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INTERNAL AND EXTERNAL BARRIERS INFLUENCING LMS IMPLEMENTATION IN IRAQI HIGHER EDUCATION

Mustafa Radif [1], Dr. IP-shing Fan[1], Dr. Patrick McLaughln

[1]Cranfield University

Abstract

Successful implementation of Learning Management System (LMS) can significantly improve the quality and quantity of education. Both the technological and people infrastructure need to be in place to achieve LMS success. Iraq is recovering from the recent wars and still faces serious security challenges. LMS could remove the time and geographic constraints of attending universities and bring education to more students, accelerating the re-skilling of the country. However, the Iraqi situation imposes specific context factors that are different from LMS implementation in developed countries. The aim of this paper is to identify the most important internal and external barriers in adopting LMS as a higher education initiative in Iraq, using the University of Al-Qadisiyah as the case organisation. The primary data collection targets are the IT staff, faculty and academic department heads because they are the key stakeholders to deliver the pedagogical and technological collaboration needed in successful LMS. There are 90 participants in the survey.

The significant barriers to LMS implementation identified are: Lack of or limited teachers' training; lack of commitment to constructivist pedagogy; lack of experience to use the technology; lack of technical support; lack of pedagogical training for teachers; and lack of appropriate educational software. Most important at this time is ICT skills development and ICT training provision for teachers.

The correlation of these factors to the Iraqi context is discussed in the paper. The result is used to develop a framework on the internal and external barriers. This helps academic staff and IT staff to develop the teaching-learning style and achieve an effective adoption of LMS in all higher learning institutions in Iraq.

Keywords: LMS Learning Management system

1. INTRODUCTION

The origin of learning management system (LMS) is found in the use of computer technologies in education practice as a result of information revolution. LMS is a full-scale learning platform that supports numerous aspects of educational process [1] (Kats, 2013). It provides education certain classification capabilities in delivering online courses. LMS can be generally defined as a software tool aimed to manage educational resources stored in a repository so that such resources could be delivered to users in a controlled learning environment [2](Lerma, 2007). It is generally referred to as software adopted to tackle certain functions in the academic sphere, including class management, document tracking, report generation, and online courses delivery [3](Nelson and Staggers, 2014).

Several higher education institutions in the world are adopting and implementing an online learning platform to aid teachers and keep up with the advancing technology, and the most popular of which is LMS. There is presently a very marginal contribution that e-learning LMS provides to higher education institutions, and the main challenges include building awareness and providing the needed services to all faculties that integrate several systems [4](Liberona and Fuenzalida, 2014).

In order to reduce the digital divide, ICT adoption in education is being sought as a forefront amongst Arab countries, which likewise pursue strong national initiatives and implementation of e-learning solutions. Iraq currently adopts limited usage of ICT in education [5](Abdallah and Albadri, 2011). Nevertheless, ICT plays an important role in improving its education system and quality of learning. Currently, it has adopted a programme called 'ICT (information communication technology) in Education for Iraq', which purports to integrate ICT in education towards the 'continuing quality improvement of teaching and learning' [6] (Cohen, 2012: 156). This is expected to further lead to revitalisation of education system and improvement in the quality of education and training in the country [6](Cohen, 2012).

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Further, higher education in Iraq has greatly influenced Iraqi society as a whole through policy making and is considered one of the pillars of the basis of its modern society. Yet, this sector has been gradually impoverished because of UN sanctions and total embargo that the country experienced, in which abolition of intellectual dynamism and independency were likewise experienced [7](Elameer and Idrus, 2011).

In 1974, primary, secondary, and higher education became free in Iraq. However, neglect and rampant looting after the downfall of the Saddam Hussein rule led to the deterioration of the country's educational system. The sanctions made on Iraq in the 1990s and 2000s also contributed to this deterioration. Schools were utilised as ammunition storage by government forces; repairs were required in thousands of schools; and higher education institutions became severely damaged by under-investment and rampant looting. In the periods 2003 and 2008, reported attacks on Iraqi educational institutions reached more than 31,500 [8](UNESCO Institute for Statistics, 2010). Academics and students in higher education became targets of violence, resulting in them fleeing to other countries to find safety [9](UNESCO Iraq Office, 2014).

After April 2003, an increase in demand for all types of higher education courses was experienced in Iraq as an outcome of its social development process. The current higher education sector is driven by new technology and conviction to remove all limitations, promote innovation, and uphold student-centredness in all areas of the teaching-learning process. The emergence of the e-learning concept in the country is espoused by the combined use of learning and technology that is expected to provide high quality education for all [10](Radif et al., 2014).

Addressing specific barriers to teaching and learning has been the goal of higher education sector in Iraq in identifying technology integration strategies [11](Dell and Hakeem, 2012). Despite the numerous usage of learning management system, several barriers preventing its full adoption in higher education in Iraq have been identified. Some of these barriers are lack of ICT knowledge; lack of support from teachers and post-secondary level; teaching styles; and technical competency of students [12](Nasser et al., 2011).

