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ASSESSING THE BEHAVIOURAL INTENTION OF STUDENTS TOWARDS LEARNING MANAGEMENT SYSTEM, THROUGH TECHNOLOGY ACCEPTANCE MODEL - CASE OF IRAQI UNIVERSITIES

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ABSTRACT

The increasing pace of advancements in the technological domain has influenced all the business and economy sectors of the world. Similar trends have been observed in the educational domain in terms of the adoption of e-learning platforms of LMS - Learning Management System, particularly. The success rate of e-learning adoption is exceptional in the developed regions of the world; however, its adoption in the Middle East and other developing economies is regarded as being in its infancy. This particular study has assessed the behavioural intention of the students of Iraq, being in its infancy in terms of internet adoption; thus, going through the transformation of traditional modes of learning into e-learning modes. The study believes the adopted situation of LMS as the e-learning tool in the four selected higher educational institutes of Iraq. Accordingly, Technology Acceptance Model is deployed to assess the behavioural intentions of the students towards LMS. As a result, the students are affirmed to have significant impacts of *perceived ease of use - E*, and *perceive usefulness - PU* over their *behavioural intention - BI* for LMS. Besides, the *attitudes towards the use (A)* of LMS are also affirmed to have significant association with the other constructs of TAM.

Keywords: *Technology Acceptance Model (TAM), e-learning, Learning Management System (LMS), Higher Education, Iraq,*

1. INTRODUCTION

The domain of education has received significant influence of the technological advancements in the area of Information and Communication Technology - ICT; thus, the educational sector has experienced the incessant adoption of the term e learning within the domain across the world, particularly in the developed countries [1-4]. It has been established that the use of ICT seems to be imperative based on its relevant efficacies in the resistive sector, particularly in the field of teaching and learning. With respect to the effective tools of ICT for the educational sector, the use of Learning Management System-LMS has been the preferred one. Its deployment has been widely accepted in higher educational institutions, both in terms of open-source and commercial systems of learning management, as Moodle and Blackboard respectively [2-3].

LMS has been contended as the critical success factor of the objectives of e learning, since it has the competence of facilitating the entire academics with its online interactive environment of learning and teaching [5]. The services of LMS are of varying nature, depending on the integrated systems, including the services of controlling, performance management, assessment, communicational needs, scheduling, documentation, and content availability as well. Considering the recent reporting about LMS adoption across the world, it has been noted that almost all the developed regions of the world are having stabilized adoption of this mode of learning all across the educational sectors. With respect to the technological adoption in learning and educational sector of Middle East, the statistics are satisfactory to some extent, as the tools of LMS have been as promising for the Middle Eastern educational institutions as for the developed countries [5-7].

Accordingly, the implication of LMS in the developing regions has not received much growth, due to certain challenges or constraints involved in the process [8-9]. Among the developing states, Iraq has been identified as potentially adopting LMS in order to best cope with the international standards of education. With respect to the past-scenario of Iraq, the educational statistics were best in the region by the year of 1991 [10]. However, the experiences of wars, international sanctions, and the

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associated adversities have greatly affected the educational sector. Accordingly, there has been a notable lacking in the strength of ICT sector as well, since the teachers are not literate enough with respect to the competence required for dealing with ICT. Over the years, it has been observed that the domain has recognized the needs of promoting ICT awareness among students, teachers, and the entire faculty of Ministry of Education-MoE and the educational institutions as well [10].

Throughout the higher educational institutions of Iraq, it is observed that the educational settings represent significant inclination towards technological adoption. Radif [11] have documented that the learners in Iraq are facilitated with the advanced level acquisition of education that turns out to be compatible with the educational quality of the developed regions of the world. The assertion is validated from the country's increasing rate of internet penetration across the commonplace. According to the statistics of Internet World Stats, [12] it is noted that the Iraq has acquired significant improvement in its internet penetration. By June 2016, the rate of internet adoption has been 37.3% that is far better than the statistics of preceding years (shown below).

Table 1: Iraq's Technological penetration [12]

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

The increasing adoption of internet accessibility reflects that the implications of e learning as LMS would be progressive for the country's global position [13]. However, the utilization of ICT needs to be consistent across all the regions of Iraq in terms of the instilled aspects of services, infrastructure, and other activities as well. The paper has intended to analyse the acceptance of this innovative mode of education "LMS" among the Iraqi students, which has been accomplished by the deployment of TAM "*Technology Acceptance Model*" as the theoretical framework. The paper also presents the detailed literature review along with the theoretical aspects of making the study a success in its objectives' accomplishment.

