated by the IT department.

According to Teacher 2, an interview participant:

"My organisation addresses them (barriers) by ensuring that we learn the aspects of LMS. They do this by sending the IT team to teach us through training seminars. We have a mndedicated IT team, and if you approach them for problems relating to LMS integration, they are on call at all times."

Buabeng-Andoh (2012) stated that the barriers to LMS implementation were lack of ICT skills and confidence amongst instructors; lack of pedagogical training for teachers; lack of appropriate educational software; limited ICT access; and rigid structure of traditional school systems. These barriers were also mentioned in Garrote (2012) and Asunka (2013). Likewise, Palahicky (2014: 28) identified that the barriers that prevent the teachers from using LMS tools are lack of teachers' training, lack of commitment to constructivist pedagogy, lack of experience to use the technology, lack of technical support, and tendency to utilise traditional approaches and teaching styles.

The pursuit of the case organisation to implement LMS is congruent with the increasing interest to integrate Internet-based technologies into classroom teaching (Shroff, et al, 2010). Akbar (2013) also emphasised that the success of LMS technologies is founded on students' acceptance and use of these technologies. Understanding the teachers' levels of awareness of the new technology therefore necessitates taking into account their subjectivities, which could likewise lead them to willingly adopt LMS. The importance of determining the awareness of teachers in the case organisation in terms of the implementation could be examined using the Theory of Planned Behaviour, which states that the behavioural intentions of an individual is shaped by subjective norms and perceived behavioural control (Hiraoka, 2009).

6.6.2 ICT Infrastructure

The interviews indicated the lack of needed skills and training as a problem encountered in the implementation. Teacher 2, an interview participant, said that as a result of his lack of ICT skills, he did not welcome the idea of using LMS in his subject areas and used the computer only to record students' grades

and to communicate with his colleagues. The lack of ICT skills as a problem was also implied in Teacher 1 statement that the initial adoption of LMS gave him a need to study how things must be done with the new technology. Even Administration Personal, stated that lack of ICT-related skills of the academic department was a problem in the integration of LMS in education. Teacher 3, a faculty member, mentioned this lack of ICT skills alongside inadequate technologies and support as problems in the LMS integration. This was linked to the study of Asunka (2012) in which the author found that LMS adoption in a university was largely unutilised despite training, motivation, and adequate resources. Culture and social environment were found to contribute to this scenario.

The interviews also denoted the following problems in the integration: inadequate technologies and support; lack of knowledge and skills about the new technology; difficulty to facilitate effective communication with students; lack of e-books and other e-materials; old computers that needed replacing; outdated computers and software; expensive technologies; lack of preparedness in the implementation; and unprepared classrooms and teachers for LMS utilisation. Alternatively, faculty members without adequate ICT skills were described by Teacher 3 (a faculty member) as hard to train as well due to lack of interest.

6.6.3 LMS Infrastructure

the study is able to determine the needs of the academic staff of the case organisation as a way to highlight the important elements in both TAM and TOE. These needs include familiarity with LMS activities (e.g. conducting online examinations, online academic discussions, online academic consultations, use of ICT to communicate with colleagues), familiarity with the use of LMS software, adequate LMS resources, required LMS-related skills and training, and collaboration between MOHESR and higher education institutions. These important elements of the LMS are presented in the study as determinants contributing to the users' technology acceptance, of which a positive outlook is suggested by their acceptance of LMS as a teaching methodology and their

favourable attitude towards it. In addition, the study is able to demonstrate that such acceptance is influenced by the technological, organisational, and environmental aspects surrounding the adoption of LMS.

7 THE LMS STRATEGIC POLICY FRAMEWORK

The adoption of LMS in the higher education in Iraq will be anchored on a policy adoption framework designed for this purpose to invigorate the higher education environment of the country. The resultant output is the conception of this specific policy adoption framework that will inform the higher education sector of the need to employ LMS integration in teaching and learning, and will likewise facilitate ease of interaction between pedagogy and technology amongst higher learning institutions. The policy adoption framework is a product of this study's findings, emphasised on collaboration between pedagogical and technological sectors of higher education as well as the use of the TAM framework to provide evidence to the important association between perceived usefulness, perceived ease of use, and intention to use the LMS tools in higher education sector, as well as government support and continuity.

Based on the results of the survey and the interviews, the aspects of development on which the framework looked into were the following: skills training, selection of relevant and updated software technology, collaboration promotion, promotion of participatory education, and technology acceptance. On the other hand, the aspects of the policy are knowledge sharing, resource-based provisions (e.g. ICT-related training programmes, facilitation of new technologies and software), traditional learning/e-learning integration, and collaborative/participatory initiatives between academic and technical staff. Collaboration also covers ensuring a good working relationship between the academic staff and the IT sector within higher education institutions.

7.1 TOE Perspectives

The framework is ultimately intended to improve the quality and standard of higher education in Iraq through LMS integration. It also aims to solicit commitment from the Iraqi government and higher education institutions for effective adoption of LMS in all higher learning institutions.

The objectives of the strategic policy adoption framework are as follows:

Technological:

1. To improve the provision of technological assistance for effective LMS integration.
2. To improve the academic staff's use of ICT materials, such as video conferencing, virtual classroom, MS Office, use of LMS software (e.g. LAMS, JUSUR, and BLACKBOARD) as well as the use of ICT activities, including online academic discussions and consultations, online examinations, use of ICT to prepare lessons, and use of ICT to communicate with students.
3. To provide ICT-related professional development to academic staff, including technological resources and competence development to assist them on technology acceptance and address gaps in ICT knowledge and skills.

Organisational:

4. To improve the teaching-learning process in higher education institutions through ICT adoption;
5. To strengthen the collaboration between traditional learning and e-learning approaches in higher education institutions;
6. To help ease socio-economic barriers that might hinder effective LMS implementation in higher education institutions.

Environmental:

7. To improve the standard of education of higher learning through LMS adoption.
8. To promote an increased level of awareness of the importance of learning management systems in higher education in Iraq.
9. To ensure rapid LMS implementation in the higher learning sector.

10. To provide prioritisation of the higher education sector, including research on LMS and e-learning, in government budgeting and resource allocation.

11. To provide effective government support to higher education institutions in the areas of instruction, communication and coordination, ICT-related training provision, and physical resources through continuous and direct integration of the MOHESR to higher education institutions.

7.2 Policy Framework

The proposed policy adoption framework is described in the flowchart below:

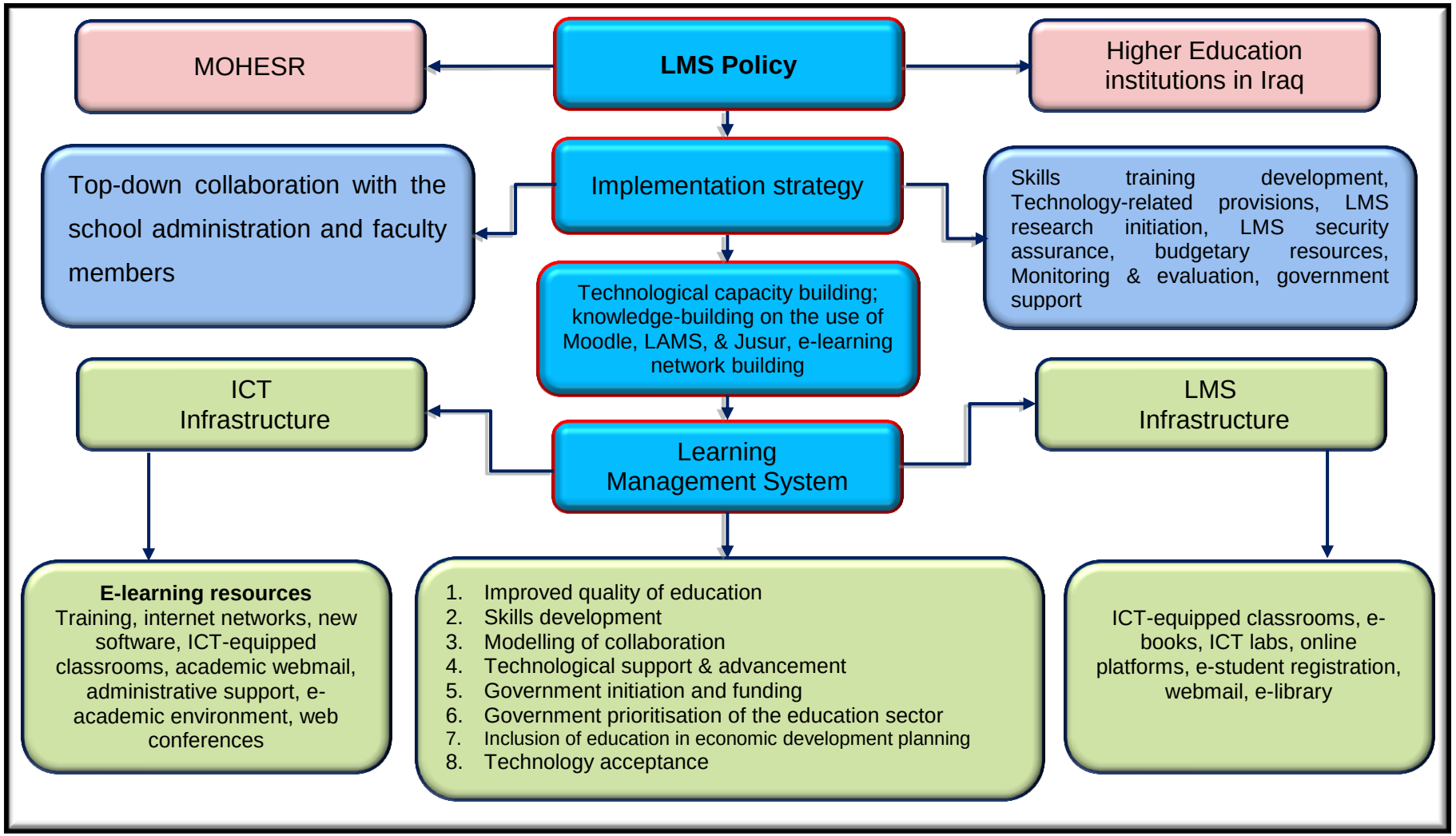

Figure 7-1: The proposed policy framework

In terms of derivation and description of Figure 7-1, the box of e-learning resources is linked to ICT infrastructure, which, along with LMS infrastructure, comprises the learning management system. Improved quality of education, skills development, modelling collaboration, technological support and advancement, etc., are linked directly to LMS, whilst ICT-equipped classrooms, e-books, ICT labs, online platforms, etc. are examples of LMS infrastructure. LMS is related to technological capacity building, knowledge building on the use of Moodle, LAMS, and Jusur, and e-learning network building, which lead to LMS policy and are connected to skills training development, technology related provisions, LMS research initiation, etc. LMS policy is then implemented through the MOHESR and higher education institutions in Iraq.

7.3 Intended outcomes

Below are the desired outcomes of the strategic policy adoption framework:

- ✓ **Outcome 1: Improved quality of education through LMS adoption**

All private and government-operated tertiary institutions in Iraq shall have improved the quality of their education through their adoption of effective learning management systems.

Establishing a LMS policy adoption framework in Iraq includes the coordination of the LMS integration policy between the Ministry of Higher Education and Scientific Research (MOHESR) and all institutions of higher learning in the country. The MOHESR will serve as the implementing body of the policy. Presidents of tertiary institutions will implement the policy down to the deans, who will in turn enforce it to academic and non-academic departments. The policy will be utilised by both faculty and students as a guide in LMS adoption. This desired outcome is a response to the need to establish a collaboration between the MOHESR and the higher education institutions in Iraq identified in Chapter 6.

- ✓ **Outcome 2: Skills development**

The LMS will adopt infrastructure and education management, which will address the problem of lack of training amongst the teachers, lack of support from university administration, lack of logistic and technological preparedness in the implementation, lack of sufficient time to implement LMS, lack of adequate knowledge and acceptance of the new technology, and lack of interest due to such inadequacy. The importance of collaboration-capacity building in the policy adoption framework is seen in the direct impact of knowledge and skills on the use of LMS. Since the higher education system in Iraq generally lacks the required ICT skills for effective LMS implementation, focusing on collaboration building will enable it to shape the education system according to the LMS policy adoption framework. This desired outcome is also a response to the need to improve the ICT-related skills of the academic staff identified in Chapter 6.

- ✓ **Outcome 3: Modelling of collaboration**

The strategic policy adoption framework involves modelling the collaboration through adequate ICT infrastructure, sufficient training and resources, and continued support from MOHESR. This must be ensured despite the pervading socio-economic challenges that may beset the country. This desired outcome is a response to the lack of adequate ICT resources, training, and support from MOHESR which are identified in Chapter 6.

- ✓ **Outcome 4: Technological support and advancement**

The technological trajectory for LMS implementation involves such elements as technology, interface design, and technological capacity building. High-access computing, which includes sufficient bandwidth/Internet speed, will be introduced in the policy. Supporting online learning applications vis-à-vis face-to-face method will be ensured through ICT-equipped classrooms, Internet networks, e-academic environments, online platforms, ICT labs, and e-libraries and databases. These will likewise encourage the use of online discussions and examinations, virtual classroom, video conferencing, and online consultations. Technological support and advancement shall be anchored on the development

of the teaching methods. This is in response to the need for further LMS acceptance of the academic staff, which is highlighted in Chapter 6.

- ✓ **Outcome 5: Government initiation and funding of LMS-related research**

Academic staff will actively participate in research on the field through government initiation and funding of LMS-related research. An integration of government support and educational provision in higher education will be ensured. This will help prepare the higher education sector for technology acceptance. This will also respond to the need identified in Chapter 6 that the case organisation must receive funding for LMS implementation.

- ✓ **Outcome 6: Government prioritisation of the education sector**

The Iraqi government will give adequate prioritisation of the education sector by ensuring that the LMS strategic policy adoption framework will be enforced effectively. The MOHESR will facilitate a top-down implementation of all the rules governing the strategic framework. It will develop a set of guidelines for rapid and responsive country-wide adoption of LMS in all higher learning institutions in Iraq. Capacity-building initiatives aiming to support the furtherance of LMS integration in higher education will be strengthened.

- ✓ **Outcome 7: Inclusion of education in economic development planning**

Education will be included in economic development plans to provide strong support to LMS implementation in the midst of socio-economic challenges. The Iraqi government, through the MOHESR, will then include education as a part of its economic development plans.

- ✓ **Outcome 8: Technology acceptance through government support**

Having found that technology acceptance is an important factor of the development and implementation of LMS, MOHESR will build alliance with the

higher learning institutions to ensure technology acceptance amongst the faculty members of higher education institutions. Effective and efficient government support and continuity will be enabled by this.

7.4 Aspects of implementation

Pedagogical and ethical aspects shall embody the LMS policy. They are specifically outlined below:

Pedagogical aspects

The pedagogical dimension of LMS implementation looks at such issues as audience analysis, learning strategies/methodologies, content analysis, and design approaches (Elameer and Idrus, 2010c). These are in connection with the technology-organisation-environment framework embodying the LMS implementation.

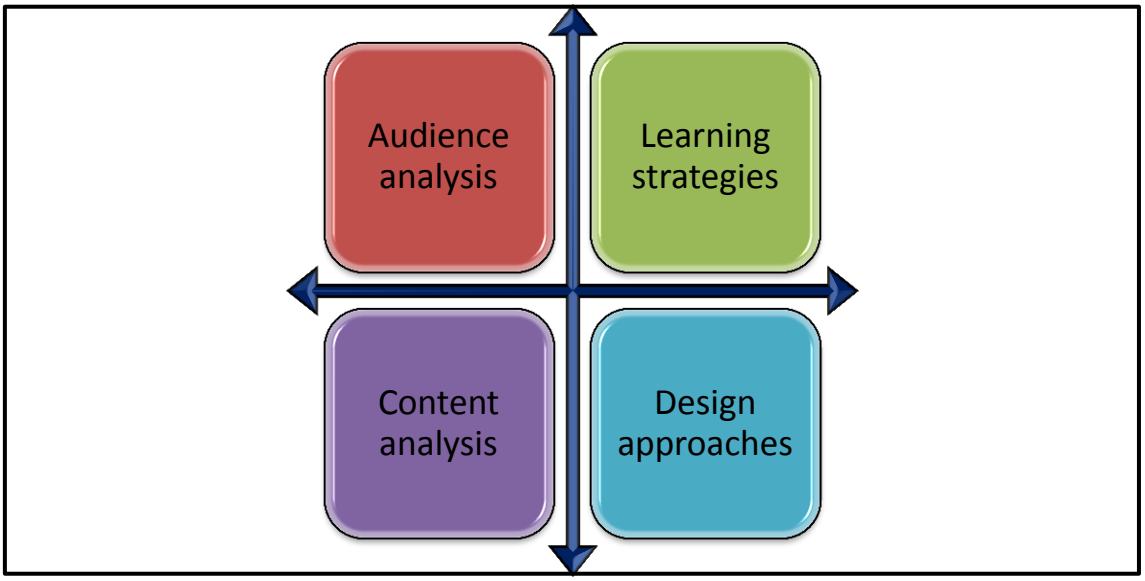

Figure 7-2: Pedagogical aspects of LMS implementation

Ethical Aspects

The ethical aspects of LMS implementation include cultural diversity, digital divide, and social backgrounds of students, which shall be considered in designing ICT approaches and e-learning programmes (e.g. Cohen, 2012).

