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# Determinants of E-Learning Implementation Success In The Iraqi MoHE

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**ABSTRACT**

The aim of this paper is to investigate the determinants of implementation success of the E-Learning in the Iraqi Ministry of Higher Education (IMoHE) and put a work plan to make the E-Learning widely implemented in the IMoHE. The Technology-Organization-Environment (TOE) framework and the E-Learning literature were used to analyze the factors which may influence this implementation and adoption. A questionnaire which consists of twenty nine questions divided into three parts: Technological factors (Information Systems (IS) infrastructure and IS expertise), Organizational factors (organizational compatibility and organizational benefits), and Environmental factors (competitive pressure and educational partner readiness) were written. The implementation success is characterized by two dimensions Internal Integration and External Diffusion. This questionnaire data gathered from 120 faculty members in the IMoHE were employed to test the relationships between the research models constructs using a structural equation modeling (SEM) approach. The results reveal that IS expertise, and Expected Benefits are key determinants of E-Learning implementation success in terms of Internal Integration and External Diffusion.

**Keywords**: Electronic Learning Management Systems, Implementation Success, Technology- Organization-Environment framework, Statistical Methods

## محددات نجاح تطبيق التعليم الالكتروني في وزارة التعليم العالي العراقية

**الخلاصة**

في هذا البحث نطمح الى دراسة العوامل التي تحد من نجاح تطبيق التعليم الالكتروني في وزارة التعليم العالي العراقية. قمنا باستعمال اطار عمل (التكنولوجيا-المنظمة-البيئة) والدراسات السابقة في مجال تطبيق التطبيقات الالكترونية من اجل تحليل العوامل التي من الممكن ان تؤثر على عملية التطبيق والتبني. قمنا



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بكتابة استبانة تتكون من تسعة وعشرون سؤال مقسمة الى ثلاثة اقسام وهي: العوامل التكنولوجية ( البنية التحتية لتكنولوجيا المعلومات, والخبرة في مجال الانظمة التكنولوجية), عوامل المنظمة (مدى التطابق مع المنظمة, الفوائد التي سوف تحصل عليها المنظمة), عوامل البيئة (الضغط التنافسي, والشركاء في المجال التعليمي). ان نجاح تطبيق التعليم الالكتروني يتم قياسه بواسطة بعدين: التكامل الداخلي و الانتشار الخارجي. ان هذه الاستبانة التي تم توزيعها وجمعها من 120 عضو هيئة تدريسية في وزارة التعليم العالي العراقية قد وضفت من اجل قياس العلاقة بين مكونات موديل البحث باستعمال نظرية نمذجة المعادلة الهيكلية(Structural Equation Modeling SEM) . اوضحت النتائج بان الخبرة في مجال الانظمة التكنولوجية والفوائد المتوقعة للمنظمة هي محددات اساسية وعوامل مؤثرة في مدى نجاح تطبيق التعليم الالكتروني فيما يتعلق بالتكامل الداخلي والانتشار الخارجي.

## INTRODUCTION

The fast pace of new developments in Information and Communications Technologies (ICTs) continuously challenges the MoHE to stay abreast in order to function and compete in the global educational area. Electronic-Learning Management Systems (E-LMS) is increasingly having a strategic importance for the Ministry of Higher Education (MoHE). However the adoption and implementation of E-LMS is not yet extensive.

In nowadays the E-Learning is highly depending on the Web Technologies. Many E-Learning web applications exist, some are open source, some are proprietary and also the IMoHE can build the E-Learning web software from the ground up. Open source software (OSS) has been identified as a facilitator to implement the E-LMS at reduced cost [3]. However its diffusion in the MOHE has been rather slow.

Internationally governments have been playing a major role in implementing open source software (OSS) within their respective environments [3]. OSS can offer many benefits in terms of cost reduction as well as the fast development and implementation of The E-LMS. OSS presents MoHE with the opportunity to overcome some of the problems and bridge the digital divide at a relatively low cost. There are many barriers and enablers of E-LMS adoption depending on OSS.

