



**COURSE MATERIAL SYSTEMEFFECTIVENESS IN IRAQI
UNIVERSITIES**

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COURSE MATERIAL SYSTEM EFFECTIVENESS IN IRAQI UNIVERSITIES

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ABSTRACT

COURSE MATERIAL SYSTEM EFFECTIVENESS IN IRAQI UNIVERSITIES

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The effectiveness of ICT towards managing organizational activities in a competitive environment is undeniable. Global organizations and businesses are increasingly adopting ICT advancements within their activities, and gaining enduring benefits as well. Similar trends are obvious even in the educational sector, in the form of increasing adoption of e-learning across the world. Multiple learning platforms as Learning Management System - LMS have been employed, in this regard. It is noted that even Middle East countries have successfully directed their attention towards adopting e-learning trends. Iraq being potentially new with the technology integration has become the focus of this study, with respect to the implementation of Course Management System - CMS across its higher educational institutions. In order to assess its successful adoption and identifying relevant challenges, the study has employed TAM - Technology Acceptance Model, and designed the survey for gaining the faculty members' perceptions and readiness towards its adoption. Besides, qualitative secondary data from literature review, and qualitative primary

data from an interview with an IT expert has also been collected. It therefore adds to the credibility of the research findings to be used by the responsible authorities for taking relevant decisions. The study has acquired valued findings by means of using statistical techniques of Descriptive statistics, Correlation, and Regression analysis. It has been established that the Iraqi faculty members have significant intentions of using the CMS platform as an effective educational medium, once deployed. However, there would be the challenges of internet accessibility and technological awareness of the users and the technical department as well.

Keywords: Course Management System (CMS), Technology Acceptance Model (TAM), Learning Management System (LMS), Learning system adoption, effectiveness of educational medium

ÖZ

İRAK ÜNİVERSİTELERİNDE DERS MATERYALLERİ SİSTEMİ VERİMLİLİĞİ

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Yüksek Lisans, Bilgi Teknolojileri Anabilim Dalı

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Bilgi ve iletişim teknolojilerinin verimliliği, rekabetçi bir ortamda organizasyonel faaliyetlerin yürütülmesine yönelik olarak yadsınamaz bir gerçekliktir. Küresel organizasyonlar ve işletmeler, faaliyetlerinde bilgi ve iletişim teknolojilerini giderek daha fazla benimsemekte ve aynı zamanda sürekli fayda elde etmektedirler. Benzer eğilimler, dünya çapında e-öğretim kabulünün yükselişi formunda eğitim sektöründe de aşikâr durumdadır. Bu bağlamda, Eğitim Yönetim Sistemi olarak çoklu öğrenim platformları devreye sokulmuştur. Ortadoğu bölgelerinde dahi e-öğrenme eğilimlerinin kabulüne yönelik dikkatlerini yönlendirmiş olduğu görülmektedir. Ders Yönetim Sistemi'nin yükseköğretim kurumlarında uygulanmasına ilişkin olarak; Irak, teknoloji entegrasyonu ile potansiyel olarak yeni olmasıyla, bu çalışmanın odak noktası olmuştur. Başarılı kabulünün değerlendirilmesi ve ilgili değişikliklerinin tanımlanması amacıyla çalışma, Teknoloji Kabul Modelini devreye almış ve kabule yönelik öğretim üyelerinin algıları ve hazır oluşlarının kazanımı için araştırmayı tasarlamıştır. Ayrıca, literatür taramasından elde edilen kalitatif ikincil veriler ve Bilgi

Teknolojisi uzmanıyla yapılan görüşmenin kalitatif birincil verileri de toplanmıştır. Ayrıca, bu nedenle araştırma bulgularının güvenilirliğine ilaveten, ilgili kararların alınması için sorumlu makamlar tarafından kullanılmak üzere. Çalışma ile betimsel istatistikler, bağdaşma ve regresyon analizi istatistiksel tekniklerinin kullanılması suretiyle değerli bulgular elde edilmiştir. Iraklı öğretim üyelerinin, bir kere uygulandığında etkili bir eğitim aracından Eğitim Yönetim Sisteminin kullanılmasına dair önemli amaçları olduğu tespit edilmiştir. Bununla birlikte, kullanıcılar ve aynı derecede teknik birimler, internet erişilebilirliği ve teknolojik farkındalığa dair güçlüklerle sahip olacaktır.

Anahtar Kelimeler: Ders Yönetim Sistemi (CMS) ,Teknoloji Kabul Modeli(TAM), Öğrenme Yönetim Sistemi(LMS) , Öğrenme sisteminin benimsenmesi , Eğitim ortamı etkinliği

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LIST OF ABBREVIATIONS

CMS	Course Management System
LMS	Learning Management System
PU	Perceived Usefulness
BEOU	Perceived Ease Of Use
BI	Behavioural Intention
MEKTEP	Model -Environment of Knowledge Tracking and Extension Process
TAM	Technology Acceptance Model
SPSS	Statistical Package For Social Sciences
ICT	Information communication technologic

CHAPTER 1

INTRODUCTION

1.1 Introduction

This section presents the relevant information of the topic of the research. With respect to the research area, there is a need of acquiring insights of the problem focus to acquire competence of determining the aim and objectives of the study. Since the advancing nature of technology has influenced all the sectors operating for competitive advantage and economic stability, its adoption has been regarded as the foremost priority over the traditional systems or business processes. Accordingly, the impacts of technological advancement have been significant on the educational center (inclusive of institutes, universities, schools, and colleges). The educational centers have adopted the integration of certain Learning Management Systems (LMS) and even Course Management Systems (CMS) as well, as the advanced form of learning management systems, in order to facilitate distance or virtual learning in the most feasible manner (Ninoriya et al 2011[38]; Barsnica et al 2010[7]; Tsai 2015[49]; Al-Busaidi[4], and Al-Shihi, 2012). Focusing the effectiveness of CMS deployment within the universities of Iraq, the researcher has formulated the entire research plan. The proceeding section presents the essential elements that are determined prior to the execution of the plan.

1.2 Background

The pace of development within the domain of Information and Communication Technology (ICT) has yielded the impression of making the adoption of ICT imperative for the competitiveness of the organizations or industries (Bhuasiri et al 2012[9]). With the increasing inclination towards the deployment of ICT infrastructure, substantial attention of the researcher has also been observed towards

exploring its maximum potential (Alharbi[6], and Drew, 2014; Bhuasiri et al 2012[9]).Most importantly, the contribution of ICT has been directly influential on the processes of learning and teaching, enhancing the prospect of e-learning. Consequently, the increasing access to the ICT attributes has generated a new paradigm of facilitating the needs of education. Based on this beneficial prospect, educational institutes across the world have adopted the deployment of technological measures. The traditional or existing strategies have been revised to complement the accomplishment of pedagogical goals. Undoubtedly, e-learningturns out to be a manifestation of intentional adoption of ICT to enhance the quality of education (Alharbi[6], and Drew, 2014; Bhuasiri et al 2012[9]).

LMS "Learning Management System" as an ICT tool has been widely adopted across the educational sector. The tools of ICT are regarded as the governing element of successful e-learning (Bhuasiri et al 2012[9]). The platform of LMS has been facilitating the learning and teaching needs of the students and the faculties of the educational institutes in terms of online accessibility to the learning services. The services facilitated by LMS are of varying nature, depending on the nature of the system, including performance management, access control, assessments, communication, scheduling, learning material or content availability, and documentation. Based on the respective advantages, universities and institutions across the globe have been deploying these tools of ICT (Alharbi[6], and Drew, 2014). Even the developing or emerging economies have also represented significant incline towards the adoption of LMSs within their universities and higher education institutes. Figure 1: explains the tools of Global adoption of e-learning.

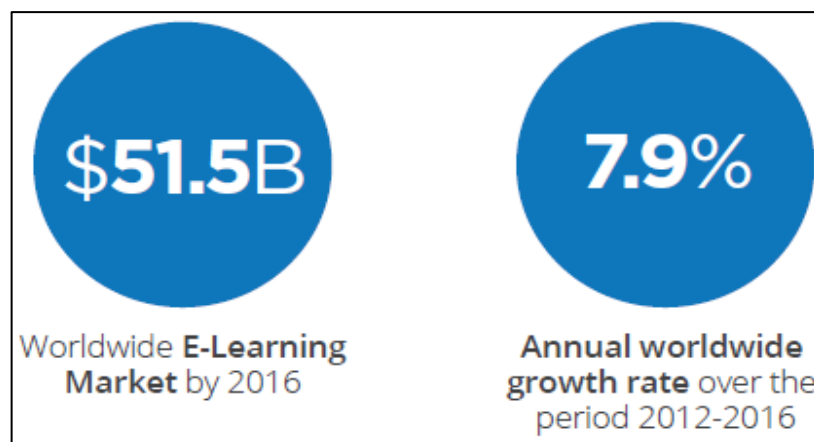


Figure 1 Global adoption of e-learning tools

Source: (Trends, 2014) [47]

Followed by the increasing adoption of LMS, the tools of ICT have been developed having focused or specific objectives with respect to the educational needs. Among these interventions, CMS (Course Management System) was developed at Stanford University at first in 1998, providing the effective management of particular academic systems. Being an advancement of LMS, CMS is primarily a scientific technique that is focused on planning, organizing, and controlling the flow of informative content or course material in between the learner and the instructors (Al-Busaidi[4], and Al-Shihi, 2012). CMS is proficient in making effective use of the database; thus, yielding exceptional results of e-learning. The institutes are capable of managing the data related activities, including the course content, results of the assessments, and the other detailed records of the students (Epignosis 2014[24]); Dahlstrom, et al 2013[19]).The tools of CMS make it easier for the personnel involved to add, delete, or even update the existing content, which is easily accessible through the user interface of CMS (Ninoriya et al 2011)[38]. Figure 2, Figure 3: explains the deference among LMS and CMS.

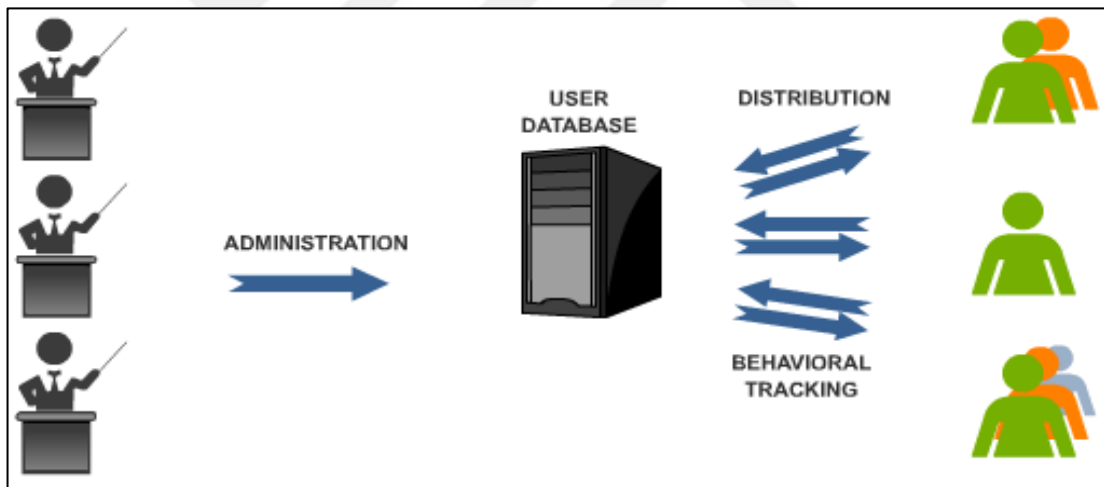


Figure 2LMS(Ninoriya et al 2011) [38]

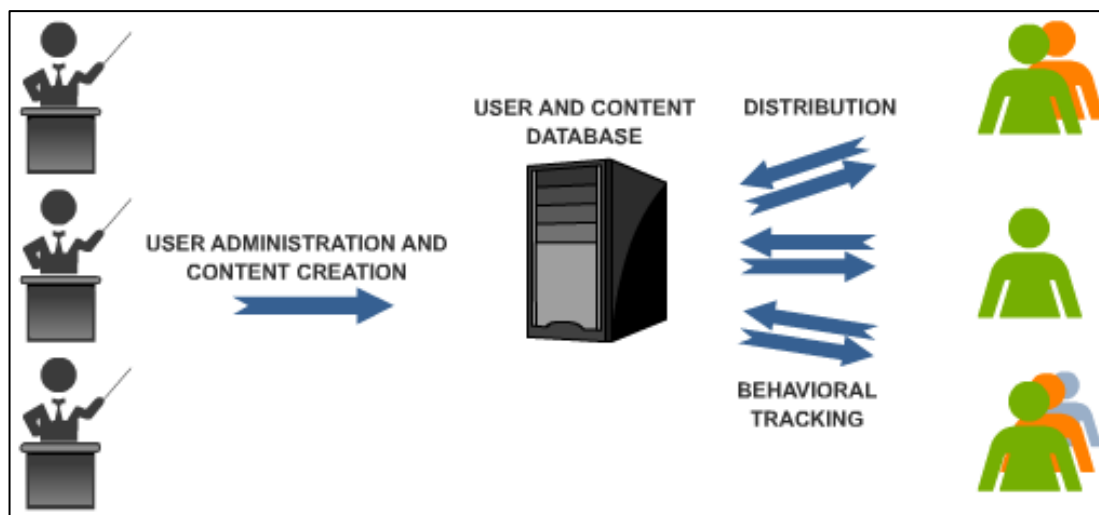


Figure 3 CMS (Ninoriya et al 2011) [38]

Even though the objectives of both the LMS and CMS are aligned with the paradigm of facilitating the e-learning needs of the students across the network, the potential differences in performance outcomes are illustrated in the table below. Depending on the needs of the educational institute, the best information system can be deployed.

Table 1 LMS vs. CMS [38]

	LMS	CMS
Primary target users	Training managers, Instructors, and Administrators	Content developers, Instructional Designers and Training Managers
Primary management	Learners	Learning content
Reports generation of trainings	Primary focus	Secondary focus
Learner collaboration	Yes	Yes
Event scheduling	Yes	No
Content-creation capabilities	No	Yes
Organizing reusable content	No	Yes
Creation of test questions and test administration	Yes	Yes
Dynamic pre-testing and	No	Yes

adaptive learning		
Workflow tools to manage the content development process	No	Yes
Delivery of content with navigational controls and learner interface	No	Yes

As a matter of fact, the integration of e-learning platforms in the developed regions of the world has been remarkable in facilitating the learning needs of the society. However, the statistics of e-learning adoption have been critical, reflecting considerable delays in adopting ICT prospects in the Middle East countries. Exploring the past studies, it has been observed that the educational settings in higher educational institutes in Middle East present challenging situations pertaining to the ICT deployment (Alharbi [6], and Drew, 2014; Al-Gahtani [5], 2011; Al-alak, and Alnawas, 2011) [2]. Among the challenges involved, there have been significant barriers of technology acceptance among the target individuals, and even the faculty of the institutes as well. Still, with the increasing e-learning trends, even the Middle East is also acquiring significant growth.

Comprehending the efficacies of the ICT tools in educational institutes, the research focuses on the effective implementation of CMS in the universities of Iraq, particularly. There has been limited research conducted in the countries like Iraq, with respect to assessing the technology acceptance in educational sector. In relation with the notable shift in the learning paradigm, even the position of Iraq is also observed to be improving in terms of educational accessibility to all. The decisiveness of the Iraq's educational improvement is evident from its record of accomplishment of internet penetration, as shown in Table 2.

Table 2 Internet Penetration of Iraq

YEAR	Users	Population	% Pop.	Usage Source
2000	12,500	26,628,187	0.1 %	ITU
2002	25,000	26,095,283	0.1 %	ITU
2008	275,000	28,221,181	1.0 %	ITU
2009	300,000	28,945,569	1.0 %	ITU
2010	325,000	29,671,605	1.1 %	ITU
2012	2,211,860	31,129,225	7.1 %	IWS
2016	14,000,000	37,547,686	37.3 %	IWS

Source: Internet World Stats, 2017

Observing the internet usage pattern among the Iraqi individuals up to 2010 (table above), the situation seems critical that eventually affirms the extent of barriers to the deployment of technological frameworks. It leads to the assertion that Iraq has been quite late in implementing the innovations of e-learning or internet-based learning (Tarhini, Hone, and Liu, 2014)[44]. Accordingly, it is observed that the pace of ICTs deployment has been the slowest in the sector of Higher Education of Iraq. However, the recent steps taken by the Iraqi Ministry of Higher Education and Scientific Research (MoHESR)[37] reflect the strategic objectives of transforming the educational sector of Iraq into internet-based or e-learning system, based on realizing the needs of filling the gap of technological adoption in the respective sector (MOH 2017). Therefore, this study has focused the analysis of CMS, being an efficient tool of ICT, in terms of its effective deployment in Iraq. Besides, the potential challenges towards its successful implementation have also been analyzed based on the framework of TAM (Technology Acceptance Model). The proceeding section presents the theoretical framework of TAM in relation to the acceptance of CMS among the faculty members of the selected Iraqi Universities.