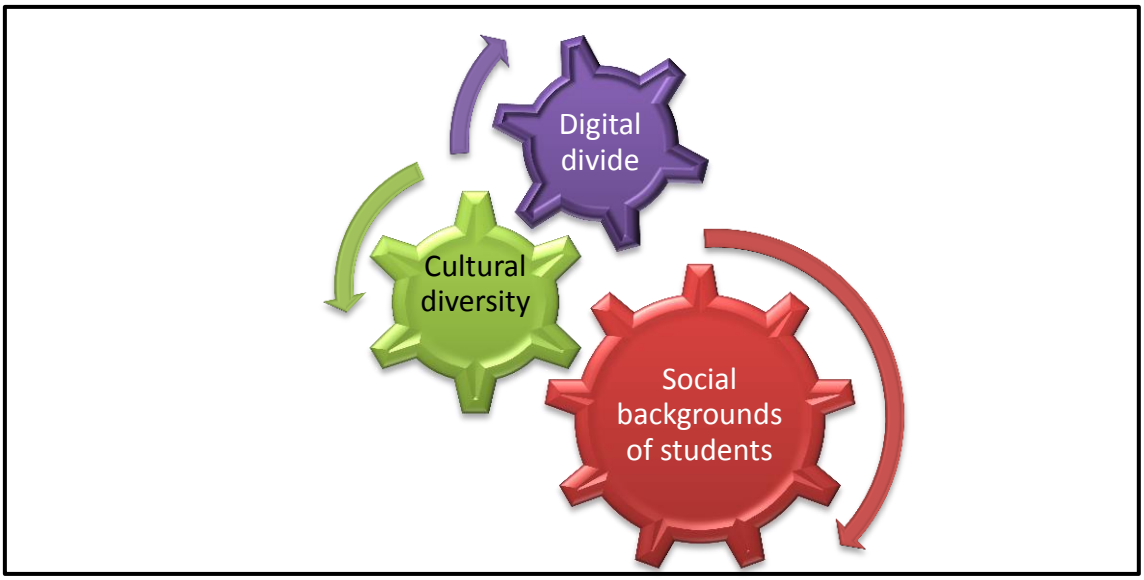

Figure 7-3: Ethical aspects of LMS implementation

Monitoring and evaluation

The policy shall serve as the basis for evaluating the effectiveness of LMS integration in higher education institutions in Iraq. Development monitoring shall be conducted by higher learning institutions. Evaluation of the LMS policy is grounded on its impact on the academic community (organisational aspect), including students, teachers, non-teaching staff, instruction, and the learning environment (environmental aspect). Both the MOHESR and higher learning institutions through their presidents will conduct a periodic evaluation of the policy to determine any aspect of need and to immediately address them as they arise (e.g. Jeffries, 2003; The World Bank, 2009).

Research and development

The LMS implementation shall be based on the foregoing research on the field, in order to ensure up-to-date knowledge of ICT and e-learning utilisation in Iraqi higher education. This will ensure technology acceptance amongst the users of LMS (e.g. Ku, 2009; Fathema and Sutton, 2013).

Resources and budgetary allocation

The MOHESR will allocate regular budget resources to all government-operated and private higher education institutions during the planning period of the LMS adoption. Extra-budgetary resources will be provided during the implementation to ensure that the LMS is well-funded and is thus able to achieve all the objectives specified in this policy framework (Anter et al., 2014).

The MOHESR shall likewise focus its available resources on strategic training programmes relating to skills development and technology adoption. The resources shall be directly aligned to the set priorities and desired outcomes identified in this framework (Garcia et al., 2011; Buabeng-Andoh, 2012; Garrote, 2012).

7.5 Validation of the Policy Framework

The implementing body headed by the MOHESR shall enforce the strategic policy adoption framework through an actual legislation embodying its contents and principles.

This section focuses on the issues involved with experts' validation of the LMS policy framework. As mentioned in chapter 5, anonymity of respondents was ensured in the collection of survey data and interview data. Thus, the real names of the interview participants were disguised in this research due to ethical considerations already described. There had been three participants in the interviews which occupied a decision-makers position in MOHESR in Iraq Three independent interviews were conducted by using WebEx with Professor Al-Aani, Dr Assad, and Dr Al-Fatlawi. Respondents were made to exam the areas that they wished to be included/excluded in a policy development framework for LMS integration in Iraqi higher education.

Areas for policy development		Respondents		
Main areas	Sub- areas	R1	R2	R3

Comprehensive	Improvement of the standard of education in relation to LMS implementation	√	×	√
	Pedagogical improvement through LMS	×	√	√
	Provision to secure higher education in times of war or conflict	√	√	√
Effectiveness-MOHSER	Support from MOHESR and higher education institutions	×	√	√
	Provision that ensures integration and use of modern technologies in education	√	√	×
	Provision on the professional development of faculty in LMS adoption	√	√	√
	Provision on skills and competence development	√	√	√
Effectiveness – Academic staff	Provision of the needed LMS and knowledge through training	√	×	√
	Promotion of increased level of awareness of faculty and IT staff in LMS implementation	√	√	√
	Promotion of participation amongst faculty and IT staff in LMS implementation	√	×	√

Table 7-1: Areas for inclusion/ exclusion in policy development framework for LMS integration

The table 7-1 shows the three categories which divided to ten areas were designed by the researcher to validate the LMS policy framework by highlight the areas to be included/ excluded in this policy.

The main desired outcomes of the above table in this report are finding out how many of the interviewees are agree or disagree to include or exclude the sub-areas; and utilising the results in validating a LMS policy framework.

A general perception impressed in the results of the validation survey was that the majority of them marked that each area must be included in this policy which gives us an optimistic view that all factors identify in this study are covered by adopting the proposed policy framework.

7.6 Contribution to Research Knowledge

The implementation of learning management system using the Technology Acceptance Model to determine the extent of technology acceptance of faculty members is considered a contribution to research knowledge. Another is its adoption of the TOE framework in relation to TAM in order to examine the extent in which the academic staff perceives how LMS is being implemented in their University.

The development of the LMS framework also serves as another contribution to research knowledge, with a particular emphasis on MOHESR as the specific government agency that is proposed to provide support for LMS adoption in order to effect an extensive and thorough implementation in Iraqi higher education. Moreover, the intended LMS policy adoption framework fosters pedagogical innovation which is drawn from a systematic investigation. Its attempt to solicit attention from the larger research community contributes to knowledge creation in the broader use of LMS and ICT. The policy adoption framework therefore signifies a research-based output from an empirical enquiry, which contributes to the furtherance of the research field. It denotes how an evidence-based study can be used in mainstreaming a policy for pedagogical development, which apparently contributes to the broader research endeavour in education.

The study integrates TOE with TAM in LMS implementation, which will contribute to current research on e-learning and LMS adoption. Investigating the

technology acceptance of the academic staff in higher education in Iraq using in consideration of the technological, organisational, and environmental aspect of LMS adoption provides a new direction for the study. Moreover, this study contributes to the research knowledge through its use of multilinear regression analysis to find out any statistically significant predictive capability between certain predictors (e.g. intention to use LMS, etc.) and responses (e.g. LMS usefulness and ease of use of LMS, etc.).

This study also demonstrates a macro-level consideration of the factors that might be affecting the implementation of LMS through the study's inclusion of socio-economic factors for Technology Acceptance Model. Intention to use, willingness to use, and ease of use of technology are therefore not the only decisive considerations for implementing LMS, but that in a conflict-stricken country like Iraq, it has been necessary to consider government support and continuity in ensuring an effective and efficient LMS implementation. This modified use of the TAM is a long stride forward for this study.

The contribution of this research to the different background communities, include its empirical evidence for the importance of the technological, organisational, and environmental aspects surrounding LMS implementation and their link to the technology acceptance levels of the users. Thus, it contributes to university administrators, academic staff, and students who are the end-recipients of the implementation, in terms of its function as a guideline for their effective university-wide utilisation of LMS tools.

Lastly, this research shows how the Theory of Planned Behaviour is established as the theoretical underpinning of the study, which is directly linked to the technology acceptance of LMS users. The theory had been made to link to TAM to demonstrate the theoretical justification of the reason for the current state of technology acceptance of LMS users by focusing on the behaviour modification in order for technology acceptance to take place. This is therefore how the study contributes to research knowledge in terms of the use of this theory.

7.7 Summary

The LMS strategic policy adoption framework is designed to invigorate the higher education environment of Iraq. It employ LMS integration to teaching and learning, and facilitates ease of interaction between pedagogy and technology. The framework is emphasised on the provision of skills training, selection of relevant and updated software technology, collaboration promotion, and promotion of participatory education. The aims of the framework are to improve the quality of higher education in Iraq through the integration of learning management systems and commitment of the Iraqi government and higher education institutions to effectively adopt LMS.

The desired outcomes of the strategic policy adoption framework are improved quality of education, skills development, modelling of collaboration, technological support and advancement, government prioritisation of the education sector, inclusion of education in economic development planning, and continuous government support. The aspects of implementation include pedagogical aspects, ethical aspects, monitoring and evaluation, and resources and budgetary allocation. The MOHESR is the specific body that will enforce the policy adoption framework through an actual legislation.

8 CONCLUSION AND RECOMMENDATIONS

8.1 Conclusion

1. The literature review revealed that challenges facing the introduction of LMS in barriers in a war recovering economy like Iraq need both more definition and understanding. Therefore, this research addressed the large scope of the challenges, categorised them and provided more information and explanation of how these challenges can impede the progress of LMS adoption.
2. A list of the socio-economic conditions influenced the implementation of learning management system in Iraqi higher education and analysed the barriers in adopting LMS as experienced by the case organisation. The factors emphasised that the lack of functional social governance in Iraq hinders the occurrence of sustainable information management systems for coordination and standardisation, which is evidence to a need for the government to improve the way it regards LMS
3. A conceptual framework was developed due to the lack in the literature of theoretical models and frameworks for war recovering economy like Iraq. The framework acted as a theoretical background and combined theories and concepts from other areas of research. The structure of the framework was built on the integration of TAM and TOE in the analysis of LMS adoption in higher education is considered a key contribution of this study to research knowledge.
4. A comprehensive framework has been developed to address the gap in the literature regarding LMS adoption. The framework is built to fit the context of the higher education sector in Iraq. The revised framework captured TAM factors and TOE factors, explained their presence and impact on the adoption process.
5. This study reveals that the willingness of the academic staff to use LMS tools in teaching was to a great extent and to some extent not affected by the socio-economic challenges that the country was facing

6. A specific gap that the study identified was the need for training the academic staff in conducting online examinations. Members of the academic staff lacked engagement in online academic discussions, online academic consultations, and conducting online examinations.

The implications for findings include adopting a learning management system as a focal strategy in higher education and globalising learning through effective technology adoption, as well as combining the Technology Acceptance (TAM) Model and the Technology-Organisation-Environment (TOE) Model in analysing acceptance of the technology.

This study can be generalised to the larger spectrum of higher education in Iraq through its analysis of LMS from the context of a country that just recovered from war and is facing lots of socio-economic challenges, as well as its scrutiny of LMS using TAM and TOE, with the academic staff showing readiness and willingness to learn LMS.

8.2 Research Limitations

The few limitations of the research are outlined below:

- It covers only the higher education sector in Iraq and excludes primary and secondary education in the country.
- The discussion and analysis of LMS integration are focused only on a single institution of higher learning – the University of Al-Qadisiyah.
- The present study revolves around potential problems encountered by administrators as well as IT and academic staff in LMS integration, developing a framework of LMS, identifying the barriers and prevailing socio-economic conditions affecting such integration, analysing the current technologies used in the teaching-learning strategies, and determining if there is a relationship between IT faculty members' perceived usefulness, perceived ease of use, and intention to use LMS based on the Technology Acceptance Model. It does not cover student-related problems arising from LMS integration.

- The credibility of the combined TAM and TOE is limited only to LMS adoption at the University of Al-Qadisiyah, and further studies could be undertaken to validate this credibility in other ICT-related education contexts.

8.3 Achievements

- The investigation of the LMS acceptance of the academic staff using the TAM and TOE framework, taking into account the socio-economic context
- The use of the mixed methods strategy to provide triangulation of findings
- The LMS policy framework as a comprehensive framework that can be used by the Iraqi government to implement an effective LMS in higher education.

8.4 Specific Contributions

- The investigation of learning management system using the integration of the TAM and TOE framework to determine the extent of technology acceptance of the academic staff
- The development of an LMS framework based on research enquiry to implement an extensive implementation of LMS in Iraqi higher education
- The consideration for the socio-economic situation of a country in investigating its extent of LMS acceptance and adoption at the University of Al-Qadesiyah
- The use of the Theory of Planned Behaviour to provide a theoretical underpinning to the TAM-TOE framework.

8.5 Recommendations

The recommendations of the study are identified as follows:

1. Conduct a study on an actual LMS integration as perceived by students.

This study will specify LMS implementation on the point of view of the actual users to whom the programme is directly purported.

2. Carry out an evaluative report pertaining to the role of MOHESR in ICT adoption in higher education.

The evaluative report will empirically examine the extent of the role of the MOHESR in LMS implementation in Iraq.

3. Perform a research investigation on the effectiveness of the MOHESR in implementing the LMS policy framework, with emphasis on its administrative, operational, resource-allocation and knowledge capabilities.

This research investigation will further determine the extent in which LMS will be effectively and successfully adopted in higher learning institutions in Iraq as specified in this research document. The specific areas of evaluation are MOHESR's administrative, operational, resource-allocation and knowledge capabilities.

4. Perform an actual study of the effectiveness of LMS adoption in the midst of a socio-economic crisis.

This study will provide evidence to the advantages (or disadvantages) of adopting LMS despite socio-economic problems.

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APPENDICES

Appendix A : Survey Questionnaire

This survey questionnaire is solely intended for the academic staff of the University of Al-Qadisiyah.

We ensure that your identity will remain anonymous.

Please put a check (√) on the appropriate box.

A.1 Demographics

No.	Questions	Appropriate Answer
1	Your gender	☐ Male ☐ Female
2	Your level of education	☐ Some Master's units ☐ Master's degree ☐ Some units in doctorate studies ☐ Doctorate degree ☐ Others, please specify:----------
3	Number of years teaching in current organisation	☐ 0-3y ☐ 4-7y ☐ 8-11 ☐ 12-15y ☐ 16 y and beyond
4	The average number of students in your class	☐ Below 30 ☐ 31-40 ☐ 41-50 ☐ 51- above ☐ Others, please specify:----------

A.2 Your level of technology acceptance

Please indicate how much experience you have with the following items by encircling the number that corresponds to your choice.

No.	Items	I have a lot of experience → I have no experience				
5	Virtual classroom	1	2	3	3	5
6	Video conferencing with students	1	2	3	3	5
7	Receiving homework online	1	2	3	3	5
8	Uploading files	1	2	3	3	5

9	Participating in online discussions	1	2	3	3	5
10	Finding information online	1	2	3	3	5
11	Online academic consultations	1	2	3	3	5
12	Online examinations	1	2	3	3	5
13	Use of ICT to prepare lessons	1	2	3	3	5
14	Use of ICT to communicate with Colleagues	1	2	3	3	5
15	Use of ICT to communicate with students	1	2	3	3	5
16	Use of ICT to communicate with school management and education administrations	1	2	3	3	5

A.3 Please indicate your answer to the following by encircling the number that corresponds to your answer

17. Your attitude towards the use of LMS in your teaching methodology:

Good	1	2	3	4	5	Bad
Favourable	1	2	3	4	5	Unfavourable
Positive	1	2	3	4	5	Negative

18. Your level of intention to use LMS in the classroom.

Strong intention	1	2	3	4	5	No intention

19. The availability of resources for LMS implementation in your university

Adequate	1	2	3	4	5	Lacking

20. The likelihood for the university administrators to acquire the needed resources for LMS

Likely	1	2	3	4	5	Unlikely

21. The likelihood for the university administrators to introduce ways to improve LMS-related skills

Likely	1	2	3	4	5	Unlikely

22. My readiness to use LMS tools

Ready	1	2	3	4	5	Not ready

23. My willingness to learn new LMS-related skills

Willing	1	2	3	4	5	Not Willing

24. The extent of security of the use of LMS tools in my organization

Secure	1	2	3	4	5	Not Secure

25. The likelihood that my organization will ensure the security of the adopted LMS tools

Likely	1	2	3	4	5	Unlikely

26. The likelihood that the university administrators will give priority to LMS training in order to improve the ICT skills of faculty members

Likely	1	2	3	4	5	Unlikely

A.4 Please check the appropriate box

No.	statements	To a great extent	To some extent	To a little extent	To no extent
27	I have a lot of information about e-learning networks.				
28	I know how to use all the MS Office.				
29	I know how to use Moodle software.				
30	I know how to use LAMS software.				
31	I know how to use JUSUR software.				
32	I know how to use				

	Blackboard software.				
33	I use ICT to find digital learning resources.				
34	I read all the up-to-date researches on e-learning.				
35	ICT is easier to use than traditional methodologies.				
36	I am interested to hone my ICT skills.				
37	I am interested to learn the technologies in e-learning.				
38	I feel confident with ICT and would like to use it more effectively				
39	I find LMS easy to use.				
40	I find LMS useful.				
41	I believe that Iraq's socio-economic challenges slow down the full implementation of LMS in its higher education.				
42	The Iraqi government should support the LMS implementation on its usefulness while tackling socio-economic challenges.				
43	Even with the presence of socio-economic challenges in Iraq, my university can still promote the usefulness of LMS.				
44	The socio-economic challenges in the country do not affect my willingness to use LMS tools in my teaching.				
45	My university must collaborate with the MOHESR effectively for LMS implementation.				

