

**FACTORS OF ERP PERCEIVED VALUE AND
ORGANIZATIONAL PERFORMANCE AT THE
PRE-IMPLEMENTATION PHASE:
ORGANISATIONAL LEARNING CAPABILITY
AS A MODERATOR**

MOHAMED SOLIMAN MOHAMED SOLIMAN

UNIVERSITI SAINS MALAYSIA

2020

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by

MOHAMED SOLIMAN MOHAMED SOLIMAN

**Thesis submitted in fulfilment of the requirements
for the degree of
Doctor of Philosophy**

August 2020

ACKNOWLEDGEMENT

First of all, I am grateful to Allah from the core of my heart for inspiring, guiding, and giving me the strength, courage, and ability to accomplish my study. All good things that I have had in my life are due to His help, love, and Mercy. Allah who is the one, the eternal refuge, neither begets nor is born nor is there to Him any equivalent.

I would like to express my sincere gratitude and deep thanks to the Universiti Sains Malaysia (USM) for its financial support and fellowship scholarship. Great appreciation to IPS workshops where I learned research skills and the effective learning environment and facilities in the school of management, my lovely place inside USM as well as USM Library for free training, services, and consultations along with providing a quiet and motivating study place.

I would like to express the deepest appreciation to my supervisor and mentor Associate Professor Dr. Noorliza Karia for her guidance and support, valuable advice, and perceptive suggestions throughout my Ph.D. journey. She puts huge attention to build the research spirit within me, which will lead me to the next stage of my career efficiently. It has been an honour to be her student.

I would like to dedicate this thesis to my father, mother, and my siblings. By their love, sacrifice, affection, and prayers of day and nights make me able to get such success. Great thanks and appreciations to Prof. T. Ramayah for his significant guidance and inspiring influence on my Ph.D. journey. My sincere thanks go to brother DR. Imran Mahmoud for his kind support and motivation throughout my Ph.D. journey.

My cordial thanks to my friends: Shamim, Firdaus, and Souroj for their support in Malaysia. Thanks to Pravina, Arshad, Adeel, Sohail, Samsudeen, Khalil, Jamsheed, Adilah, Janna, Shaban, Mahmoud, and others for providing an excellent research atmosphere in the PhD room. I would like to thank Puan Robitah for her excellent support at SOM.

Finally, I would like to thank my wife, Reham and my children, Abdelrahman and Kenzy, who accompanied me during this journey from the beginning till the end and believed in my ability to accomplish this goal. By their love, sacrifice, affection, encouragement, and prayers of day and nights make me able to get such success and honour.

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LIST OF ABBREVIATIONS

CP	Competitive Pressure
EPV	ERP Perceived Value
ERP	Enterprise Resource Planning
HE	Higher Education
HEIs	Higher Education Institutions
ICT	Information and Communications Technology
IS	Information System
IT	Information Technology
OLC	Organizational Learning Capability
PLS	Partial Least Square
PTC	Perceived Technical Competence
RA	Relative Advantage
RBV	Resource-Based View theory
SAP	Systems, Applications, and Products
OP	Organizational Performance
SEM	Structure Equation Model
SPSS	Statistical Package for Social Science
TC	Technological Compatibility
TMS	Top Management Support
TOE	Technology – Organisation – Environment framework
TRI	Technology Readiness Index theory
USM	Universiti Sains Malaysia

**FAKTOR-FAKTOR NILAI TANGAPAN ERP DAN PRESTASI
ORGANISASI PADA FASA PRA-PELAKSANAAN: KEUPAYAAN
PEMBELAJARAN ORGANISASI SEBAGAI MODERATOR**