1.3 Problem Statement

The effectiveness of ICT tools is widely recognized, particularly in the field of teaching and learning across the world. Its adoption has been increasing among the developed and even developing regions of the world. However, certain developing regions (Middle East Countries, such as Iraq) present a potentially slower progress in technology adoption in Higher Education. In response to the efforts of the Iraqi Ministry of Higher Education and Scientific Research (MoHESR)[37], the study has

aimed at exploring the potential of CMS (Course Management System) as an effective ICT tool of meeting the technological needs of the Iraqi individuals. Even though, CMS is going to ensure the faculty of the educational institutes to be fully equipped with respect to the advanced educational needs, yet certain challenges are always there while implementing an innovative measure as a replacement to traditional strategies (Barsnica et al 2010[7];Dahlstrom, et al 2013[19]).It reflects that the faculty members, being the potential users of CMS, may pose resistance towards accepting the advancements. Therefore, the study analyses the possible constraints that would hinder the successful implementation of CMS in Iraqi Universities. Moreover, The goals of the Ministry of Higher Education are based on the acceptance of Iraqis to use modern technology in education through the provision of integrated technology within the educational sector.

1.4 Aim and Objectives of the Study

In order to keep the research directed towards the problem focus, the researcher has thoroughly devised the aim of the study. It is aimed at exploring the effectiveness of the Course Management System for both the organization and the stakeholders as well, particularly in the Iraqi University. Accordingly, the objectives have also been formulated to accomplish what has been aimed already. Following are the pre-determined objectives:

- To evaluate the challenges involved in the implementation of a Course Management System in Iraqi University
- To find the best system of CMS to be adopted for education in Iraqi universities.

1.5 Research Questions

In accordance with the pre-determined objectives, the study intends to answer the following questions:

Q1: What are the potential benefits of CMS with respect to the enhancement of higher education?

Q2: How can the educational status of Iraqi universities be improved with technology deployment?

Q3: How is Technology Acceptance Model (TAM) effective in assessing the readiness of Iraqis towards CMS?

Q4: What are the Challenges of making the implementation of CMS successful in Iraq?

Q5: Which CMS tool will be advantageous for the Iraqi Universities to deal with the e-learning needs of the target individuals?

1.6 Contribution of the study

The current study is focused on the effectiveness of Course Management System (CMS) with respect to the needs of managing the learning process. The study provides comprehensive knowledge regarding the pros, cons, and even barriers associated with the CMS implementation in a learning institute (Dahlstrom, et al 2013[19]). Focusing on the learning/teaching process at Iraqi University, the study highlights the needs of deploying CMS at the campus. In this regard, the entire study has favoured the use of CMS at Iraqi University, based on the motivational aspects of CMS in serving the faculty and other stakeholders' needs associated with the course material. Undoubtedly, the implications of CMS have been validated with regard to the academic gains it offers to the learning institutes as a whole.

1.7 Research Methodology

The success of the study has been ensured with respect to the selection of the best-suited research method (Bryman, and Bell, 2015[11]). Since the focused area of the research has been the implementation of CMS, the researcher has adopted mixed methodology approach for complying with the essentials associated with the research area. CMS being the advanced level learning system has been a topic of research among the researchers; therefore, this current study has explored the literary findings to collect the secondary data. Moreover, the researcher has also conducted an interview with an expert of technology deployment, in order to get the insights of making the deployment of an information system a definite success. Once learned the

essentials of successful CMS deployment within the organization, the researcher has then conducted an online survey questionnaire with 120 participants from the Iraqi universities, including the faculty members as the stakeholders associated with the learning system. The participants were sampled from six universities of Iraq, including Baghdad University, Technological University, Mustansiriya University, Kirkuk University, Kufa University, and Babylon University. The responses of the questionnaire were analyzed in accordance with the attributes of Technology Acceptance Model (TAM model).

1.8 Dissertation Structure

The dissertation is structured as:

Chapter 1: The basic and important information, focused on the research area is present in this section. Besides, the formulated objectives, questions, and the adopted methodology for accomplishing those objectives are also described in this section.

Chapter 2: In this section, a comprehensive detailed account of past studies is present that facilitates the researchers' understanding of the concept of Course Management System, and its potential significance in meeting the educational needs. Besides, the theoretical framework adopted for the study is also described.

Chapter 3: It is basically the section presenting the details of the adopted research methodology. The section includes the methods and techniques of collecting and analyzing the data.

Chapter 4: This section encompasses the findings and the respective discussion of the findings in relation to the objectives of the study.

Chapter 5: in this section, the researcher has presented the concluding remarks pertaining to the objectives of the study. Besides, certain recommendations are also proposed in this section to enhance the implications within the research area.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This section presents the comprehensive accumulation of the relevant literary findings in relation to the objectives of the study. At first, the past studies have been explored to acquire better knowledge of the implications of CMS within the educational sector of Iraq. The chapter has focused the extensive analysis of the main elements of technology adoption among the faculty members of Iraqi educational settings. It has been based on the assertions of Mligo (2013)[36] that the integration of existing literature within the current studies tend to ascertain the success of the study. It is carried out by interlinking the existing literary findings that led towards the formulation of research paradigm. Moreover, the potential limitations of the existing studies also enhance the knowledge of the researcher that eventually contributes towards the avoidance of any possibly flawed activity. Therefore, the importance of literature review to be conducted prior to the deployment of research instruments is ascertained. The proceeding section presents the relevant details, along with the theoretical framework of the research as well.

2.2 Theoretical Framework

The success of an innovation deployment within a particular sector demands the assessment of the potential chances of acceptance among the target individuals. In this regard, Technology Acceptance Model (TAM) has been efficacious for multidisciplinary knowledge domains of sociology, psychology, and the information systems of management and business (Chuttur, 2009[15]). Primarily, it has been affirmed that the acceptance and usage behavior of the individuals towards IT has efficiently been assessed based on the social psychological parameters. In this regard, the framework of TAM is regarded as possibly the most-preferred model of

analyzing the acceptance of technology, whose credibility is governed empirically by numerous studies (Chuttur, 2009[15]; Lee, et al 2011[31]; Shroff, et al 2011[41]; Edmunds, et al 2012[23]; Cheung, and Vogel, 2013[13]; ŠUmak et al 2011) [43]. Additionally, the reliability and validity of TAM have been affirmed in relation to the adoption of information systems (IS), particularly in the Arab countries (Al-Gahtani [5], 2011; Tsai 2015[49]; Dajani, and Yaseen, 2016[20]). However, the efficacy of TAM in predicting the success rate of LMS/CMS has not been extensively studied.

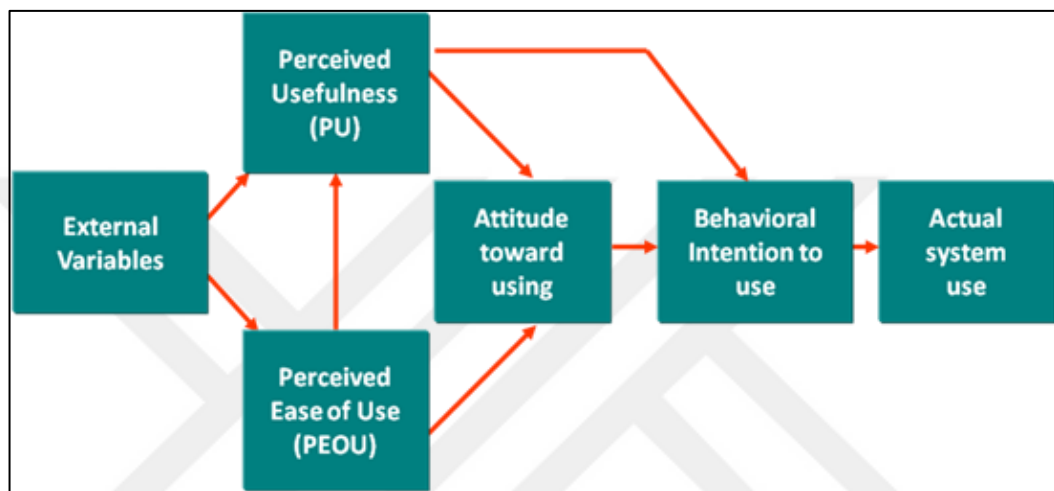


Figure 4: Technology Acceptance Model (Tsai 2015)[49]

The frameworks of assessing the acceptance of Information Systems (IS) have long been there, since the evolution of internet across the business or educational sectors. It was Davis, in (1986), who introduced TAM as the most comprehensive framework to predict the success of the information system on the basis of behavioral intention (BI), and attitude towards use (A) of the users. Besides, certain internal beliefs focused on perceived efficacy of the innovation also facilitated the assessment of technology acceptance. These beliefs include the element of subjective perceptions towards the innovation, in terms of Perceived Usefulness (PU), and Perceived ease of Use (PEOU). These internal beliefs carry immense significance as the target individuals have the perceptions or expectations from the innovation to enhance their performance, but requiring less or no efforts in return.

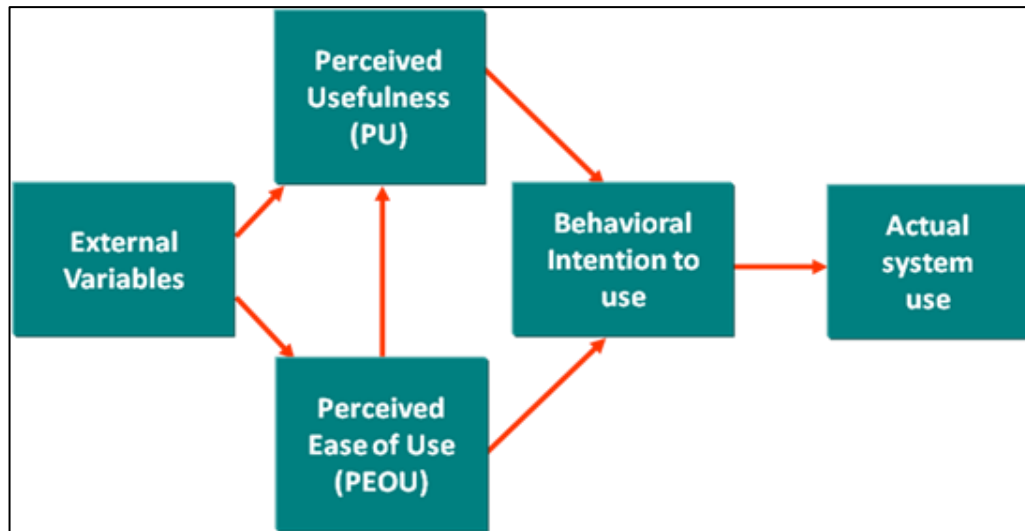


Figure 5: Modified or Upgraded TAM(Tsai 2015)[49]

According to the framework of TAM, the impacts of Perceived Usefulness (PU) and the attribute of Attitude Towards use (A) are cumulatively influential on the Behavioral Intention to use (BI). Besides, the impacts of PEOU are also indirectly influential on BI, being directly effective on A. Therefore, the framework of TAM has been modified to integrate A into BI, as represented in Figure 5. Consequently, the acceptance of CMS within the premises of selected Iraqi universities has been assessed based on TAM, in this particular study.

2.3 Course Management System - CMS and Learning Experiences

According to the study of Ninoriya, et al (2011) [38], course management systems (CMSs) have been the most popular within the higher education sector of academics. The adoption of internet technology and its potential impacts on the transformation of education landscape has acquired potential growth over the last two decades. All across the world, the adoption of numerous internet-based or web-based tools or techniques within the educational institutions has enhanced the trend of e-learning as the most beneficial and accessible source of learning. Besides, the rapid changes in the technological measures of wireless and mobile advancements have further added to the pervasiveness and ubiquitous elements of the e-learning (Dahlstrom, et al 2013[19]). Consequently, the establishment of a CMS can be described as the advanced representation of the results and the driving prospects of the developing trends of e-learning (Kato, and Ishikawa, 2012; Niu 2011[39]). CMS being a

software package facilitates the learning and teaching needs of the blended and online learning needs through web-based sources, tools, and services. Most of the higher education settings have CMSs, presenting the performance efficacies in the sectors of course authorization and enterprise-level needs as well. According to the study of Tsai (2015)[49], CMSs have been increasingly adopted across the learning institutions as a source of promoting efficient, quality, and flexible modes of learning and teaching across the higher educational institutes.

As a continuously evolving tool, having the integrated prospects of innovation, CMS has been facilitating diverse objectives and settings across the institutions. However, there have always been controversies pertaining to its potential efficacies of meeting the needs of educational settings. The implications of CMS have been focused across the prospects of comprehending the real theme of CMS along with making improved pedagogical choices. Besides, the deployment of CMS also needs to be integrated with the theories of learning along with the intentional perspectives of pedagogical designs (Tsai 2015[49]; Wang, et al 2009[51]). Moreover, the software environment of CMS also presents certain considerate elements of defining and designing the next generations of CMS. The study of Kato, and Ishikawa, (2012) [29], has contended that the system of CMS is difficult to be appropriately defined, since it entails a diverse range of objectives. Primarily, CMS is intended to facilitate the target individuals by means of an integrated set of teaching elements, which turns out to be a powerful and resourceful tool for facilitating the instruction needs of the faculty. Accordingly, the traces of CMS link back to the 1990s in the form of the online teaching platforms of Blackboard at "CornellUniversity", WebCT at the "University of British Columbia", and ATutor at the "University of Toronto". These systems being focused on the management of the course content have been successful in terms of being recognized institutional systems.

These CMSs platforms are observed to have no particular large arrays of functionalities. These systems are mainly having certain synchronous and asynchronous tools of communication for facilitating the information management at the administrators' end. These communication tools include online chat option, discussion board or forum, and direct emails. Besides, organizational tools that are directed all across the targeted segment include the announcement board, syllabus and online calendar, and the element of drop box, which collectively ascertain the

content management within the class; thus, turning out to be potential assistance for the instructors. In addition to this, the online assessments (quizzes and exams), grading tools, and the course-related content tracking carried out by the potential learners or students are also facilitated by the streamlining performance of the CMSs. Both the students and the faculties are capable of sharing the digital content (documents, URLs, assigned readings and others) over the platform of CMS (Al-Azawei[3], et al 2016 Kato, and Ishikawa, 2012; Niu 2011)[39]. Accordingly, the features of CMS are characterized as:

- Content management tools (creation and delivery): Course material, reading or written assignments
- Communication tools: Online Chat, Email, Discussion board or forums
- Administrative tools : Announcement board, calendar, syllabus
- Assessment tools: Quiz, grade book
- Learning tools: Bookmarks, personal tasks

2.4 Significance of CMS in terms of different CMS Product Implementation

CMSs have been an important and essential element of the higher education system across the world. These days, numerous institutions are either observed to have implemented the CMS as a commercially owned version or adopted as a personalized in-house system. Undoubtedly, the deployment of an information system has always instilled challenges at different stages towards of decision-making (Barsnica et al 2010[7]; Niu 2011)[39]. Nonetheless, still the efficacies of CMSs have been prominent in dealing with the administrator level tasks of educational sector. Niu, (2011) [39] has defined CMS as an effective administrative tool that facilitates the instructors to spread knowledge across the web, without requiring the understanding of HTML. The overall framework of CMS turns out to be an interactive platform for both the teachers and the students. Niu(2011) [39] have added to the performance matrix of CMS in terms of adding the elements of tracking the web accessibility of the students. However, still the CMSs have been analyzed in terms of potential challenges of time, as the designing and accessing of course content seems to be concerning with respect to the time management for both the instructors and learners, respectively (Al-Azawei, et al 2016)[3]. Therefore, different

frameworks or products of CMSs have been deployed across the institutes to facilitate learning and teaching needs (Dahlstrom, et al 2013[19]). The proceeding section presents the available tools or products of CMSs, based on the respective efficacies of meeting the objectives of CMS.

Among the available CMS products, **WebCT, ATutor, ASTD, and Moodle** have been the widely adopted open-source frameworks. These products or frameworks of CMS are observed to be quite complex or expensive for the organizations or educational institutions, mainly due to the open-source prospects (Unal, and Unal, 2011[50]; Kumar et al 2011[30]; Chung et al 2013[14]). It has been asserted based on the main element of open-source services that is observed to be intended to facilitate the service users with maximally possible functionalities. Since, it is a recognized element that these tools or platforms are effective for multiple educational and even organizational needs; therefore, most of the functionalities might not be useful for the higher education, but increase the complexity of the system to be managed. With respect to the educational needs, the CMSs need to be flexible enough along with the element of feasibility. Therefore, the proceeding section presents the most efficacious product of CMS as demanded by the educational institutions.

2.5 MEKTEP (Model -Environment of Knowledge Tracking and Extension Process)

MEKTEP is regarded as a conceptual model of CMS, which is aligned with the complex nature of learning management systems and the associated demands of the learners and the instructors. MEKTEP is affirmed to have the prospects of efficient functionality and enhancement in terms of reusability of the content, along with facilitating the architectural needs of realizing, designing and exploring the extent of e-learning trends (Wang, et al 2009)[51]. MEKTEP is affirmed to have the integrated element of modularity as well; thus, ascertaining it to be the most efficient among the available products.

MEKTEP provides easy content sharing and the accessibility of the modules, along with the facilitation of exporting the material of CMS, uploading and downloading the content of course, editing and monitoring changes, and commenting as well.

Besides, the students' work can also be mapped in terms of grade-book in the assignment. As a result, it turns out to be a collaborative teaching and learning facility that is integrated with the feasible and flexible elements of simplified navigation (Wang, et al 2009)[51]. The infrastructure of MEKTEP offers uninterrupted addition of new modules or content. More specifically, each module is independently managed that eradicates the concerns of interruption or overriding data. The interface offered by the MEKTEP is customisable that is aligned with the preferences of the users. The administrators and the potential users are capable of changing or modifying the page layout, in relation to the system wide needs. As compared to other products of CMS, MEKTEP is affirmed to be feasible for both the novice and experienced users that is ensured by the simple but advanced features of MEKTEP (Wang, et al 2009)[51].