2. BARRIERS TO ADOPTING LMS IN IRAQI HIGHER EDUCATION SECTOR

The study of [13]Garrote (2012) examined the barriers to a broader adoption of a LMS and identified the reasons for the seldom use of some LMS tools in the midst of assertions of the importance of interaction and collaboration through LMS to improve students' performance. The study conducted an interview with 17 lecturers in 2006 and 2011 and did not indicate any significant changes in their attitude in terms of LMS adoption. Their use of LMS was recorded to be for the purposes of course administration and document distribution. The study analysed the apparent hesitation amongst lecturers to use interactive features by emphasising expected effects on the work situation. The author argued that the primary barrier to a broader LMS adoption and use is the fear amongst lecturers that adoption might place additional demands on their time. Garrote's (2012) study is apparently related to the current research as it tackled a range of issues associated with LMS's barriers in implementation.

Similarly, a university in Ghana deployed a web-based LMS that remained largely unutilised by instructors, in which the university's management took over. The university aimed to increase access to its educational resources by using ICTs. With due acknowledgment of the pivotal role played by instructors in this goal, they were given training, motivation, and appropriate resources to prepare and enable them toward effective use of LMS in course delivery. After five years however, most instructors remained hesitant in utilising LMS software. One suggested approach was engaging all instructors in participatory activities designed to identify and tackle the challenges connected to LMS adoption. [14]Asunka's (2013) study is different from that of [13]Garrote's (2012) in such a way that the former identified fear with additional demands on lecturers' time as a barrier to LMS integration, whilst the latter identified hesitation to utilise LMS software, which could be traced back to lack of skills or LMS-related training activities amongst the teachers in the study. Garrote's study is certainly relevant to this research as it pointed out a significant barrier to LMS implementation in higher education.

The direction of discussion of [15]Tahseen Consulting Ltd. (2012) is however different from those of Garrote (2012)[13] and Asunka (2013) 1[14]as Tahseen[15] Consulting was focused on the dissatisfaction of Arab educators with their LMS interaction, from which barriers to LMS implementation could be found. Arab educators were generally dissatisfied with their LMS interaction,

but such dissatisfaction was particularly high in the Levant region (Cyprus, Israel, Jordan, Turkey, Lebanon, and Palestine). The study indicated that 24 per cent of Arab educators reported daily interaction using LMS but those in the Gulf and North Africa tended to report using the same system several times a week or daily. Higher education institutions with a student population of 500 or more reported more frequent interaction with LMS, but those institutions with more than 10,000 students were likely to have lower frequency of LMS use. This scenario presents a situation whereby LMS is not fully utilised to its optimum level to be able to provide the best benefits to Arab educators. The barrier to its full implementation is therefore the infrequent and insufficient use of its tools. The relevance of this work to the current research is its focus on the extent of LMS utilisation in higher education to find out its limitations and barriers to thereby construct a policy framework that facilitates effective and efficient LMS utilisation in Iraqi universities, which is of important consideration to this research report.

The previous work is parallel to that of [16]Palahicky (2014), which also identified some barriers preventing teachers from using LMS tools, including 'lack of teachers' training, lack of commitment to constructivist pedagogy, lack of experience to use the technology, lack of technical support, and tendency to utilise traditional approaches and teaching styles' [16](Palahicky, 2014 : 28). The barriers were classified as internal and external, and the internal ones were identified as pedagogy, attitudes, and teaching styles. On the other hand, the external barriers were pointed out as lack of training, lack of time (also mentioned by [16] earlier), and administration support. In order to facilitate an effective use of LMS tools, instructors must obtain the needed expertise for technology utilisation, which is equivalent to experience and training. An example of this is learning definite skills to design the differentiated release of quiz and test results to facilitate feedback for students' academic performances. [16]Palahicky's (2014) study is useful to this research as it clarifies several barriers to LMS implementation as well as a corresponding measure that could be adopted in order to facilitate an effective use of LMS tools.

Additionally,[17] Mirza and Al-Abdulkareem (2011) stated that the Middle East situation of making parents accept and adapt to the e-learning concept is still in the early phase. Various success levels in this regard have been achieved by different universities within each country in which they identified barriers to implementation.

In [18]Buabeng-Andoh's (2012) study, the barriers to LMS implementation were identified as the following: Lack of ICT skills and confidence amongst instructors; lack of pedagogical training for teachers; lack of appropriate educational software; limited ICT access; and rigid structure of traditional school systems. Notice that some of these barriers were also identified by [13]Garrote (2012);[14] Asunka (2013); and [16]Palahicky (2014). According to [19]Munkvoid (1999), Iraq is hindered by financial constraints in its adoption of new technologies in the educational sector, including higher education. [19]Munkvoid also agreed with [10]Radif et al. (2014) in terms of the lack of needed infrastructures and technologies for enforcing new ICT approaches, including LMS. Mukvoid's study was focused on the barriers to LMS implementation, and identified these as resistance from organisational units, lack of incentives, and technological incompatibility. [20]Rivard and Lapointe (2012) added user resistance as a barrier that serves as a crucial issue during ICT adoption, and which must be necessarily tackled without regard to the nature of resistance.