1.1 Rationale for the Study

It has been established from the past studies that the implications of LMS as an effective e learning platform have not been recognised across the developing nations. In particular, the Iraq's prolonged experiences of wars and other adversities have notably affected its educational settings. Unfortunately, even the practitioners and researchers had also abandoned the state with respect to research and development aspects. However, the recent situation as reviewed, reflect the government's inclination towards developing its educational sector. Therefore, it turns out to be the rationale for the study, as it would definitely serve the responsible authorities in making improved and better decisions in favour of the state. Besides, the idea of assessing LMS acceptance in Iraq is also appealing, since the culture of Iraq does not offer equal accessibility of education to both genders. It is anticipated that LMS's adoption would be greatly favoured, since women would be having compatible opportunities of education and development as their counterparts.

2. LITERATURE REVIEW

2.1. Concept of Internet-based Learning

The implications of online learning tools have been widely assessed in terms of their respective efficacies and acceptance among the targeted individuals. Primarily, the notions of online or electronic learning are associated with the proficient deployment of internet technology. Among the domains having significant advantages of technology, the domain of education is affirmed to have eminence with respect to the implications of the internet-based applications [50], which is in accordance with the study of Anter et al [14]. These electronic implications in the learning sector are based on the objectives of enhancing the performance outcomes of the learners and the teachers as well; thus, reflecting the cost-effective management of the entire educational resources in a proficient manner [15]. [16] has documented the effectiveness of electronic learning in terms of mitigating the problem-causing elements in the educational organisations. It becomes feasible through the internet-based learning environment to access the learning material in an inexpensive manner.

2.2. ICT and E-learning

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E learning has been referred as the learning facility that incorporates the element of learning assistance without requiring physical access to the learning institutions [17-18]. In this regard, the educational sector has observed a significant contribution of ICT that has eventually transformed the learning environment. E learning is defined as the process of providing educational services even at remote locations. By means of this, the most concerned prospects of the educational sector are managed in a flexible manner [19]. The entire learning setting is free from the physical essentials of visiting the locations, since the electronic representation of the entire educational process mitigates the typical physical learning settings. Arkorful, & Abaidoo, [20] have asserted that the integration of ICT in the educational domain has been an interactive addition to the learning process by means of internet, teleconferencing, and intranet as well. In this manner, the entire learning environment tends to acquire the manifestation of being learner-centred that holds the eminence of being free of the time-related concerns as well [19-20].

The designing of the entire system is sternly in affirmation with the instruction principles. Ellis, & Goodyear, [21] have documented that the prospect of online education delivery is ascertained by means of interactive devices availability across the learners, which ultimately involves the integration of ICT. In the same context, it has also been asserted that the pedagogy of internet-based learning also facilitates the administrative tasks of the educational departments; thus, reflecting the affirmation of being a credible learning platform [22-24].

Besides, it is noteworthy to mention here that the modes of acquiring electronic learning are not specific, but numerous alternatives are available, depending on the needs and interests of the users or learners. Alshetwi [24] has stated that the learning platforms in the online environment must be proficient in meeting the learning needs of the involved participants at all levels; thus, securing the maximization of educational level. Accordingly, Learning Management System - LMS has been ranked among the most prominent e-learning solutions, both in terms of facilitating the synchronous and asynchronous needs of learning. Ellis, & Goodyear, [21] have described this learning process as the depiction of ensured accessibility of the learning material that is implicit for both the learners and the organisational needs as well [15, 25]. As a result, the dimensions of interactivity and accessibility are credited as the most significant contributor of successful LMS.

2.3. Learning Management System - An Effective Tool of E-Learning

Hussain et al [26] has documented that effectiveness of integrated element of LMS within the education domain of e learning. LMS facilitates the learning process and the instructors involved, by means of its features of developing, and organising the learning material and the relevant other contents. Throughout the process, the involved personnel are allowed to manage the interacting activities in between the learners and teachers, along with individual needs of managing the learners (tracking the performance and other relevant areas) as well. It has been noted that LMS offers significant improvement measures for the learning enhancement of the students [26]. There are the most competent and feasible dimensions of user logging, content management, tracker of students' activities while online, management of the grade, reports generation, and managing the interactive platforms of forums, discussion groups, teleconferencing as well [24-26].

Edress [27] has emphasised that LMS even provides additional benefits of managing the learning needs of the students if it is integrated as LCMS "Learning Content Management System". LCMS is having the assisting features of creating, managing, modifying, and even publishing the required content or material for learning needs of the students. As a result, LCMS turns out to be increasingly aligned with the advancements of technology. LCMS are observed to govern the accessibility and manageability to the scores, question choices, and even navigation behavior of the learners while using the online mode of learning [27]. Consequently, the managers or the instructors are potentially having access to the crucial information regarding the learners. In this manner, the credibility of LMS enhances with the integration of content management that further gets improved with the adoption of specific instructional methods, considering the preferences and willingness of the learners [26-27].