2.5.1 Feasible User-Interface

The performance of CMSs is usually assessed based on the prospects of User Interface, and the perspective of architecture as well. In order to mitigate the CMSs issues of User Interface, following features of MEKTEP are affirmed to be accommodating:

1. **Advanced but Simple modes:** As compared to other complex systems, MEKTEP offers similar functionalities with its simple modules. Being new to the system does not count as a problem anymore, as the simple mode offered by MEKTEP provides all the features in an easily accessible format (Wang, et al 2009)[51].
2. **Layout Flexibility:** The users are allowed to deal with the layout related features of the product. Screens can be organized, modules can be moved across the links, and even the unused or rarely used modules can be minimized (Wang, et al 2009) [51].

2.5.2 Architectural Flexibility

The flexibility of architecture offered by MEKTEP is also unique as compared to other CMS products. The architectural features include multiple tools focused on the

prospects of student involvement, communication, administrator, course delivery, productivity, and curriculum designing (Wang, et al 2009)[51].

- **Productivity Tools:** These tools are observed to facilitate the learning and teaching needs of both the students and the instructors, respectively. Calendar seems to enable the learners in a way of scheduling their plans for assignments or upcoming courses. Bookmarks facilitate the learning needs in terms of easily switching back to the important course content when required. Announcement board makes it easier for the learners and teachers to access the posted presentations and quizzes. Offline working is also available that instils the elements of downloading the course content or even making the back up as well. Glossary option is also available for accessing the linked definitions when needed. Most importantly, MEKTEP provides access routes of wizards, hints, and online help as well (Wang, et al 2009)[51].
- **Student Involvement:** Group Work manages the discussions, projects and other group-based activities. Self-assessment also facilitates the learning potential of the online students. Student portfolio tends to motivate and encourage the learners towards being a representative member of the module (Wang, et al 2009)[51].
- **Communication Tools:** Web-based discussionboard facilitates interactivities in between the students and with the instructors as well. E-mail facilitates internal communication or interaction with the peers. Notification keeps the learners informed regarding the new quizzes and assignments. Besides, Chat area also assists the learners to interact with others, and instructors to monitor the performance of the learners. Additionally, file exchange is for uploading or sharing the content or assignments with the instructors, and white board provides the facility of sharing video or audio content over the module (Wang, et al 2009)[51].
- **Course Delivery:** Instructors are facilitated with the tools of creating quizzes for the students. Besides, online grading is also provided as an assisting tool to the instructors for keeping a track of the students' performance with respect to certain modules (Wang, et al 2009)[51].
- **Designing Curriculum:** Course Templates assist the instructors in building the content of the course, without requiring the expertise of HTML over the

WebPages. Instructors are facilitated with the flexibilities offered for the appearance and graphics of the content (Wang, et al 2009)[51].

- **Administrative Tools:** Authorized access ensures the safety and security of the content of the course, along with the facilitation of integration with other requirements (Wang, et al 2009) [51].

2.5.3 Modularity

MEKTEP facilitates the institutional needs of adding other features or modules to the existing framework that is not facilitated by other solutions of CMS. It is ensured by the flexibility offered by the plug-in mechanism instilled within the architecture of the MEKTEP. Besides, the modules of Watchdog and Theme are also included in the system of MEKTEP for dealing with the display related concerns of the users, while Watchdog carries out the monitoring of the activities (Wang, et al 2009)[51]. Figure 6, 7 presents the architectural representation of MEKTEP in terms of user interface:

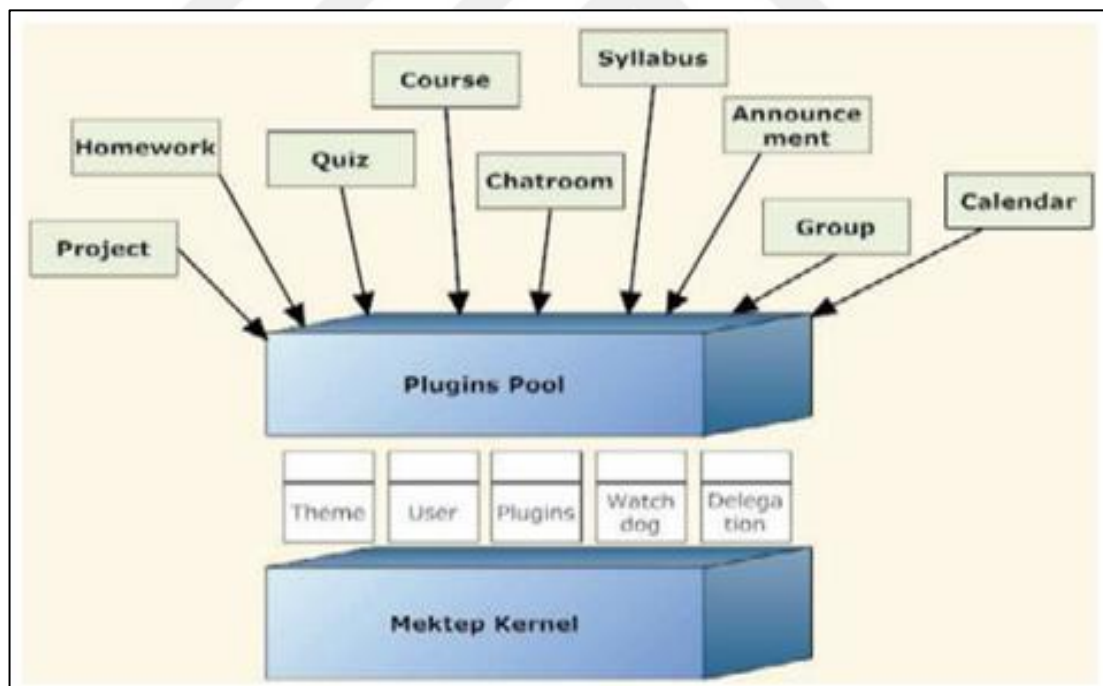


Figure 6: MEKTEP architecture

Source: (Wang, et al 2009)[51]

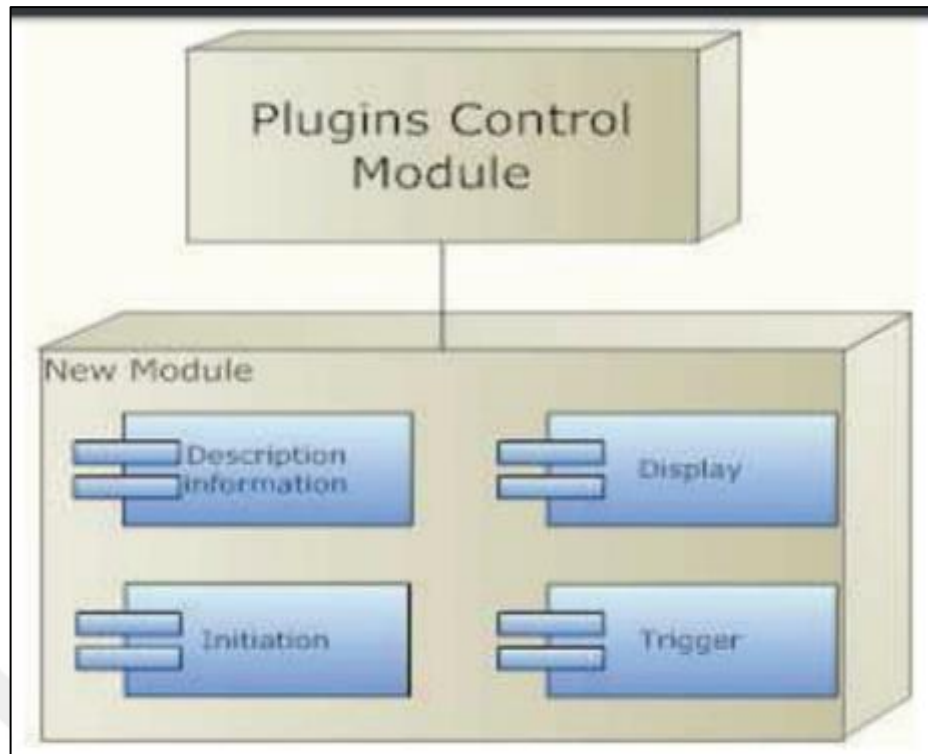


Figure 7: Controls of Plug in

Source: (Wang, et al 2009)[51]

<input checked="" type="checkbox"/>	Quiz	0.1	quiz	Xiaoran Wang
<input checked="" type="checkbox"/>	Syllabus	0.9	Syllabus	Xiaoran Wang
<input checked="" type="checkbox"/>	Course Module Management	0.8	Course Module Management	Xiaoran Wang
<input checked="" type="checkbox"/>	User Profile Widget	0.9	User Profile Widget	Xiaoran Wang
<input checked="" type="checkbox"/>	Chatroom	0.2	chatroom	Xiaoran Wang
<input type="checkbox"/>	building	0.	building, here only for course related building.	Xiaoran Wang

Figure 8: User interface

Source: (Wang, et al 2009)[51]

2.6 Challenges of CMS Implementation in Iraq and the Framework of TAM

According to the study of Radif (2016)[40], the deployment of technological innovation within the domain of Iraqi universities has been complex. It has been asserted based on the fact that the internet penetration of Iraq has been the lowest over the last 3 decades (InternetWorldStats 2017). It has also been noted that Iraq has been the last in the entire Middle East to move towards internet penetration (Al-Azawei[3], et al 2016;InternetWorldStats 2017). Therefore, the needs of modern or advanced technological frameworks are definite within the region; however,

potential challenges are also affirmed to be encountered within the region for less awareness or technological readiness among the Iraqi individuals. Likewise, the study of Alharbi[6], and Drew, (2014) has also studied the potential challenges of technology acceptance within the academic sector of Saudi Arabia. Similarly, numerous other studies have also analysed the implications of certain LMS/CMS/LCMS within the sectors having lesser internet penetrations across the target population. Consequently, all the studies have affirmed the efficacy of TAM in making the technology implementation a success for the organisation or the educational institute (Chuttur, 2009[15]; Lee, et al 2011[31]; Shroff, et al 2011[41]; Edmunds, et al 2012[23]; Cheung, and Vogel, 2013[13]; SUMak et al 2011[43]).

In this regard, the identified variables of TAM, mainly the behavioural intention towards use has been most effective in comprehending the readiness of the target population towards the technological measures. Accordingly, it has been facilitating the adoption of certain training or awareness related measures for making the deployment of technology or information system a success. CMSs pose certain challenges to the administrators in terms of making appropriate decisions regarding the usage and deployment of the system. The process of making decisions has been challenging for the rapidly increasing faculties and their respective needs, and the controversies and conflicts prevailing within the marketplace of CMSs. Additionally, the budgets constraints have also been significantly influential over the implementation of CMSs within the educational settings. Mainly, the challenges involved in the acceptance of technological innovations include the following areas:

- **Personal factors / PF**

CMS being a potentially benefiting source for both the learners and the students are observed to face resistance from both the targets. It entails the notable elements of the technological knowledge or proficiency, along with the prospects of satisfactory outcomes as well.

- **System factors / SF**

Besides the personal attributes, the challenging implementation is also due to the system related concerns as well. The infrastructure of the system seems susceptible with respect to the quality; the organisation or the educational

institution is also vulnerable in terms of service quality; and the Course content is also suspected with respect to the quality of the information.

- **Organizational factors/OrgF**

Additionally, the impacts of the training elements and the support of the management are also significant, while exploring the challenges to the successful implementation of the information systems.

- **Supportive factors/SupF**

More specifically, the concerns of legitimacy and ethical perspectives are also there pertaining to the privacy and security needs of the system. Besides, the issues of cost and other content-related concerns of copyrights and plagiarism are also notable.

Accordingly, the deployment of CMS within the educational institutes of Iraq is based on the following expected values:

- Cost-effective measures of the content of training
- Faster and flexible accessibility of the course content, without requiring instructors' assistance
- Immediate or prompt feedback mechanism for both the learners and the instructors regarding the respective performance measures
- Availability of the tracking mechanism in order to ensure compliance with the course needs and the standards as well

2.7 Chapter Summary

The overall chapter has presented the important prospects of CMS, and its implications within the educational sector, along with the potential challenging situations as well. It has been established that the effectiveness of CMS has long been availed by the higher education institutions across the globe. Still, Iraq, being the target of this study, represents considerable needs of technological awareness. It is asserted based on the fact that the state has notably accepted technology adoption form 2012. In order to deal with the resistance from the Iraqis towards the deployment of CMS, the researcher has studied the implications of TAM as the best-

suitable framework of assessing the extent of challenges or resistance. Besides, the potential success of CMS deployment within the selected Iraqi Universities has also facilitated the mission of the Iraqi Ministry of Higher Education and Scientific Research (MoHESR)[37] of making the state's educational system a technologically revolutionised system (MoHESR 2017)[37]. Accordingly, the potential significance of CMS favouring the educational needs of Iraq is also recognised.



CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This section encompasses the description of the adopted methodology for making the pre-determined objectives of the study as definite success. Regardless of the nature of the study or the research area, the worth of research methodology is undeniable as it is associated with the credible collection of data. In this regard, Jackson (2015)[28] in his study has documented that the researcher must have the insightful understanding of the most appropriate methods of research with respect to the problem focus of the study. This particular study is focused on the analysis of the challenging situation of Iraqi Universities with respect to the effective deployment of the information system of Course Management (CMS). In order to assess the likely acceptance of CMS across the educational sector of Iraq, the researcher has adopted the framework of Technology Acceptance Model (TAM). The section below carries the detailed description of the important research elements that collectively manifest the entire plan of the research.

3.2 Research Approach

According to the study of Lewis (2015) [32], research approach is the entire plan of the study that encompasses the broader perspective of all the processes and the tools and techniques involved in the collection and the interpretation of the gathered findings. Consequently, it is contended that the adopted approach determines the credibility of the study results, if the tools and techniques of collecting, analyzing, and interpreting the data are in accordance with the objectives of the study (Bryman 2015[10]; Creswell 2013[18]). The current study has adopted the research approach of "Mixed Method", instilling the combined effect of both the qualitative and

quantitative measures of data collection within the study. Figure 9, illustration of the adopted approach:

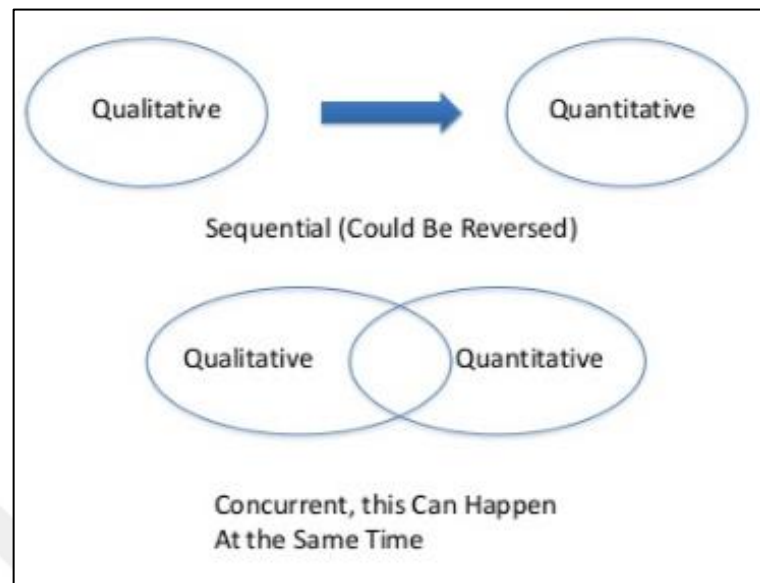


Figure 9 the adopted approach (Bryman 2015)[10]

The researcher has selected this mixed approach to the research for the integrated benefit of feasibility. It has been acknowledged that the research area of determining the acceptance of CMS within the Iraqi Universities demands a realistic, but practical approach to be used. The study of Taylor, Bogdan, and DeVault (2015)[45] has contended that the quantitative study is the reflection of the researcher's considerate attitude towards the study outcomes, as it entails adequate understanding of the cause-and-effect thinking towards the findings (Flick 2015; Taylor Bogdan and DeVault 2015)[45]. Bryman (2015) [10], asserted that statistical analysis is crucial for the investigation of the research questions of a quantitative study. By means of this approach, the researcher needs to combine the identified variables in order to comprehend the relationship in between the variables.

In addition to the quantitative study, the adopted research approach entails the prospects of qualitative study as well. Undoubtedly, the intent has been the attainment of increasingly cohesive and coherent study outcomes. Being qualitative in nature, the study incorporates no quantitative measures with respect to the collected data. In particular, it encompasses the potential usability of the researcher to comprehend the insights, views, thoughts, and other concerns of the research instruments pertaining to the research questions (Burns & Burns 2008[12];). Ioannidis et al., (2014), have documented that the qualitative approach to study

facilitates the investigation of the formulated research questions based on a thorough and comprehensive analysis of the behavior and the participants of the targeted population (Bryman and Bell 2015[11]; Silverman, 2013)[42].