In the same manner, [21]Eriksson (2010) claimed that the lack of functional central governance in Iraq serves as a hindrance to its sustainability of information management systems for coordination and standardisation of data collection and analysis in pre-MIS adoption. Governance continuity also lacks time and effort in terms of required transition of technology. The author identified the importance of responding to complexity in the face of administrative interface. Certainly,[21] Eriksson (2010) focused on the internal aspect of technology adoption and lack of governance continuity as a key factor for the several inadequacies encountered in LMS implementation.

The figure below shows the internal and external barriers in adopting LMS in Iraqi higher education sector:

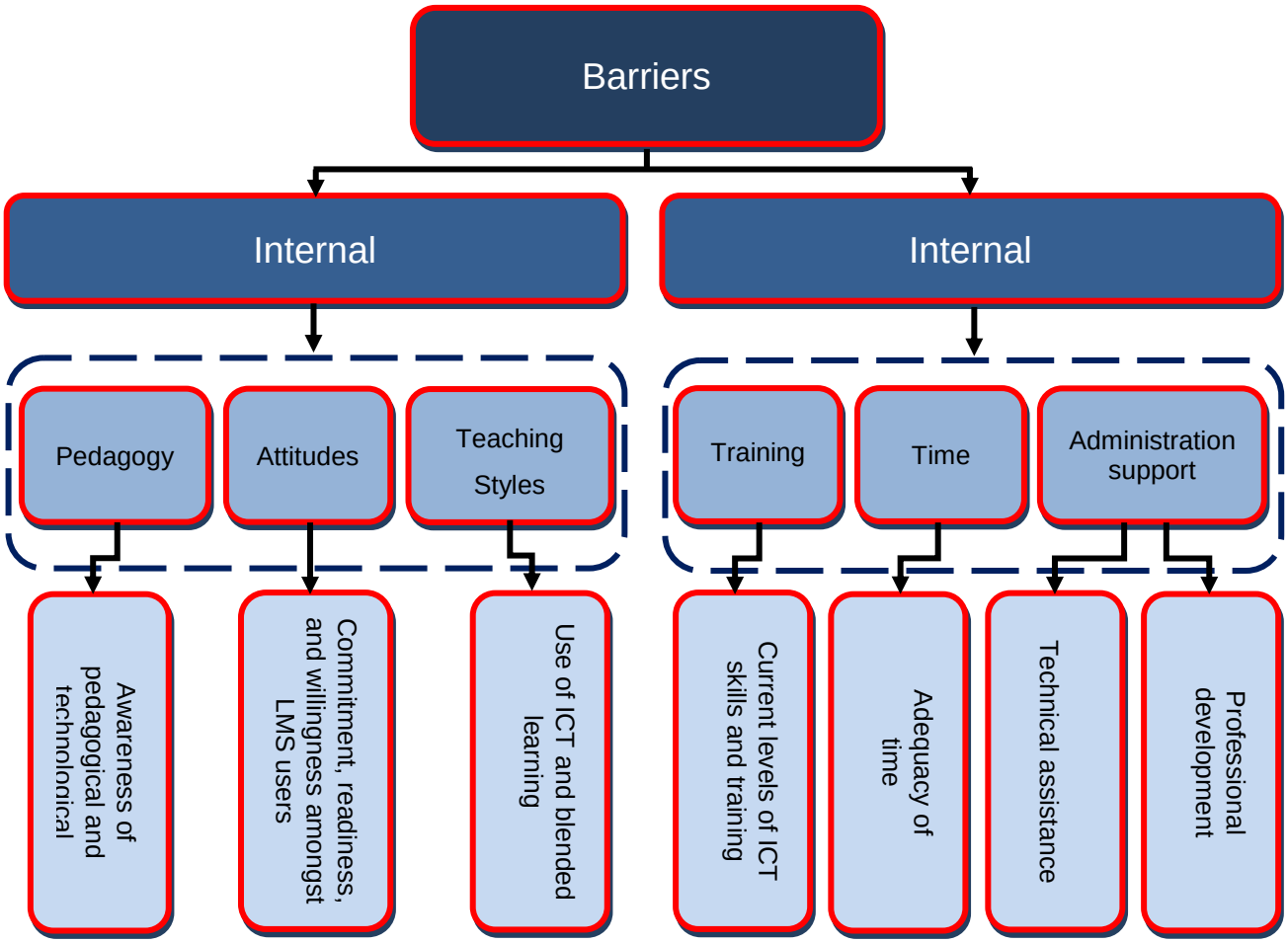


Figure (1): Iinternal and external barriers in adopting LMS in Iraqi higher education sector

3. THE RESEARCH AIM

The primary objective of this work is to identify the most important national and external barriers in adopting LMS as a higher education enterprise in Iraq. This will assist Academic staff to attain the optimal use of LMS tools.

4. RESEARCH DESIGN

The author adopts interpretivism, allowing for the creation of subjective meanings to be created which are related to the actors. The reason why this research holds that the interpretive paradigm is the most appropriate paradigm to address the research questions is because of its emphasis on discovering potential problems faced by the stakeholders in LMS integration in higher education in Iraq. The current Iraqi situation has its unique context and the practical outcome has to be based on the current situation. The appropriateness of this approach rests in the idea that the research is conducted based on the subjects' own perceptions and interpretations rather than on a pre-given theory or hypotheses.