2.4. Tools of LMS

Among the most common and proficient tools of LMS, *ATutor*, *Moodle*, *Sakai* are the eminent ones. Hussain et al [26] has stated that modular techniques are used for ensuring the flexibility needs of the tools and applications that makes it

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possible to get instilled within the respective features of other tools or modules; thus, the featured elements of the respective system are enhanced. In addition to this, it has also been established that open source nature of LMS makes it competent in being flexible to the situational needs of incorporating multiple platforms. Besides, it also ensures exceptional adaptability, extensive accessibility, security, and all other essentials of internet-based learning in a cost-saving manner. The proceeding section presents the details of important tools of LMS that are feasible to be deployed even as the initial stage of making the educational institutions aligned with technology-based learning [26-27].

2.4.1 Moodle

Moodle is stated to be competent with the educational aspects of social constructionist. The element of social constructivism is affirmed from its free of cost availability, since its adoption objectives need to be the efficient designing of the courses for learners. It is readily available and accessible over the internet, which is licensed by *"GNU Public License"*. On the basis of the objectives of this particular study, it is anticipated that Moodle is going to facilitate the needs of the Iraqi students of higher education in a proficient manner. With respect to its featured elements of providing education to the learners, primarily group-oriented approach is promoted that ultimately involves the element of collaborative prospects [28-29]. The involved personnel and the students are ensured to have active participation that results in establishing online learning communities [28].

On the other side, Moodle is also noted to support the areas of development, business related activities, and even the training needs of the instructors regarding ICT knowledge. Hussain et al [26] has documented that the network of Moodle is competently feasible for the technical aspects of managing the customer base. It has acquired significant support or preference from the instructors due to its easy adaptation with respect to the educational environment that usually varies across different cultures. More specifically, its incessant adoption across the global educational institutions ascertains its credibility of being the most effective and efficient online learning platform [26, 28].

2.4.2 ATutor

ATutor is another tool of LMS that is based on open-source platform of learning. It is developed at the "Inclusive Design Institute", and is licensed under the same prospects of "GNU Public License" as for Moodle. With respect to its featured elements, *ATutor* is referred as being exceptional with its unique characteristics of being accessible with ascertained interoperability. By means of this particular tool, the instructors are regarded as the content managers that are capable of exporting the entire content or material to some other systems or even to an entire new server [30]. Accordingly, its adaptability is highlighted that in turns facilitate the learners in being adaptable to the modified learning processes and the associated activities. Besides, *ATutor* also ensures the user-friendly element of shaping the navigation behavior of the learners that is based on the personal preferences or expectations from the physical appearance of the tool [31]. Consequently, the content managers are supported in dealing with the learning needs of the students, based on their learning abilities and needs as well [30-31].

2.4.3 Sakai

Sakai Foundation develops this particular tool of LMS that has the competence of dealing with the educational needs of the entire domain, including the community, the organisations or the institutions, the instructors and the learners as well. Sakai tends to be promoting the notions of a collaborative platform of learning as CLE "*Collaboration and Learning Environment*". The tool is noted to have the Java support that is recognised from its design feature of being service-oriented. Hussain et al [26] has regarded Sakai as being proficiently reliable, extensible, scalable, and even interoperable; thus, affirming its credibility for being an efficient online learning management system. Identical to other tools and applications of LMS, Sakai also incorporates the content management activities of document distribution, grading, course management, chatting or interacting with other students and teachers, discussion forums, online exams and assignments' management as well. Moreover, the prospect of group-based activities is also integrated within the framework of Sakai. In addition to this, the learners or the potential users are also capable of modifying the appearance of their respective interfaces. As a result, the deployment of this tool within the educational domain of the institutes makes the accomplishment of the objectives of developing an enriched learning environment a success [32].

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2.5. E-learning and TAM

The implications of LMS are based on the use of internet among the targeted consumers, who are potentially the learners or students. If the targeted users were not inclined towards accepting internet usage, particularly for the learning needs, the deployment of LMS would not be a success, regardless of all the efficacies and proficiencies. Therefore, the projected impacts of LMS on the learning behaviour or the preferences of the students need to be assessed. In this regard, the implication of the TAM as the analytical approach of assessing the acceptance of LMS, and the associated behavioural intention of the users is mostly favoured throughout the domain [33].

TAM is having the rationale of being feasible in determining the impacts of the external variables on the behavioural intentions of the users towards the acceptance of technological advancement. For this purpose, the contribution of the attitudes of the users and their beliefs is regarded as considerable with respect to the notion of determining the instrumental effectiveness, particularly in the domain of educational institutes. The asserted dimension of belief is associated with the subjective norms, as the analysis of subjective norms of the individuals or the targeted users reflect the behavioural performance of the users. It entails the prospect of being considerate towards the behaviours and perceptions or expectations of the users from the technological integration within the typical domain of their ease and comfort. A number of studies have supported and recommended the deployment of Tam, while assessing the acceptance of a particular technological integration across the target segment [26, 27, 34, 35].