The Technology-Organization-Environment (TOE) framework was used to guide the data analysis of how the IMoHE can adopt and Implement the OSS E-LMS. The aim of this research is to gain a deeper understanding of the factors which have an impact on E-LMS adoption depending on OSS in the departments of MoHE. The rest of this research starts with a literature review about the concept of OSS, the Content Learning Management Systems, and the technology-organization-environment framework.

## THEORETICAL BACKGROUND

Two field of study, the determinants of implementation success of E-Learning, and the TOE framework have influenced the work on this research.

### Implementation success of E-Learning Systems

The literature survey has showed that in the current era the E-Learning implementation is built by systems which use the Internet media. Like any other web systems, theses E-Learning systems are either Open Source systems or Proprietary



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systems. Most of the open source E-Learning systems are free of charge and could be further developed and customized by any organization, while the proprietary E-Learning systems are expensive and could not be further developed by persons other than its creators.

## Open Source Software

As [2] shows, Open Source is a development method that harnesses the power of distributed peer review and transparency of process. The promise of open source is better quality, higher reliability, more flexibility, lower cost, and an end of predatory vendor lock-in. There is a non-profit corporation formed to educate about and advocate for the benefits of open source and to build bridges among different constituencies in the open source community.

The distribution terms of open-source software must comply with the following criteria:

- Free Redistribution
- Source Code

The program must include source code, and must allow distribution in source code as well as compiled form. The source code can be downloaded via the Internet without charge.

- Derived Works

The license must allow modifications and derived works, and must allow them to be distributed under the same terms as the license of the original software.

- Integrity of The Author's Source Code

The license may require derived works to carry a different name or version number from the original software.

- No Discrimination Against Persons or Groups
- No Discrimination Against Fields of Endeavor
- Distribution of License
- License Must Not Be Specific to a Product
- License Must Not Restrict Other Software
- License Must Be Technology-Neutral [2].

### Proprietary Software

Proprietary Software on the contrary refers to the Software that is developed by a few commercial companies and its code is not made public.

### Open Source software license.

The Software License states the restrictions on using the Software and the rights of the author of the software, the license should comply with the open source definition above and must go through the approval process, it states whether the software is free or someone must pay fees for using it, there are about 80 Open Source Licenses which have successfully gone through the approval process [2]. One of the most used OSS license is General Public License (GPL), it states that any software released under this license is free to copy, modify, redistributed and the source code must be available with the software, it also prevent the software form being changed to Proprietary Software. This



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license allows OSS solution to be adopted, implemented, and modified to suit any environment [3].

**Electronic Learning Management System (E-LMS)**

LMSs are web applications, meaning that they run on a server and are accessed by using a web browser. The server is probably located in the university or department, but it can be anywhere in the world. The students can access the system from any place with an Internet connection. At their most basic, E-LMSs give educators tools to create a course web site and provide access control so only enrolled students can view it. E-LMSs also offer a wide variety of tools that can make the course more effective. They provide an easy way to upload and share materials, hold online discussions and chats, give quizzes and surveys, gather and review assignments, and record grades [4].

**The Technology-Organization-Environment framework (TOE)**

The TOE framework is a fundamental approach to investigating a firm context that influences the process by which it adopts, implements, and diffuses technological innovations. The TOE framework identifies three aspects to explain firm decision-making behavior in relation to technological innovations: Technology, Organization, and Environment. Technological context includes both the internal and external technologies used by the firm. Meanwhile, organizational context refers to descriptive characteristics of the organization, including firm size and scope, complexity of firm managerial structure, quality, and degree of its human resources. Moreover, environmental context refers to the firm industry and its dealings with educational partners, competitors and government. The TOE framework has consistent empirical support in the Information Systems (IS) domain. The TOE framework is appropriate for studying E-LMS implementation success, because E-LMS is made possible by technological development of the Internet, driven by organizational readiness, and influenced by environmental factors, especially the situations of students, teachers [1].

In order to study what the enablers and barriers of E-Learning adoption are, it is important to understand what constitutes user acceptance. For a technology to be adopted there, it needs to have acceptance by the potential user of the technology. Understanding the factors which influence this user acceptance is a well researched area within Information Systems (IS) literature. In this research, the organization was considered to be the MoHE (students and teachers), the Technology was considered to be the E-Learning systems, and the Environment was considered to be the Iraqi and international Ministries and institutions other than the MoHE, thus TOE was identified as an appropriate framework for this research.