ABSTRAK

Institusi pengajian tinggi (HEIs) dicabar untuk mengekalkan sistem maklumat peringkat tinggi untuk menjana laporan masa nyata yang kompleks. Mereka juga memerlukan transformasi digital untuk kekal kompetitif. Sistem perancangan sumber perusahaan (ERP), melalui ciri integrasi, boleh menyediakan penyelesaian yang disesuaikan untuk pengagihan sumber yang berkesan dan membuat keputusan yang lebih baik. Walaupun sistem ERP meningkatkan inovasi organisasi, kebanyakan HEIs Mesir tidak dilaksanakan ERP, menunjukkan ERP tidak dianggap sebagai keupayaan inovasi. Oleh itu, kajian ini bertujuan untuk membangunkan satu model nilai yang dirasakan ERP pada fasa pra-pelaksanaan. Kajian ini menerokai cerapan 112 Mesir. Berdasarkan kajian yang terdahulu, kajian ini meramalkan faktor yang dirasakan sebagai nilai yang dilihat di kalangan HEIs melalui pautan tiga rangka kerja utama; Teknologi-Pertubuhan-alam sekitar (TOE) rangka kerja, indeks kesediaan teknologi (TRI), dan pandangan berasaskan sumber (RBV). Faktor kaki termasuk kelebihan relatif, keupayaan teknologi, sokongan pengurusan atasan kecekapan teknikal yang dirasakan, dan tekanan kompetitif. Penyelidikan menyiasat faktor nilai yang dirasakan ERP, mengkaji semula kesan ERP nilai yang dirasakan atas prestasi organisasi dan kesan daripada keupayaan untuk meningkatkan kemampuan dalam pembelajaran organisasi (OLC). Pendekatan Pemodelan Persamaan Struktural Sebahagian Least Partial (PLS-SEM) digunakan untuk mengukur model penyelidikan. Dapatan

mengesahkan bahawa kelebihan relatif, tekanan daya saing, dan kesediaan teknologi ERP adalah peramal ketara daripada nilai yang dirasakan ERP. Menariknya, kelebihan relatif adalah peramal yang paling ketara, diikuti dengan kesediaan teknologi ERP dan tekanan kompetitif. Walau bagaimanapun, keserasian teknologi, sokongan pengurusan atasan, dan kecekapan teknikal yang dirasakan adalah peramal yang tidak ketara. Hasil kajian juga menunjukkan bahawa nilai yang dirasakan ERP dengan ketara memberi kesan kepada prestasi organisasi, dan keupayaan pembelajaran organisasi yang melibatkan hubungan ini. Penyelidikan ini maju pengetahuan dan penyelidikan mengenai ERP. Ia memberikan bukti bagi model penyelidikan ERP yang dilihat pada fasa pra-pelaksanaan dalam konteks pendidikan tinggi. Kajian ini menyediakan 'Pengurus dan ERP pembekal rangka rujukan untuk menganalisis situasi HEIs ' sebelum memulakan inovasi. Kajian ini mencadangkan HEIs untuk mengguna pakai ERP dan fokus pada Nilai yang dirasakan ERP dengan memahami faktor untuk meningkatkan nilai dan daya saing.

**FACTORS OF ERP PERCEIVED VALUE AND ORGANIZATIONAL
PERFORMANCE AT THE PRE-IMPLEMENTATION PHASE:
ORGANISATIONAL LEARNING CAPABILITY AS A MODERATOR**

ABSTRACT

Higher education institutions (HEIs) are challenged to sustain the high-level information systems to generate complex real-time reports. Also, their need for digital transformation to stay competitive. Enterprise Resource Planning (ERP) systems, through its integration characteristic, can provide tailored solutions for effective resource allocation and better decision making. Even though ERP systems increase organisational innovation, most Egyptian HEIs have not implemented ERP, showing ERP is not perceived as innovation capability. Therefore, this study aims to develop a model of ERP perceived value at the pre-implementation phase. This study explored the insights of 112 Egyptian HEIs. Based on the previous studies, this study predicts the factors of ERP perceived value among HEIs through linking three prominent frameworks; Technology-Organization-Environment (TOE) framework, technology readiness index (TRI), and resource-based view (RBV). The TOE factors include relative advantage, technological capability, top management support, perceived technical competence, and competitive pressure. The research investigates the factors of ERP perceived value, further examines the impact of ERP perceived value on organizational performance and the moderating effects of organisational learning capability (OLC). Partial Least Squares Structural Equation Modelling (PLS-SEM) approach used to measure the research model. Findings affirm that relative advantage, competitive pressure, and ERP technological readiness are significant predictors of the

ERP perceived value. Interestingly, the relative advantage is the most significant predictor, followed by ERP technological readiness and competitive pressure. However, technological compatibility, top management support, and perceived technical competence are insignificant predictors. The results also indicate that the ERP perceived value significantly affects organizational performance, and organisational learning capability moderates this relationship. This research advances knowledge and research on ERP. It provides evidence for the research model of ERP perceived at the pre-implementation phase in the context of higher education. This study provides HEIs' managers and ERP vendors a frame of reference to analyse HEIs' situation before initiating innovations. This study recommends HEIs to adopt ERP and focus on ERP perceived value by understanding factors to enhance value and competitiveness.