Appendix B : Interview Schedule

1. In your experience, what were the problems you encountered in the integration of LMS in education?
2. What are the main barriers that you face with the use of LMS?
3. How does you organisation address these barriers?
4. What are the enabling actions, their impact and timeliness, to achieve effective LMS implementation in higher education in Iraq?
5. What is your view of the impact of socio-economic conditions on your university's LMS implementation?
6. As a personnel involved in the adoption of LMS, how do you model collaboration for its successful implementation?

Appendix C : Questionnaire respondents represented as numbers

C.1 Demographics

Questions	participants' answers					Grand total
Q1	Male			Female		283
	156			127		
Q2	Master degree	some master units	some doctorate units	Doctorate degree	Others, please specify	283
	85	122	45	31	0	
Q3	0-3 year	4-7 year	8-11 year	12-15 year	16 years and beyond	283
	97	59	65	34	28	
Q4	Below 30	31-40	41-50	51-above	Others, please specify:	283
	51	133	91	8	0	

C.2 Your level of technology acceptance.

Questions	participants' answers					Grand total
Q5	I have a lot of experience	I have more than average experience	I have average experience	I have little experience	I have no experience	283
	29	36	41	132	45	
Q6	I have a lot of experience	I have more than average experience	I have average experience	I have little experience	I have no experience	283
	12	14	30	77	150	
Q7	I have a lot of experience	I have more than average experience	I have average experience	I have little experience	I have no experience	283
	40	45	51	90	57	
Q8	I have a	I have	I have	I have	I have no	283

	lot of experience	more than average experience	average experience	little experience	experience	
	107	84	52	23	17	
Q9	I have a lot of experience	I have more than average experience	I have average experience	I have little experience	I have no experience	283
	76	64	66	53	24	
Q10	I have a lot of experience	I have more than average experience	I have average experience	I have little experience	I have no experience	283
	117	74	53	27	12	
Q11	I have a lot of experience	I have more than average experience	I have average experience	I have little experience	I have no experience	283
	57	54	87	44	41	
Q12	I have a lot of experience	I have more than average experience	I have average experience	I have little experience	I have no experience	283
	63	95	75	34	16	
Q13	I have a lot of experience	I have more than average experience	I have average experience	I have little experience	I have no experience	283
	66	71	62	55	29	
Q14	I have a lot of experience	I have more than average experience	I have average experience	I have little experience	I have no experience	283
	71	91	56	45	20	
Q15	I have a lot of experience	I have more than average experience	I have average experience	I have little experience	I have no experience	283
	53	81	45	67	37	

Q16	I have a lot of experience	I have more than average experience	I have average experience	I have little experience	I have no experience	283
	132	98	31	13	9	

C.3 Please indicate your answer to the following by encircling the number that corresponds to your answer:

Questions	participants' answers					Grand total
Q17	Very good	Good	Average	Bad	Very bad	283
	87	79	52	42	23	
	Very favourable	Favourable	Average	Unfavourable	very Unfavourable	283
	103	98	39	30	13	
	Very positive	positive	Natural	Negative	Very negative	283
	105	98	49	22	9	
Q18	Strong intention	Moderate intention	Some intention	Little intention	No intention	283
	94	71	64	31	23	
Q19	Very much ready	Ready	Somewhat ready	Somewhat not ready	Not ready	283
	43	38	55	86	61	
Q 20	Very much willing	willing	Somewhat willing	Somewhat not willing	Not willing	283
	72	89	63	31	28	
Q21	very adequate	Adequate	Somewhat adequate	Somewhat adequate	Lacing	283
	44	47	45	79	68	
Q22	Very likely	Likely	Somewhat likely	Somewhat unlikely	Unlikely	283
	38	34	49	98	64	
Q23	Very likely	Likely	Somewhat likely	Somewhat unlikely	Unlikely	283
	59	60	42	66	56	
Q24	Very	Secure	Somewh	Somewhat	unsecure	283

	secure		at secure	unsecure		
	45	49	39	73	77	
Q25	Very likely	Likely	Somewh at likely	Somewhat unlikely	Unlikely	283
	63	62	68	49	41	
Q26	Very likely	Likely	Somewh at likely	Somewhat unlikely	Unlikely	283
	76	87	73	29	18	

C.4 Please check the appropriate box.

Questions	participants' answers				Grand total
	To a great extent	To some extent	To a little extent	To no extent	
Q27	12	34	122	115	283
Q28	61	156	43	23	283
Q29	7	12	88	176	283
Q30	5	10	99	169	283
Q31	10	22	106	145	283
Q32	12	22	133	116	283
Q33	113	140	19	11	283
Q34	52	49	95	87	283
Q35	97	96	46	44	283
Q36	108	123	27	25	283
Q37	112	135	17	19	283
Q38	83	95	62	43	283
Q39	90	92	56	45	283
Q40	87	99	59	38	283
Q41	116	134	14	19	283
Q42	98	109	45	31	283
Q43	79	92	57	55	283
Q44	111	138	21	13	283
Q45	93	139	29	22	283

Appendix D : Interview Data

Teacher 1:

Question 1: In your experience, what were the problems you encountered in the integration of LMS in education?

Answer: I guess these are lack of e-textbooks and related LMS materials, students having a hard time and needing extra help, and integrating lecture to the system. I myself also needed to study how things must be done with the new technology and I had to spend much longer time familiarising myself with it.

Q2: What are the main barriers that you face with the use of LMS?

A: Lack of training amongst teachers; lack of interest to add to this; lack of time; and lack of support from the school. I guess these are the main barriers. If these barriers are properly addressed, then we could probably have a successful LMS integration in our university.

Q3: How does your organisation address these barriers?

A: They provide training to instructors, but I think they should do it more in-depth.

Q4: What are the enabling actions, their impact and timeliness, to achieve effective LMS implementation in higher education in Iraq?

A: Enabling actions? These are training programmes and regular consultation with faculty members on ICT-related matters. The impact is of course improved technological skills on the part of the faculty, better ICT use for students, and enhanced facilitation of learning.

Q5: What is your view of the impact of socio-economic conditions on your university's LMS implementation?

A: First, Iraq just came out of a long period of war that is really devastating, and it affected our higher education system. As we adopt new education policies like LMS integration, we begin to acknowledge the importance of educating our students and

working harder to achieve quality education. We have survived the war and we're on the process of picking the pieces all over again, so to speak, and even though our school buildings and equipment have been severely damaged in the past, the LMS is a step toward better education for our people.

Q6: As a personnel involved in the adoption of LMS, how do you model collaboration for its successful implementation?

A: Modelling collaboration is first, knowing the need for collaboration, working for and towards it, and making it a way of life in education. I model collaboration by promoting a participatory education both online and offline, meaning, even if students should learn through the traditional and non-traditional methods, they should learn collaboratively by seeking the ideas and help of others, including me and their classmates.

Teacher 2:

Question 1: In your experience, what were the problems you encountered in the integration of LMS in education?

A: Lack of needed skills and training - these were the primary problems I encountered. I did not welcome the idea of using LMS in my subject specifically that it's not an ICT subject at all anyway and I was using the computer in my job only to record students' grades and communicate within my organisation, but that's in the past now. Using technology in my subject by almost specialising on it was very hard for me. Now, I have adjusted and have been used to it.

Q2: What are the main barriers that you face with the use of LMS?

A: The main barriers are my lack of adequate knowledge to use the new system and my likewise lack of interest because of that inadequacy. I also observed that the entire university was not prepared logistically and technologically when it implemented the LMS.

Q3: How does your organisation address these barriers?

My organisation addresses them by ensuring that we learn the aspects of LMS. They do this by sending the IT team to teach us through training seminars. We have a dedicated

IT team, and if you approach them for problems relating to LMS integration, they are on call at all times.

Q4: What are the enabling actions, their impact and timeliness, to achieve effective LMS implementation in higher education in Iraq?

A: The enabling actions are the support of the higher education ministry down to higher education institutions, sufficient LMS training to teachers, and adequate ICT infrastructure and technologies to be used by both the faculty and students. It all boils down to support from the upper organisation down to the lower structures.

Q5: What is your view of the impact of socio-economic conditions on your university's LMS implementation?

A: The main impact that I see is that we lag behind other Middle Eastern countries in terms of ICT adoption in education. Blended learning has been a common adoption in more developed countries and we're just barely starting in Iraq. The government has not paid much attention to improving ICT in schools as much as it pays attention to other economic issues, and that is understandable because of the priorities set.

Q6: As a personnel involved in the adoption of LMS, how do you model collaboration for its successful implementation?

A: By learning it as much as I can and making students learn better through this. That's how I model it.

Teacher 3:

Question 1: In your experience, what were the problems you encountered in the integration of LMS in education?

Answer: Lack of adequate technologies and support, and lack of ICT skills on my part.

Q2: What are the main barriers that you face with the use of LMS?

A: I guess the same as those I mentioned.

Q3: How does your organisation address these barriers?

A: My organisation tries as much to help by commissioning the IT department to conduct a training programme on teaching personnel, but the lack of new and modern equipment sometimes poses as another problem.

Q4: What are the enabling actions, their impact and timeliness, to achieve effective LMS implementation in higher education in Iraq?

A: These enabling actions, in my opinion are, ensuring adoption of new and modern technologies to facilitate successful ICT utilisation, adequate training and resources for teaching personnel, and continued support from the higher education administration.

Q5: What is your view of the impact of socio-economic conditions on your university's LMS implementation?

A: The socio-economic conditions of the country reflect the kind of support the Iraqi government can provide to higher education institutions, and such support is apparently lacking. Compared to other countries, we lack adequate government support and IT infrastructure needed for LMS integration, but our university is doing a good attempt at implementing the learning management systems.

Q6: As a personnel involved in the adoption of LMS, how do you model collaboration for its successful implementation?

A: Through shared knowledge and cooperation with other teaching and non-teaching personnel. Also by fostering a good learning ICT-based environment in my classes.

Teacher 4:

Question 1: In your experience, what were the problems you encountered in the integration of LMS in education?

A: The number one problem I have encountered was lack of knowledge and skills about the new technology, and as a result, I did not have willingness and interest – and yes, enthusiasm to implement LMS integration. I tended to delay its adoption in my classes, until I had to face the problem and learn the needed technologies. It was a hard way in the beginning.

Q2: What are the main barriers that you face with the use of LMS?

A: The main barriers are my lack of ICT skills, lack of preparedness for such implementation… and… These two are the main barriers.

Q3: How does your organisation address these barriers?

A: By providing training programmes through our IT department.

Q4: What are the enabling actions, their impact and timeliness, to achieve effective LMS implementation in higher education in Iraq?

A: The enabling actions, I think, are support from the Iraqi government through the MOHER, and adequate support from the university itself, like sending off the teaching personnel outside for effective ICT skills acquisition, and provision of bursarial education for teaching personnel, sponsored by the university for ICT courses. The impact and timeliness of these are certainly improved LMS adoption, more effective ICT-based technology implementation, and increased number of ICT-based educated students. This is how we could achieve effective LMS implementation in higher education in Iraq.

Q5: What is your view of the impact of socio-economic conditions on your university's LMS implementation?

A: The impact is very obvious. Our higher education institutions are lacking in good facilities and modern equipment because of the damages of the war, but they are fortunately coping up with this, and are so far successful. I think this is true with Al-Qadisiyah University as well.

Q6: As a personnel involved in the adoption of LMS, how do you model collaboration for its successful implementation?

A: By adopting the new technologies to teaching; also by collaborating with my fellow teachers, the university administration, and students.

Teacher 5:

Question 1: In your experience, what were the problems you encountered in the integration of LMS in education?

A: These problems are communication with students, providing e-books and other e-materials, and conked out old computers that need replacing.

Q2: What are the main barriers that you face with the use of LMS?

A: The main barriers are unprepared classrooms and teachers for LMS utilisation.

Q3: How does your organisation address these barriers?

A: The organisation addresses these barriers by taking in talented IT personnel tasked to train teaching personnel on the needed LMS-related skills and expertise that must be learned. Slowly, we have adapted to the new culture that LMS integration is posing on us. We should not resist this new culture, however, since it is a positive sign of progress for the university.

Q4: What are the enabling actions, their impact and timeliness, to achieve effective LMS implementation in higher education in Iraq?

A: I believe these enabling actions are cooperation and support amongst teaching personnel, IT department, administration offices that are responsible for the implementation, outside stakeholders like the Iraqi government, other higher education institutions, and private organisations. The impact of this (cooperation and support) is definitely effectiveness of LMS integration in higher leaning. The timelessness is its sustainability because of learned and established skills and capabilities through the step I have identified.

Q5: What is your view of the impact of socio-economic conditions on your university's LMS implementation?

A: The socio-economic conditions of Iraq impact Al-Qadisiyah University through the inadequate technological resources being adopted in the university because the Iraqi

government needs to take care of what it thinks are more important matters, like economic development and social order.

Q6: As a personnel involved in the adoption of LMS, how do you model collaboration for its successful implementation?

A: I model collaboration by applying it, not just simply talking about it. I implement collaboration in my classes by making students work in groups rather than individually, and in cases that they work individually, I encourage seeking help from their peers and from me or other teaching personnel teaching the same field. All of these are within the context of LMS.

IT Personnel 1:

Question 1: In your experience, what were the problems you encountered in the integration of LMS in education?

A: The problems I encountered are outdated computers and software.

Q2: What are the main barriers that you face with the use of LMS?

A: Aside from I have mentioned, other barriers are teachers not having enough skills to teach with technology, and some of them are hard to train as well, and this is because of their lack of interest.

Q3: How does your organisation address these barriers?

A: Lack of interest to learn new ICT skills could be remedied by making the teaching personnel familiar with learning management systems, and ICT in particular. As time goes by, I observe that they are able to acquire the needed skills eventually through ICT-related training and seminars.

Q4: What are the enabling actions, their impact and timeliness, to achieve effective LMS implementation in higher education in Iraq?

A: The enabling actions are adoption of modern and updated hardware and software technologies, linked to teaching personnel with expertise at adopting LMS, supported

by the Ministry of Higher Education in Iraq and from the Al-Qadisiyah University itself.

Q5: What is your view of the impact of socio-economic conditions on your university's LMS implementation?

A: The impact is great, and it is on the negative side. The LMS implementation could not make a complete take-off as a result.

Q6: As a personnel involved in the adoption of LMS, how do you model collaboration for its successful implementation?

A: I model collaboration by consistently equipping myself with updated information on the use of technology and new software. This way, I am able to directly support collaboration in LMS implementation.

IT Personnel 2:

Question 1: In your experience, what were the problems you encountered in the integration of LMS in education?

A: The problems that I encountered were the lack of adequate computer software and hardware, and lack of ICT skills amongst the teachers. The classrooms could not be adequately designed as an environment with ICT technologies because of lacking computers and computer software.

Q2: What are the main barriers that you face with the use of LMS?

A: I think what I mentioned are also the barriers.

Q3: How does your organisation address these barriers?

A: First, the IT team were made to identify the problems in the implementation of LMS, and we pointed this out (lack of computers and software) amongst the top priority lists of the things that must be handled immediately. So, the university purchased a new set

of computers and we installed the needed software as well. We also identified lack of technological skills amongst teachers, and this was addressed by providing them training programmes relating to ICT adoption.

Q4: What are the enabling actions, their impact and timeliness, to achieve effective LMS implementation in higher education in Iraq?

A: I think what the university has initially done is an enabling action – We, from the IT department, were made to help teaching personnel to acquire ICT skills and facilitate the installation of computers and computer software, and the students, who are the intended recipients of these efforts are able to learn with the aid of technology. So, thumbs up for this.

Q5: What is your view of the impact of socio-economic conditions on your university's LMS implementation?