This particular study has employed both the approaches, recognizing the respective significance to deal with the challenges encountered in implementing CMS in Iraqi Universities. The secondary qualitative approach has facilitated in gaining thorough understanding of the concept of CMS and its important in e-learning needs. Consequently, a semi-structured interview with a technology expert added to the qualitative primary prospects of the study, which facilitated the understanding of the important elements to be considered while deploying an innovative technology over a traditional approach. Later on, quantitative element of questionnaire with the potential participants of the deployed CMS added to the credibility of the study (Zohrabi, 2013)[54]. As a result, the researcher has ensured the integrity of the study to better facilitate the objectives of making the Iraqi educational system thoroughly technologically revolutionized.

3.3 Research Purpose

Research purpose illustrates the direction of the overall study that needs to be aligned with the aim of the study. The nature of the study could be a continuation or extension of a previously conducted study, or it might be a new idea to be explored. Therefore, the purpose of the study is regarded as an important element to be considered while initiating a research process (Jackson 2015[28]). Davies and Hughes (2014)[21], have documented that the purpose of a study needs to be clear and concise if its definite success is expected. The researcher needs to vigilantly select the study purpose that demands extensive study of the research area. Accordingly, the purpose of the research is interpreted in three ways that are in accordance with the studies of (Wittmayer, and Schöpke, (2014) [52] and Jackson (2015)[28]):

- **Exploratory Purpose:** Being exploratory, this purpose is allocated for the research questions that have not been studied extensively. If a particular study is intended to be exploratory in nature, the researcher is accountable to be excessively proficient and reasonable, as the study outcomes would be a

potential baseline for future researches (Gray 2013[27]; Denscombe 2014[22]). Moreover, the sources of data are mostly secondary, as it has no identified variables that could be explored through quantitative or statistical measures. Nonetheless, depending on the nature of the study, open-ended questionnaire survey can also be used for adding value to the study results, as certain topics might have limited secondary data.

- **Descriptive Purpose:** Being the next stage of exploratory study, descriptive study is asserted as being "Conclusive" of the preceding performance in the respective area. Gray (2013)[27] has documented that it leads to the formulation of next strategy of extending the research in future. Accordingly, there are needs of considerably large amount of data to be collected with respect to the objectives of the study that are pre-determined in relation to the literary findings (Collis and Hussey 2013[16]). Based on the differentiated element of Descriptive study, certain variables are acquired as the influential elements on the performance measures of the study objectives. These variables are assessed by means of certain statistical measures.
- **Explanatory Purpose:** The identified variables through descriptive research are adopted within this particular research; thus, it is regarded as being *Conclusive*, since it is the last stage of determining the relationship in between the identified variables in relation to the objectives of the study. In this particular research purpose, the inclusion of cause-and-effect thinking is considered, while devising the relationship in between the identified variables (Gray 2013[27]; Davies and Hughes 2014) [21].

In this particular study of analysing the acceptance of CMS within the Iraqi educational institutions, the researcher has adopted the explanatory purpose of the research. The internet penetration of Iraq has been quite challenging within Iraq that could be the reason of all the potential challenges encountered while deploying the information system of CMS within the universities. In this regard, the identified variables of Technology Acceptance Model (TAM) have been used in order to assess the acceptance or readiness of Iraqis towards innovation of CMS in the educational sector.

3.4 Research Design

The strategic execution and completion of a study depended on the selected design of the research. The entire study plan needs to be efficient and systematic, aimed at the completion of the research in a timely, cost-effective, feasible, and flexible manner. However, the prospects of credibility and integrity must be aligned at all the levels (Mitchell and Jolly 2012[35]; Zikmund et al., 2012[53]). In this regard, the essentials of collecting and analysing data are significant that are carried out in different forms; thus, formulating the basis of different research designs. The designs of the research include Review-based design, experimental design, semi-experimental design, descriptive, correlational, meta-analytics and others as well (Bryman, 2012[10]; Franck 2013[26]; Mitchell, & Jolley, 2012[35]; Jackson 2015[28]; Bernard, 2011[8]; Trotter, 2012)[48].

Based on the extensive nature of this particular study, different research designs have been adopted for accomplishing the formulated objectives. Primarily, the research has adopted Review-based design, in order to acquire insights of the concept of CMS, and its potential importance or significance in dealing with the learning and teaching needs of the educational institutes, particularly for Higher educational institutes. In this regard, the researcher has explored the past studies in an extensive manner, collecting the literary findings that have facilitated devising the interview questions and the survey questionnaire as well.

Accordingly, the acquired findings led to the formulation of the semi-structured interview questions to be conducted with the technology expert. The responses of the interview session have been evaluated in relation with the literary findings; thus, adding the elements of review-based and Descriptive design of the research. Consequently, the identified variables of TAM have been used in order to assess the acceptance or probable reluctance of the targeted personnel towards the implementation of CMS. The implications of TAM have been aligned with the Descriptive (Survey) design approach that facilitated the accumulation of the participants' responses towards CMS, in order to assess the potential success factors of the CMS deployment. Additionally, the acquired bulk of datasets has been explored on the basis of correlational perspectives of the study design. The impacts

of the variables were assessed to acquire the statistics of the potential resistance or acceptance of CMS from the target population.

3.5 Data Sources

At all the levels, it is the success of the study that is the prime objective of a researcher. Therefore, the researcher is expected to be careful while incorporating the required data into the research plan. The data sources are important in this regard, since the quality of data and the measures of collecting the data are highly influential over the success of the study. Without being considerate about the primary or secondary sources of data, it is highly important that the sources are credible and appropriate pertaining to the nature of the study (Davies and Hughes 2014[21]; Denscombe 2014[22]).

Primary data sources are the sources that offer the researcher a potential opportunity of governing the credibility and cohesiveness of the research, since these sources are having the prospect of direct sources or sources having first-hand information from the participants of the research. Survey questionnaire, interviews, and others are the potential sources of collecting primary data. Conversely, there are secondary sources that are extensive in nature for being indirect as the data is available and accessible through online databases. Being indirect does not mean that the data cannot be credible or trustworthy, but it is still realistic if the researcher is careful in selecting the most recent and the most reliable databases. These reliable indirect sources of data include textbooks, published journals/peer-reviewed journals or articles, websites, reports, or existing survey results (Denscombe 2014[22]; Davies and Hughes 2014[21]).

The current study has integrated both the sources of data to acquire insights of the research area; thus, strengthening the credibility and integrity of the study as well. In order to collect the relevant literary findings with respect to the technology of CMS, the researcher has accessed the databases of Google Scholar, ProQuest, ScienceDirect, EBSCOhost, and others as well. The search results were refined for getting the best outcomes by means of using the Boolean operators of AND/OR and other tactics of using the most relevant Keywords as well. Based on the highlighted significance of CMS in e-learning facilities, the researcher has also collected enough

information regarding the potential challenges or barriers in successful implementation of CMS. Afterwards, a technology expert was approached for a semi-structured interview that yielded a particular set of qualitative primary data.

Afterwards, quantitative data has been collected from the primary source of Survey Questionnaire that was conducted online across the selected six universities of Iraq. As a result, the researcher has acquired enough knowledge regarding the potential challenges towards the acceptance of CMS within the higher educational sector of Iraq. The responses were focused on the demographic, institutional aspects, and informational behaviours and attitudes of the potential targets of CMS. The behavioural intention (BI) has been the dependent variable that entailed the impacts of the potential perspectives of the target users towards CMS in terms of the expectations of the performance, the input, or efforts required, along with certain other external variables as well.

In accordance with the study outcomes of Crano et al (2014), this study is affirmed to have potential credulity and integrity. It has been established based on the fact that the researcher has used both the sources of the data; thus, no chances of biasness or any particular shortcoming are there. Even the entire data collection process has been a bit time-taken, requiring extra efforts in analysis as well. However, the credibility and integrity of the research has not been compromised at any level (Teddlie and Tashakkori, 2011[46]; Creswell and Clark 2007[18]).

3.6 Population of the Study

The population of the study is significant if primary data collection is involved. If the target population is not appropriate, the quality of the research outcomes remains conflicted or dubious. Therefore, the selection of the research population is another significant element to be considered with respect to the research plan. The population of the study must have identical interests or similar attitude towards contributing to the study (Fowler 2013[25]). The current study has considered this research element, while targeting the population for its survey questionnaire. For qualitative primary data, the IT expert was selected that led towards the formulation of the survey. The survey was aimed for collecting quantitative data that demanded appropriate selection of the population. 120 participants from the selected Iraqi Universities were

selected, rather than making it accessible to all the institutes, since the efficacy of CMS was to be assessed at higher education level. The selected universities included Baghdad University, Technological University, Mustansiriyah University, Kirkuk University, Kufa University, and Babylon University. However, the participants were the faculty members and all the potential users of the CMS.

3.7 Sampling Strategy

Sampling is associated with the dedicated collection of primary data from the targeted population of the study (Cooper et al 2003[17]). The population of the study has been targeted as the selected six universities of Iraq. However, the participants of the survey still needed to be sampled, in the form of dividing the population into particular segments. The sampled population must have the prospects of relativity with the objectives of the study (Mendenhall et al 2012)[34]. The process of collecting the primary data entails the added concerns of time-consumption, cost-investment, and certain other geographical aspects of accessing the participants. However, if appropriate sampling is adopted, all the potential risks or issues are mitigated (Cooper et al 2003[17]).

In addition to this, there is another concern of biasness associated with the responses of the participants that can eventually have adverse impacts on the integrity of the research (Mendenhall et al 2012)[34]. In this regard, Mendenhall et al (2012)[34] have contended that the sampling of the study must be representative, in order to avoid the challenges or constraints of bias responses. It is followed by the selection of sampling strategy to be either Convenience or Probability.

- **Convenience Sampling:** Random selection of participants
- **Probability Sampling:** Specific measures of selecting the participants; thus, entailing certain complexities at research level (Mendenhall et al 2012)[34].

In order to mitigate the complexities of probability sampling, the researcher has selected Convenience sampling as the strategy for this particular study. The random selection of the Faculty members as the research participants was targeted across the selected universities of Iraq, carrying out the considerations of being the potential users of CMS.

3.8 Sample size

The selected size of the sampled participants of the research has been 120, who belonged to the selected six universities of Iraq. Among the participants, the age group, gender, education level, position at the university campus, and technological knowledge were also noted, as it facilitated the interpretation of the responses in terms of their behavioural intention towards CMS deployment.

3.9 Statistical Technique

The collected qualitative primary data was analysed based on the descriptive and review-based techniques of analysis. In particular, statistical techniques were required for analysing the survey responses. The responses to the questionnaire were analysed through the use of Descriptive Statistics. At first, the survey responses were collected based on the identified variables of TAM, by using 5-point scale (Disagree to Agree). Afterwards, the Descriptive statistics and correlation techniques led to the overall analysis.

3.10 Research Instrument

The importance of research instrument is aligned with the collection of primary data. This particular study has used the instruments of Semi-structured interview, and the survey questionnaire. The questions of the interview session with the IT expert were intentionally semi-structured, having formulated set of questions prompting open discussion. As a result, the researcher was at ease in comprehending the probable challenges or constraints of successful implementation of an innovation technology within an organization. In addition to this, the nature of the questionnaire was selected to be close-ended, since the researcher intended to acquire responses to the selected prospects of CMS successful implementation in Iraqi universities. Open-ended questionnaire would have added the element of open discussion or responses from the participants that was somehow of no use to the researcher due to the concerns of credibility of the opinions or asserted needs (Aarons et al 2001[1];

Zohrabi 2013)[54]. Consequently, the formulated survey questions were analysed on the basis of the parameters of 5-point scale ranging in between 1-5 (Disagree-Agree).

3.11 Variable Description

The identified variables in accordance with the modified TAM framework for the accomplishment of the objectives of this study are as follows:

Independent Variables:

- Perceived Ease of Use (PEOU)
- Perceived Usefulness (PU)
- External Variables
 - a. Demographic Factors
 - b. Technological knowledge
 - c. Institutional Aspects

Dependent Variables:

- Behavioral Intention to Use - BI

In this particular study, the independent variables have been identified in relation to the acceptance and readiness of the potential users towards technological innovation of CMS. Consequently, it led to the analysis of the dependent variable of Behavioral Intention to Use (BI) for generating the results of the study.

3.12 Ethical Consideration

Maxwell (2012)[33] has documented that the researcher must ensure the ethical prospects of the research during the accomplishment of the study. In this regard, the elements of being justified or unbiased, and the respect for the participants' along with the consideration of the associated needs of confidentiality are regarded as significant. Accordingly, the researcher has ensured all these ethical aspects of the research. The involvement of human participants has been ethically managed, in terms of acknowledged contribution, and ensured confidentiality, if demanded. More specifically, the participants were provided adequate information of demanding their

contribution, in order to acquire straightforward and unbiased participation. In addition to this, even the secondary data was also ethically acquired. The researcher has carefully interpreted the data, rather than manipulating the findings for accomplishing the objectives. Besides, all the accessed sources were credible that lessened the concern of forged data or findings. The researcher has cited all the contributing researches or authors, rather than manipulating the findings and asserting as personal opinions.

3.13 Methodological Summary

This section carries considerable significance for the entire research completion, since it encompasses the overall research plan. Presenting the adopted approach, selected purpose and the design of the research, this chapter has provided a comprehensive understanding of the research elements. Table 3, is the summarized illustration of the main elements of the study:

Table 3: Methodology Summary

Research Approach	Qualitative and Quantitative Approach - Mixed Method Approach
Research Purpose	Explanatory Research
Research Design	Review-based (Literature Review, Interview), Descriptive (Questionnaire Survey), and Correlational Design.
Data Source	Both the Primary and Secondary sources
Population of the Study	Six Universities of Iraq; <ul style="list-style-type: none"> • Baghdad University, • Technological University, • Mustansiriya University , • Kirkuk University, • Kufa University, and • Babylon University
Sampling Strategy	Convenience or Random sampling
Sample size	100 – 150
Research Instrument	Semi-structured interview, Questionnaire Survey
Statistical Analysis	Descriptive, Correlation, and Regression

CHAPTER 4

FINDINGS AND DISCUSSION

4.1 Introduction

This section of the study presents the key findings extracted from the literature review in relation to the primary data collected through the interview session with IT expert, and the survey questionnaire across the faculty members of the targeted universities. At first, the benefits of implementing CMS across the higher educational institutes of Iraq are presented, with respect to the previously conducted studies and the interview response of the IT expert. Afterwards, the section presents the effectiveness of TAM in assessing the readiness of Iraqi universities towards the adoption of CMS, by means of statistically analyzing the responses of faculty members to the survey questionnaire. For this purpose, the statistical techniques of Descriptive Statistics, Correlation, Regression analysis have been employed, which have potentially led the researcher to generate concluding remarks with respect to the formulated objectives of the study. Moreover, it is notified here that the statistical analysis has been performed on MS Excel and IBM SPSS 20.

4.2 Benefits of CMS Implementation across the Higher Education Institutions of Iraq

After reviewing the relevant past studies focusing on the implications of CMS across educational settings, it has been established that CMS has acquired global access for its intrinsic implications of learning process. Almost all the developed states of the world are already aligned with the adoption of e-learning tools across their learning institutions, in order to become a globally recognized entity. In accordance with the study outcomes of Tsai (2015)[49] and Barsnia, et al., (2010), it has been affirmed that CMS has effectively served effective administration across the educational sector. Successful or renowned educational institutions of the world have CMS (either commercial or personalized) as the critical success factor. In addition, the IT professional has also ascertained the credibility of CMS in this regard,

"... CMS serves the needs of planning, organizing and controlling the information flow across the educational setting, facilitating both the learners and the instructors as well. There is an efficient use of the entire database through CMS, which makes the entire learning experience exceptional".

With respect to the feasibility prospect of CMS for the higher educational institutions, it has been acknowledged that CMS is inherently user-friendly for both the learners and the instructors. Besides, it also offers architectural flexibility that would be appealing for the newly adopting institutions. The study of Al-Azawei[3], et al., (2016) has affirmed the feasibility of CMS by stating that these platforms do not have increased arrays of functionalities for the information management. It has also been supported by the opinion of IT expert, as he has confirmed the user-friendliness instilled within the interface of CMS platforms (quoted below).

"... The entire system is designed carefully towards the prospects of offering user-friendliness, in terms of feasible and flexible elements of simplified navigation".

From the work of Kato, and Ishikawa, (2012) [29], this study has gained insights of the streamlined performance of CMS platforms. Iraqi universities being new with the deployment of ICT tools are going to acquire significant benefits of enhanced learning environment and increased educational level through CMS. The instructors can easily interact with their learners, while ensuring the availability and accessibility of the required educational content over the shared platform of CMS. By means of the communication tools of announcement board, discussion board, calendar of syllabus, and the added element of drop box, the instructors have improved opportunities of content management. In addition to this, even the learners who are not potentially aligned with e-learning efficacies are going to be facilitated through the readily accessible and easily navigated options of online assessment, grading tools, and all other content tracking needs. Accordingly, the researcher has summed up the features offered by CMS from the review of the literature, as the tools of content management, communication, administration, assessment, and learning needs of the learners.