• Technology: Major factors which fall under the technology context are cost, perceived reliability and compatibility with existing technologies and skills.

• Organization: According to the framework the presence of ‘boundary spanners’ is a major factor which falls under the organization context, other factors are human and financial resources and innovativeness of the organization.



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• Environment: Under the environment context major factors are the availability of complementary assets and the fear of adopting a losing standard. The industry in which the organization operates is also seen to have an influence on technology adoption.

## RESEARCH MODEL

Based on the TOE framework and the E-Learning literature, this paper identified the key factors that have high impact on the implementation success of the E-Learning in the IMoHE, these factors consists of two technological factors, two organizational factors, and two environmental factors. The implementation success of E-Learning is measured by two factors, Internal Integration, and External Diffusion. As figure (1) illustrates the implementation success (in terms of Internal Integration and External Diffusion) of E-Learning is positively affected by IT infrastructure (X1Xa, X1Xb), IT expertise (X2Xa, X2Xb), Organizational Compatibility (X3Xa, X3Xb), Expected Benefits (X4Xa, X4Xb), Competitive Pressure (X5Xa, X5Xb), Educational Partner (teachers and students readiness) (X6Xa, X6Xb).

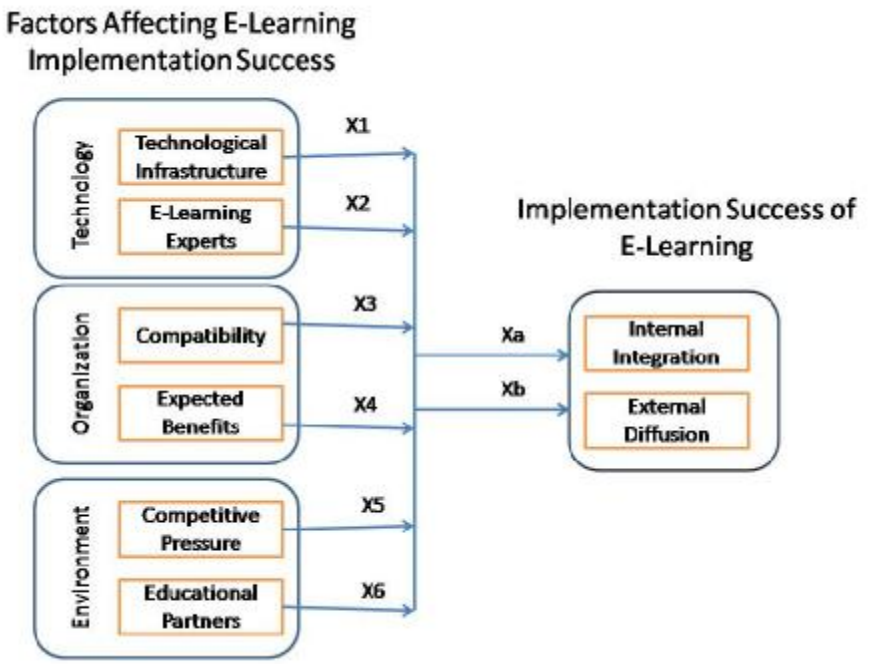


**Figure (1) the Research Model**

### Technological Factors

The research studies [1] and [3] revealed that the institutions that have advanced Information Technology (IT) infrastructure will have more chance to an extent implementation success of web applications like E-Learning. The IT infrastructure



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encompasses all the IT technologies like fast Internet connection, the sufficient up to date computers, and good computer networks. Also the institutions that have modern and advanced Web Applications which are related to E-Learning, either Open Source or Proprietary, will have an increased chance to a successful implementation of E-Learning. Also the institutions that have a shared database for their applications rather than a separated database for every application will have an increased opportunity to a successful implementation of E-Learning.