A: The socio-economic conditions bar Iraq from focusing on technological development. All ICT-related endeavours that Al-Qadisiyah University has initiated so far are out of its own efforts, with minimum help from MOHSER, if any.

Q6: As a personnel involved in the adoption of LMS, how do you model collaboration for its successful implementation?

A: Modelling collaboration? I think, it's working hand-in-hand with the involved people, and these are the academic personnel, the administration people, and students.

Administration Personnel 1:

Question 1: In your experience, what were the problems you encountered in the integration of LMS in education?

A: The problems are the expensive technologies that need to be purchased for the adoption and the lack of ICT-related skills of the academic department.

Q2: What are the main barriers that you face with the use of LMS?

These are also the main barriers.

Q3: How does your organisation address these barriers?

A: We assign the IT department to teach the teachers on acquiring ICT skills and we determined a supplier with less expensive offering from whom to purchase all the needed computers and other equipment.

Q4: What are the enabling actions, their impact and timeliness, to achieve effective LMS implementation in higher education in Iraq?

A: The enabling actions are effective adoption of LMS within the classroom, backed by administration and IT support.

Q5: What is your view of the impact of socio-economic conditions on your university's LMS implementation?

A: The impact is that there is no funding from the national government to allocate to higher education institutions to improve on ICT adoption. That's why we have to be autonomously in charge of this.

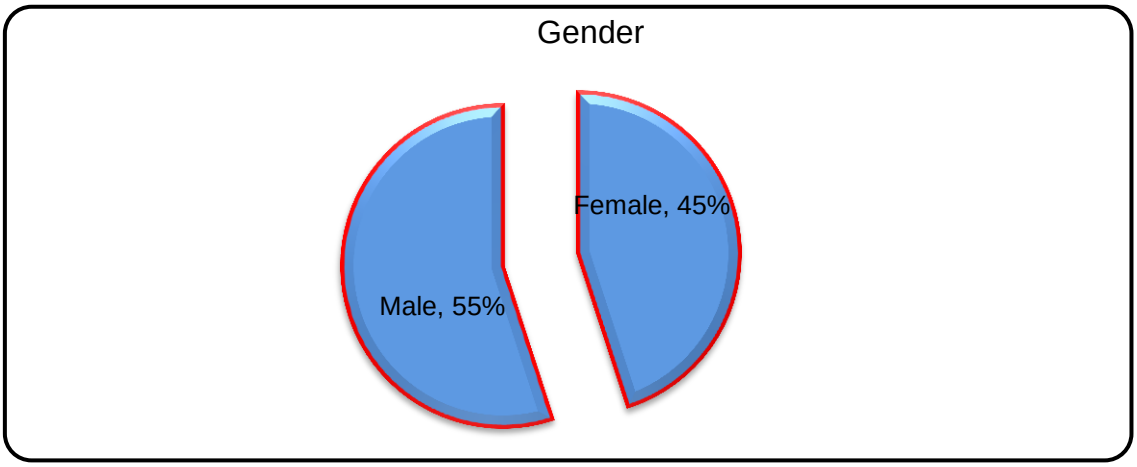
Q6: As a personnel involved in the adoption of LMS, how do you model collaboration for its successful implementation?

A: We model collaboration by initiating it to teaching personnel and non-teaching staff like the IT staff, because we have to work closely to effectively implement it. We also promote collaborative learning amongst students as we adopt learning management systems.

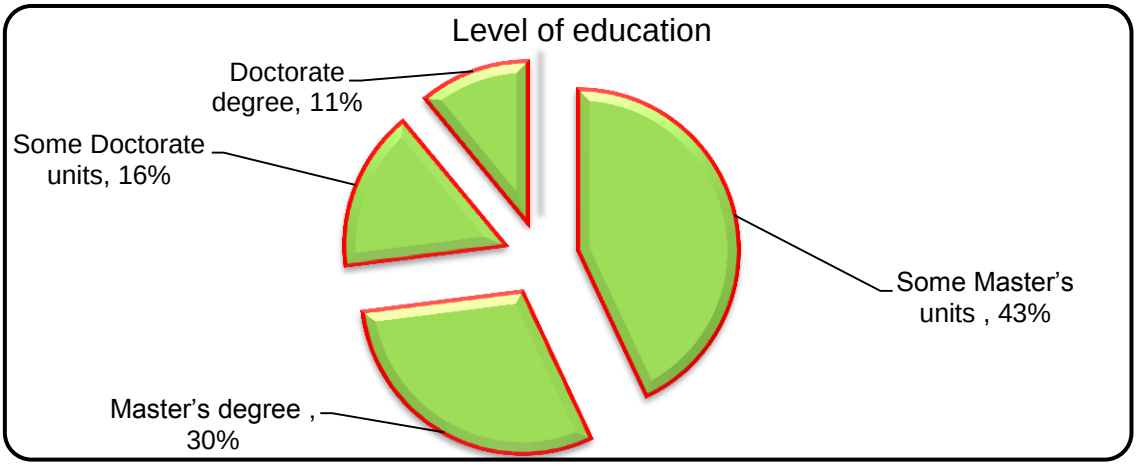
The first training programme for the academic staff in the University Al-qadisiyah who working at (Teaching and Academic Development Centre) relative with LMS start on 7th January 2014. IT staff that working at (Computer Centre and Internet Service) began new course to teach academic staff how to use MOODEL although they do not have good experiences and they are not conversant with all aspects of relative with free software. Then began a new scheme for training new group from academic staff from various disciplines to deployment the benefits and characteristics of this software and how academic staff can use it in perfect way to improve the output of the educational process, relying on the principle of training for trainers (TOT).

Appendix E Pie Charts for the Survey Results

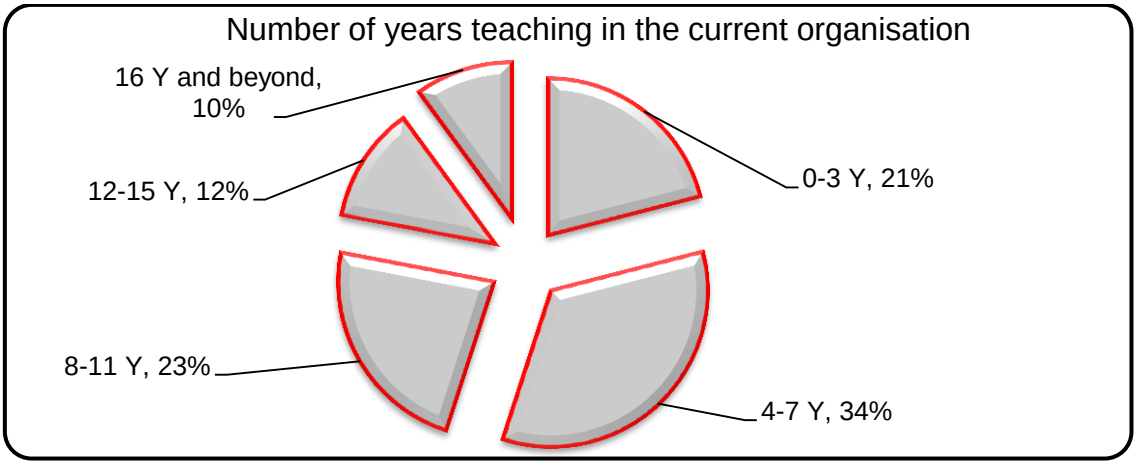
E.1 Demographics



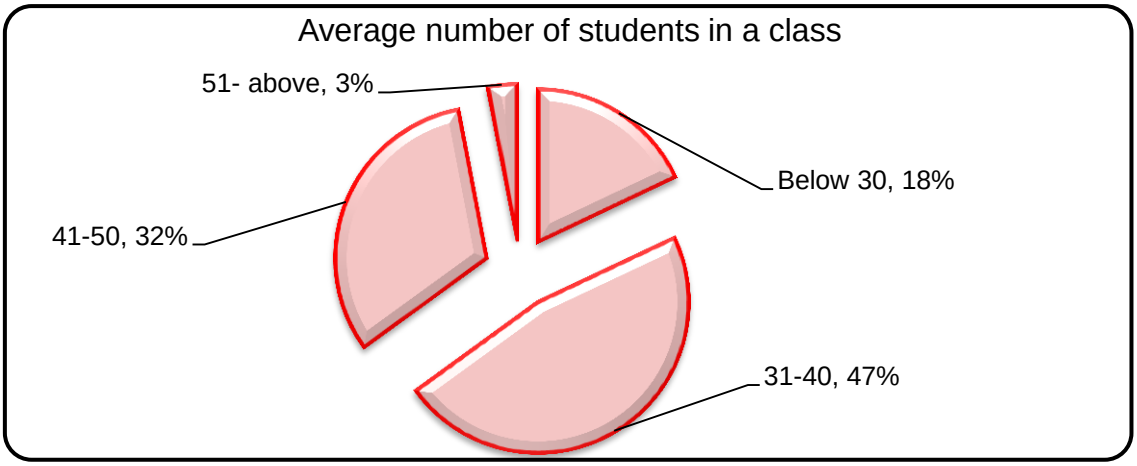
Gender of respondents



Respondents' levels of education

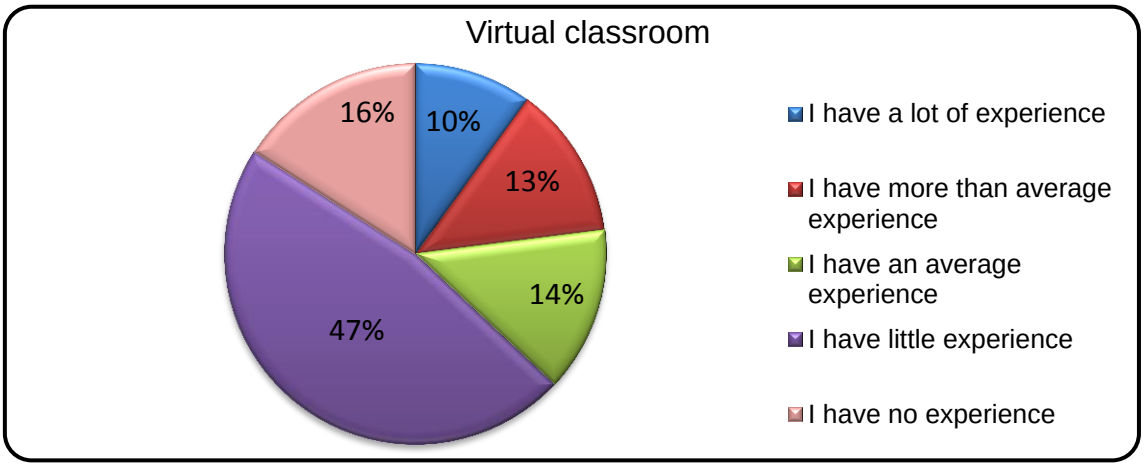


Number of years teaching in the current organisation

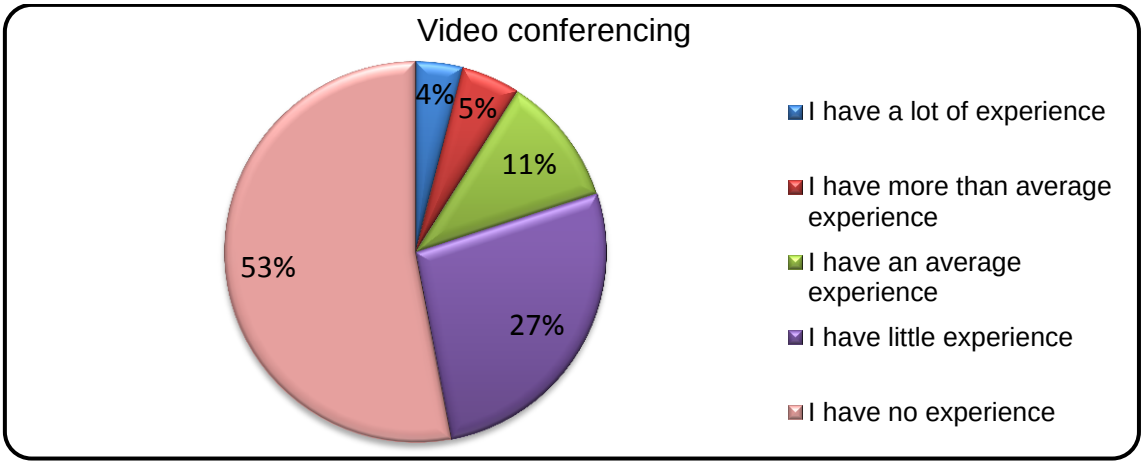


Average number of students in a class

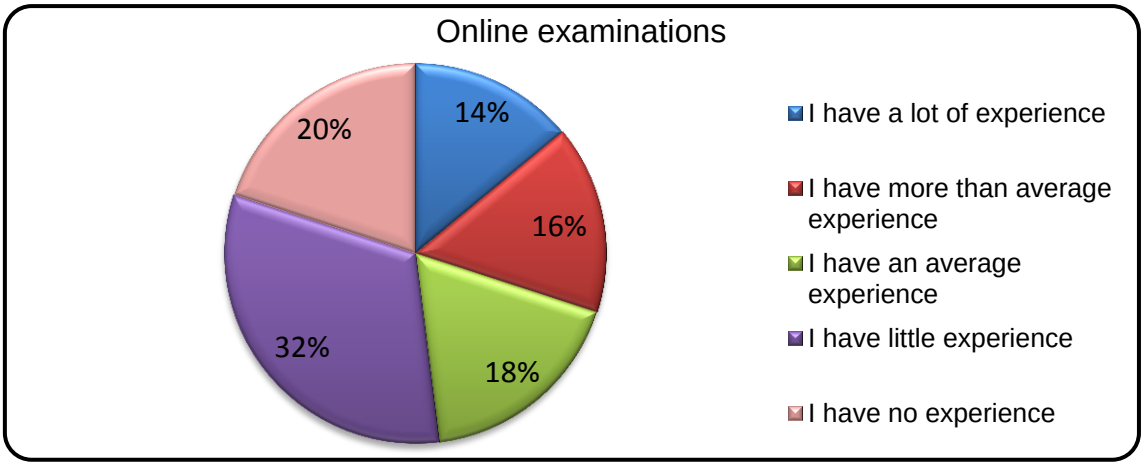
E.2 The Technology Aspect of LMS Implementation