Consequently, the research has explored the studies discussing different CMS platforms, in order to recommend the most effective solution to be employed across the Iraqi educational institutes. The researcher has noted that the mostly adopted platforms have been the free open-source frameworks of WebCT, ATutor, ASTD,

and Moodle across diverse management levels of educational institutions and even organizations. Even though these products are efficient in managing the content, the prospect of open-source license has made these frameworks a bit complex with respect to managing the domain specific functionality (Unal, and Unal, 2011[50]; Kumar et al 2011[30]; Chung et al 2013[14]). In accordance with the needs of Iraqi higher educational content management, there is a need of flexibility and feasibility assurance within the CMS framework. Therefore, the research has brought into focus the conceptual model of MEKTEP (Model -Environment of Knowledge Tracking and Extension Process). As contended by Wang, et al., (2009)[51], MEKTEP offers efficient functionality and enhancement in terms of reusability of the content, and the most important elements of feasibility and modularity with respect to the functionality development needs. Even the IT expert has also favoured MEKTEP for the e-learning needs of Iraqi educational setting (quoted below).

With respect to the prospect of Open-Source licenses it eventually becomes complex that will not be favorable in case of an institution that is new with this experience. Therefore, the selection of service providers must be based on considering the element of development simplicity, like adopting MEKTEP that offers flexibility and modularity.

The study of Dahlstrom, et al., (2013[19]) has highlighted the pervasiveness and ubiquitous elements of the e-learning through the increasing adoption trend of wireless and mobile technology among the society individuals. Accordingly, the educational setting of Iraq is observed to receive significant impact of the increasing penetration of internet technology among the individuals. In relation to the reported rate of internet penetration of 37.3% by the year of 2016, the strategic efforts of Iraqi Ministry of Higher Education and Scientific Research (MoHESR)[37] are noted to be increasingly directed towards adopting e-learning system (MoHESR 2017)[37]. The ICT sector of Iraq is comparatively fragile when considered with respect to the challenges of technology acceptance among the potential users. Therefore, instead of recognizing the benefits of CMS implementation across its educational institutions, the study has also employed the model of Technology acceptance to better integrate the added value to make the users respond appropriately to this effective measure of learning, once deployed. Accordingly, the results acquired through TAM are discussed in the section below.

4.3 Assessing the Challenges of CMS Implementation across Iraqis Educational Institutions through TAM

From the literature, it has been acknowledged that CMS is an evolving concept that offers diverse levels of benefits across different domains of deployment. In fact, its implications across the educational sector have also been challenged considerably. However, it has been contended that the best possible performance outcomes of CMS are acquired, if its deployment entails the consideration of its intentional perspectives of pedagogical designs (Tsai 2015[49]; Wang, et al 2009[51]). In the same context, the study of Kato, and Ishikawa, (2012)[29], has commended that CMS implementation is challenging for making it a feasible solution to accomplish variety of objectives. Therefore, the model of TAM has been employed to assess the acceptance of CMS across the targeted domain, prior to the actual deployment. The study has assessed the potential challenges or acceptance level towards CMS in terms of certain external variables and the essential constructs of TAM as well. It is notified here that the researcher has been vigilant with respect to the assessment of TAM's constructs. In this regard, the survey questions have been designed on the basis of affirming the competence of CMS platform for e-learning needs.

4.3.1 External Variables

In this section, the external variables of demographic, technical knowledge, and the institutional aspects are assessed with respect to the Descriptive Statistics.

4.3.1.1 Demographic Variables

The study has assessed the factors of gender, position at the university, education level, and age group of the survey participants.

Table 4: Gender of the Respondents

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Female	34	28.3	28.3	28.3
	Male	86	71.7	71.7	100.0
	Total	120	100.0	100.0	

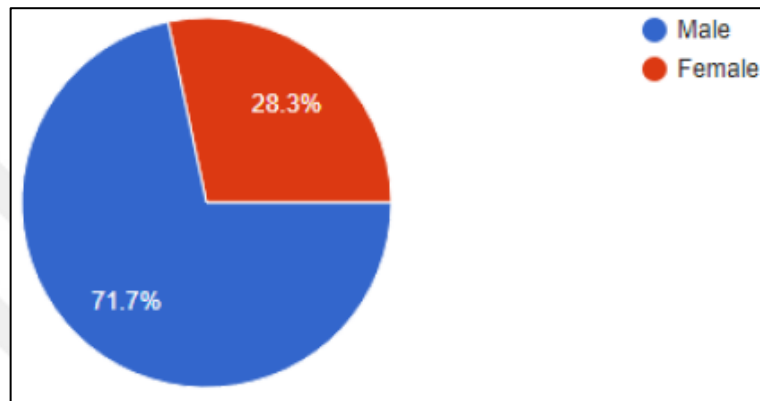


Figure 10: Gender of the Respondents

Table 4, represents the descriptive statistics of the participants' gender, highlighting that most of the respondents have been males (71.7%), with only 28.3% females (illustrated in Figure 10). Likewise, the study has also evaluated the respondent's position at the university, which affirms that all have been the faculty members across the selected universities of Iraq.

The study has also assessed the age group and education level of the respondents, represented below (Table 5 and Table 6, respectively). The descriptive statistics reflect that majority of the respondents (39.2 percent) belong to the age group of 35-40 years, followed by the age groups of above 40 (27.5%), and then 29-34 years (23.3%) (Table 5). It leads to the assertion that the potential users of CMS are going to be the individuals from generation X, and generation Y; thus, becoming potentially challenging towards CMS acceptance, particularly the ones belonging to Generation X. On the other hand, the education level assessment of the respondents indicate that majority of the potential CMS users have MastersDegree (45%)

Table 5:Age group of the Respondents

Age Group					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	22-28	12	10.0	10.0	10.0
	29-34	28	23.3	23.3	33.3
	35-40	47	39.2	39.2	72.5
	Above 40	33	27.5	27.5	100.0
	Total	120	100.0	100.0	

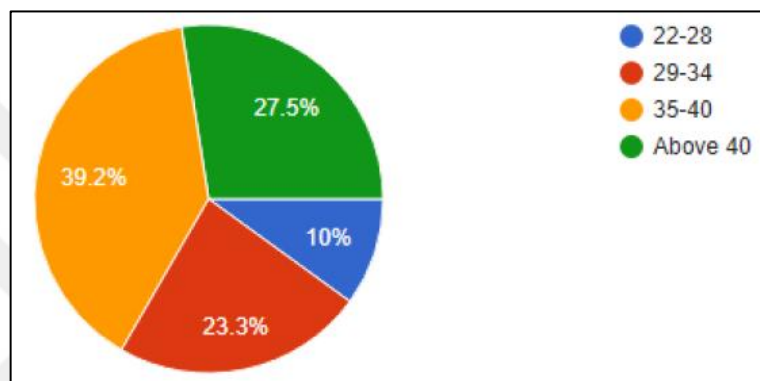


Figure 11: Age group of the Respondents

Table 6: Education level of the Respondents

Education Level					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Masters	54	45.0	45.0	45.0
	PhD	32	26.7	26.7	71.7
	Undergraduate	34	28.3	28.3	100.0
	Total	120	100.0	100.0	

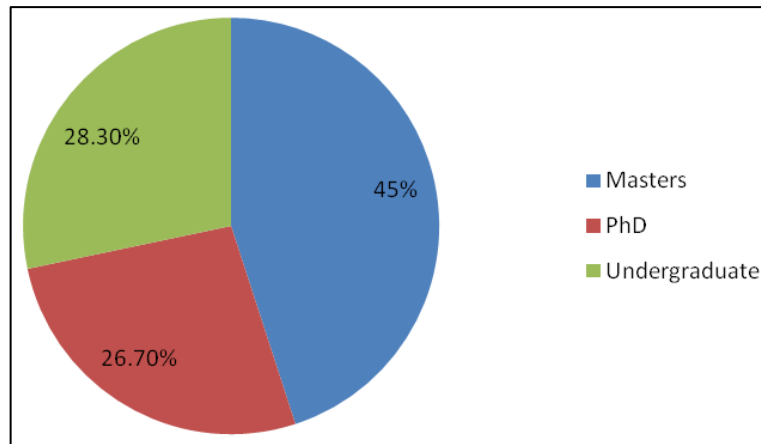


Figure 12: Education level of the Respondents

Therefore, it can be established that the education level of Iraqi faculty members is considerable with respect to expecting the acceptance of CMS; however, age factor could be concerning as well.

4.3.1.2 Technological Knowledge of Faculty Members across Iraqi Universities

This section of the analysis presents the findings on the technological knowledge of the faculty members of Iraqi universities. Based on the descriptive statistics, it is noted that most of the respondents (48.3%) have never used CMS before (Table 7). It could be a potential challenging aspect, while making them adopt CMS in their educational activities.

Table 7: Experience with CMS

I have used course management system before					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	always	19	15.8	15.8	15.8
	never	58	48.3	48.3	64.2
	several times	43	35.8	35.8	100.0
	Total	120	100.0	100.0	

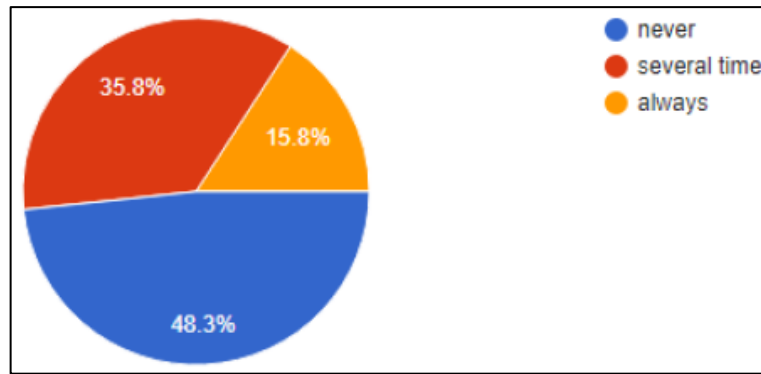


Figure 13: Experience with CMS

The study has also assessed the internet accessibility of the respondents, in terms of the experience and daily hours spent over the internet-based applications. In this regard, almost 90 percent (35.8% - always, and 54.2% - several times) of the potential CMS users have agreed to using internet in their daily life (Table 8). Table 9 represents that the adoption of internet is 40 percent for the period of 6-10 years, and 30 percent for 2-5 years duration. It reflects that the Iraqis are increasingly getting aligned with the technology in their lives. However, still the internet has not acquired much space in their daily routine activities, since 33.3% have agreed to use internet for 12-15 hours in a week, with only 7.5% respondents spending over 18 hours a week (Table 10). Accordingly, it turns out to be potential challenge for the acceptance of CMS in educational domain of Iraqis.

Table 8: Daily Internet Accessibility

I access internet in my daily life.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	always	43	35.8	35.8	35.8
	never	12	10.0	10.0	45.8
	several times	65	54.2	54.2	100.0
	Total	120	100.0	100.0	

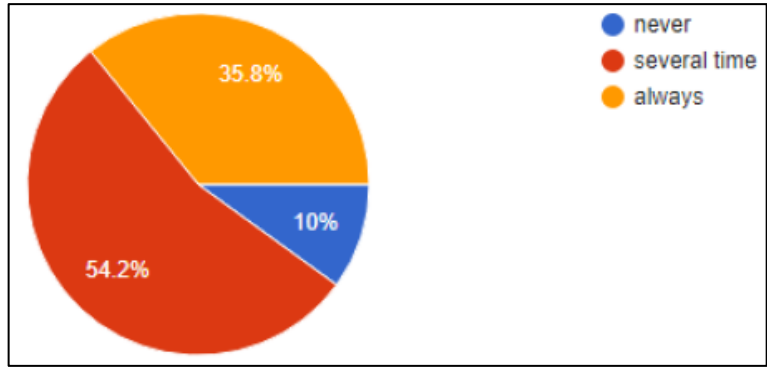


Figure 14: Daily Internet Accessibility

Table 9: Daily spent hours of using internet

How long have you been using internet?					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2-5 years	36	30.0	30.0	30.0
	6-10years	48	40.0	40.0	70.0
	almost a year	5	4.2	4.2	74.2
	over 10 years	29	24.2	24.2	98.3
	recent user	2	1.7	1.7	100.0
	Total	120	100.0	100.0	

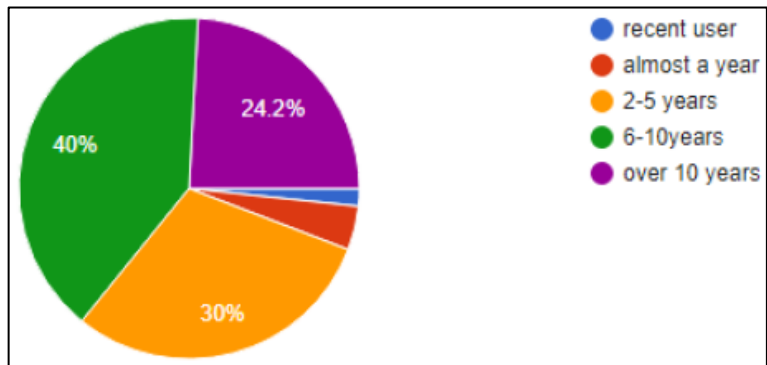


Figure 15: Daily spent hours of using internet

Table 10: Weekly hours spent using internet

No. of dedicated hours spent weekly on learning new application while using internet					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	12 to 15 hours	40	33.3	33.3	33.3
	15 to 18 hours	25	20.8	20.8	54.2
	3 to 6 hours	6	5.0	5.0	59.2
	6 to 9 hours	9	7.5	7.5	66.7
	9 to 12 hours	31	25.8	25.8	92.5
	more than 18 hours a week	9	7.5	7.5	100.0
	Total	120	100.0	100.0	

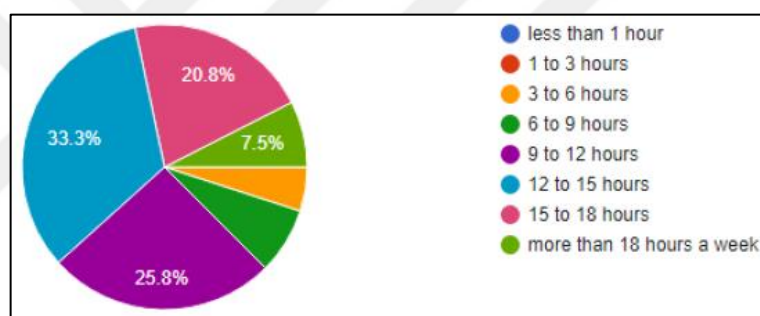


Figure 16: Weekly hours spent using internet

4.3.2 Institutional Aspects

In this section, the researcher has presented the respondents' views of institutional concerns towards the potential acceptance of CMS across e-learning environment of Iraq.

4.3.2.1 Institutional Issues

Figure below represents that the impacts of faculty and staff support (43.3%), followed by instructional quality (47.5%) are significant towards making the deployment of CMS a success. Besides, the factor of financial aid (31.7%) is also significant in this regard.



Figure 17: Institutional Issues

4.3.2.2 Technical Expertise Issues

Figure below represents that the majority of the respondents (43.30%) believe that their institutions require increasing efforts in the domain of updating and monitoring security measures. Moreover, the element of technical expertise is also crucial across the system administration department (38.10%), in order to make the deployment of CMS a definite success.

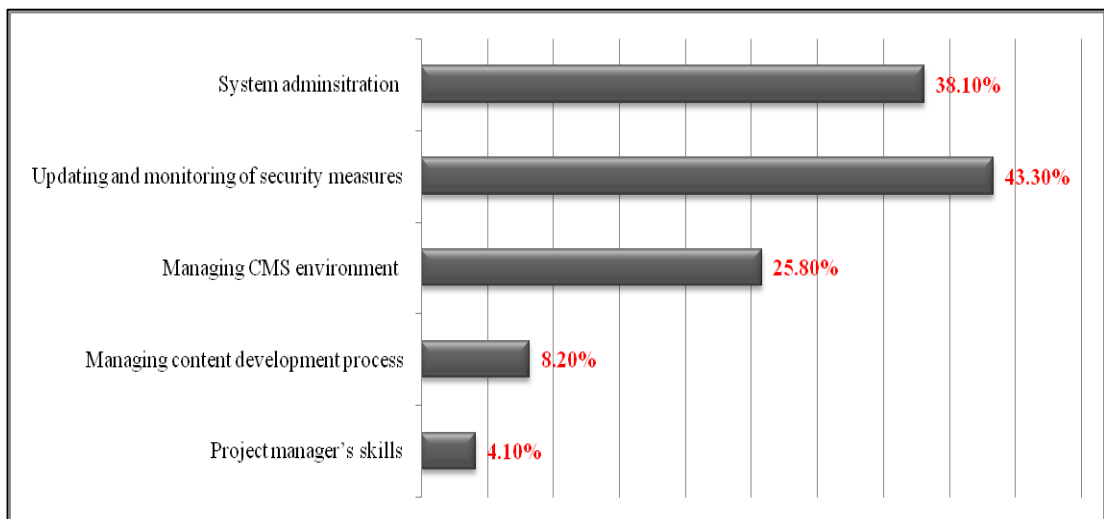


Figure 18: Technical Expertise Issues

4.3.2.3 Technological Progress Issues

The respondents have agreed that their institutions need to improve their hardware prospects (42.9%) and the potential of creating digital content (34.8%) prior to the deployment of CMS (figure below). Besides, the areas of planning (27.7%) and software development (26.8%) also need improvement. It represents that the institutions' software and digital content competencies are not in-line with the demands of CMS.