The more Information Systems (IS) expertise related to E-Learning which exists in the institution means the more likelihood of successful implementation of E-Learning. The institution should have the necessary IS experts who have good knowledge about the E-Learning Applications (including the Open Source and the Proprietary Applications) and the technologies needed to implement them. Also the firm should hire highly specialized persons in E-Learning Applications and technologies and should give their experts the necessary training in these technologies in order to increase the chance of a successful implementation of E-Learning.

## Organizational Factors

This research depends on the compatibility factor in determining the successful implementation of e-learning, where the greater the compatibility between the applications of e-learning with the practical applications of the institution that had adopted it in terms of beliefs, values and past experiences, needs, priorities and policies, the greater the positively influence on the success of the implementation of e-learning, because this compatibility will lead to the more easily dealing between the e-learning applications and the practical ordinarily applications. The applications of e-learning will change the way of the work, from the paper based work to the electronic based work, which may open ways of re-engineering of the entire business. So if compatibility was larger, the chances of successful implementation of e-learning will increase and if there is a lack of compatibility between the working methods of e-learning applications with the usual ways of working, it will lead to more difficulty in the implementation of e-learning and its spread.

Perceived benefits refer to the degree to which new technologies provide more benefits that old ones. These expected benefits include the increased ability of the MoHE to accept more students, providing accurate, quick, and more information about the educational process which can lead to an enhanced decision making, providing better way for transferring the knowledge to the students, providing a higher rate of cooperation and exchange programs between the institutions of the higher education. The lack of awareness about the expected benefits of implementing E-Learning is the most significant barrier to the successful implementation of E-Learning. Hence this study hypothesize that higher expected benefits of E-Learning are likely to facilitate extensive use of E-Learning within and outside the Higher Education.



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## Environmental Factors

The competitive pressure is the pressure which erupts in the institution when it became afraid of losing competitive advantages against the other institutions which have implemented the advanced technologies. That the implementation of the Electronic Learning in the Higher Education Institutions will enable them to be recognized as being better in the functions of the higher education and will open new opportunities in the fields of teaching the transferring the knowledge to the students the exchanging of the expertise between the teachers and students and to spread the good reputation for the institution which adopt and implement it and the increase of the number of its students and the leverage of the scientific level of its lectures. Also the experiments reveal that the institution which adopt and implement the E-Learning earlier gain vast competitive advantages than the institutions which are slow in the adoption and implementation of E-Learning. And the latter will suffer a decrease in the scientific level locally and internationally.

The implementation success of E-Learning highly depends on to which extent the educational partners, the teachers, and the students induce their educational organizations to implement E-Learning. That when the surrounding environment of the higher education (education partners, teachers, and students) has good knowledge about the benefits of implementing E-Learning and how to use and implement it, the higher education institution will be more concern about the implementation of E-Learning. And when there are enough numbers of experts in E-Learning within the surrounding environment, the chance of implementing E-Learning will increase.

# RESEARCH METHODOLOGY

## Measurement Development

IS infrastructure was measured with items adapted from [1] Hsiu-Fen Lin and Szu-Mei Lin. The measure focused on telecommunications and database infrastructure. IS expertise was assessed with items adapted to reflect the firm level of specialized IS expertise. Three items measured the organizational compatibility of E-Learning with existing operating practices, beliefs and value systems, and IS infrastructure. Expected benefits was measured using four strategic benefits, each of which was assessed in term of to what degree it motivated firms to implement E-Learning: increasing the number of students in the higher education institutions, providing more accurate information's and in a less time for a better decision making in the higher education institutions, providing a better situation for transferring the knowledge to the students and expand their knowledgeable base, raise the level of cooperation and scientific and cultural exchange between the higher educational institutions. Competitive pressure, which measures the degree of pressure exerted by competitors on the E-Learning implementation decision, was assessed using two items based on [1] Hsiu-Fen Lin and Szu-Mei Lin. Educational partner readiness was measured using four items derived from [1] Hsiu-Fen Lin and Szu-Mei Lin. The measure focused on potential partner willingness and ability to use the E-Learning.