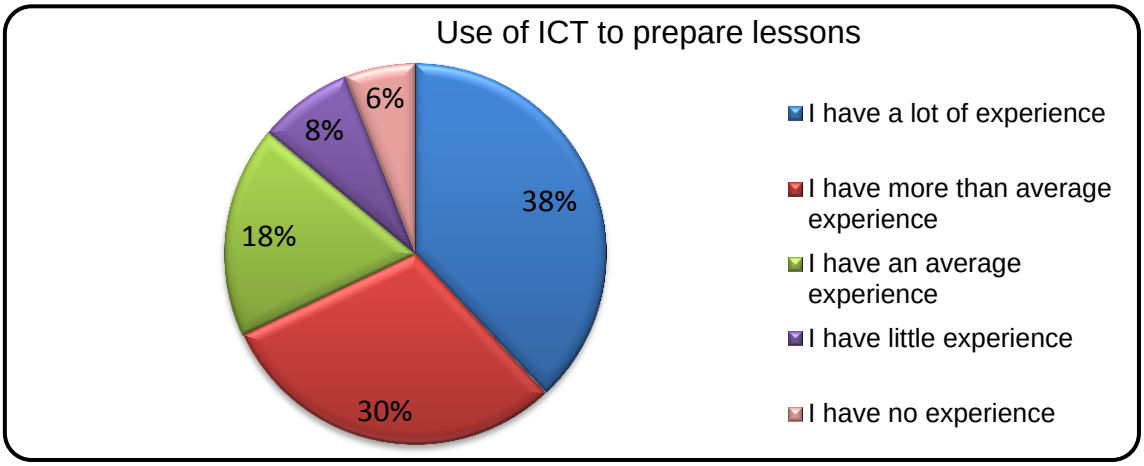
Virtual classroom



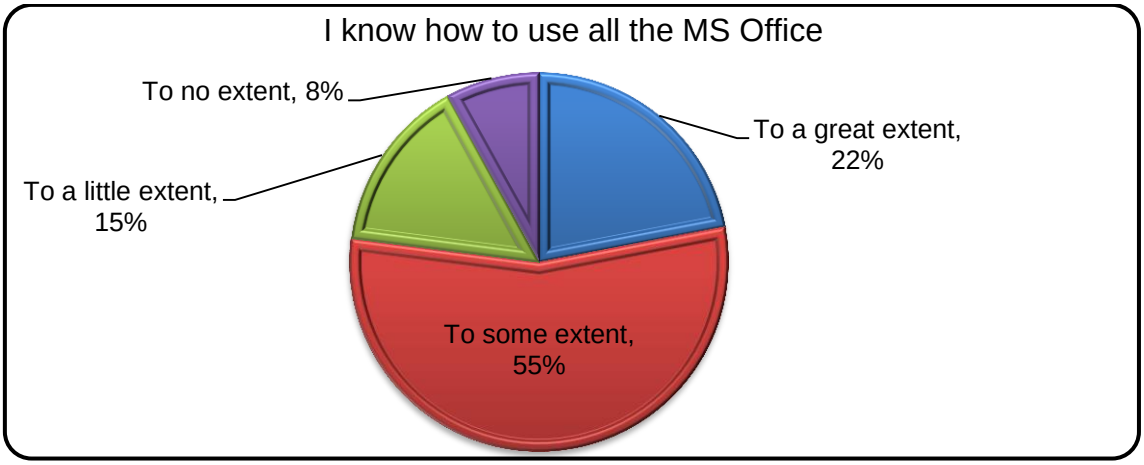
Video conferencing



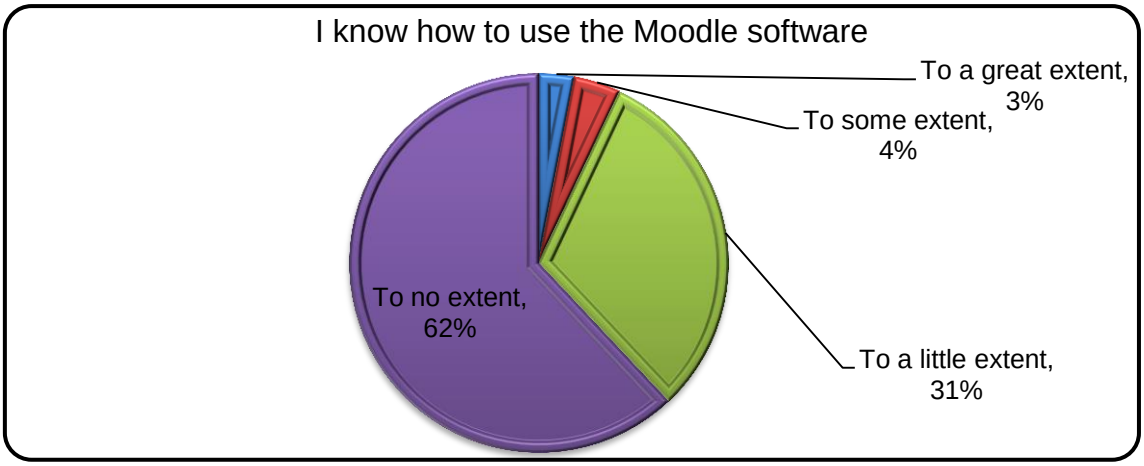
Online examinations



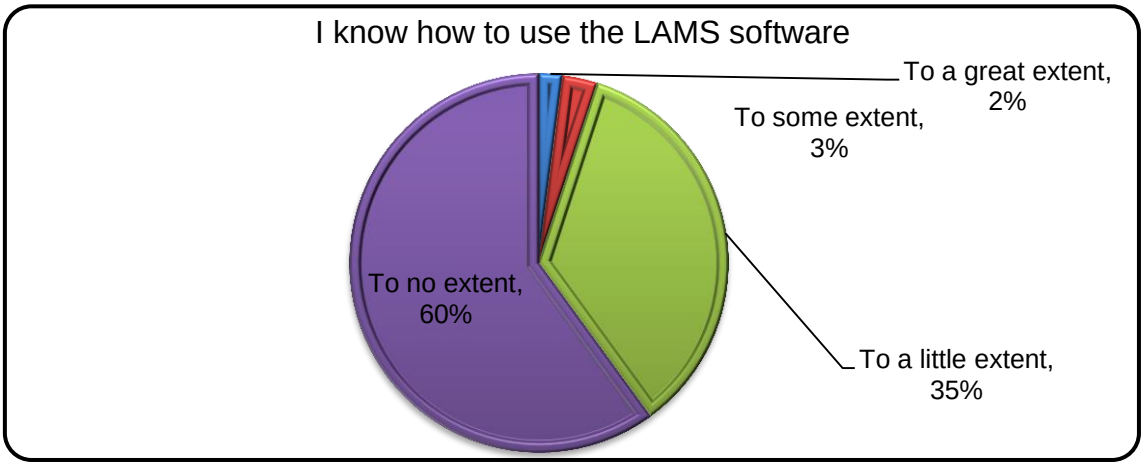
Use of ICT to prepare lessons



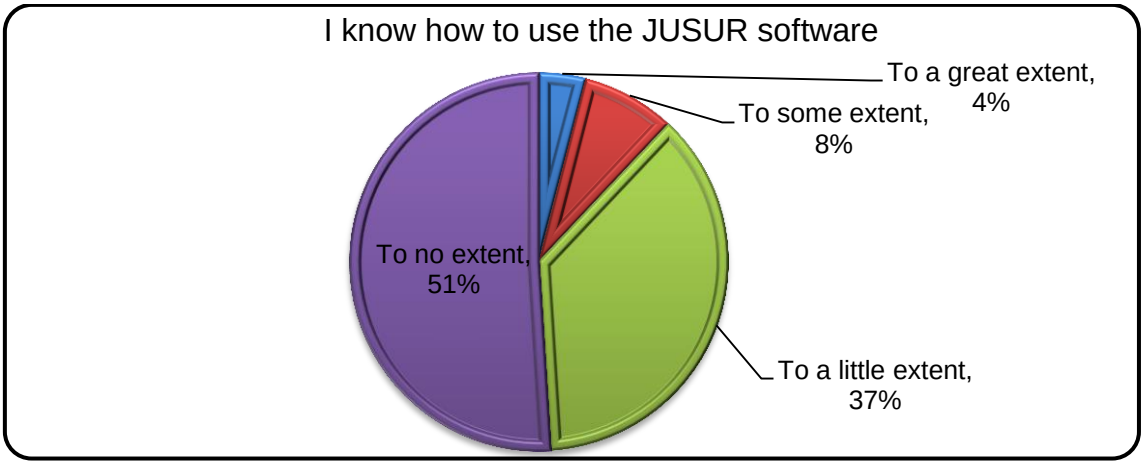
Extent of knowing how to use the entire MS Office



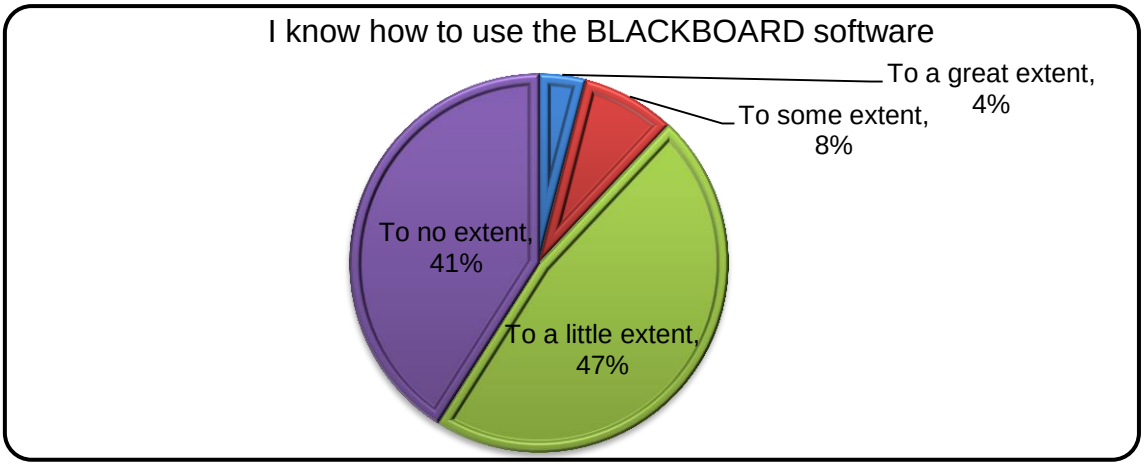
Extent of knowing how to use the Moodle software



Extent of knowing the LAMS software

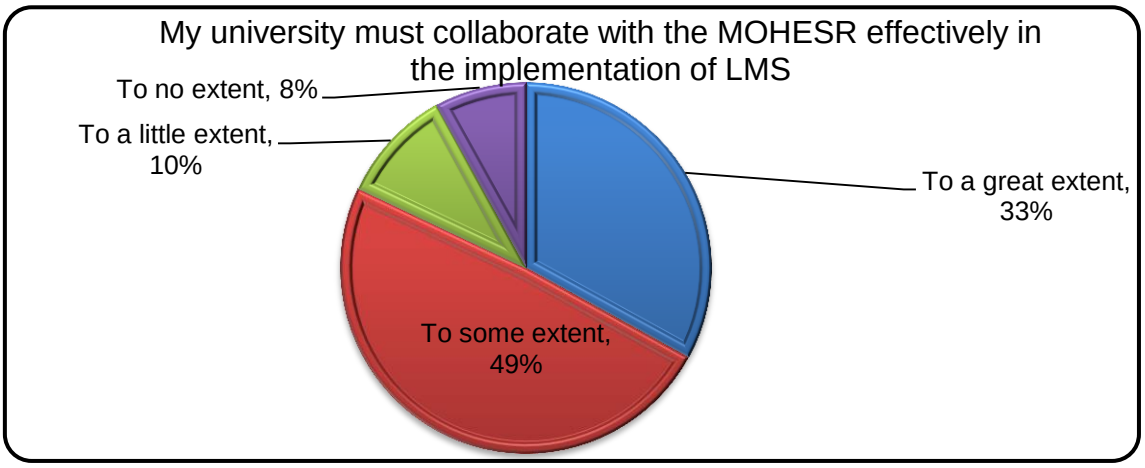


Extent of knowing how to use the JUSUR software

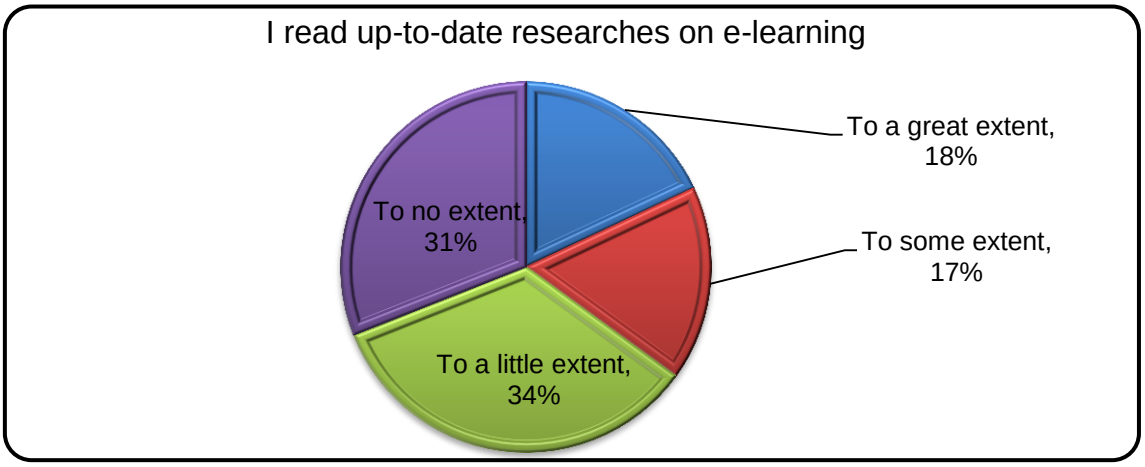


Extent of knowing how to use the BLACKBOARD

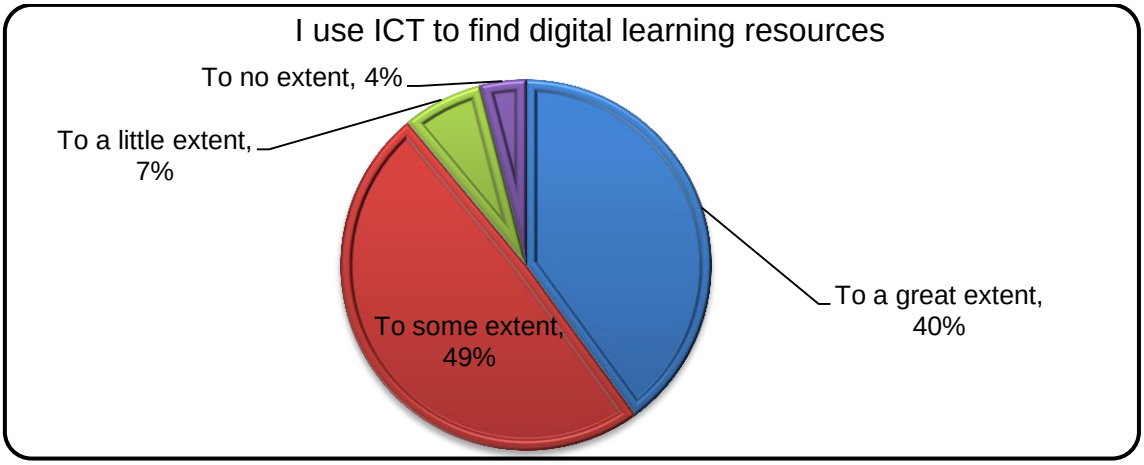
E.3 The Organisational Aspect of LMS Implementation



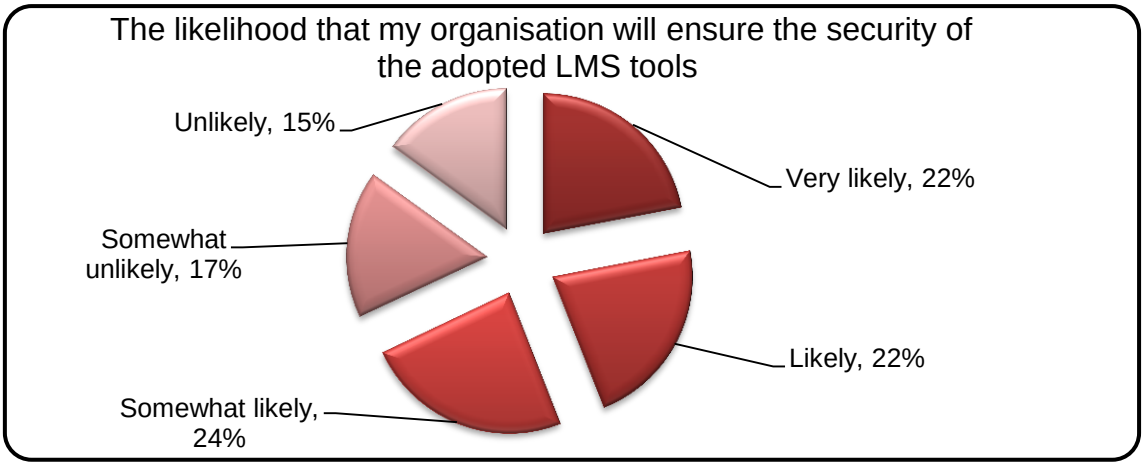
Perception of university collaboration with the MOHESR for LMS implementation



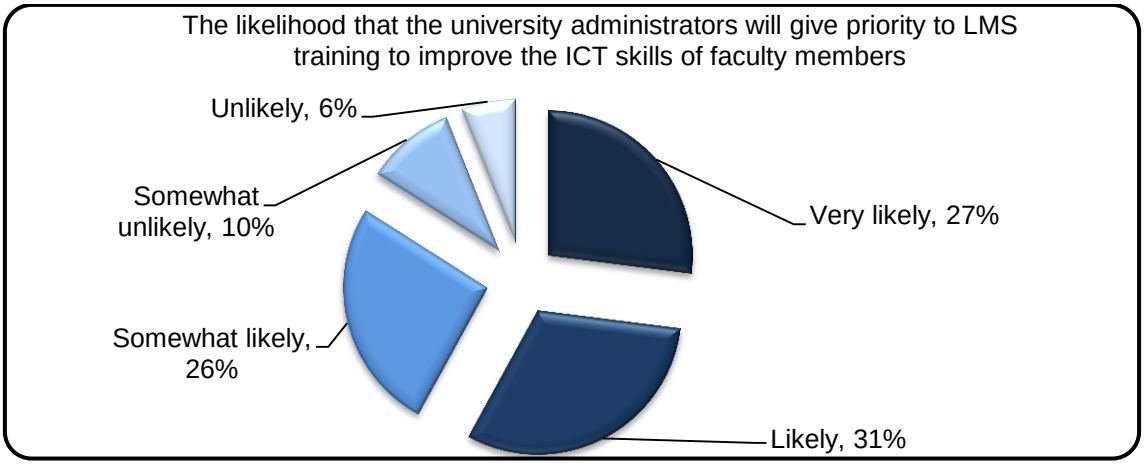
Extent of reading up-to-date researches on e-learning