To supplement this, the author adopts a quantitative methods design. The quantitative research design is one in which a specific phenomenon is explained through the collection of numerical data and the likewise analysis of these data using statistical methods [22](Mujis, 2011). The quantitative method allows the presentation of data in a numerical form alongside using mathematically based methods. It also involves devising research instruments in which non-quantitative phenomena are transformed into quantitative ones, capable to be analyzed statistically, with results also capable to be summarized statistically [23](Lodico et al., 2010).The use of survey method is justified by its appropriateness to determining the extent of existing ICT skills, ICT-related training, commitment, and readiness of academic and IT staff in LMS integration. The Ninety survey respondents are involved in

data collection using the survey method. Meanwhile, the secondary data thus collected are those from books, academic journals, and relevant online resources.

The complementary nature of the data collected is significant as it provides a more detailed understanding of the subject matter but also provides a more analytical and in-depth approach that allows us to address the issues related to LMS integration and implementation from the point of view of those agents (academic and IT staff) who are most affected in their job tasks. The justification for using both primary and secondary data is their increased propensity to address the research question in a more closely relevant manner, since not only does the study rely on existing literature on the subject of LMS integration, but it also employs direct and immediate enquiry of the research problem through survey methods, which can enable reflection of views, attitudes, and judgments of actual academic and IT staff on LMS integration in Al-Qadisiyah University in Iraq.

This is the case for example through the use of case studies which enable not only a more in-depth analysis and examination but also allows for a developmental or historical observation of the subject matter and thereby for the conclusion and reflection on recurring practices, norms, or points of significance.

Sampling follows a stratified, in other words stratified sampling was used for the selection of survey respondents identifying common characteristics of the respondents, that is, academic and IT staff of a chosen university. The research follows a thematic analysis method, which means that it draws and identifies from the main observations, themes, and ideas that appear within the data in order to reach its conclusions. The research is conducted only in relation to higher education in Iraq and concentrates only on one institution, namely the Al-Qadisiyah University, which may be considered as limitations of the current research along with a third possible limitation that, while it identifies potential issues and obstacles in relation to the implementation and integration of LMS, it is not concerned with problems that may derive from such implementation in respect to the students.

5. RESULTS AND ANALYSIS

Data from the survey is presented in this section. Charts, graphs, and tables are used to present the views of respondents in the survey. Cross-tabulations are also conducted to compare categorical data. Cross-tabulations compare two variables to see the relationship between them.

Respondents' Profile

Questions	participants' answers					Grand total
Your current role in your university	Teaching	IT-realated		Administrative		90
	59(66%)	**18**(20%)		**13**(14%)		
Your length of stay in your current organisation	Under 5y	5-10y	11-15y	Over 15y		90
	45(51%)	**29**(32%)	11(12%)	**5**(5%)		
Your gender	Male			Female		90
	61(68%)			**29**(32%)		
Your age	25-34y	35-44y	45-54y	55y and above	Below 25y	90
	37(41%)	**28**(31%)	**17**(19%)	**8**(9%)	**0**	

Table (1): Demographic Information

Barriers to Implementation

The respondents identified the barriers to the implementation of LMS adoption, and the most number of responses went to 'lack of needed ICT skills' (82 respondents). Next to this was lack of needed skills and knowledge (79 respondents). Lack of funds gathered 70 responses; lack of time received 67; lack of persistence had 33; and lack of commitment had 32.

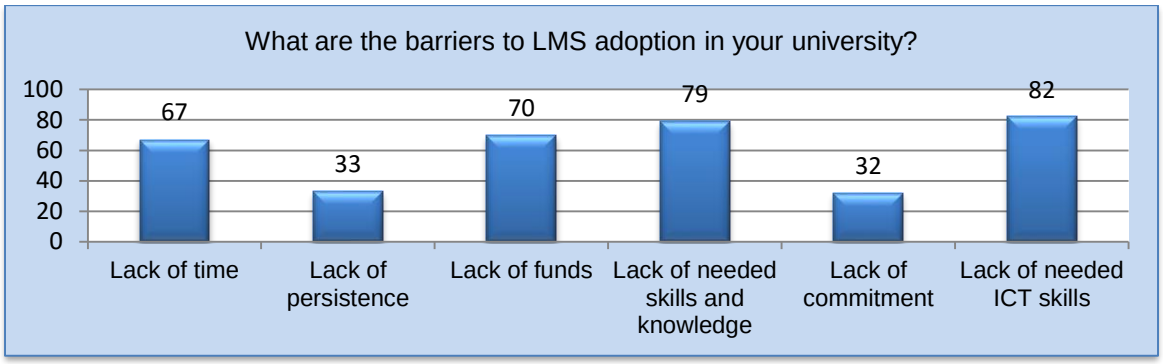


Figure (2): Perceived barriers to LMS adoption

Fifty-five percent perceived that the university was fairly persistent in addressing the barriers. There were 30 percent who believed that it was very persistent. Only 12 percent posited that it was hardly persistent.