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Two variables, internal integration and external diffusion of E-Learning, were used to measure the implementation success of E-Learning. Internal integration was assessed by the level of integration of E-Learning in sex major E-Learning applications, namely online courses, online quizzes, online students and teachers registration systems, online students' assessments and grades, online chat, online forums and Wiki's. External diffusion was measured using four items asking respondents about the extent to which E-Learning achieves electronic integration with teachers and students. These items were adapted from [1] Hsiu-Fen Lin and Szu-Mei Lin. For all the measures, a five point Likert scale was adopted with anchors ranging from strongly disagree (1) to strongly agree (5).

### Survey administration

In order to put this research model into the test, three Iraqi universities were chosen, these universities are Baghdad University, University of Technology, Al Mustansiriya University. The questionnaire has been distributed to the students of the Faculty Training Program in the Development and Continuous Education Centers. The students of this program are faculty staff from different colleges of each university. Also the questionnaires are distributed to faculty staff of many colleges like Engineering College, College of Administration and Management, College of Science, and other colleges. The total number of the distributed questionnaires reaches 300 questionnaires. We then follow up these distributed questionnaires and after a month we collect about 120 questionnaires to include the views of the professors from different colleges of three universities.

## QUESTIONNAIRE DATA ANALYSIS

Data analysis utilized a two-stage approach as used by [1]. The first stage involves the analysis of the measurement model, while the second stage tests the structure relationships among latent constructs. The aim of the two-stage approach is to assess the reliability and validity of the measures before their use in the research model.

Confirmatory factor analysis (CFA) was applied to assess the reliability and validity of the proposed constructs. Table (1) presents the results of the CFA analysis. For a measurement model to have sufficiently good model fit, the chi-square value normalized by degrees of freedom ($\chi 2/df$) should not exceed 3 [1]; and Non-Normal Fit Index (NNFI) and Comparative Fit Index (CFI) should exceed 0.9. For the current CFA model, $\chi 2/df$ was 2.49 ($\chi 2=57.16$; df=23), NNFI was 0.91, CFI=0.94, suggesting adequate model fit. Additionally, the results in Table (1) indicate that the composite reliability of all scales exceeds the 0.7 thresholds for acceptable reliability, as used by [1]. The convergent validity of the scales was verified by all indicator loadings should be significant and exceed 0.6 except OC3. For the current CFA model, all factor loadings were above the 0.6 threshold (see Table 1) [1]. Finally, the discriminant validity of the scales was assessed using the guideline used by [1]: the square root of the average variance extracted (AVE) from the construct should be greater than the correlation in the model. Table 2 lists the correlation among the constructs, with the square root of the (AVE) on the diagonal. All the diagonal values exceed the inter-construct correlations; hence the test of



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discriminant validity was acceptable. Therefore, we conclude that the scales should have sufficient construct reliability and validity.

**Table (1) Summary of Measurement Scales**

| Construct Measure | | Factor Loading |
|---|---|---|
| *IS infrastructure (ISI) Composite reliability = 0.7023* | | |
| *ISI1* | *Our institution has a good telecommunication infrastructure.* | *.618* |
| *ISI2* | *There are integrated Web LMS's encompassing different learning functional areas* | *.647* |
| *ISI3* | *The higher educational institutions share the databases for various applications, rather than having a separate database for each application.* | *.677* |
| *IS expertise (ISE) Composite reliability = 0.7360* | | |
| *ISE1* | *Is employees are generally aware of the functions of LMS* | *.634* |
| *ISE2* | *MOHE hires highly specialized or knowledgeable personnel for LMS* | *.661* |
| *ISE3* | *Is employees are well trained in LMS* | *.614* |
| *Organizational compatibility (OC) Composite reliability =0.7990* | | |
| *OC1* | *Implementing the changes caused by the adoption of LMS is compatible with existing learning practices* | *.771* |
| *OC2* | *Implementing the changes to learning procedure initiated by the adoption of LMS is compatible with the beliefs and values of MOHE* | *.761* |
| *OC3* | *The adoption of LMS is compatible with the existing IS infrastructure* | *.535* |
| *Expected benefits of E-Learning (EBE) Composite reliability =0.8551* | | |
| *EBE1* | *LMS is useful to expand the number of students studying in the MOHE* | *.611* |
| *EBE2* | *LMS is useful to provide more timely and accurate information for decision making* | *.695* |
| *EBE3* | *LMS is useful to provide better mode for transferring knowledge to the students* | *.707* |
| *EBE4* | *LMS is useful to improve coordination between the MOHE institutions* | *.815* |
| *Competitive pressure (CP) Composite reliability = 0.7828* | | |
| *CP1* | *Our institution experienced competitive pressure to implement LMS* | *.629* |
| *CP2* | *Our institution would have experienced a competitive advantage if LMS had not been adopted* | *.688* |
| *Educational partner readiness (TRP) Composite reliability =0.7998* | | |
| *TPR1* | *Majority MOHE partners requested implementation of LMS* | *.745* |
| *TPR2* | *Majority MOHE partners recommended implementation of LMS* | *.648* |