CHAPTER 1

INTRODUCTION

1.1 Introduction

This chapter presents the research background, including the ERP situation in Egypt. This chapter also demonstrates an ERP preliminary study among Egyptian HEIs to investigate their ERP perception. Besides, the chapter sheds light on the research problem, research objectives, and research questions. It also introduces the reader to research motivation, the scope of the study, key terms definitions, and, subsequently, the structure of the thesis.

1.2 Background

Higher Education (HE) in its nature is continuously changing due to the emergence of advanced technologies and globalization. Most HEIs of different sizes and types are in a struggle to compete by enhancing their technological capabilities. Moreover, the higher education industry today is heavily dependent on the global development of information technology (IT) due to the government's call to improve its performance and efficiency. Fast-moving advances in IT have reshaped how universities undertake their administrative practices. Also, the competitive educational environment and the expectations of the stakeholders globally are forcing universities to improve their overall performance (Khalid et al., 2018).

Recently, there have been many changes to the scene of the higher education sector, including government funding reduction, growing demand for higher education, changing demographics, new models of higher education, economic development and growth, technological advance in information communication

technology (ICT), and changing government regulations. However, HEIs have attempted to achieve a competitive advantage for shaping their strategic policy direction in the face of these changes (Mathooko & Ogutu, 2015).

On the complexity of the competitive context of HE, the ERP system is significant for the HEIs' sustainable performance. Educational ERP system integrates all facets of academic operations and administrative functions that allow a wide range of information sharing for better decision-making (Bett, 2018). Also, ERP systems can be a source of innovation by integrating ERP functions to organizational processes based on its ability to have timely and reliable data from the current IT resources (Badewi, Shehab, Zeng, & Mohamad, 2018). However, the ERP adoption decision is highly critical since the switch from a manual system or scattered applications into an ERP system entails extensive planning and preparations within the HEIs (Débrosse-Bruno, 2017).

ERP systems are fully realized in organizations and yield significant benefits (Badewi et al., 2018). Nonetheless, Egyptian HEIs still are not convinced with the ERP system as a source of emerging innovation capability that will improve their organizational performance and service efficiency. That is due to the limited successful implementations as well as they have not yet perceived the ERP value and benefits to justify the adoption costs (Faddelemoula, 2018; Haddara & Elragal, 2013). This approach assumes that when they perceive the value of the ERP systems earlier, it will be a motivating step to adopt these systems to gain further the competitive advantage that will result from a successful ERP implementation.

The educational ERP does not yield enough return on investment (ROI). Also, its cost of planning, customization, and implementation might be too much for a

slighter profit-driven. ERP profit is a monetary benefit that is realized when the revenue gained exceeds the expenses for business activity (Rani, 2016). However, ERP value (EPV) is a non-monetary benefit consisting of derived benefits enjoyed by the organization. Organization judges the EPV according to how it improves the job performance of its employees, supports business objectives, and increases the productivity, quality, and organizational competitiveness (Seol, Lee, & Zo, 2016). As a result, the HEIs' leaders are rightfully raising their concerns about how to ensure the ERP system yields a value before the adoption decision. This conclusion is in line with the HEI nature, as a non-profit organization, mainly aims at creating public value.

Karia (2018) reveals the importance of technology resources to influence firms' competitive advantage towards moving in the Industry Revolution 4.0. However, technology resource alone is not durable and easy imitated by competitors. This assumption implies that technology or ERP system is a valuable resource-capability just for a temporary competitive advantage. ERP system itself is insufficient and incapable of creating an innovation capability in the long-term. Therefore, the research concerning ERP role and its value is crucial for the adoption of an ERP system and sustained competitive advantage.