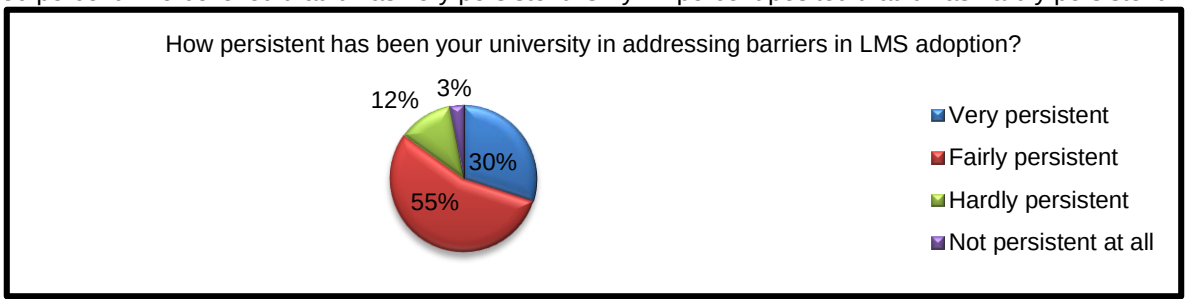


Figure (3): Perceived persistence of the university in addressing the barriers

Further, in terms of respondents' perceived persistence of the university to address barriers, it was found that all of the IT personnel in the study believed that the university had been 'very persistent'. Additionally, 69.23 percent of administrative people in the study expressed that the university had been very persistent as well. Conversely, 77.97 percent of teachers and 23.08 percent of administrative people said that the university had been fairly persistent in addressing these barriers. Only 7.69 percent of administrative people and 16.95 percent of teachers marked it 'hardly persistent'. The grand total in the left shows 54.44 percent that stated 'fairly persistent' (administrative = 23 percent; teaching =77.97 percent); 12.22 percent who ticked 'hardly persistent' (administrative = 7.69 percent; teaching = 16.95 percent); 3.33 percent who ticked 'not persistent' (5.08 percent of teachers); and 30 percent who denoted 'very persistent' (69.23 percent of the administrative people).

Addressing barriers in LMS	Position in the university			
	Administrative	IT-related	Teaching	Grand Total
Fairly persistent	23.08 %	0.00 %	77.97 %	54.44 %
Hardly persistent	7.69 %	0.00 %	16.95 %	12.22 %
Not persistent at all	0.00 %	0.00 %	5.08 %	3.33 %
Very persistent	69.23	100.00 %	0.00 %	30.00 %
Grand Total	100.00 %	100.00 %	100.00 %	100.00 %

Table (2): Respondents' current role in the university vs. perceived persistence of the university to address barriers

Training and Technical Assistance

There were 37 percent who marked their current levels of ICT skills 'average.' Thirty-two percent considered their levels of these skills as 'good.' Nineteen percent believed that they had 'poor' skills in this area, and 12 percent considered that their current levels were 'very good'.

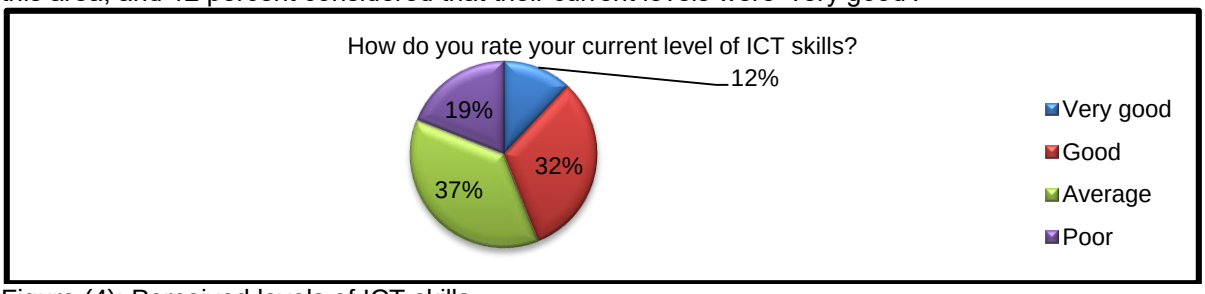


Figure (4): Perceived levels of ICT skills

The categorical cross tabulation in Table 7 shows that those with perceived average level of ICT skills were administrative people (15.38 percent) and teachers (52.24 percent). There were 84.62 percent of administrative people as well as 38.89 percent of IT personnel and 18.64 percent of teachers who perceived having good ICT skills. Only teachers (28.82 percent of them) felt that their level of ICT skills is poor whilst only IT personnel (61.11 percent) felt having a very good level. The grand total in the left shows that the 15.38 percent administrative people and the 52.54 percent teachers comprised 36.67 of the total responses of those who had an average level; and 32-22 percent comprised those with a good level (administrative people =84.62 percent; IT personnel = 38.89 percent; teachers =18.64 percent). Moreover, the 18.89 percent under "Poor" level of ICT skills were the teachers (28.81 percent), and the overall 12.22 percent under "Very good" were in fact 61.11 percent of IT personnel.