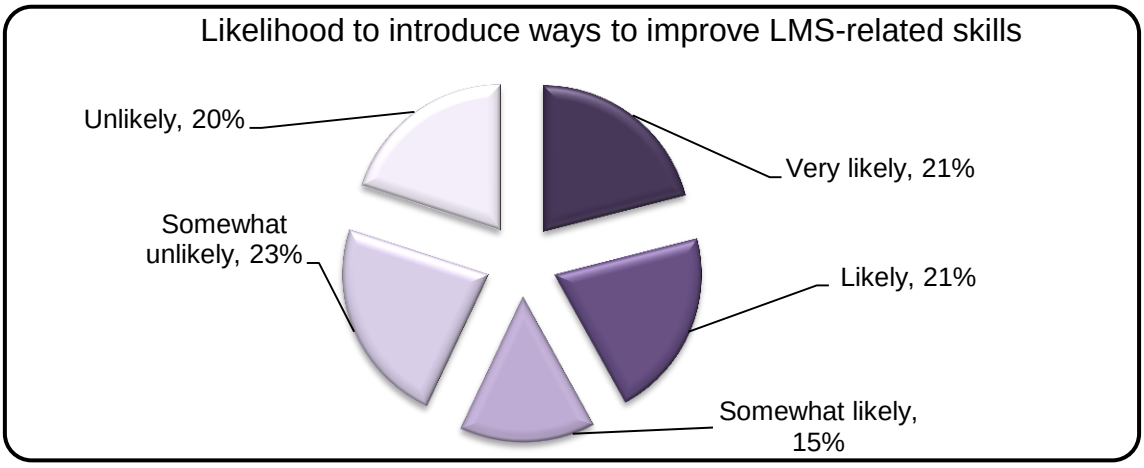
Extent of using ICT to find digital learning resources



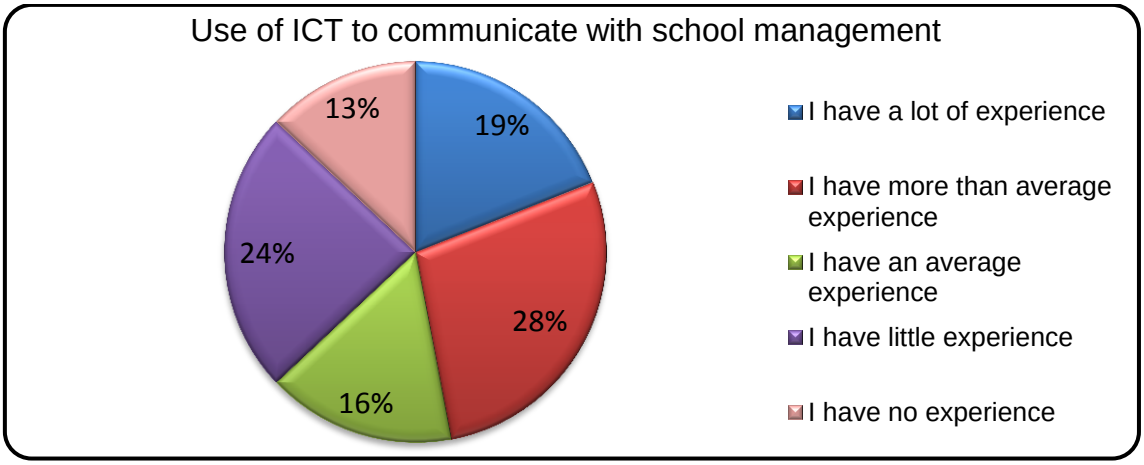
The likelihood that the organisation will ensure the security of the adopted LMS tools



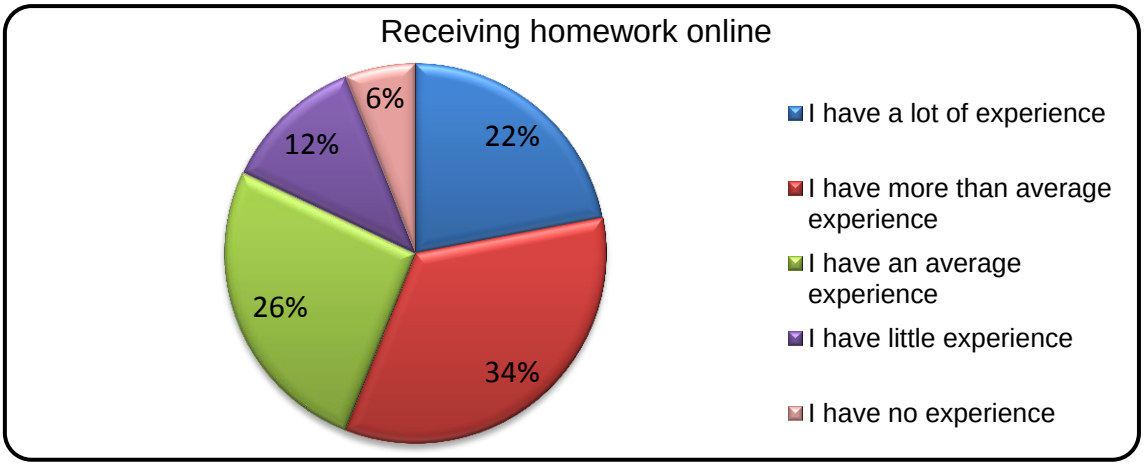
The likelihood that the university administrators will prioritise LMS training to improve the ICT skills of the faculty members



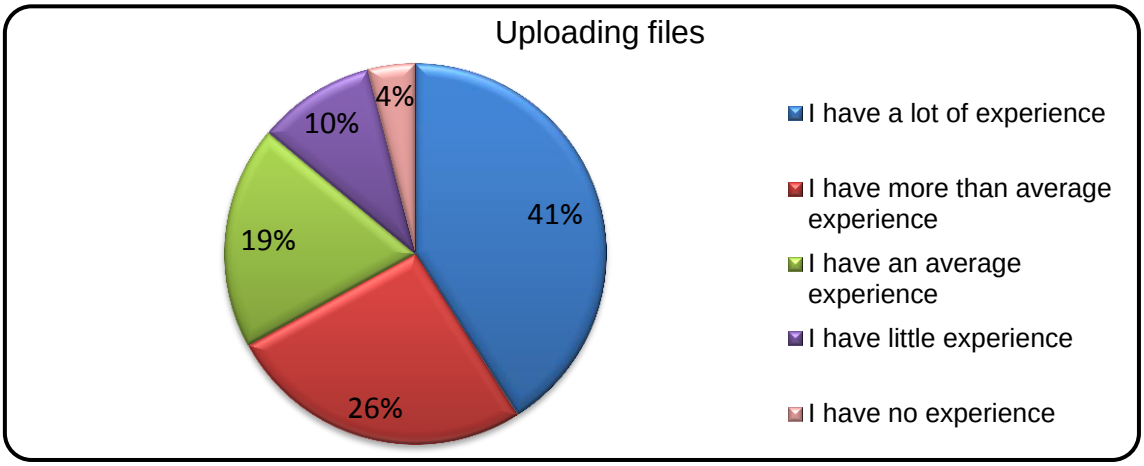
Likelihood of the respondents' organisation to introduce ways to improve LMS-related skills



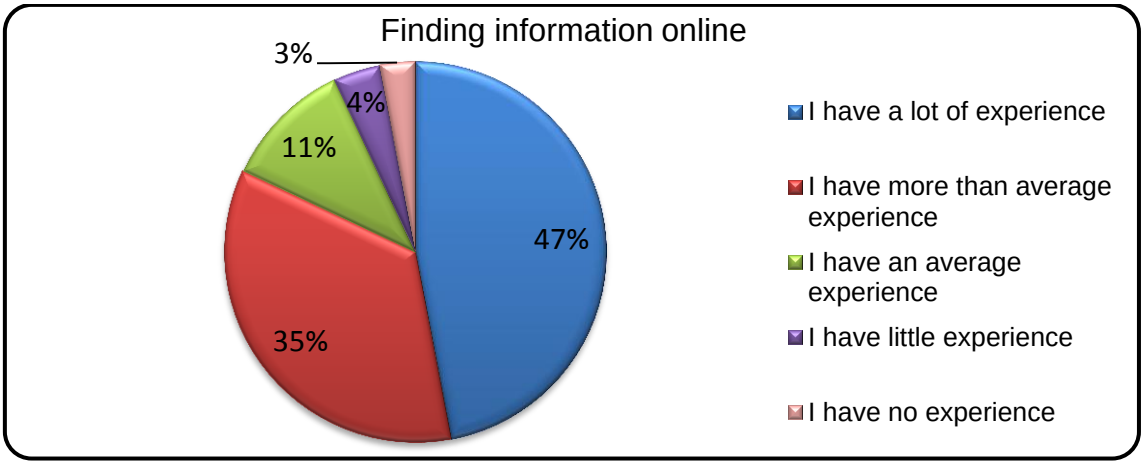
Use of ICT to communicate with the school management



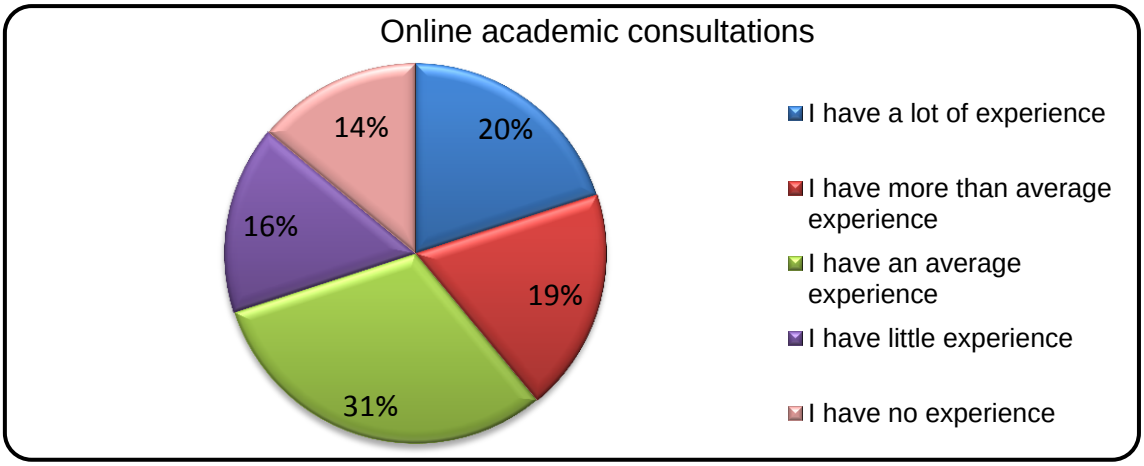
Receiving homework online



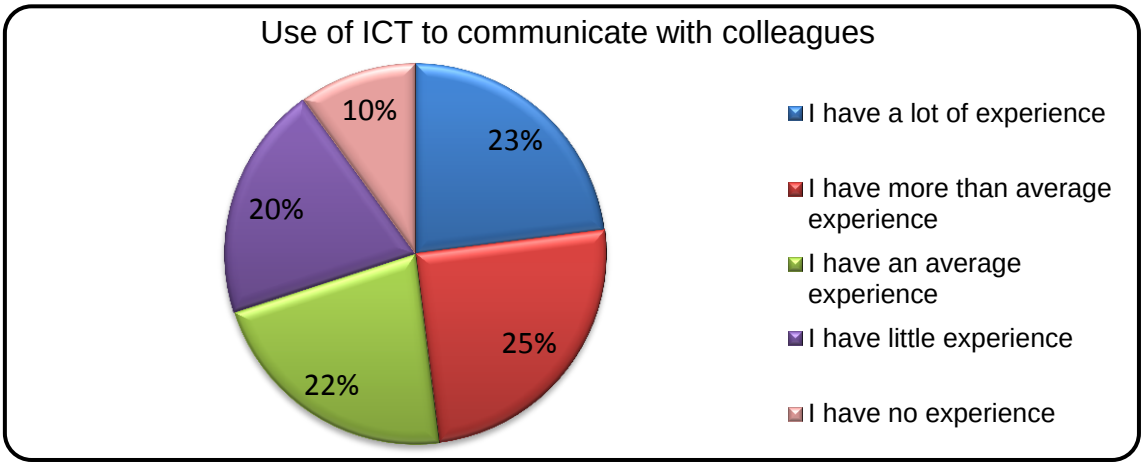
Uploading files



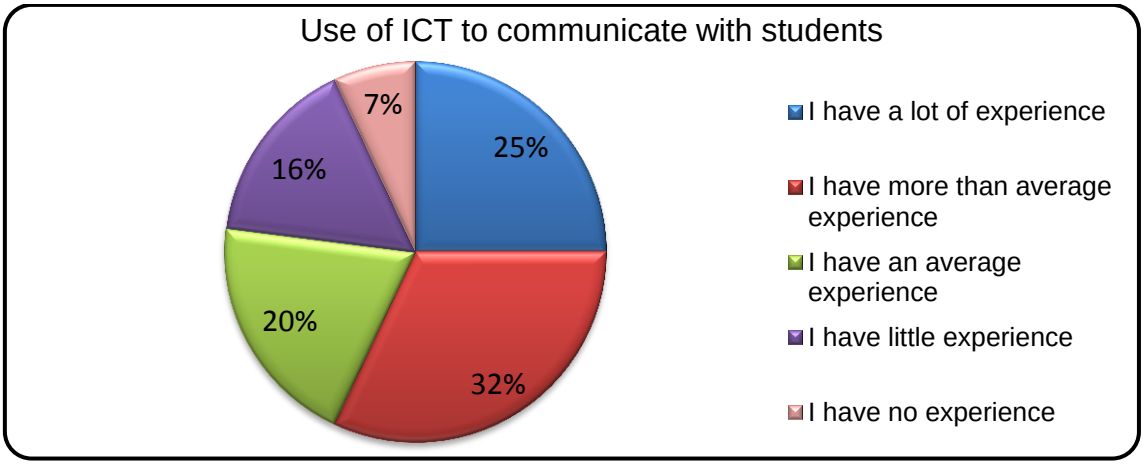
Finding information online



Online academic consultations

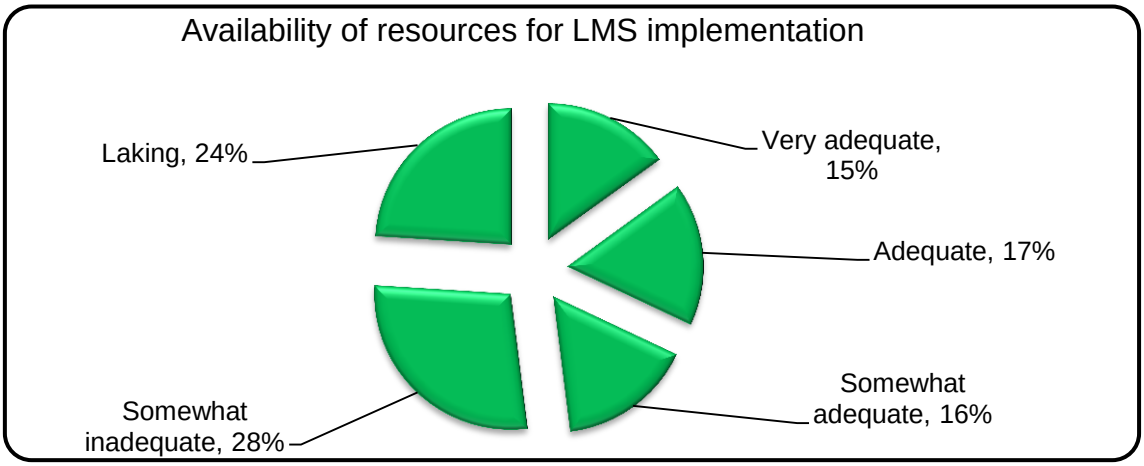


Use of ICT to communicate with colleagues

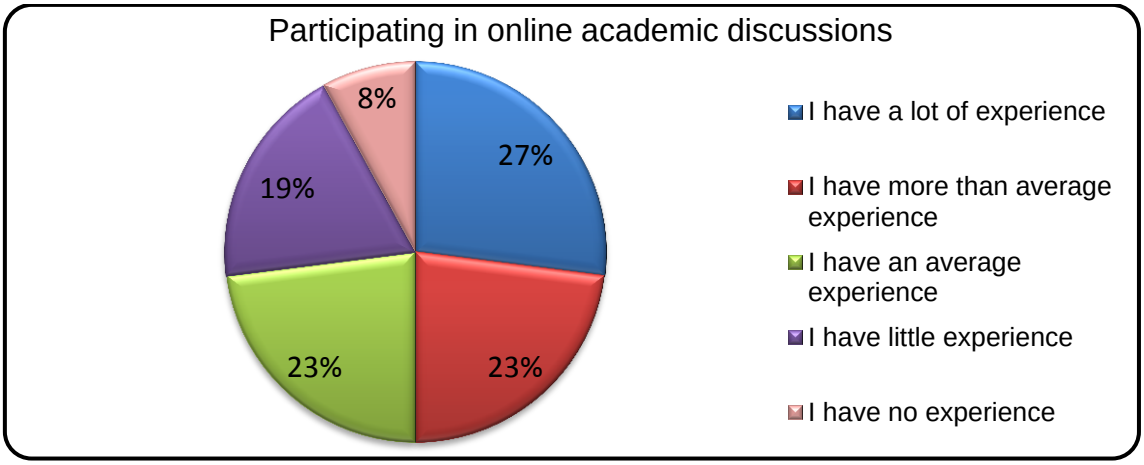


Use of ICT to communicate with students

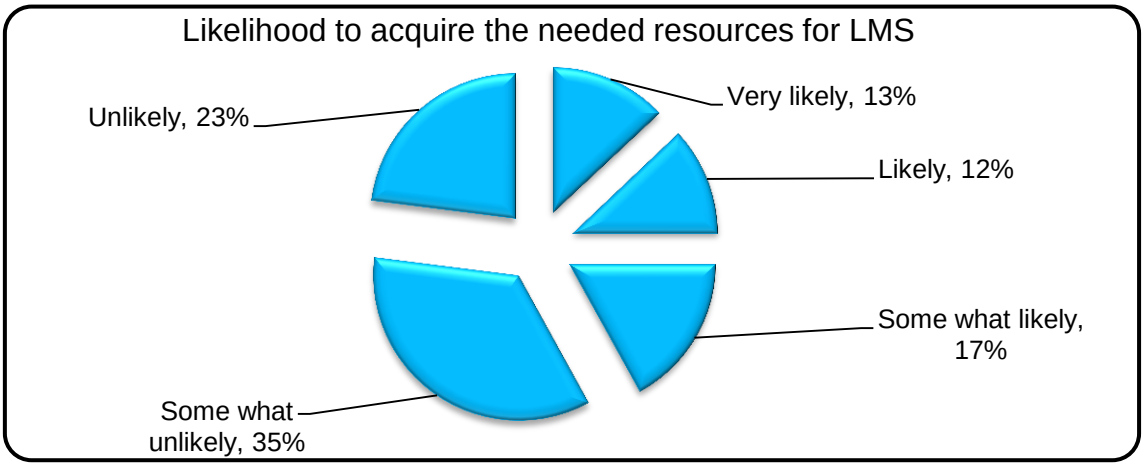
E.4 The Environmental Aspect of LMS Implementation