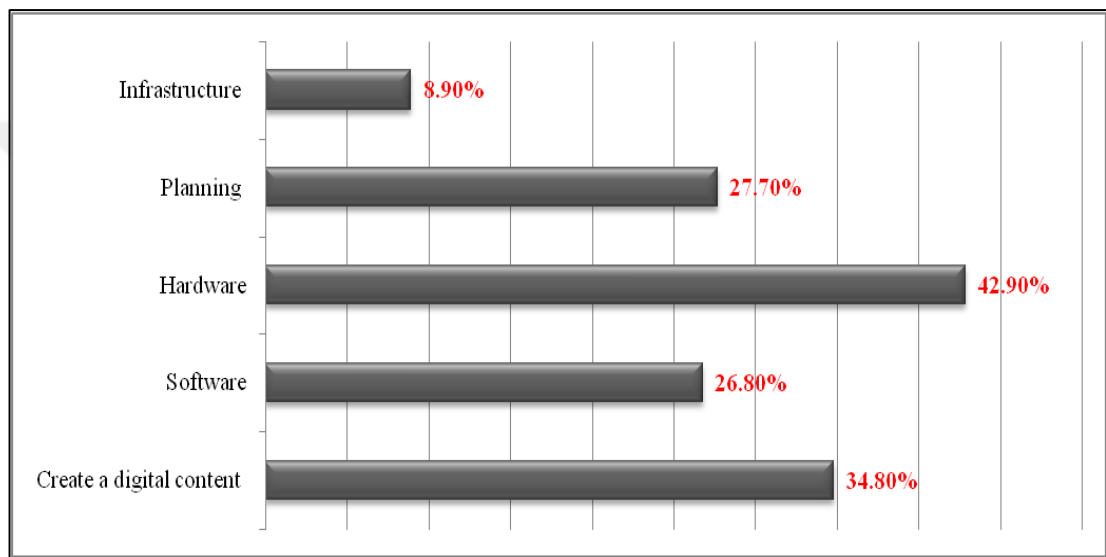


Figure 19: Technological Progress Issues

4.3.2.4 Support Issues

With respect to the cost-related concerns of the institutions, it has been affirmed that there are significant flaws across the maintenance and operational areas (36.2%), and the management of online and offline resources (36.2%), as shown below.

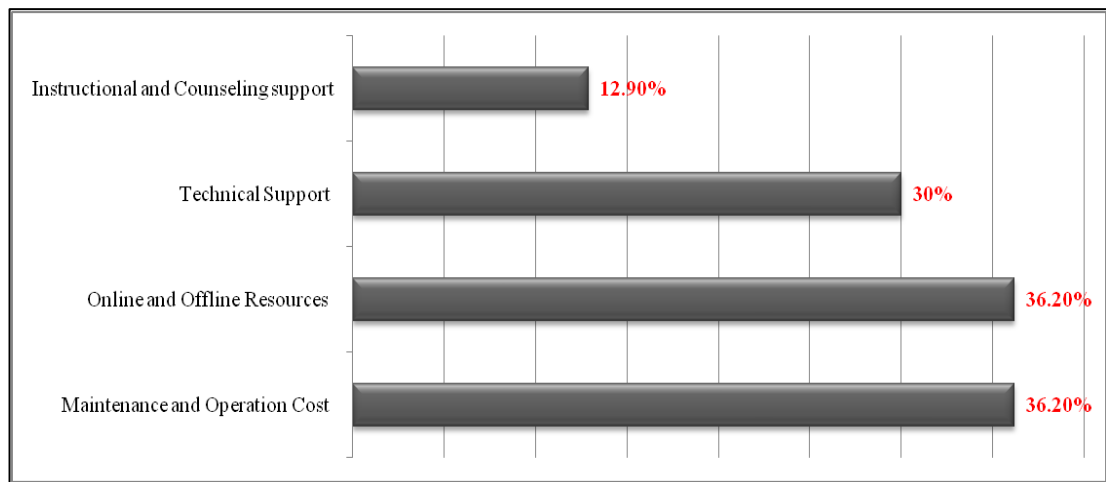


Figure 20: Support Issues

Consequently, it has been established that the technical scenario of the institutions of Iraq is going to be challenging for the effective deployment of CMS.

4.3.3 Constructs of TAM in relation to the CMS Implementation

Followed by assessing the external variables, the study has analyzed the core constructs of TAM in relation to the acceptance of CMS across the Iraqi universities. In this regard, the section below presents the descriptive statistics of the findings acquired from the survey responses.

4.3.3.1 Perceived Ease of Use - PEOU (Independent Variable)

In order to assess the respondents' perceptions towards ease-of-user prospect of CMS being a technological advancement to be deployed across the higher education institutions of Iraq, the researcher has devised four constructs. On the scale of 1-5 (level of disagreement to level of agreement), most of the respondents (32.5%) have rated 5 (Agree), when inquired about their experience in CMS-related technologies. However, this percentage cannot be regarded as significant, since almost 33% of the respondents have disagreed, with almost 18% responding neutrally (figure below).

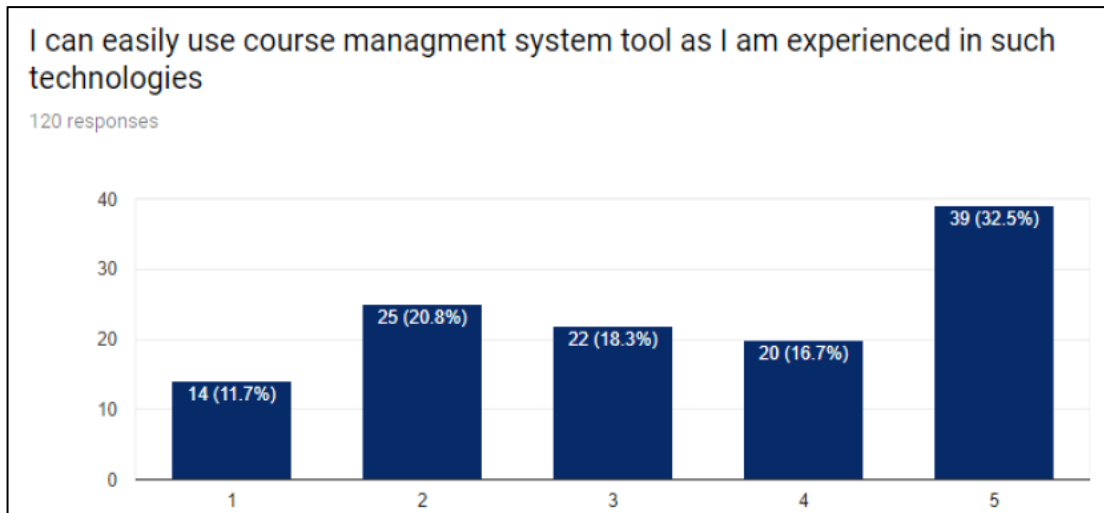


Figure 21: Experience with technology

Assessing the existing knowledge level of CMS among the respondents, the researcher has also investigated the perceptions of CMS potential users by offering the elements of training (figure 22) and support service or user manual as well (figure 23). Accordingly, it seems satisfying towards the supposed deployment of CMS across Iraqi universities, as almost 76 percent (almost 52% - Agree, and 25% - somewhat agree) of the respondents have agreed to adopt CMS with provided training (Figure 22), and almost 68 percent (almost 38% - Agree, and 29% - somewhat agree) would accept CMS, if provided with user manual or support service (Figure 23).

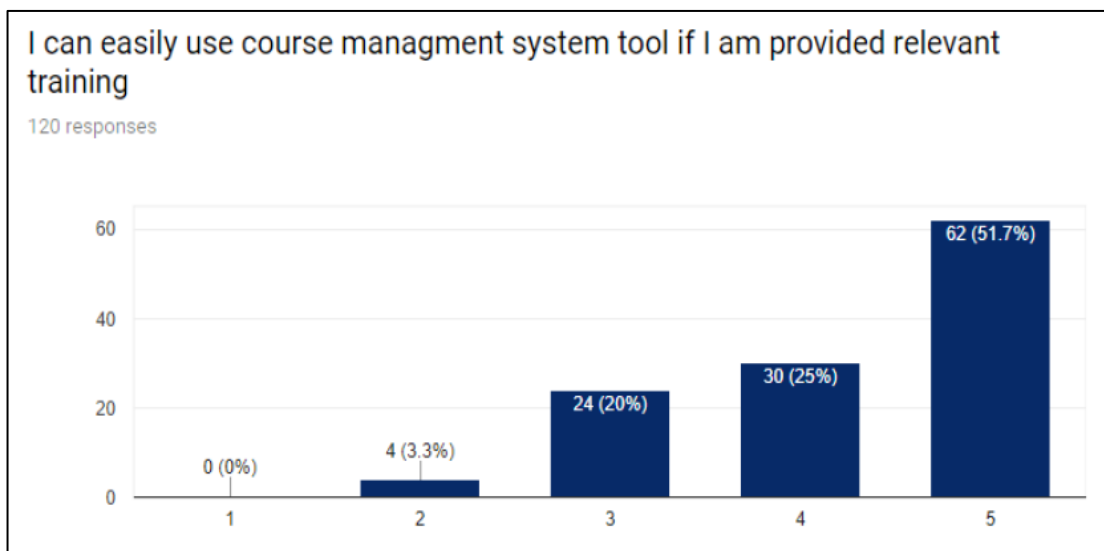


Figure 22:PEOU in relation to training provision

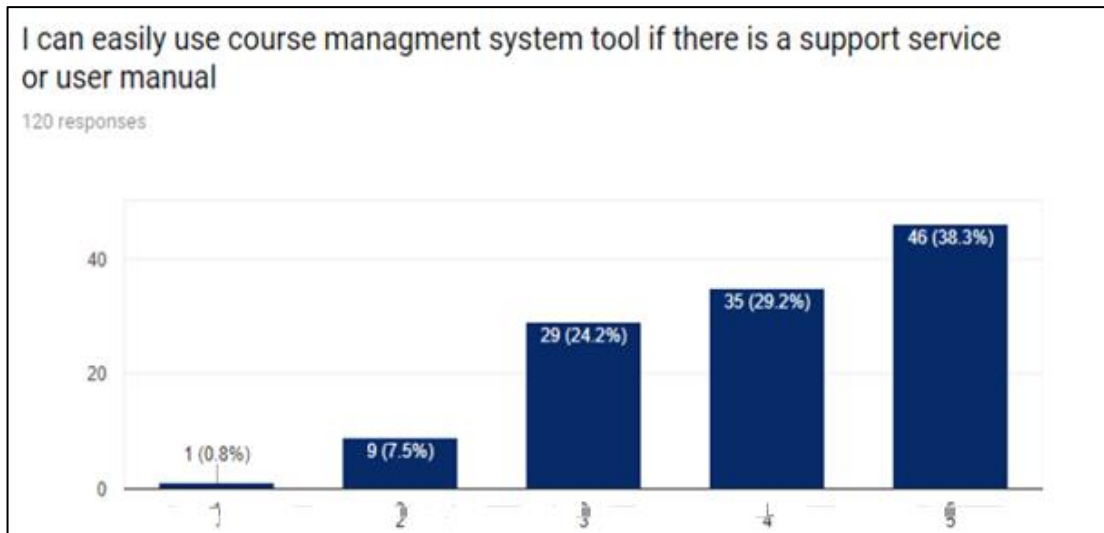


Figure 23: PEOU in relation to support service or user manual

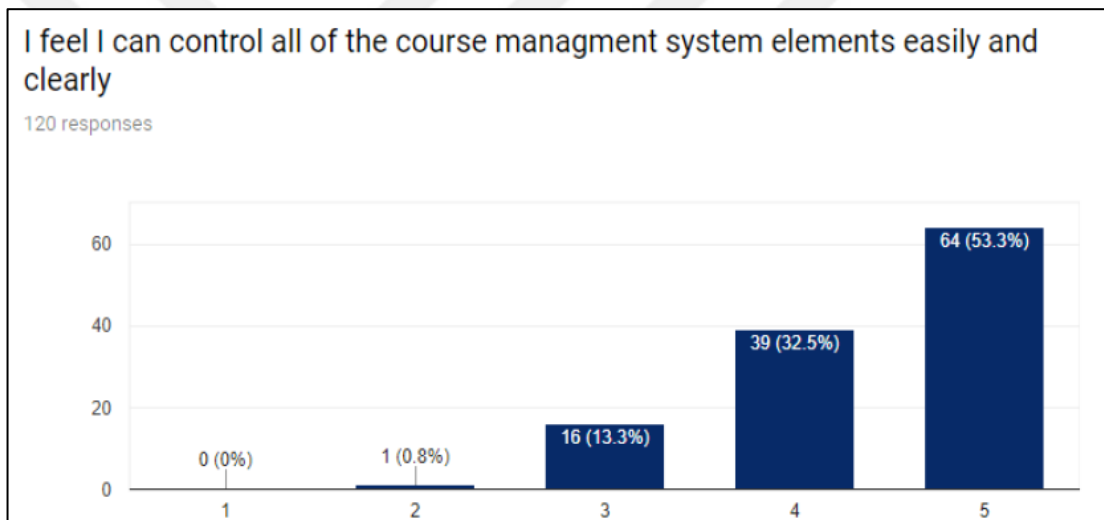


Figure 24: Ease of Use of CMS

In addition to this, almost 86% (53% - Agree, and 33% - somewhat agree) of the respondents have agreed that the elements of CMS will be easily controlled, once deployed, which reflects that CMS is considerably perceived to be easy-to-use (figure 24). Consequently, it can be established that the construct of PEOU (independent variable) for CMS adoption significantly affects the probability of its Perceived usefulness (PU), regardless of lacking in experience with relevant technologies. The section below presents the findings of PU, based on the survey responses.

4.3.3.2 Perceived Usefulness - PU (Independent Variable)

Other than the users' competence of dealing with the technological prospects of CMS, the study has also assessed the perceived usefulness of the CMS among the users through six relevant constructs. Observing the descriptive statistics of all the six constructs, it is noted that most of the participants have responded in considerable level of agreement. Figure 25 represents that almost 91 percent (53% - Agree, and 38% - somewhat agree) of respondents have agreed to the appealing aspects of CMS towards educational/management prospects. Likewise, figure 26 indicates that almost 92% (58% - Agree, and 33% - somewhat agree) of respondents have favoured the productive impacts of CMS over the learning performance of the domain. Most importantly, 98% (70% - Agree, and 28% - somewhat agree) of agreement has been noted with respect to the compatibility of CMS with studying needs of course content (Figure 27).