Current levels of ICT skills	Position in the university			
	Administrative	IT-related	Teaching	Grand Total
Average	15.38 %	0.00 %	52.54 %	36.67 %
Good	84.62 %	38.89 %	18.64 %	32.22 %
Poor	0.00 %	0.00 %	28.81 %	18.89 %
Very good	0.00 %	61.11 %	0.00 %	12.22 %
Grand Total	100.00 %	100.00 %	100.00 %	100.00 %

Table (3): Respondents' current role in the university vs. perceived levels of ICT skills

Respondents rated their current levels of ICT training. Forty-seven percent indicated having an average level. Thirty-one percent marked 'good'; 12 percent marked 'very good', and 10 percent marked 'poor'.

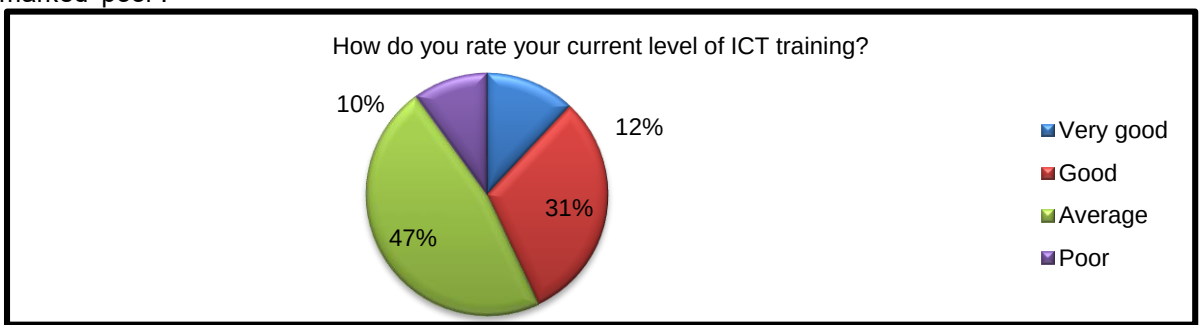


Figure (5): Perceived current levels of ICT training

When cross-tabulated, it was revealed that only the teachers had a perceived average level of ICT training (71.19 percent), and only they had likewise perceived having a poor level of such training (15.25 percent). All of the administrative people felt that their level of ICT training was good, whilst 38.89 percent of the IT personnel and 13.56 percent of the teachers perceived having a good level. Only the IT personnel perceived that their level of ICT training was very good. The grand total shows the total frequency distribution of respondents' levels of ICT training vis-à-vis their roles in the university. See Table 8:

Levels of ICT training	Position in the university			
	Administrative	IT-related	Teaching	Grand Total
Average	0.00 %	0.00 %	71.19 %	46.67 %
Good	100.00 %	38.89 %	13.56 %	31.11 %
Poor	0.00 %	0.00 %	15.25 %	10.00 %
Very good	0.00 %	61.11 %	0.00 %	12.22 %
Grand Total	100.00 %	100.00 %	100.00 %	100.00 %

Table (4): Respondents' current role in the university vs. perceived level of ICT training

Fifty percent of respondents gave a fair rating of their institution's provision of technical assistance to strengthen LMS. Thirty percent, on the other hand, rated it 'good.' Thirteen percent and 7 percent assessed such provision as 'poor' and 'excellent' respectively.

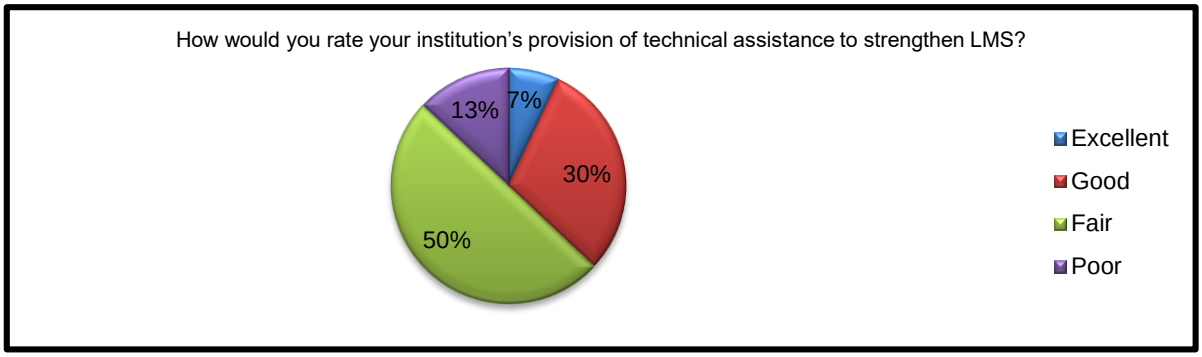


Figure (6): Respondents' rating of their institution's provision of technical assistance

Forty-three percent of respondents indicated a fair level of support provided by their university administration in pedagogical-technological collaboration. There were 31 percent who perceived a 'good' level of support and 20 percent who perceived that such support was 'very good'. Only 6 percent perceived that it was 'poor'.