Cheung, & Vogel, [36] has documented that the assessment of TAM model has acquired increasing trends with the associated increase in the demands of adapting the electronic learning environment. As a result, the integration of the technology within the targeted domains is better assessed in terms of anticipated outcomes. In this regard, its effectiveness has been affirmed by analysing the model of CWAM - "*Course Website Acceptance Model*". The model has examined the relationship in between the elements of "*Perceived Usefulness*", "*Perceived Ease of Use*", and "*Behaviroal Intention to Use*". These dimensions have yielded effective outcomes in terms of determining the impacts of electronic learning and teaching methods [27, 34]. In addition to this, it has also been noted that the attitudes towards perceived usefulness of the typical learning platform of LMS tend to shape the beliefs of the individuals that results in improved levels of learning experiences [26].

The study of Tam, Lam, & Fung, [37] has referred the personnel of the higher educational domain as the learners or potential users of LMS at all the levels. In addition to the integrated benefits of TAM model, there comes another prospect of navigational preferences or attitude of the users [37-38]. Accordingly, the features of the system and the attitude of the learners seem to be the external variables influencing the attainment of effective learning outcomes of LMS. Tarhini, Hone, & Liu, [39], have emphasised that the assessment of behavioural intention of the users is essentially a continuous process, if sustained benefits are aimed with the deployment of LMS within the educational institutions. For that reason, TAM has been ascertained as the most suitable theoretical framework of facilitating the expected efficacies of extended learning activities.

Tam, Lam, & Fung [37-38], have stated that the dimension of *PEOU "Perceived Ease of Use"* has significant importance in determining the projected outcomes of the technological deployment of learning system. In this regard, there have been noted impacts of self-efficacy, and individuals' disposition towards determining the potential acceptance of LMS among the targeted individuals [40]. Consequently, the deployment of electronic learning platforms could be a success, if the personnel are informed with the preferences and capabilities of the targeted users. With respect to the Iraqi educational institutes, this dimension of PEOU is strongly in affirmation, as the self-efficacy of the learners remains a potential constraint in shaping their behavioural intentions towards using LMS [38-40].

Arrifin et al [40] has contended that the element of subjective norms is significantly influential over the performance behaviour of the users. Mohammadi, [41] has also stated the same assertions regarding the importance of subjective norms towards successful deployment and adoption of LMS as the effective e-learning tool. On the contrary, certain conflicting arguments have been observed regarding the inefficacy of subjective norms in determining the success of the learning software. Nonetheless, the use of *SEM - Structural Equation Modelling* has been suggested as the assessing tool of mitigating the potential inconsistencies of the learning tool [39].

Exploring the relevant literature, it has been noted that there a notable gap with respect to the

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analysis of LMS deployment or adoption, particularly in the regions of Iraq. It turns out to be a potential chance for the researcher to contribute in mitigating the noted gap in the literature. For this purpose, the study has developed the research framework based on the model of TAM, to better assist the research domain and the educational institutions as well.

3. THEORETICAL FRAMEWORK

The Technology Acceptance Model (henceforth, TAM) is affirmed to be the mostly adopted framework in the field of Information System for the assessment of technology acceptance [42]. Besides, numerous studies have validated the efficacious contribution of TAM in assessing the responsive behavior of the target segment towards a particular technological deployment [43]. It has been affirmed that the technological benefits are anticipated to be adaptive, if the implications are ensured both at the individual and organisational levels. Undoubtedly, it has been aligned with the increasing adoption of technological measures in all the service sectors, based on the associated benefits of potential competitive advantage. More specifically, it is efficacious in determining the users' attitudes towards a particular technological element that eventually results in regarding the technology deployment as a model or framework of assessing the users' behavioural intention [42-43].

The significance of conceptual or theoretical framework or model is instilled in its credibility of addressing the technology acceptance among the users. Accordingly, it has also been contended that different technological measures of deployment demand different formats of technology models. In this regard, TAM has been the most effective one, with its remarkable element of "*Perceived Usefulness (PU)"*, as it illustrates the potential needs of the enhanced performance of the technology to meet the needs of the users in a useful manner. With respect to the case of LMS deployment and assessing its acceptance among the students, particularly in terms of their respective behaviour towards LMS, significant outcomes are achieved through TAM. In addition to this, the component of *"Perceived Ease of Use-PEOU"*, also facilitates the interpretation of the behavioural intention of the users towards a particular technological deployment. It is favoured by the recent increase in the technological awareness among the young generation; thus, positive impacts are anticipated on the attitudes of students towards the acceptance of LMS as an effective means of e learning. By means of these two components of TAM, the attitudes and the respective intentions of using the implemented technology are depicted in a collective manner [44].

Accordingly, there is a significant impact of the *Theory of Reasoned Action-TRA* in determining the acceptance of LMS among the students of higher educational institutions in Iraq. It has been asserted that the beliefs of the targeted individuals are influential in a significant manner over their attitudes that carry the inclusion of the respective social norms towards accepting the innovative deployment. According to the study of Erasmus, et al [33], it has been asserted that the intentional behaviours of the users are better addressed and shaped accordingly by means of the statements of TRA. It entails the prospects of guiding or even dictating the individuals in terms of their behavioural intentions. Primarily, this theoretical perspective relies on the notions of individuals' capability of decision-making that is mostly referred as being rational. These rational decisions are mostly entailing the outcomes of the continuous efforts of assessing particular technology integration with respect to the innate beliefs; thus, the attitudes of the users are formulated in a respective manner [43-44].