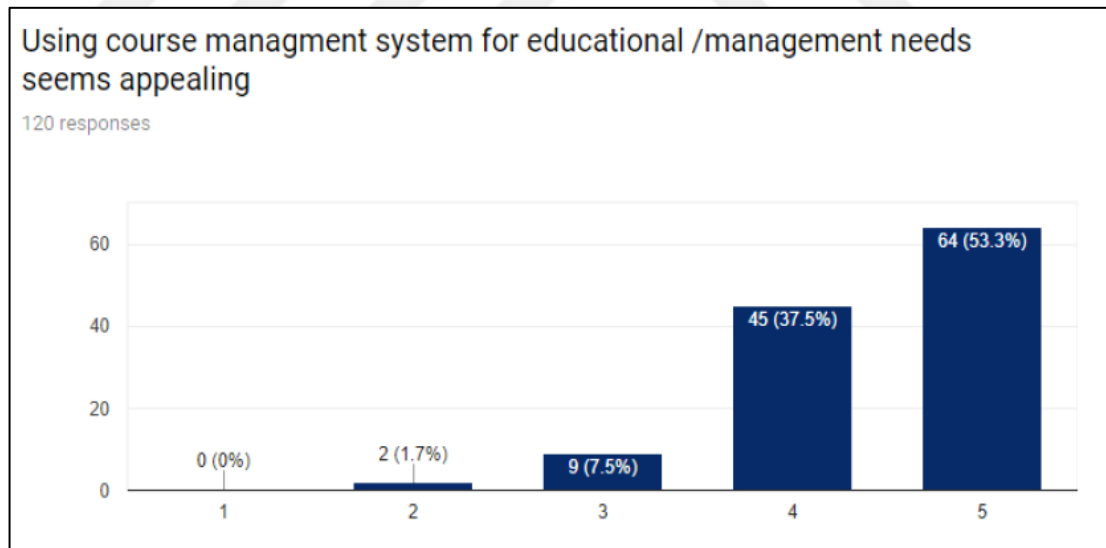


Figure 25: Appealing prospects of CMS

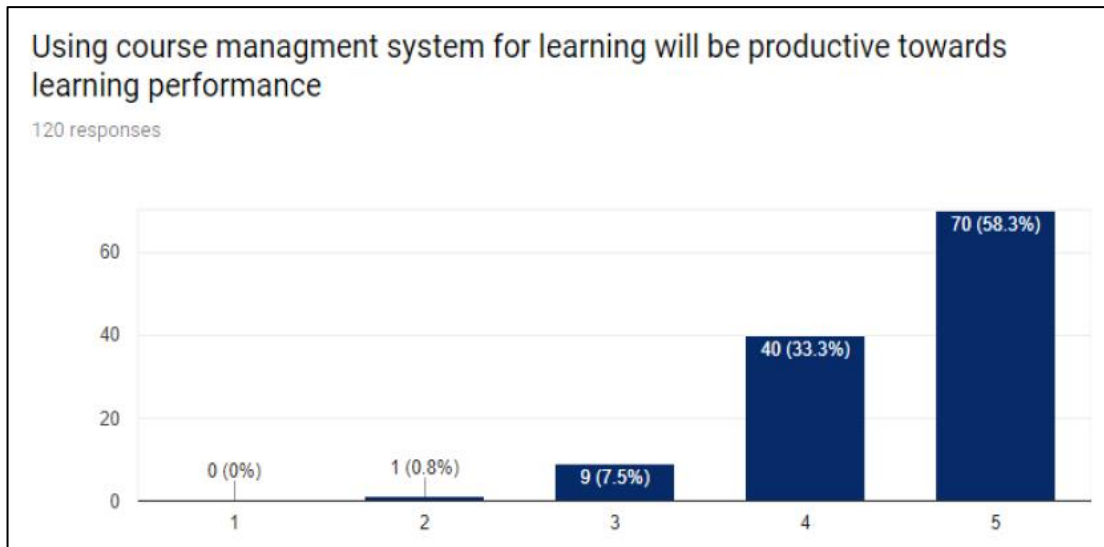


Figure 26: Performance outcomes of CMS

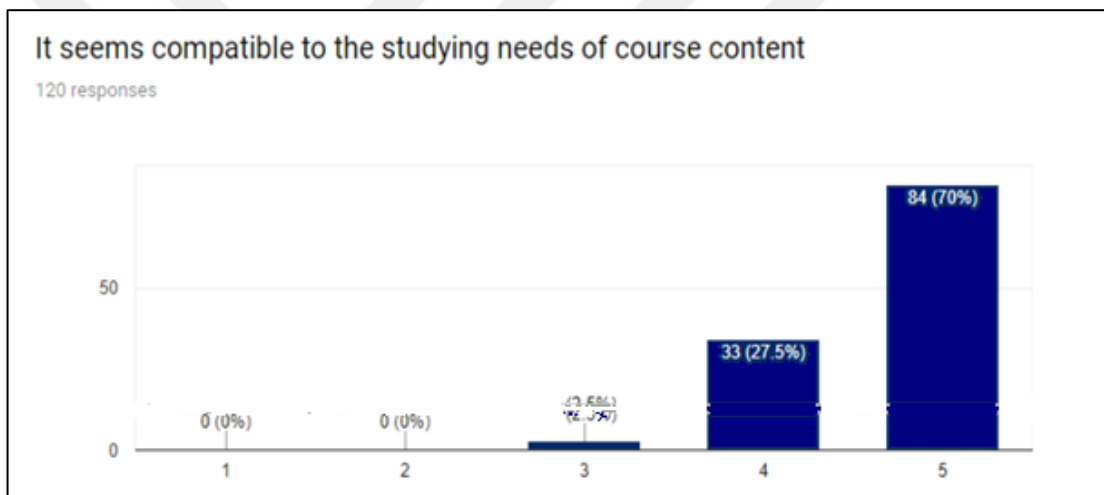


Figure 27: Compatibility with course content needs

In addition to this, the faculty members of Iraqi universities have also notably agreed (80%) to the alignment of their working attitude with the integration of CMS (Figure 28). Accordingly, CMS is perceived to improving the performance efficiency of the faculty members (almost 90% agreement) (Figure 29), along with enhancing the quality of education as well (almost 88%) (Figure 30).

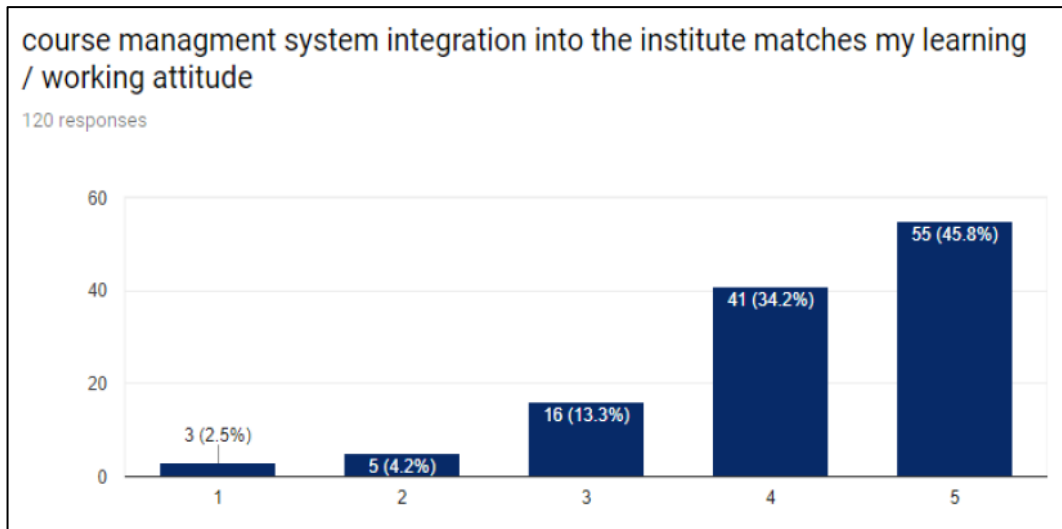


Figure 28: Impact on Learning/Working attitude

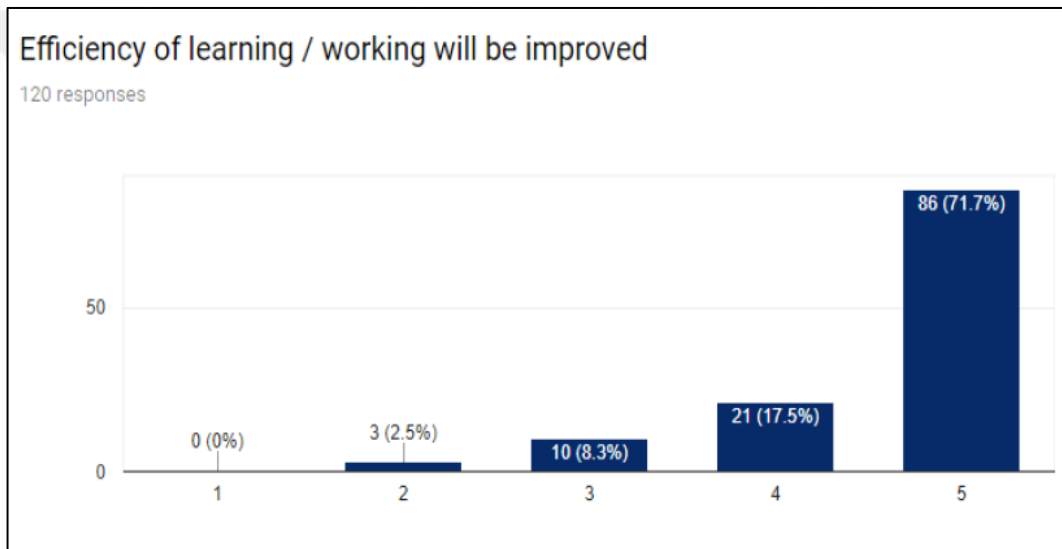


Figure 29: Impacts of CMS on Learning/Working Efficiency

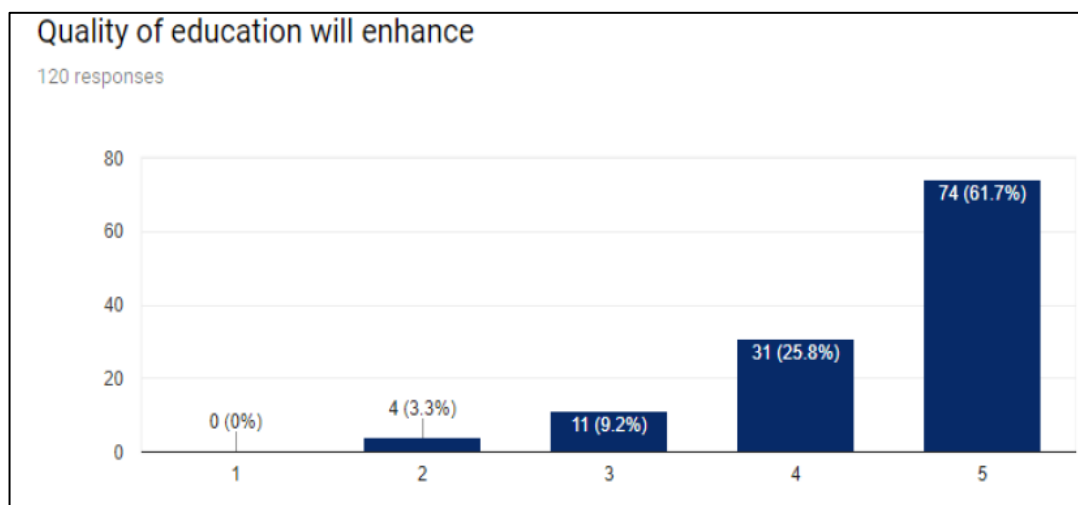


Figure 30: Impacts of CMS on education quality

Consequently, the independent variable of PU has received significant support from the responses of the participants, in relation to the deployment of CMS. It leads the study to assessing the impacts on Behavioral Intention - BI (dependent) of the users towards CMS.

4.3.3.3 Behavioral Intention to Use - BI (Dependent Variable)

With respect to the modified framework of TAM, BI being the dependent variable is influenced by the independent variables of PEOU and PU. The study has also devised the constructs for BI as well, rather than generating the conclusions merely on the basis of PEOU and PU responses. The responses to the four constructs of BI represent that the potential users of CMS are positive towards its use, once deployed successfully. Figure 31 indicates that most of the users (almost 92%) are positive towards extracting the best outcomes from the learning medium of CMS. Additionally, 102 respondents out of 120 have agreed to continue the use of CMS, once it is deployed across their administrative center (Figure 32).

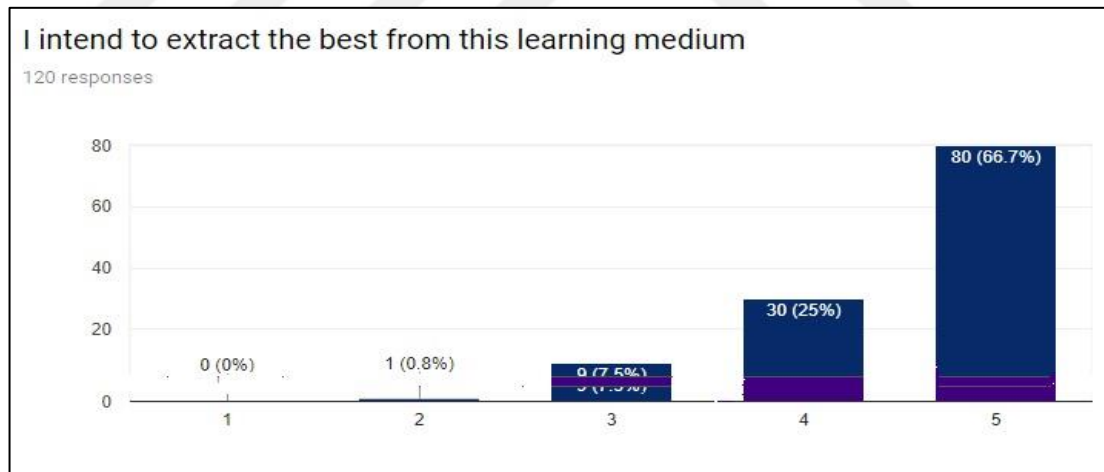


Figure 31:BI towards usefulness of CMS

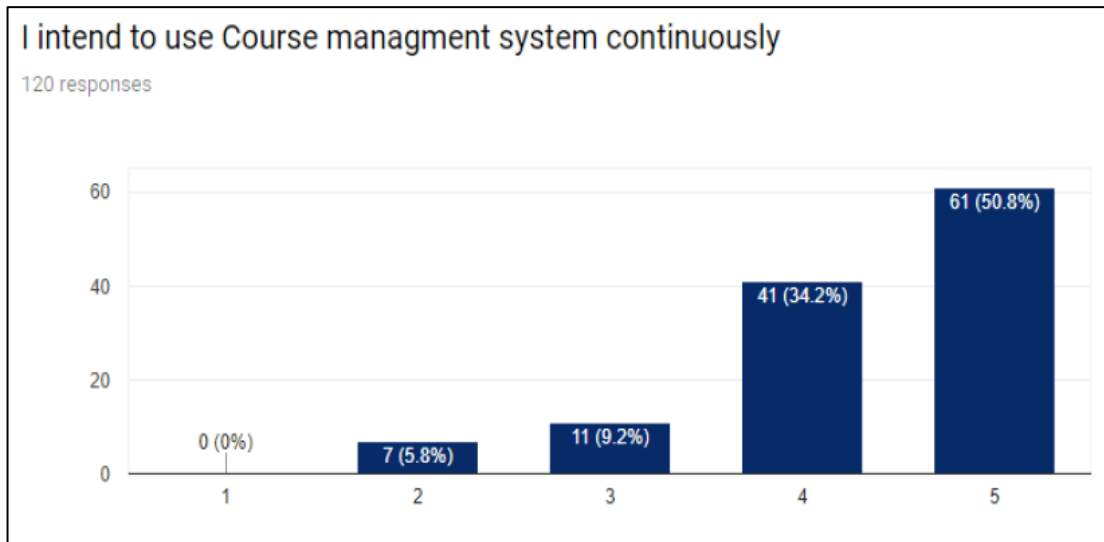


Figure 32: BI towards continuous use of CMS

Furthermore, the faculty members of the Iraqi universities have also commended the potential benefit of CMS in terms of establishing relationship between the learners and the instructors. Figure 33 represents that 90 percent respondents agree to the strengthened relationship prospect resulting from CMS deployment. Subsequently, the proficiency of CMS has also been validated in terms of encouraging the students towards education, as figure 34 indicates 85 percent agreement in this regard.

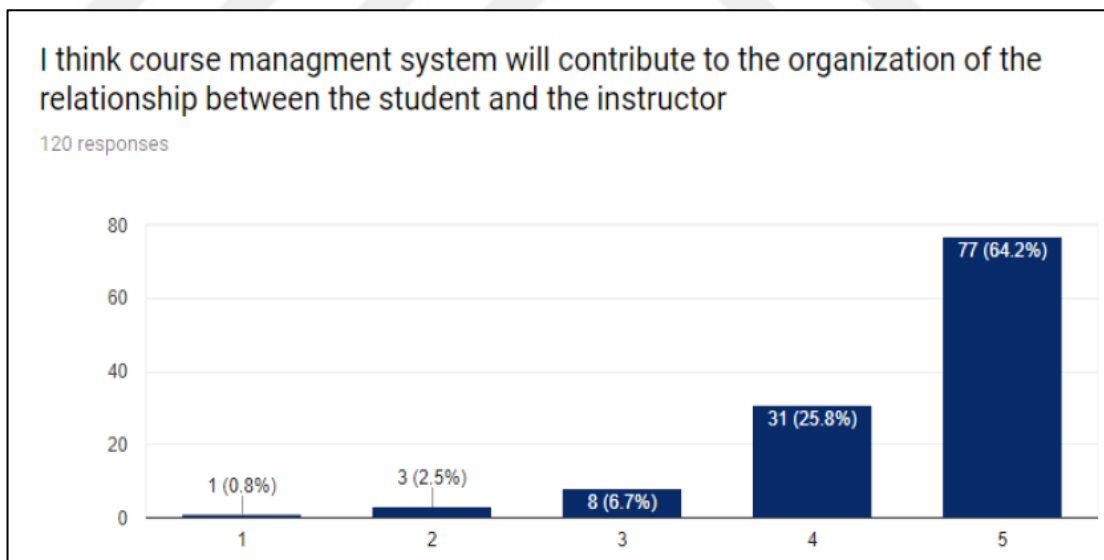


Figure 33: BI towards strengthened relationship between student and instructor

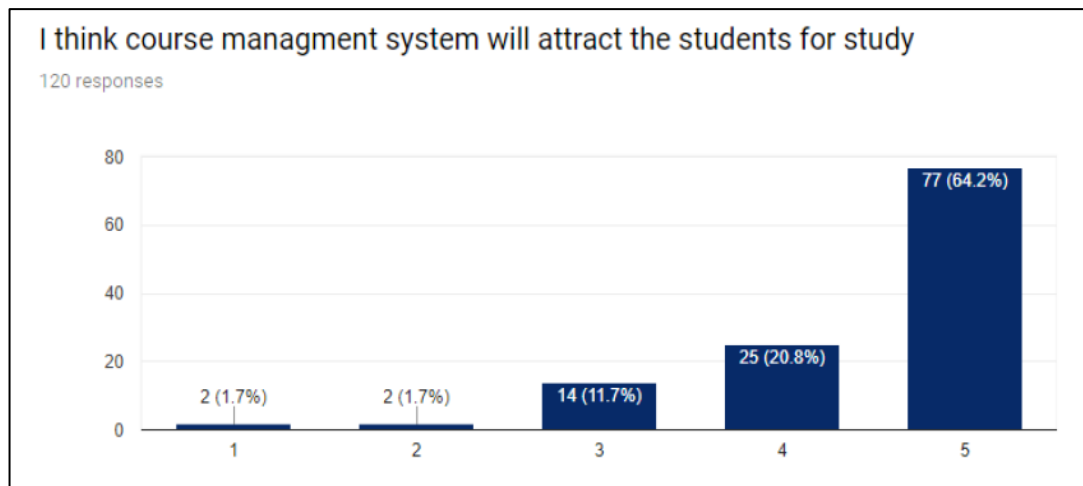


Figure 34: Attractiveness of CMS

4.4 Descriptive Statistics

Since the study has employed the rating scale of 1-5 (Disagree-Agree), the researcher has assessed the rating behavior of the respondents towards the constructs of survey. Table below reflects the rating level of the respondents to the identified dependent (BI) and independent variables (PEOU & PU) of the study. For PEOU, the average mean value is 3.9938 with a std. deviation of 0.90137 that indicates that people have rated high or agreed (on average) to the constructs of PEOU. Likewise, for PU, the average mean value is 4.4667 with a std. deviation of 0.55953 that indicates that people have rated high or agreed (on average) also to the constructs of PEOU. Similar is the case with the dependent variable BI, as represented in the (Table 12).