In general, Porter (1998) indicates that technology is the means through which an organization can achieve a competitive advantage. Similarly, HEIs invest in ERP systems to improve the overall institution's efficiency and to realize the benefit of competitive advantages. In contrast, HEIs in Egypt have faced some issues because of the absence of ERP systems. For example, the lack of integration of applications supporting the businesses functions leads to asynchronies in the databases, work duplications, ineffective management of resources, and excessive loss of time and cost

of searching for relevant information to generate meaningful reports to support planning and decision making (Abdellatif, H. J., 2014; Al Kilani, Adlouni, Al Ahbabi, & Al Yahyaei, 2012).

For decades, ERP system has been acknowledged for achieving competitive advantage; nevertheless, the ERP literature shows the mixed evidence about the expected values from these ERP systems in HEIs (Eid & Abbas, 2017). The reviews indicate that the perceived value of the ERP system is inconsistent and inconclusive that delays the ERP adoption. What HEIs need is further justification for the ERP role and its benefits for enhancing the ERP adoption. As a result, this study mainly aims at investigating the significant ERP perceived value factors to influence organizational performance at the pre-implementation phase. That, therefore, may affect the ERP adoption decision to formulate strategies that will guarantee imminent successful ERP implementation.

1.2.1 Egyptian ERP Scenario

Globalization, privatization, and liberalization have made a marked transformation in the business environment in Egypt during the early 1990s. IT and communication solutions emerge from conducting business efficiently and effectively. As a result, organizations in Egypt showed more significant concern about increasingly utilizing IT to gain a competitive advantage.

Literature indicates that the application of ERP systems in Egypt has solely placed a focus on two phases; implementation and post-implementation (El Sawah et al., 2008; El Sayed, Hubbard, & Tipi, 2013). This deduction is in line with the ERP studies mainly concentrated on issues related to the ERP implementation phase since

most organizations are in the implementation phase (Nazemi, Tarokh, & Djavanshir, 2012).

Moreover, Ali and Miller (2017) argue the ERP pre-implementation phase requires further research attention because of its role in forming the attitude (e.g., resistance, feedback, and involvement) of those who will be charged with the implementation stage. So, it is crucial to realize the nature and origin of such attitudes. The current literature refers to the research on the pre-implementation is limited. It is interesting to notice that scholars have mainly focused on the implementation stage. In contrast, the research in the pre-implementation is lacking. The pre-implementation is a critical phase, where the plans adopted will have a direct effect on the process and consequence of the implementation. The pre-implementation stage includes such activities as planning for the ERP introduction, determining the ERP vendors' role plus in-house resources, delivering an initial training, and deciding on the gradual steps of change management to fit with the ERP system.

Likewise, HEIs, in particular, should focus on the early stages of the ERP implementation if they wish to achieve high standards of ERP stakeholders' performance (Althonayan & Althonayan, 2017). Also, there is a call of further work on the ERP pre-implementation phase in the Egyptian context to ensure the ERP project success (Haddara, 2018).

Recently an ERP system, as an extremely complex information system (IS), has been transferred by multinational companies into the local environment in Egypt (El Sawah et al., 2008). However, the ERP introduction to the Egyptian context faced some failures and issues. Egyptian enterprises cope with significant challenges such as hierarchical structure, lack of lateral connections, and centralized decision making

(Rasmy et al., 2005). It was found just in time production and purchasing (JIT), total quality management (TQM), and materials requirement planning (MRP) were the most practices executed by the Egyptian manufacturing sector with less interest to ERP systems (Ismail Salaheldin & Eid, 2007).

Also, an ERP system project failed in Egypt using a theoretical framework informed by the institutional theory to justify the findings (Kholeif, Abdel-Kader, & Sherer, 2007). The management accountants' role during the ERP implementation by the application of performance-based budgeting in Egypt was constrained to gather cost information for decision making (Jack & Kholeif, 2008). The organizational culture is viewed as the primary reason for the high rate of failure of the ERP implementation (El Sawah et al., 2008).