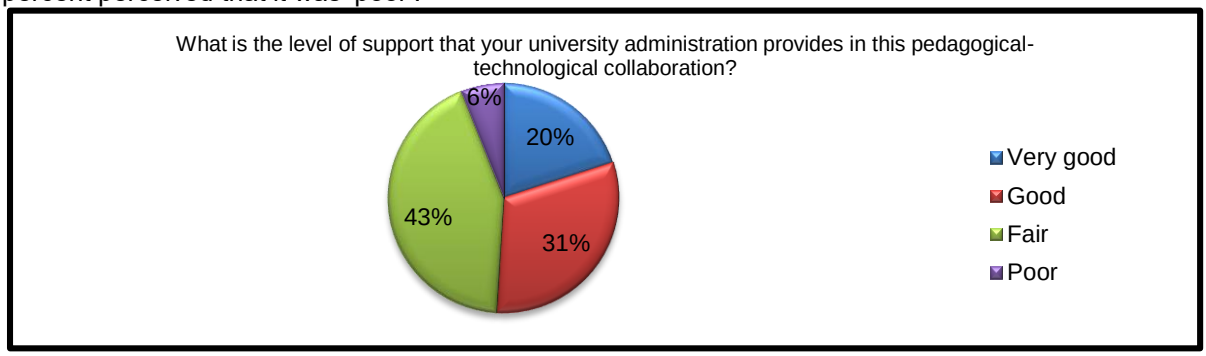


Figure (7): Perceived level of support that the university administration provides in pedagogical-technological collaboration

Pedagogy-Technology Collaboration

Fifty-three percent of respondents thought that their university had been fairly effective in introducing new LMS technologies and software. Twenty-five percent thought that it was very effective; and 22 percent believed that it was not effective at all.

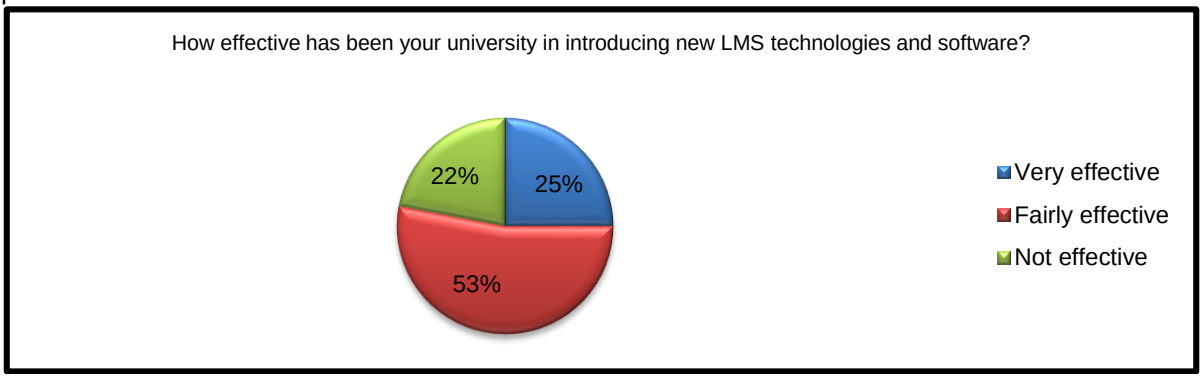


Figure (8): Perceived effectiveness in introducing new LMS technologies and software

The categorical cross-tabulation below shows that no one from the administrative people deemed that the introduction of new LMS technologies and software was fairly effective. Further, 66.67 percent of IT personnel and 61.02 percent of teachers marked it fairly effective. Only teachers (33.9 percent) believed that such introduction was not effective. One-hundred percent of the administrative people, 33.33 percent of IT personnel, and 5.08 percent of teachers said that it was very effective. The grand total reveals that 53.33 percent of the total responses under "fairly effective" comprised the IT personnel (66.67 percent) and the teachers (61.02 percent). Additionally, the 33.90 percent of teachers who marked that the introduction of new LMS technologies and software was not effective consisted of 22.22 percent of the total responses. Those who said that the introduction was very effective were 24.44 percent of the total responses. These are shown below:

Effectiveness of introducing new LMS teaching & software	Position in the university			
	Administrative	IT-related	Teaching	Grand Total
Fairly effective	0.00 %	66.67 %	61.02 %	53.33 %
Not effective	0.00 %	0.00 %	33.90 %	22.22 %
Very effective	100.00 %	33.33 %	5.08 %	24.44 %
Grand Total	100.00 %	100.00 %	100.00 %	100.00 %

Table (5): Respondents' current role in the university vs. perceived effectiveness of introducing new LMS technologies and software

Furthermore, 48 percent of the respondents denoted that the pedagogy-technology collaboration was fairly effective; 26 percent believed that it was very effective; and 18 percent maintained that it was hardly effective. There were 8 percent who believed that it was not at all effective.