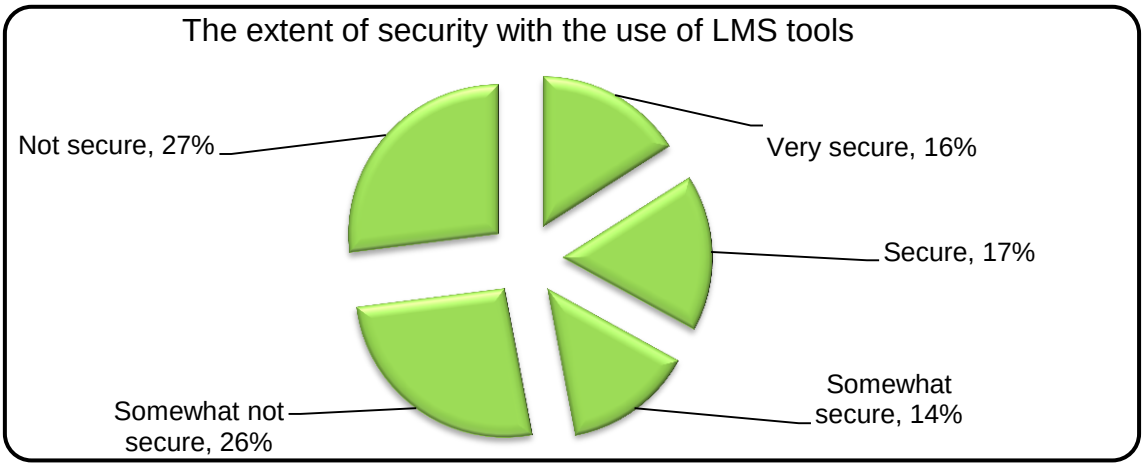
Availability of resources for LMS implementation



Participating in online academic discussions

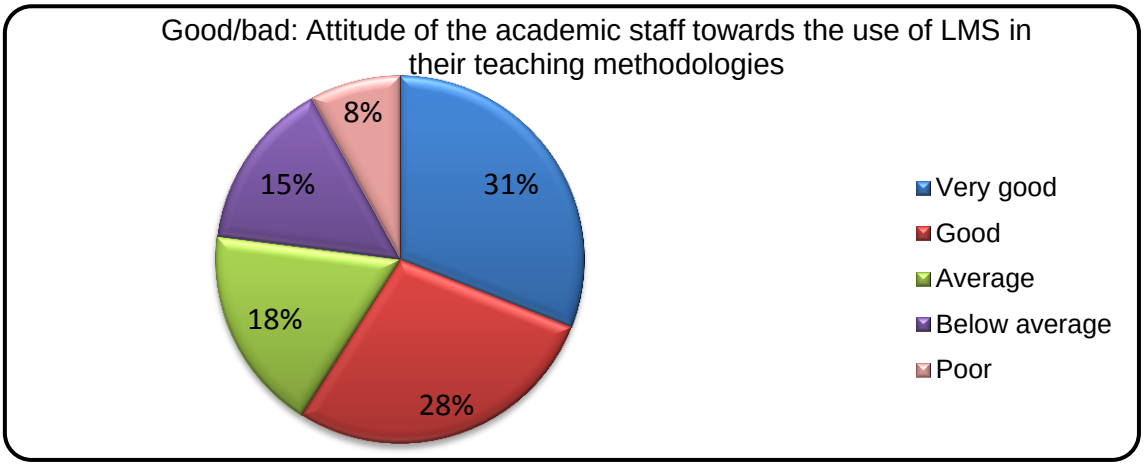


Likelihood to acquire the needed resources for LMS

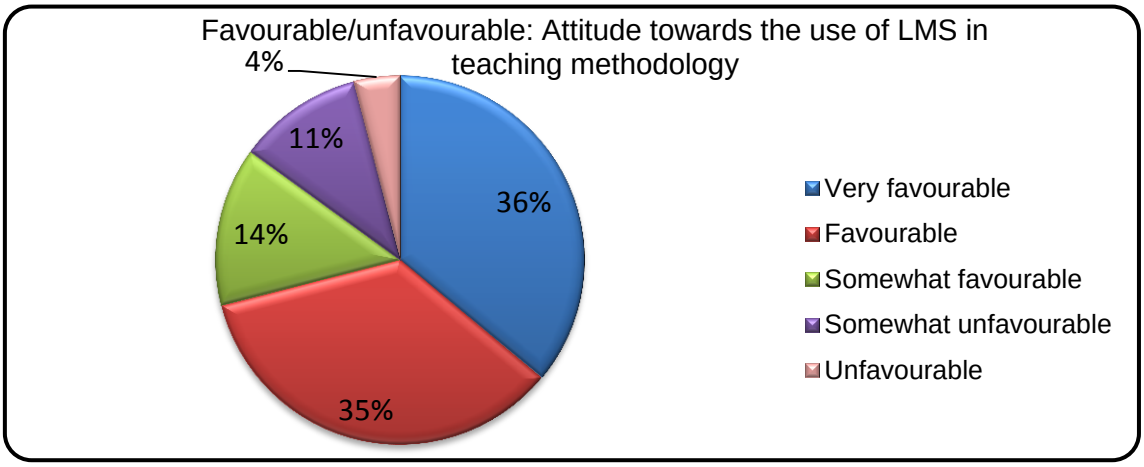


Perception of academic staff on the extent of security with the use of LMS tools

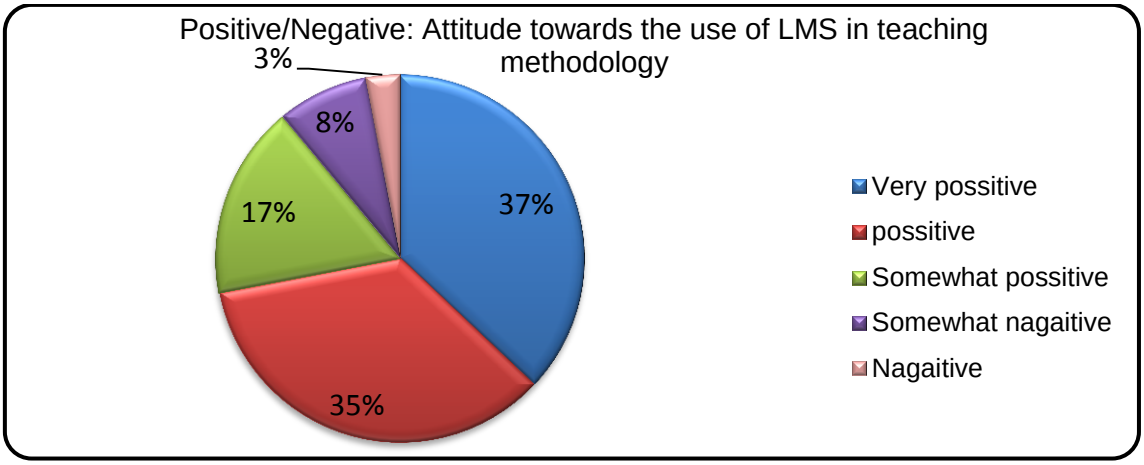
E.5 Levels of Technology Acceptance



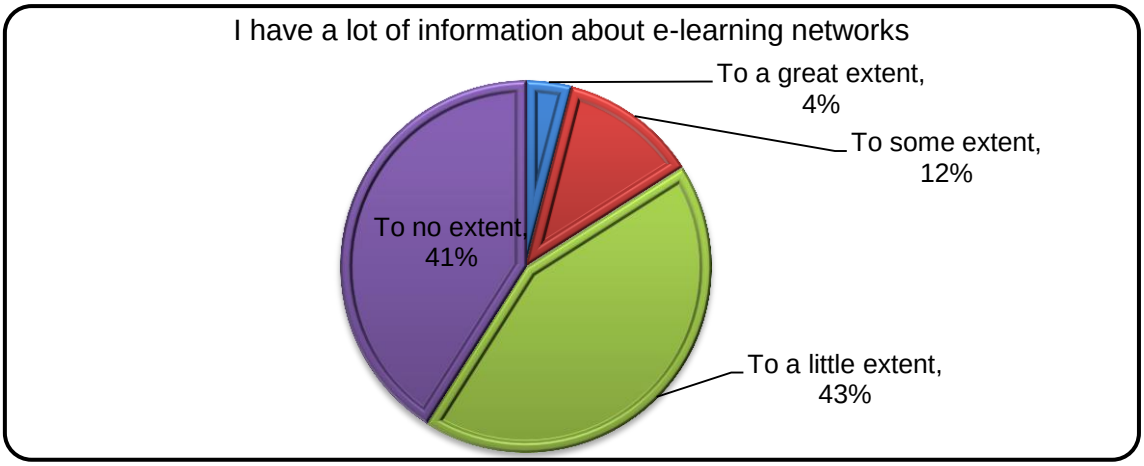
Good/bad: Attitude of the academic staff towards the use of LMS in their teaching methodologies



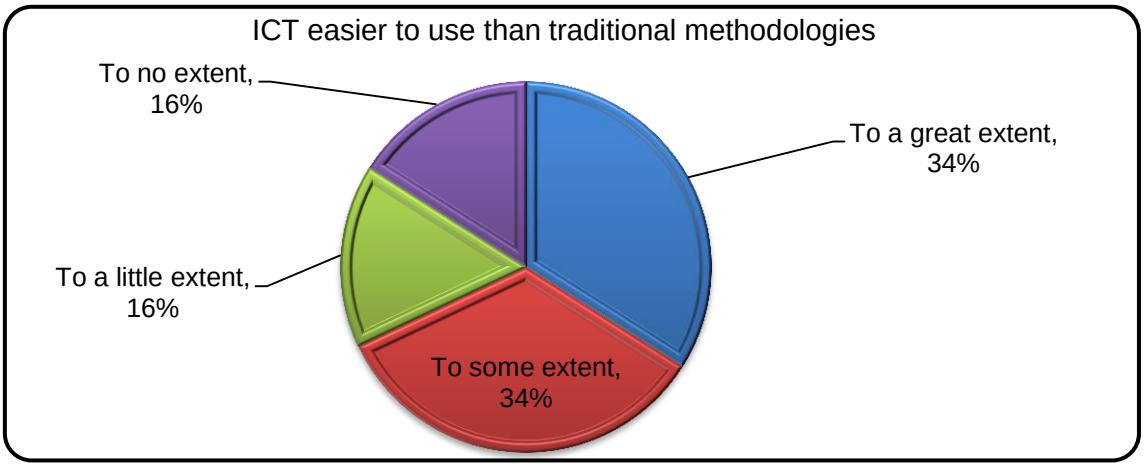
Favourable/unfavourable: Attitude towards the use of LMS in teaching methodology



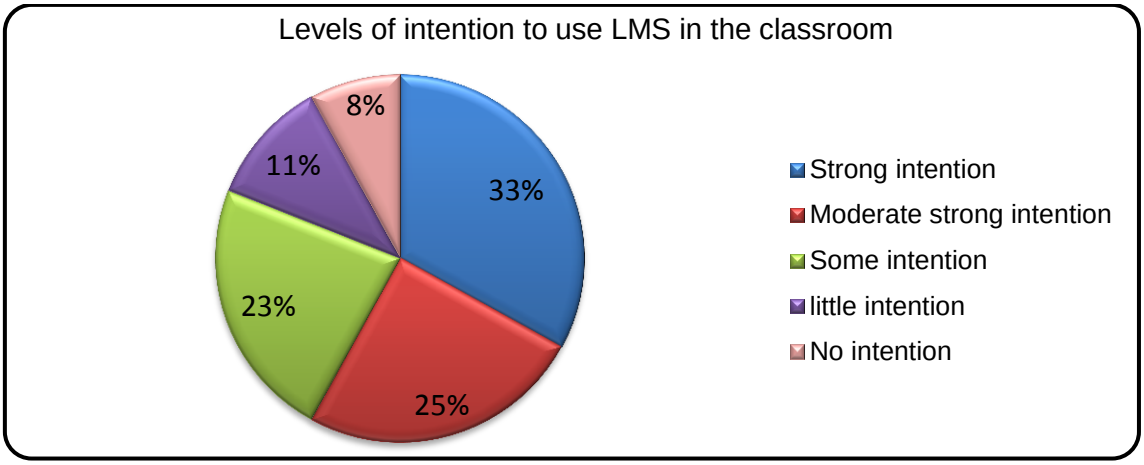
Positive/Negative: Attitude towards the use of LMS in teaching methodology