The study of Calisir [45] has affirmed that the behavior of the individuals or the potential users towards a particular technological innovation is determined in terms of identified behavioural intentions of the users. Consequently, the attitudes of the individuals or the users are comprehended towards the use of the particular technological innovation, which incorporates the impacts of certain subjective norms as well. For this purpose, researchers have promoted the implications of an *expectancy-value* model that addresses and analyses the beliefs of the individuals or the targeted users based on their attitudes towards the behavioural intentions [46]. In this regard, the value of expectancy gets multiplied with the belief factor; thus, yielding the overall set of outcomes as the potential attitude of the users.

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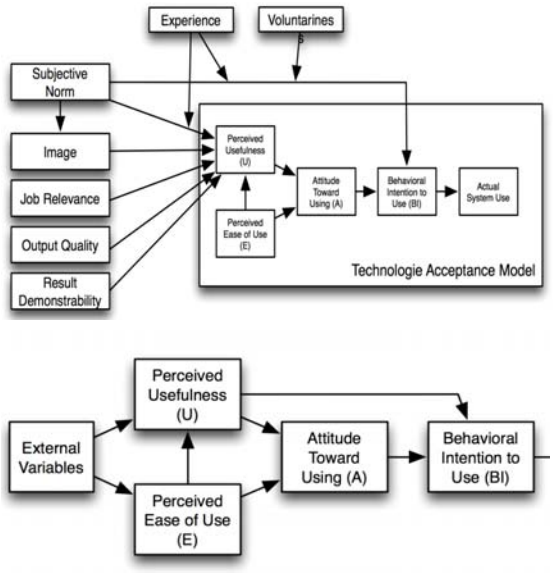

Figure 1: *Technology Acceptance model [44]*

Besides, TAM also entails another considerable construct of perceptions of the individuals towards a particular technological advancement. Perceptions of the users being the subjective norm reflect the potential chances and nature of the users' reaction or response towards the innovative measure of technological deployment. The collective impact of the normative beliefs and motivation of the users tends to illustrate the behavioural intention of the users in a collaborative manner with the subjective norms [40-44]. As a result, the actual behaviour of the individuals or the users (students of the higher educational institutes of Iraq) is determined in a successful manner towards the innovative deployment of technological framework (LMS in this case).

3.1. Iraqi Educational Institutions

The targeted segment for this particular study has been the higher educational domain of Iraq, focusing on the universities and institutions of *University of Baghdad, Diyala University, Kufa University,* and *University of Technology Iraq.* Based on the targeted segment of *Students*, these universities' management personnel were contacted regarding the survey needs of assessing the LMS acceptance of their students. In this regard, the agreement of the universities led to the installation of the survey questionnaire at the respective portals of the students, who were requested to fill-in the questionnaire with their valued responses. Almost 300 responses were anticipated, with 75 valued feedbacks from the four targeted institutions. However, the collected data represented 209 valid responses that could be integrated within the study framework.

3.2. Significance of the Study

It has been intended that the study outcomes would serve the implications of LMS in the educational system of Iraq, expectantly at all the levels. Even though, the study presents outcomes specifically for higher educational institutions, the results are anticipated to be applicable throughout the educational premises, if deployed appropriately. The study results ensure the elements of educational accessibility and availability across all the segments of Iraq. The conditions of Iraq have not been better in terms of both education and economy. However, the improved educational settings would definitely favour the economic development as well, the educational status of the country would increase, making the state recognised at global level.

4. RESEARCH MODEL AND HYPOTHESES

The research model incorporates the application domain of academic users, focusing the students of the selected higher educational institutions of Iraq. In this regard, the integration of TAM as the assessment model has been effectively employed. Numerous studies have louvered the deployment of TAM for assessing the potential success of the technology adoption. However, its effectiveness has been the same for the assessment of already deployed system of technology within a particular domain. In accordance with the TAM model shown in figure 1, 3 core constructs and moderators of TAM have been identified, leading towards the formulation of research hypotheses. The generated hypotheses are listed as:

1. *Perceived Ease of Use - E* positively influences *Perceived Usefulness - PU* for LMS.
2. *Perceived Ease of Use - E* positively influences the *Attitudes towards using- A* LMS.
3. *Perceived Usefulness - PU* positively influences the *Attitude towards use - A* for LMS.
4. *Perceived Usefulness - PU* positively influences the *Behavioral Intention to Use - BI* for LMS.

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5. *Attitude towards using LMS - A* positively influences the *Behavioral Intention to Use - BI*.