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| | | |
|---|---|---|
| *TPR3* | *MOHE partners are generally very knowledgeable regarding technical matters* | *.615* |
| *TPR4* | *MOHE partners contain considerable technical expertise* | *.746* |
| *Internal integration (I I) Composite reliability = 0.8404* | | |
| *Extent of integration of LMS in…* | | |
| *II1* | *Electronic on-line courses* | *.728* |
| *II2* | *Electronic on-line exams* | *.696* |
| *II3* | *Registration systems for students and teachers* | *.686* |
| *II4* | *On-line grading system* | *.601* |
| *II5* | *On-line chat between the students and teachers* | *.658* |
| *II6* | *Wiki systems* | *.651* |
| *External diffusion (ED) Composite reliability = 0.9277* | | |
| *Extent of use of LME in …* | | |
| *ED1* | *Exchanging information between MOHE institutions and other ministries* | *.829* |
| *ED2* | *Sharing educational courses between MOHE institutions* | *.852* |
| *ED3* | *Simplifying the management of administrational and educational processes of MOHE institutions* | *.819* |
| *ED4* | *Students services* | *.734* |

**Table (2) Correlations and AVE**

| | **AVE** | **Construct** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | **ISI** | **ISE** | **OC** | **EBE** | **CP** | **TRP** | **I I** | **ED** |
| **ISI** | **0.718** | **0.8476** | | | | | | | |
| **ISE** | **0.819** | 0.533(**) | **0.9051** | | | | | | |
| **OC** | **0.872** | 0.477(**) | 0.587(**) | **0.9336** | | | | | |
| **EBE** | **0.684** | 0.256(**) | 0.234(**) | 0.299(**) | **0.8273** | | | | |
| **CP** | **0.795** | 0.369(**) | 0.364(**) | 0.597(**) | 0.550(**) | **0.8916** | | | |
| **TRP** | **0.655** | 0.260(**) | 0.478(**) | 0.539(**) | 0.641(**) | 0.591(**) | **0.8095** | | |
| **I I** | **0.557** | 0.166 | 0.068 | 0.229(*) | 0.828(**) | 0.467(**) | 0.491(**) | **0.7463** | |
| **ED** | **0.601** | 0.203(*) | 0.388(**) | 0.353(**) | 0.709(**) | 0.319(**) | 0.607(**) | 0.741(**) | **0.7750** |

*Note 1*: Diagonal elements (in hold) are the square root of the average variance extracted (AVE). Off-diagonal elements are the correlation among constructs. For discriminant validity, diagonal elements should be larger than off-diagonal elements.

*Note 2*: ISI= IS infrastructure; ISE= IS expertise; OC= Organizational compatibility; EBE= Expected benefits of E-Learning; CP= Competitive pressure; TRP= Educational partner readiness; I I= Internal integration; ED= External diffusion.

*Note 3:* ** Correlation is significant at the 0.01 level (2-tailed).

*Note 4:* * Correlation is significant at the 0.05 level (2-tailed).



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The structural model reflecting the assumed linear, causal relationships among the constructs was tested with the data collected from the validated measures. The model fit indices were within accepted thresholds: $\chi 2$ to degrees of freedom ratio of 2.49 ($\chi 2$=57.16; df=23), NNFI=0.91, CFI=0.94, and RMSEA=0.065 (see Table 3).