Perception on information about e-learning networks



Extent of ease of use of ICT compared to traditional methodologies



Levels of intention of the academic staff to use LMS in the classroom

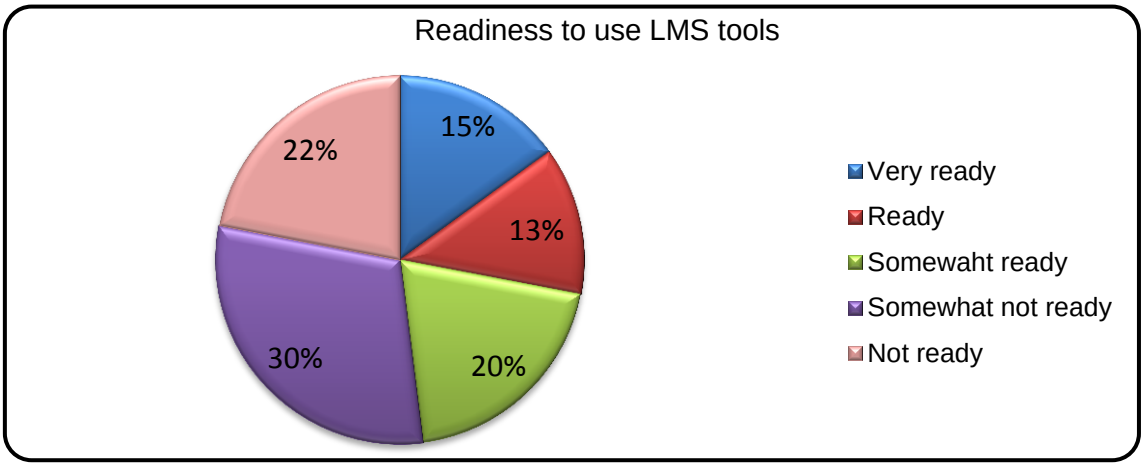
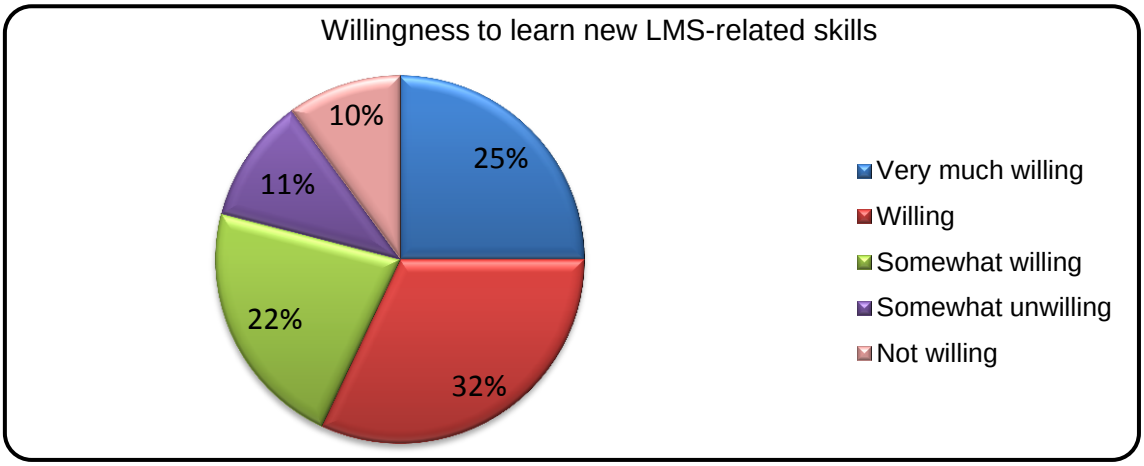
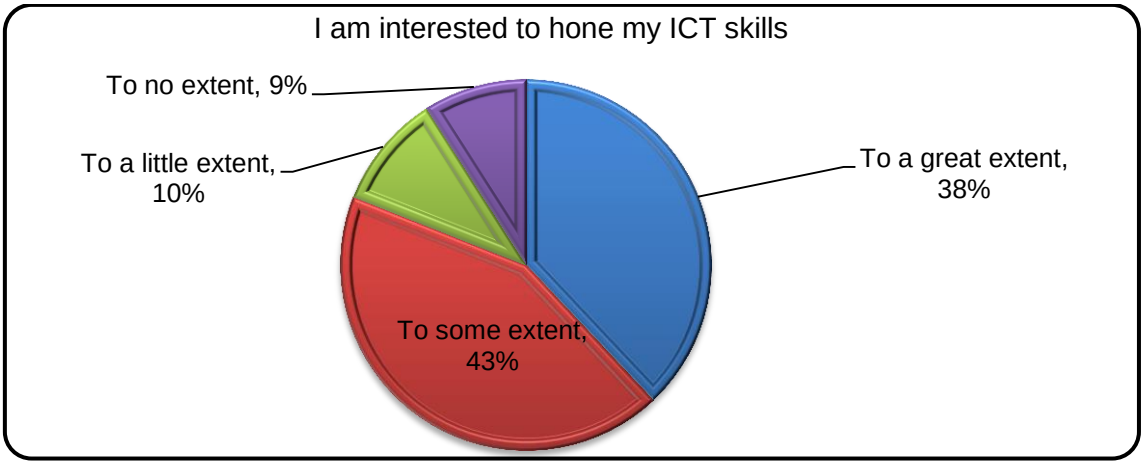


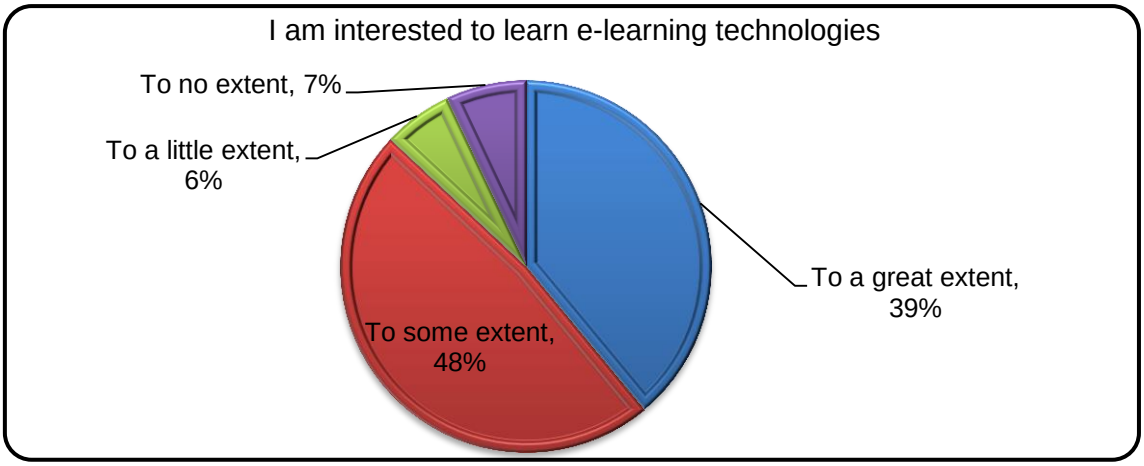
Figure 8-1: Readiness to use LMS tools



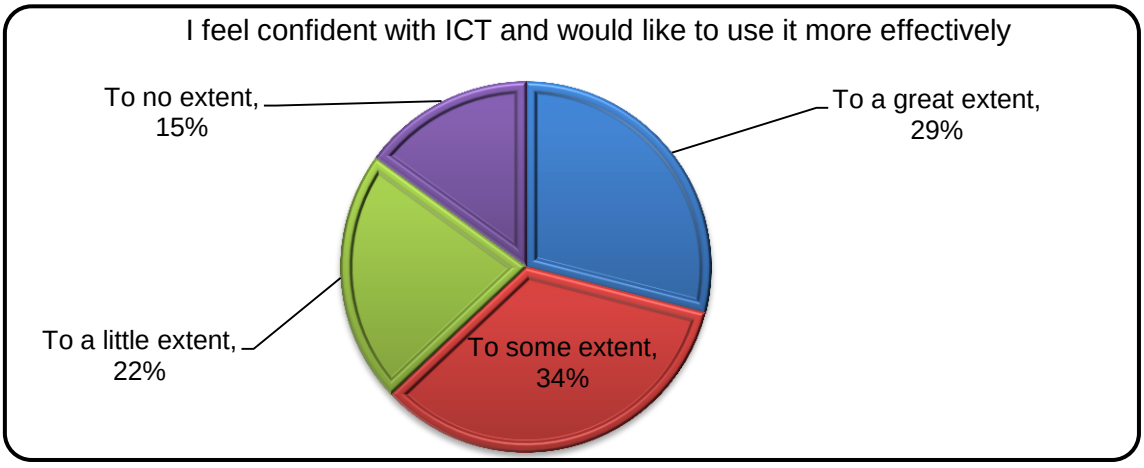
Willingness to learn new LMS-related skills



Respondents' extent of interest to hone their ICT skills



Extent of interest to learn e-learning technologies



Respondents' extent of confidence with ICT and interest to use it more effectively

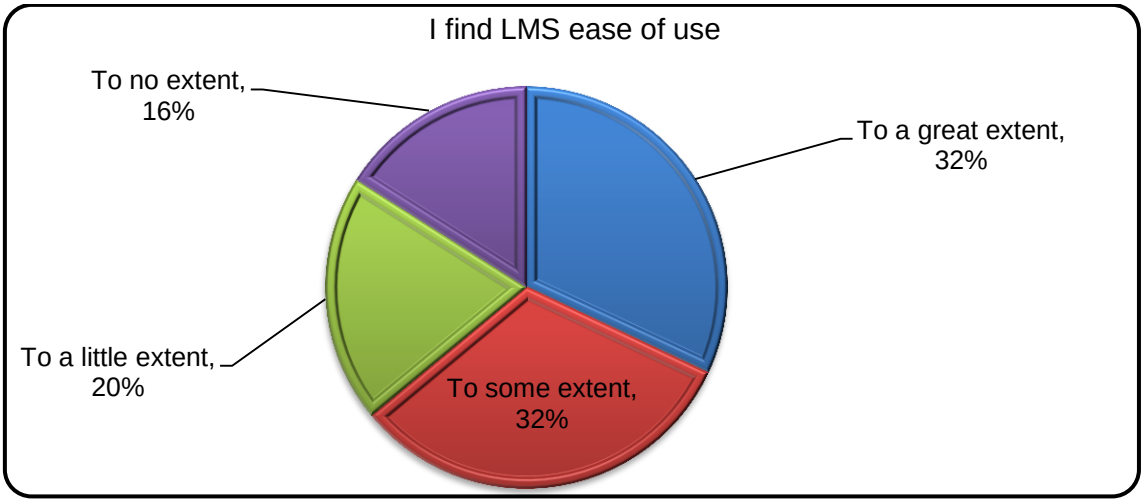
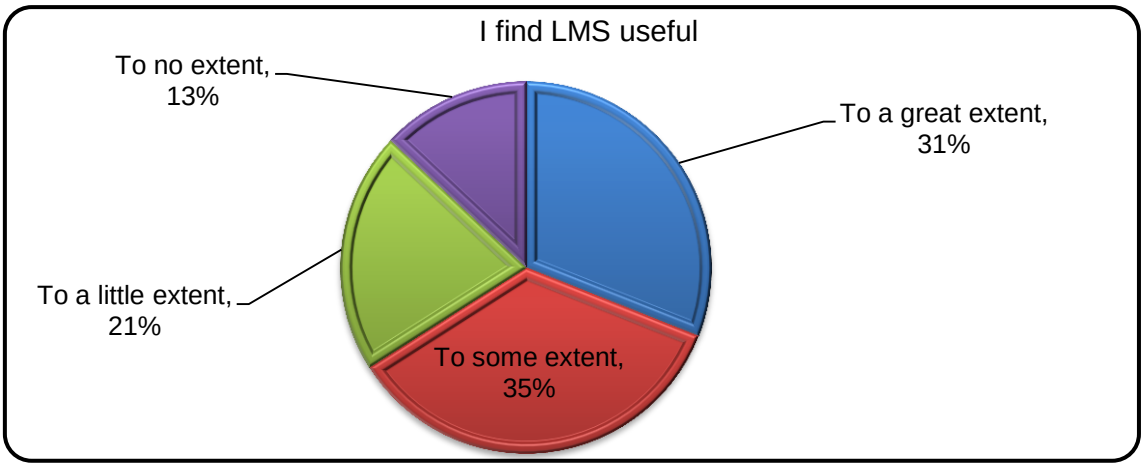
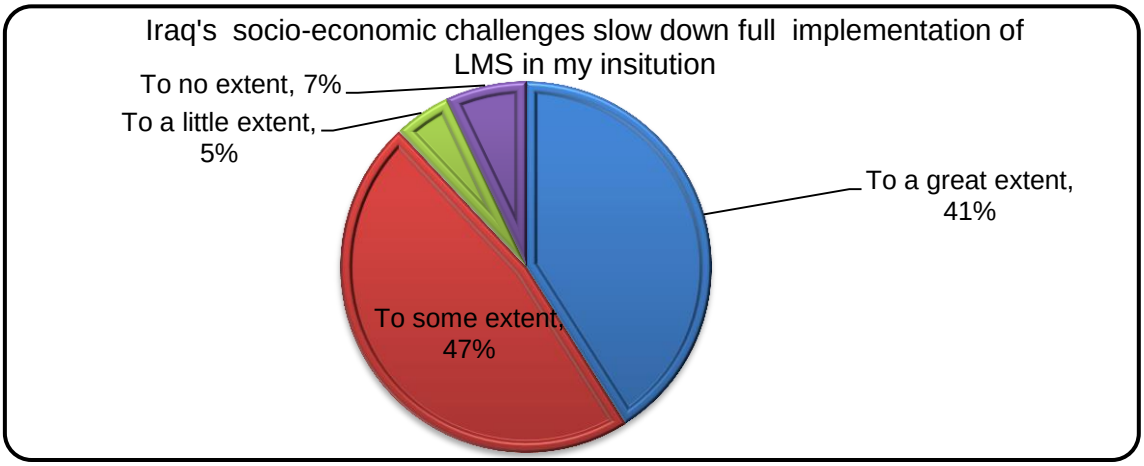


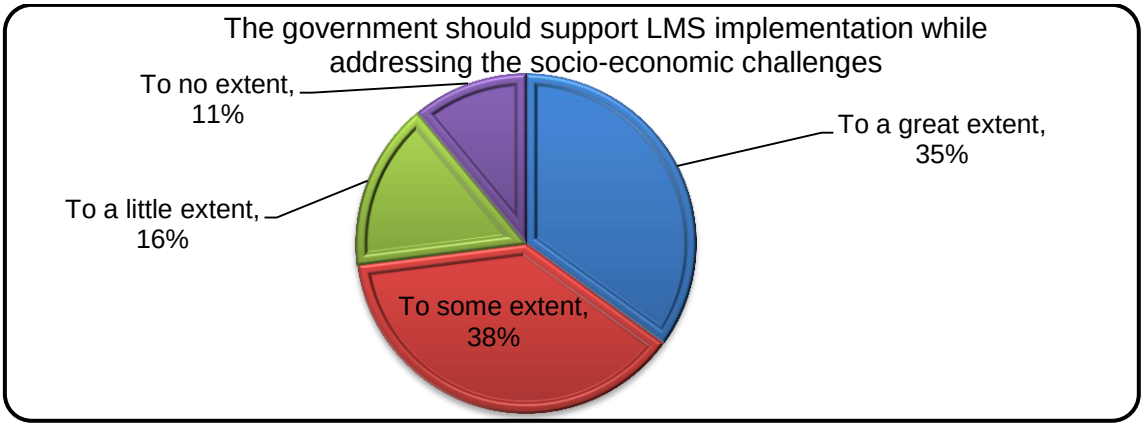
Figure 8-2: Perception of LMS' ease of use



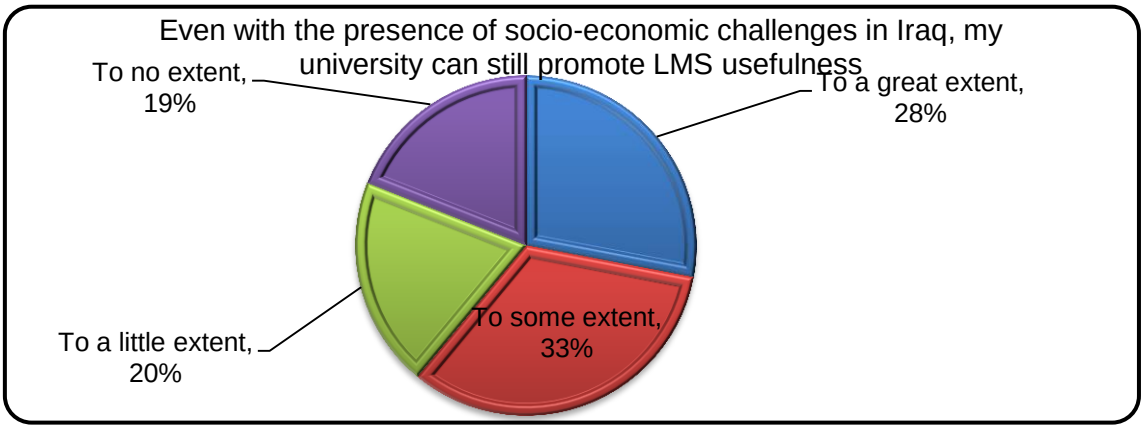
Perception of LMS' usefulness



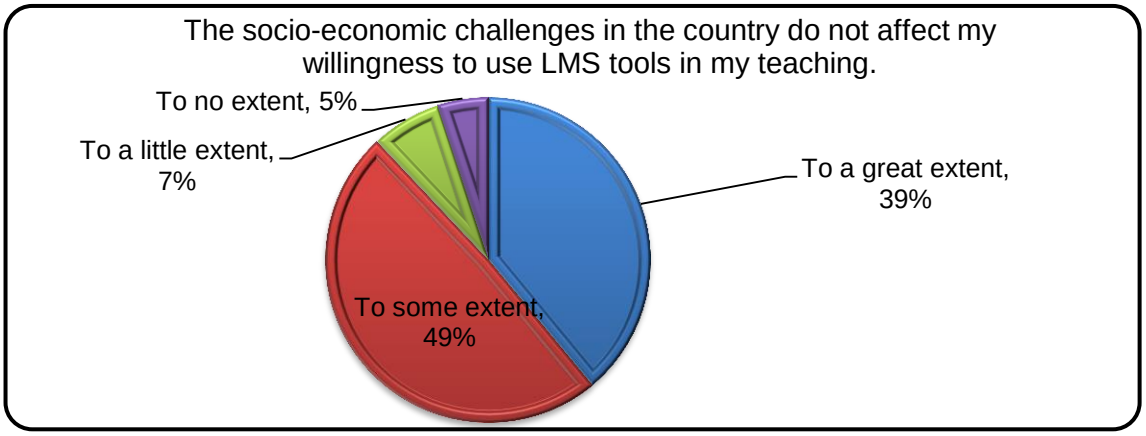
Perception of socio- economic challenges and the full implementation of LMS



Perception of the government supporting LMS implementation whilst addressing the socio economic challenges



Perception of promoting LMS usefulness in the midst of socio-economic challenges



Perception of socio-economic challenges and willingness to use LMS tools