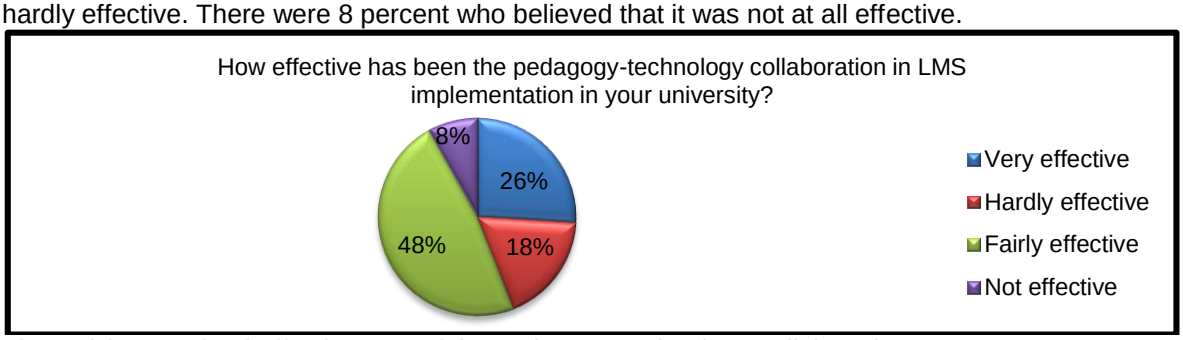


Figure (9): Perceived effectiveness of the pedagogy-technology collaboration

There were 73 percent who indicated that their university's integration of modern technologies in education had been 'fairly effective' and needs more improvement. Twenty percent marked 'very effective' in this area, and 7 percent ticked that it was not effective at all and needs serious improvement.

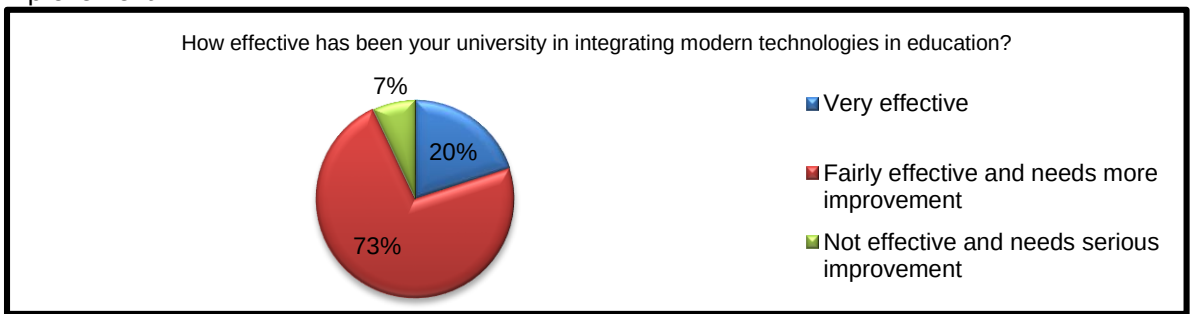


Figure (10): Perceived effectiveness of the university in integrating modern technologies in education

6. FINDING AND CONCLUSION

The speedy expansion in the area of Information and Communication Technology (ICT) and usage of electronic learning tools including learning management system (LMS) has become essentials to refine the outputs of the educational process. Many higher educational institutions have adopted LMS to increase the quality of learning, equip learners with technological skills, encourage learners to be more interactive, and removing the limitations of time and space in instructional processes ([24]Al-Zaidiyeen, et al., 2008; [25]Al-Zamil, 2003; [26]Chang, 2008). Nevertheless, supplying the required technological infrastructure does not assure the optimal implementation of LMS by all academic staff of the university. In effect, all higher educational foundation attempts to increase the employment level of LMS of its academic staff to assure the effective and successful integration of technology in teaching and learning processes.

The data gathered enhances what is currently known about LMS in higher education in Iraq. After the analysis of the data, it was found that the respondents' level of ICT skills; 37% of whom respondent 'average', 32% as 'good', 19% as 'poor' and 12% 'very good'. It is noticeable again that those who respondent 'poor' included teachers as opposed to those who considered their skills as 'very good' comprised IT personnel. Additionally, when asked to rate their institution's provision of technical

assistance to strengthen LMS, 50% considered it ‘fair’, 30% ‘good’, 13% thought of it as ‘poor’, while only 7% considered it excellent. To supplement this, 53% considered that their institution has been ‘fairly effective’ in introducing new LMS technologies and software, 25% considered it as ‘very effective’, and 22% as not effective’. Interestingly, those respondents who considered the effectiveness as not effective were once more the teachers but at the same time 61.02% of the teachers along with 66.67% of IT personnel believed that it was ‘fairly effective’. 73% indicated that their institution had been fairly effective in integrating modern technologies in education albeit in need of more improvement, while 20% responded that it was very effective as opposed to a low 7% that considered it not effective and in need of serious improvement.

On the topic of barriers to LMS implementation and adoption at the university, 82 responded that it was due to lack of required ICT skills, 79 of the responses went to lack of needed skills and knowledge which is closely related to the first reason, 70 of the responses attributed the obstacles to LMS adoption to the lack of funds, 67 to the lack of time, while 33 and 32 responses went to lack of persistence and lack of commitment respectively.

The respondents revealed a willingness to learn and be kept informed about technology in education by either directly seeking assistance and guidance or attending trainings provided by their institution, while at the same time being able to identify the various obstacles, problems, and issues that impede a proper implementation of LMS.

Overcoming internal and external barriers that identify in this research is compulsory to progress to overcoming the other barriers so that the focus is more on the pedagogical dimensions and increase the opportunities of e-learning rather than on the logistics.

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Radif, Mustafa; Fan, Ip-Shing; McLaughlin, Patrick

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