**Table (3) Model Fit Indices for the Structural Model**

| Model fit indices | Results | Recommended value |
|---|---|---|
| Chi-square statistic $\chi^2/df$ | 2.49 | $\leq 3$ |
| NNFI | 0.91 | $\geq 0.90$ |
| CFI | 0.94 | $\geq 0.90$ |
| RMSEA | 0.065 | $\leq 0.08$ |

Table (4) shows the results of hypothesis. Sixth out of the twelve hypotheses exhibited a p-value less than 0.05, while the remaining six were not significant at the 0.05 level of significance. One Technological factors (IS Expertise), one Organizational factor (Expected Benefits) were found to positively influence Internal Integration and External Diffusion of LMS, and Environmental factor (Competitive Pressure, Educational partner readiness) were found to positively influence External Diffusion of LMS.

However, contrary to hypotheses X1Xa and X1Xb, Technological factors, and X3Xa, X3Xb, Organizational Compatibility showed no significant influence on the Implementation Success (in terms of Internal Integration and External Diffusion) of E-Learning. Finally, Competitive Pressure and Educational Partner Readiness exhibited significant influence on External Diffusion of E-Learning, but not on Internal Integration of E-Learning. Consequently, hypothesis X5Xa, X6Xa was not supported, while hypothesis X5Xb, X6Xb was supported.

The explanatory power of the research model is also shown in table 4. The R-square values shows that IS Infrastructure, IS Expertise, Organizational Compatibility, Expected Benefits of LMS, Competitive Pressure, and Educational Partner Readiness account for 71% of variance of Internal Integration of LMS and 62% of variance of External Diffusion of E-Learning.



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**Table (4) Results of Estimation Structural Model**

| | Implementation success of E-Learning | |
|---|---|---|
| Construct | Internal integration | External diffusion |
| | Standardized Coefficients | Standardized Coefficients |
| Technological factors | | |
| *IS infrastructure* | 0.002 | 0.091 |
| *IS expertise* | 0.171* | 0.209** |
| Organizational factors | | |
| *Organizational compatibility* | 0.066 | 0.143 |
| *Expected benefits of E-Learning* | 0.843** | 0.680** |
| Environmental factors | | |
| *Competitive pressure* | 0.043 | 0.297** |
| *Educational partner readiness* | 0.029 | 0.193* |
| $R^2$ | 0.707** | 0.618** |
| * $p < 0.05$ , ** $p < 0.01$ | | |

## SUMMARY OF RESULTS

This study examines the relationships between technological, organizational, and environmental factors and two measures of LMS implementation success: internal integration and external diffusion. The results indicate that firm with sophisticated (IS expertise) is important in explaining both aspect of LMS implementation success. This finding resembles that [1] that firms with more sophisticated technological resources (expertise) may be more able to implement IS effectively. Accordingly, firm with sophisticated IS expertise are more likely to increase LMS internal integration and external diffusion.

Unexpectedly, organizational compatibility did not significantly impact the implementation success of LMS. This result may occur because organizational compatibility may influence initial LMS adoption, but not extent of implementation. That is, LMS adopting firms may have already made requisite organizational changes, reducing the influence of organizational compatibility in distinguishing different levels of LMS implementation. This result may also occur because the sample firms were current LMS adopters, and thus there is likely to be less variance in the organizational environments in which their LMS diffusion is embedded. Moreover, the results further

Indicate that the expected benefits of LMS positively influence the two aspects of LMS implementation success –internal integration of LMS and external diffusion of LMS. As [1] noted, expected benefits can provide motivation for IS implementation and expansion because employee appreciation of the relative advantages of the new system influences the extent of IS implementation.

This study shows that the emergence of competitive pressure have a significantly influence on external diffusion of LMS. Also, this study found that educational partner



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readiness have a significantly influence on external diffusion of LMS. However, this study did not support the hypothesis that competitive pressure and educational partner readiness had positively effects on internal integration of LMS. Thus, competitive pressure and educational partner readiness have less influence on their internal LMS processes.

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