5. RESEARCH METHOD

The particular study has employed quantitative research approach by means on conducting online survey across the target population. Online surveys are affirmed to facilitate the researcher in terms of being time-saving, and cost-effective as well, since the concerns of geographical accessibility are mitigated [47]. Besides, surveys are beneficial in terms of making the unique subjects accessible. Moreover, the typical concerns of approaching the participants of both the gender are also managed, as certain cultures do not support ease in accessing the female participates, as in the case of this particular study.

5.1. Questionnaire

In order to govern the credibility of the research outcomes, the formulated questionnaire is considerably focused on the core constructs of TAM, adopted from multiple relevant studies [48]. Undoubtedly, the researcher has modified the content based on the relevance and specificity of the study objectives. Most importantly, the designed questionnaire was analysed in terms of language and certain wordiness issues through the assistance of two English speakers. Afterwards, the questionnaire was then translated into Arabic language as well, based on the native language of the students of Iraq. Finally, even this Arabic-translated questionnaire was reviewed with respect to the chances of errors.

5.2. Research Participants

The participants of the research have been the students of the selected four universities (75 students from each). The participants were ensured to have experience with the use of LMS. Nonetheless, only 209 responses were regarded as the effective ones.

5.3. Sampling Technique

The collection of data or responses from the entire population is not possible due to several constraints of time and others. Sampling is essential for potentially drawing the representative responses from a given population [49]. Similar has been practiced within this study, as four universities have been indentified in order to access the higher education students of the respective universities. Based on the issues of geographical accessibility, convenience sampling was used, based on its affirmed credibility in dealing with the acceptance of technology. Moreover, the collection of data has been ensured within a short interval of time due to this particular technique.

5.4. Research Instrument

The questionnaire comprised of two sections, including the section of demographic details and the section of TAM-based response questions towards LMS experiences or preferences. The second section was based on Likert's Five-point scaling; where 1 represents Strongly Agree, 2 represents Agree, 3 represents Neutral, 4 represents Disagree, and 5 represents Strongly Disagree responses.

5.5. Demographic Details

The demographically inquired details included gender and age-group of the participants. Besides, it was pre-planned that the participants would be the students only.

5.6. TAM Constructs

Based on the constructs of TAM, the designed questionnaire is presented in the section below:

5.6.1 Demographic section

Gender:
- Male
- Female

Age Group:
- 18 - 22 years
- 23 - 37 years
- 28 or more

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5.6.2 TAM-based Response Questions

Perceived Ease of Use - E
1. I consider LMS clear and simple
2. The interaction with LMS is understandable
3. The operations related to LMS are easy for me
4. LMS is flexible to operate
5. It is easy to attain skills related to LMS

Perceived Usefulness - PU
1. I perceive LMS beneficial for my tasks
2. LMS improves my performance
3. LMS improves my productivity
4. LMS enables me to complete tasks quickly

Behavioral Intention to Use - BI
1. LMS is considered as a positive idea
2. I admire the intelligence of LMS
3. LMS provides me a favorable understanding

Attitude towards Use - A
1. I plan to use LMS in the aftertime
2. I plan to learn LMS is future

5.7. Data Collection

The questionnaire was integrated within the web portals of the students at the four selected universities/institutions of Iraq. It was accessible during the academic year 2016-2017, for 15 days of March 2017. The survey had the option of selecting the language form English and Arabic as well. Table below represents the anticipated and acquired details as the collected data from the universities of Iraq.

Table 2: Responders statistics from the selected universities/ institutions of Iraq

Higher Education Universities/Institutions	Expected number of Responses	Selected Reponses (appropriate for the study)
University of Baghdad	75	60
Diyala University	75	46
Kufa University	75	53
University of Technology Iraq	75	50
Total	300`	209

It is noted that only 209 participants from the targeted 300 sampled individuals gave the valid responses, yielding the response rate of 69.66%.

5.8. Validity of the Study

Since the credibility of study outcomes are dependent on the survey responses, the researcher has ensured the internal validity of the study to the maximum possible extent. In this regard, the survey was designed carefully, in terms of avoiding all possible measurement errors. Extensive research across the relevant study context was carried out, before designing the survey. Moreover, pilot testing of the constructed survey was also carried out, by taking reviews of different researchers/experts; thus, the employed survey was in its refined form.

5.9. Ethical Issues

Ethical aspects were considerably managed throughout the research process. The participants were ensured with respect to their needs of confidentiality of their personal information. Prior to the collection of data, the objectives of the study were adequately informed all across the targeted domain. The significance of participants' genuine and valued responses was communicated, and the participants were given the right to withdraw from the survey as well. As a result, the entire study has governed the element of credibility and authenticity with respect to the outcomes achieved.

6. DATA ANALYSIS AND RESULTS

6.1. Demographics

The demographic details of the survey responses reflect that there were almost 60 percent male participants (125) and 40 percent female participants (84), who had contributed to the study (Table 3). Besides, the results also reflect that majority of the participants (almost 54 percent) were from the age group of 23-27 years, being enrolled in the higher education levels. Additionally, 35 percent of the participants were aged of 28 or more years, while almost 12 percent

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of the participants belonged to the age group of 18-22 years of age (Table 3).