Table 11: Descriptive Statistics for rating trend

Descriptive Statistics			
	Mean	Std. Deviation	N
PEOU	3.9938	.90137	120
PU	4.4667	.55953	120
BI	4.4542	.69435	120

It is noteworthy to mention here that the distance between each unit of the rating scale (1-5: Disagree to Agree) is equal that facilitates analyzing the responses credibly.

4.5 Correlation Analysis

Correlation analysis assists in determining the relationship in between the variables being studied. For this purpose, the study has carried out Pearson Correlation (PC) analysis for assessing the degree of association in between the variables being studied (table 12).

Table 12: Pearson Correlation Analysis

Correlations				
		PEOU	PU	BI
PEOU	Pearson Correlation	1	.750**	.594**
	Sig. (2-tailed)		.000	.000
	N	120	120	120
PU	Pearson Correlation	.750**	1	.759**
	Sig. (2-tailed)	.000		.000
	N	120	120	120
BI	Pearson Correlation	.594**	.759**	1
	Sig. (2-tailed)	.000	.000	
	N	120	120	120
**. Correlation is significant at the 0.01 level (2-tailed).				

Table above indicates that the correlation in between PEOU and PU is statistically positive and significant with the value of correlation coefficient of 0.750; thereby, representing high degree of association in between the independent variables of PEOU and PU. In the same manner, observing the association in between PEOU and BI represents that there is a moderate degree of association with the value of 0.594; thus, statistically significant and positive at the 0.01 level. In addition to this, the coefficient correlation value in between PU and BI is also statistically significant at the 0.01 level with the value of 0.759 that indicates that the degree of association is relatively higher between the two variables.

4.6 Regression Analysis

In this section, the impact of PEOU and PU in determining the BI towards the deployment or adoption of CMS across the Iraqi educational institutions has been evaluated through regression analysis technique. For this purpose, Linear regression technique has been applied to assess the impacts of PEOU and PU on BI, in a respective manner.

4.6.1 Regression for Independent Variable of Perceived Ease of Use – PEOU

By means of using the "Enter" method, for examining the impacts of independent variable PEOU on the dependent variable BI, table below represents the ANOVA test results. It is noted that the impact of PEOU in determining the CMS potential users BI is statistically significant, since the sig. value is notably less than the threshold value of 0.05. Besides, the F statistic indicates that the overall model is significant at the value of 64.225 (Table 13).

Table 13: ANOVA test for PEOU

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	20.221	1	20.221	64.225	.000 ^b
	Residual	37.152	118	.315		
	Total	57.373	119			
a. Dependent Variable: BI						
b. Predictors: (Constant), PEOU						

Consequently, the statistical significance of the regression in between PEOU and BI is then assessed for its goodness of fit, in terms of the value of R Square. The model summary in the table below represents that the R square value for PEOU (independent variable) is 0.352, which indicates that there is 35.2% variance in the BI as the dependent variable. Adjusting the value of R Square in accordance with the predictor and sample size as well, it is noted that the value is reduced to 0.347 that represents that almost 34.7% variance is present in the dependent variable of BI (Table 14).

Table 14:RegressionModel Summary for PEOU

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.594 ^a	.352	.347	.56111
a. Predictors: (Constant), PEOU				

(Table 15} shows that the regression model for PEOU in predicting Behavioral Intention of the Iraqi faculty members of higher education towards CMS is statistically significant at the 0.05 level. The t-value of PEOU is 8.014 with the standardized Coefficient value of 0.594 that represents that there is a great influence of PEOU on BI of the potential users of CMS, and a unit increase in PEOU is going to yield 0.594 degree/unit increase in the Behavioral Intention of the users towards CMS.

Table 15: Regression Model T-test for PEOU

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.628	.234		11.249	.000
	PEOU	.457	.057	.594	8.014	.000
a. Dependent Variable: BI						

4.6.2 Regression for Independent Variable of Perceived Usefulness – PU

Table below indicates the ANOVA test results in between the independent variable of PU and the dependent variable of BI, using the "Enter" method for entering the variables into the model. It is affirmed that the impact of PU on BI is statistically significant with its sig. value notable less than 0.05 level. Moreover, the F Statistics represent that the overall model has gained higher significance at the value of 160.738 (Table 16).

Table 16: ANOVA test for PU

ANOVA ^a						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	33.085	1	33.085	160.738	.000 ^b
	Residual	24.288	118	.206		
	Total	57.373	119			

a. Dependent Variable: BI

Accordingly, the statistical significance of the regression in between PU and BI is then assessed for its goodness of fit, in terms of the value of R Square. The model summary in the table below represents that the R square value for PU (independent variable) is 0.577, which indicates that there is 57.7% variance in the BI as the dependent variable. Adjusting the value of R Square in accordance with the predictor and sample size as well, it is noted that the value is reduced to 0.573 that represents that almost 57.3% variance is present in the dependent variable of BI (Table 17).

Table 17: Regression Model Summary for PU

Model Summary		
R	R Square	Adjusted R Square
.759 ^a	.577	.573

a. Predictors: (Constant), PU

{Table 18} shows that the regression model for PU in predicting Behavioral Intention of the Iraqi faculty members of higher education towards CMS is statistically significant at the 0.05 level. The t-value of PU is 12.678 with the standardized Coefficient value of 0.759 that represents that there is a greater influence of PU on BI of the potential users of CMS, and a unit increase in PU is going to yield 0.759 degree/unit increase in the Behavioral Intention of the users towards CMS.

Table 18: Regression T-test for PU

Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.245	.335		.732	.466
	PU	.942	.074	.759	12.678	.000

a. Dependent Variable: BIU



CHAPTER 5

CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

The rapid developments across the ICT have significantly influenced the global business environment with respect to its adoption if competitiveness and global recognition is anticipated. Most importantly, this trend has also been significant across the educational sector; however, developing states of the world either have not recognized its implications or could not acquire many benefits due to certain challenges. Across the educational sector, the deployment of ICT is termed as e-learning that is regarded as an innovative paradigm of facilitating the education needs of learners even at distant locations. With respect the efficient tools of ICT to meet the educational needs of the learners, LMS "Learning Management System" has been widely adopted. The services of LMS are wide ranging in terms of facilitating performance management, access control, communication, assessments, scheduling, documentation, and even the availability of entire learning content. LMS being the tool of learning management has its implications even across the business organizations that makes it customized for different needs of management. With respect to its advancements for educational sector, the field of ICT has received CMS "Course Management System" that facilitates the academic system management.

CMS is affirmed to target the content developers across the education department, being focused on learning content. As compared to the LMS, CMS is efficient in content-creating potential, organization of reusable content, dynamic pre-testing, and adaptive learning, managing the entire development process of content and easy-to-use interface and navigational controls for the delivery of content across the learners. It is evident from the statistics of global adoption of e-learning tools that the education world is increasingly transforming into digital form, as there is an annual increase of 7.9% in its global adoption rate. In addition to this, even the developing

nations have also realized the potential benefits of technological integrations that is evident from the reported annual growth of its adoption across Middle East. Among the developing nations, there is Iraq that has been under severe economic and social destructions due to certain challenging conditions of wars and other political flaws. However, the recent years present developing trends even in Iraq as the nation has acquired much stability. It has been acknowledged that the nation can acquire global level recognition, if its education system is strengthened enough to meet the international standards.

In this regard, the Iraqi Ministry of Higher Education and Scientific Research (MoHESR) [37] has aimed at transforming the educational sector into internet-based learning system. It is supported by the increasing internet penetration of the nation as compared to the previous trends, since the nation had 37.3% internet users by the year of 2016 that is much improved than the preceding ones of 7.1% (up to 2012) and 1.1% (up to 2010). Gaining motivation from this increasing focus of Iraqi Ministry of education towards e-learning adoption, this study has presented CMS as an efficient tool for meeting the educational needs of Iraqi universities or higher education system. For this purpose, the study has aimed at exploring the effectiveness of the Course Management System for both the organization and the stakeholders as well, particularly in the Iraqi University. Accordingly, the study has also formulated the research questions:

- What are the potential benefits of CMS with respect to the enhancement of higher education?
- How can the educational status of Iraqi universities be improved with technology deployment?
- How is Technology Acceptance Model (TAM) effective in assessing the readiness of Iraqis towards CMS?
- What are the Challenges of making the implementation of CMS a success in a developing country like Iraq?
- Which CMS tool will be advantageous for the Iraqi Universities to deal with the e-learning needs of the target individuals?

With the help of literature review, the study has effectively acquired the insights of CMS, in relation to the attainment of e-learning benefits. It has been affirmed that

CMS is proficient in dealing with the administrative concerns of content management across the learning environment. The platform of CMS is aligned with the mostly needed element of user-friendliness, since the Iraqi users of CMS will be potentially new with such technological integration within their educational activities. In this regard, the researcher has also explored the studies addressing the effectiveness of different CMS platforms, including WebCT, ATutor, ASTD, and Moodle. However, it has been noted that these open-source license software solutions tend to pose certain limitations with respect to enabling the development functionalities for respective needs of content management. Therefore, there are needs of external factors or there is a certain dependency in this regard. As a result, the study has proposed the model of MEKTEP (Model -Environment of Knowledge Tracking and Extension Process) to be employed across the higher educational institutions of Iraq, for its guaranteed feasibility and modularity.

Even though CMS ensures making the online educational system increasingly efficient, yet there are certain concerns with respect to its acceptance among the target users that eventually affects the credible performance outcomes of CMS. With respect to the challenges associated with CMS deployment, the study has identified from the literature that the most challenging element is of making CMS feasible solution of e-learning, pertaining to the behavior of potential users towards its adoption. The review of the literature has facilitated the researcher to adopt TAM for assessing the challenging situation of Iraqi educational institutes. In this regard, the impacts of external variables of demographics, respondents' technical knowledge, and the institutional aspects have also been significant. The study has analyzed the descriptive statistics of these external variables, which has led to the identification of certain prospects that could be challenging towards CMS successful deployment. At first, the age factor could be concerning as most of the respondents have been generation X, followed by generation Y. It has been supported with the notable lacking of internet accessibility of these potential CMS users, as only 7.5% of the respondents have reported using internet for over 18 hours a week.

Besides, the institutional technical competence with respect to software and digital content needs, online and offline resources management, and updating and monitoring of security measures also require development changes. Accordingly, the study has then analyzed the users' perceptions in terms of the ease-of-use and

usefulness prospects of CMS, in order to predict their behavioral intention towards its actual use. In this regard, the survey constructs have been devised based on the identified variables of TAM (Independent variables - PEOU "Perceived Ease of Use" and PU "Perceived Usefulness", and the dependent variable - BI "Behavioral Intention"). Analyzing the descriptive statistics of the participants' responses to these constructs, it has been identified that the most of the faculty members of Iraq have not experienced relevant technologies before that could be challenging for making them accept its adoption. However, it has been noted that the respondents have expressed willingness, if credible amount of training (76% agree) or even support service or user manual (68% agree) is provided. It reflects that the rate of perceived ease of use - PEOU for CMS is considerable among the Iraqi faculty members that directs the rate of perceived usefulness - PU as well.

From the descriptive statistics of PU, the study has identified that CMS is believed to be notably useful towards the needs of educational system, as the level of agreement is significantly higher; thus, predicting potential chances of its successful adoption. Moreover, the study has also analyzed the responses to the constructs of BI, which indicates that the potential users are having considerable readiness towards using CMS as their educational system. Consequently, the study has performed different statistical analysis techniques of assessing the standard deviation of the responses, followed by the correlation analysis and regression analysis for assessing the relationship in between the identified variables. The average mean values of the variables (PEOU=3.9938, PU=4.4667, BI=4.4542) represent that majority of responders have been of agreement towards the constructs of survey. Subsequently, the implementation of Pearson Correlation has affirmed the statistical significance of the association in between the variables, as the sig. value has been notable less than the threshold value of 0.01.

By means of correlation analysis, it has been established that the degree of association in between PEOU and PU, and PU and BI is high (correlation coefficient values of 0.750 and 0.759), with moderate degree of association in between PEOU and BI (correlation coefficient value of 0.594). Subsequently, the linear regression model for determining the strength of relationship in between the variables has been applied. The results of linear regression model of both the variables of PEOU and PU in relation with BI have affirmed the statistical significance of the variable at 5%

level. It has been noted that the variable of PEOU has 35.2% variance in the BI as the dependent variable, while PU has 57.7% variance towards BI. More specifically, the beta values for both the independent variables (PEOU=0.594 degree/unit, PU=0.759 degree/unit) are considerable with respect to determining increase in the behavioral intention of the users towards CMS. Therefore, it has been established that the impact of these variables of PEOU and PU is significant towards predicting BI for the CMS deployment across the Iraqi higher educational institutions.

5.2 Recommendations

The identified challenges could hinder the successful deployment of CMS. Therefore, the study recommends to first enhancing the technical competence of the educational institutions of Iraq. In this regard, adequate training sessions, workshops and other short-courses are recommended that would motivate the technical staff to better respond to the CMS deployment. Besides the technical department, even the faculty members also need training and awareness of accepting the technological means of gaining or transforming knowledge. However, the learners' internet accessibility also needs to be ensured. It is anticipated that the user-friendly interface of CMS will encourage the users (learners and instructors) towards its continued adoption, once interacted.

5.3 Future work

The interview element might present a particular limitation with respect to the assertions of challenges of CMS deployment, since only one, IT expert was interviewed. However, it could be a major prospect for future studies in the same research area. Besides, the random sampling can also be a potential limitation; thus, providing another direction for future research.

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APPENDIX A

QUESTIONIRE FORM

Course material systems effectiveness in Iraqi universities

Dear participant,

A survey questionnaire is attached in the section below that is based on exploring the effectiveness of the course management system (CMS) for both the organization and the stakeholders as well, particularly in the Iraqi university. Since you are one of the stakeholders of the Iraqi universities, your contribution to the survey will be of higher value to the accomplishment of the study objectives. The outcomes of the study will help the management to deploy CMS tool at the Universities for dealing with the CMS needs of the students.

It will take few minutes of your valued time, where the participation is voluntary. All your responses will be used specifically for the study, keeping the information confidential. The answers are expected to be based on your recent experiences or the associated activities.

EXTERNAL VARIABLES

Demographic Factors

i. Gender

- Male
- Female

ii. Position at University

- Faculty member

iii. Education Level

- Undergraduate
- Masters
- PhD

iv. Age group

- 22-28
- 29-34
- 35-40
- Above 40

Technological Knowledge

i. I have used course management system before.

never () several time () always ()

ii. I access internet in my daily life.

never () several time () always ()

iii. How long have you been using internet?

recent user () almost a year () 2-5 years () 6-10years ()
over 10 years ()

iv. No. of dedicated hours spent on learning new application while using internet: (Please Tick One)

hours per week	
less than 1 hour	
1 to 3 hours	
3 to 6 hours	
6 to 9 hours	
9 to 12 hours	
12 to 15 hours	
15 to 18 hours	
more than 18 hours a week	

TAM MODEL

Assessment of agreement or disagreement of the participants using Likert's 5-point scale

Statements	Response				
	Strongly Agree 5	Agree 4	Neutral 3	Disagree 2	Strongly Disagree 1
Perceived Ease of Use (PEOU)					
I can easily use course management system tool as I am experienced in such technologies					
I can easily use course management system tool if I am provided relevant training					
I can easily use course management system tool if there is a support service or user manual					
I feel I can control all of the course management system elements easily and clearly					

Perceived Usefulness					
Using course management system for educational /management needs seems appealing					
Using course management system for learning will be productive towards learning performance					
It seems compatible to the studying needs of course content					
course management system integration into the institute matches my learning / working attitude					
Efficiency of learning / working will be improved					
Quality of education will enhance					
Behavioral Intention to Use - BI					
I intend to extract the best from this learning medium					
I intend to use Course management system continuously					
I think course management system will contribute to the organization of the relationship between the student and the instructor					
I think course management system will attract the students for study					

External Variables

Which of following variables you believe need to be improved before starting the use of CMS (more than one option can be selected)

institutional Issues

- Organizational change and readiness assessment
- Financial aid
- Instructional quality
- Faculty and staff support
- Learning skills development
- Intellectual property rights
- Project manager's skills
- Managing content development process
- Managing E-learning environment
- Updating and monitoring of security measures

System administration

- Technological progress Issues
- Infrastructure
- Planning
- Hardware
- Software
- Create a digital content

Support Issues

- Instructional and counseling support
- Technical support
- Online and offline resources
- Maintenance and operation cost

Thank you for your contribution to this research

CURRICULUM VITAE

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EDUCATION

Degree	Institution	Year of Graduation
M.Sc.	Çankaya Univ.	2017
B.Sc.	AL-rafedain Univ.	2000
High School	Ukba bin nafiaa High school	1996

WORK EXPERIENCE

Year	Place	Enrollment
2005 UNTIL NOW	FEDERAL BOARD OF SUPREME AUDIT	PROGRAMMER

FOREIN LANGUAGES

Language	Speaking	Reading	Writing
Arabic	Native	Native	Native
English	V.Good	V.Good	V.Good