Table 3: Gender and Age group details

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	125	59.8	59.8	59.8
	Female	84	40.2	40.2	100.0
	Total	209	100.0	100.0	

Age Group					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18 - 22	24	11.5	11.5	11.5
	23 - 27	112	53.6	53.6	65.1
	28 or more	73	34.9	34.9	100.0
	Total	209	100.0	100.0	

6.2. Validity and Reliability

Besides the validity tests of reviewing the research instrument by native English and Arabic speakers in a perspective manner, the reliability of the instrument has also been assessed through *Cronbach's Alpha*, which has determined the internal consistency of the different identified variables as the constructs of TAM.

E- ***Perceived Ease of Use***

Table 4: Perceived Ease of Use

Reliability Statistics	
Cronbach's Alpha	N of Items
.928	5

A- ***Attitude towards Use***

Table 5:Attitude towards Use

Reliability Statistics	
Cronbach's Alpha	N of Items
.656	3

PU- ***Perceived Usefulness***

Table 6: Perceived Usefulness

Reliability Statistics	
Cronbach's Alpha	N of Items
.656	3

BI- ***Behavioral Intention***

Table 7: Behavioral Intention

Reliability Statistics	
Cronbach's Alpha	N of Items
.525	2

Observing the *Cronbach's Alpha* values for the four variables of E, A, PU, and BI form the tables above, it is affirmed that the construct of Perceived Ease of Use - E has comparatively high internal consistency with the value of 0.928 being quite closer to 1 (Table 4). Likewise, the dimensions of Attitude towards use - A, and Perceived Usefulness - PU are also observed to have significant internal consistency with value 0.656 for both the aspects (Table 5 & 6). Furthermore, the attribute of Behavioral Intention - BI is also having significant internal consistency with its value of 0.525 (Table 7).

6.3. Statistical Analysis in relation to the Constructs of TAM

Based on the objectives of assessing the attitudes of the students towards the technological learning platform of LMS through the deployment of TAM model, the study has adopted the statistical analytical techniques of Factor Analysis, Correlation, ANOVA, and Regression analysis.

6.3.1 Factor Analysis

By means of factor analysis, the measured datasets are reduced into specific and the most relevant constructs, meeting the objectives of the study. Using the *Principal Component Analysis* (PCA), the test of KMO and Barlett's has resulted the feasibility of factor analysis and the appropriateness of sampling as well. With KMO value greater than 0.6 (0.777 in this case), the sampling is affirmed to be appropriate.

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Additionally, the significant value less than 0.01 (0.00 in this case) validates the existence of correlation in between the variables benign assessed (Table 8).

Table 8: KMO and Barlett's value

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.777
Bartlett's Test of Sphericity	Approx. Chi-Square	1231.385
	df	91
	Sig.	.000

Besides, the researcher has employed the *Varimax method of rotation* for generating the below mentioned table of rotated component matrix. Accordingly, five iterations have been observed in rotation (Table 9).

Table 9: Rotated Component Matrix

Rotated Component Matrix[a]				
	Component			
	1	*2*	*3*	*4*
I consider LMS clear and simple	.876			
The interaction with LMS is understandable	.862			
The operations related to LMS are easy for me	.867			
LMS is flexible to operate	.910			
It is easy to attain skills related to LMS	.894			
I perceive LMS beneficial for my tasks		.710		
LMS improves my performance		.681		
LMS improves my productivity		.806		
LMS enables me to complete tasks quickly		.566		
LMS is considered as a positive idea			.860	
I admire the intelligence of LMS			.667	
LMS provides me a favourable understanding			.690	
I plan to use LMS in the aftertime				.637
I plan to learn LMS is future				.817
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.				
a. Rotation converged in 5 iterations.				

6.3.2 Correlations

After validating the internal consistency of the variables, and affirming the presence of correlation in between the identified variables, the researcher has evaluated the correlations as represented in table 10. Observing the significant values of the constructs of TAM, it is governed that the relationship in between the observed variables is significant (Table 10).

Table 10: Correlations

Correlations					
		E	*A*	*PU*	*BI*
Perceived Ease of Use	Pearson Correlation	1	.215**	.140*	.157*
	Sig. (2-tailed)		.002	.043	.024
	N	208	208	208	208
Attitude towards Usage	Pearson Correlation	.215**	1	.382**	.180**
	Sig. (2-tailed)	.002		.000	.009
	N	20	20	20	20

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		8	9	9	9
Perceived Usefulness	Pearson Correlation	.140*	.382**	1	.203**
	Sig. (2-tailed)	.043	.000		.003
	N	208	209	209	209
Behavioural Intention to Use	Pearson Correlation	.157*	.180**	.203**	1
	Sig. (2-tailed)	.024	.009	.003	
	N	208	209	209	209
**. Correlation is significant at the 0.01 level (2-tailed).					
*. Correlation is significant at the 0.05 level (2-tailed).					

6.3.3 Regression

With respect to the validation of hypotheses, the researcher has carried out regression analysis. The significant values reflect that the hypotheses are validated, in terms of ensuring the implications of TAM in determining the acceptance of LMS among the users.

Table 11: Regression Analysis

Model Summary				
Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	.415[a]	.173	.165	.82954
a. Predictors: (Constant), Perceived Usefulness, Perceived Ease of Use				

Table 12:ANOVA

ANOVA[a]						
Model		*Sum of Squares*	*df*	*Mean Square*	*F*	*Sig.*
1	Regression	29.425	2	14.713	21.380	.000[b]
	Residual	141.069	205	.688		
	Total	170.494	207			
a. Dependent Variable: Attitude towards Usage						
b. Predictors: (Constant), Perceived Usefulness, Perceived Ease of Use						

Table 13:Coefficents

Coefficients[a]						
Model		*Unstandardized Coefficients*		*Standardized Coefficients*	*t*	*Sig.*
		B	*Std. Error*	*Beta*		
1	(Constant)	1.176	.438		2.684	.008
	Perceived Ease of Use	.107	.042	.165	2.571	.011
	Perceived Usefulness	.542	.097	.359	5.592	.000
a. Dependent Variable: Attitude towards Usage						

Table 14:Model Summary

Model Summary				
Model	*R*	*R Square*	*Adjusted R Square*	*Std. Error of the Estimate*
1	.242[a]	.059	.049	.76065
a. Predictors: (Constant), Perceived Usefulness, Perceived Ease of Use				

Table 15:ANOVA

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ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	7.388	2	3.694	6.385	.002[b]
	Residual	118.611	205	.579		
	Total	125.999	207			
a. Dependent Variable: Behavioural Intention to Use						
b. Predictors: (Constant), Perceived Usefulness, Perceived Ease of Use						

Table 16:Coefficents

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2.973	.402		7.400	.000
	Perceived Ease of Use	.073	.038	.131	1.907	.058
	Perceived Usefulness	.242	.089	.186	2.724	.007
a. Dependent Variable: Behavioural Intention to Use						

7. DISCUSSION

The current study has employed the model of TAM in relation to the assessment of students' attitudes towards the adoption of LMS as the learning mode. The overall findings of the study are observed to have affirmation with the genuine model of TAM [26]. It has been established that all the hypotheses have positive amount of correlations in between the variables of TAM; thus, asserting the statistical significance. Accordingly, it has also been established that the increasing rate of perceived ease of use among the users eventually results in increasing the perceived usefulness as well. Consequently, the attitudes of the users are also improvingly positive towards LMS. More specifically, the contribution of the participants in terms of gender represent that no notable difference in perceptions or attitudes has been affirmed in both the genders. Likewise, the age group also has not affected the results in any way, as the participants were strictly students of the higher education institutions.

It has also been affirmed that the countries across the globe have been striving to acquire the significant position among the technologically revolutionised states of the world. Significant growth statistics have been noted within the educational domain, since the educational growth level eventually leads the country to development level. The approach of making the entire learning domain to be internet-based has been affirmed to be efficacious in making the educational opportunities to be accessible throughout the society, since the geographical constraints of accessing the institutions are all mitigated. Besides, the element of making the learning system appealing for the learners is also ensured within the framework of such learning management systems. Furthermore, the deployment of TAM for assessing the existing systems' adequacy to meet the learner needs, along with the recognition of further enhancements or improvements has been another positive element of LMS.

8. CONCLUSION AND IMPLICATIONS

The study has employed the modified form of TAM model in order to assess the attitudinal behavior of the students of Iraqi Higher Education towards the use of LMS - Learning Management System as the educational platform. In this regard, the core constructs of the model of TAM have been used as the identified variables, including Perceived Ease of Use - E, Perceived Usefulness -PU, Attitude towards use - A, and Behavioral intention - BI. Accordingly, the study has led to the conclusion that there exists a significant association in between the variables under consideration. The standings of Iraqi Higher Education are noted to be significantly improved with respect to the past statistics. Besides, the study also affirms the credibility of TAM model in facilitating the assessment criteria for diverse technological deployments.

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Consequently, the implications of this particular study are aligned with the efficacious performance outcomes of TAM constructs. Besides, it is also acknowledged that this model yields equal benefits, regardless of its deployment as pre- or post-impacts of the technological deployment. Most importantly, the research findings are going to facilitate the management of the higher education institutions of Iraq.

8.1. Research Limitations and Future Work

The study has sampled selective universities of Iraq for the collection of primary datasets. Even though, the research sample has been limited to four universities, it could be a potential direction for future researchers to collect data from more universities; thus, the generalization of the results would be more feasible.

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