In Egypt setting, however, the pharmaceutical sector is the significant ERP market because of its financial capacity as well as its complicated manufacturing procedure. Additionally, the Egyptian ERP market includes food and beverages, home appliance manufacturing, chemical and detergents industry, cars, engines and tires manufacturing, services, construction, and cement and ceramic manufacturing (El Sawah et al., 2008).

Ali and Miller (2017) found that 65 per cent of the Egyptian firms achieved their targeted ROI by implementing ERP systems, despite a low-success rate between 42.5 and 57.5 per cent in terms of time and cost. They referred to a triumphant story of an Egyptian company where the ERP system gave it the advantages to generate reports and perform financial functions within the Egyptian market rules. Also, "Chemco Egypt" has indicated that the implementation of ERP has helped the company improve its performance (Al Marri, 2014). Chemco Egypt, before the

implementation of ERP, consisted of legacy systems based on IBM AS400. Chemco is using the SAP-ERP system globally, whereas Chemco Egypt is using Oracle JD Edwards World system that is more appropriate to the SME nature and more compatible with the existing infrastructure.

Some scholars identified factors contribute towards the relationship between business performance and ERP systems (Elragal & Al-Serafi, 2011) and others investigated the factors affecting the ERP success factors and called for further research on more ERP critical success factors (CSFs) in the Egyptian context (Abdelghaffar & Azim, 2010). Besides, they concluded that the ERP CSFs had levels of priority in the local Egyptian market that varied from the global market. Local Egyptian companies were more interested in learning from external resources to avoid repeated mistakes compared to international firms that might be comfortable to settle into a routine where most critical factors are expected.

Moreover, Haddara and Paivarinta (2011) conducted a study among four medium-sized Egyptian companies (Table 1.1) who have implemented ERP to explain their benefits realization practices concerning ERP investments. They found the most popular ERP software within the Egyptian SMEs' sector are Al Motakamel, Focus, Infinity (a.k.a. Al-Motammem), JD Edwards, Oracle E-Business Suite, SAP, and several in-house developed Integrated Enterprise Applications.

Table 1.1

ERP Status Among Four Egyptian SMEs. Source: adapted from Haddara and Paivarinta (2011)

Company	Size	Industry	Reasons for adopting ERP	ERP modules
Nefertiti	Medium	Automotive parts distributor	Facing technical problems with the existing legacy system and absence of sufficient system documentation.	Finance and Controlling (FC), Sales and Distribution (SD), Material Management (MM), Customer Service, Human Resources Management (HRM), Customer Relationship Management (CRM).
Horus	Medium	Retail	Technical problems, including poor performance, slow transactions, and inexact report calculations.	FC, Capital Asset Management, Logistics, Procurement, and SD.
Cleopatra	Small	Printing & packaging	Technical problems due to the lack of integration, difficulty in generating reports, and control the business cycle.	FC, order management, purchasing, warehousing, plus an external customized payroll system.
Khufu	Medium	Dairy products	Lacked integration, scalability database failure, and loss of data.	FC, warehousing, purchasing, fixed assets, order management, HR, and Manufacturing modules.

According to Abdelghaffar (2012), ERP implementation in Egypt is deployed extensively in large organizations rather than in SMEs to gain a competitive advantage. The findings of that study show that social factors (e.g., economic growth, government regulations, and ICT infrastructure) and organizational factors have a significant impact on the ERP implementation success and the competitive advantage.

However, there is a lack of empirical understanding in implementing ERP systems within the Egyptian context (Mohamed, 2015). Only a few studies investigated ERP system success factors and expected value without any particular attention of the higher education sector (Abdellatif, H. J., 2014).

Furthermore, Haddara and Elragal (2015) considered ERP systems as the backbone for Industry 4.0. It is based on the cyber-physical systems and the Internet of Things (IoT), leading to the Factory of the Future (FoF). The findings found that

ERP systems are ready for the FoF through the insights of Egyptian manufacturers, ERP vendors, and their partners. Vodafone Egypt, a leading mobile provider in Egypt, achieved a successful ERP implementation. The success did not come only from implementing an ERP system, but also from the migration from Oracle to SAP. It allowed Vodafone Egypt to line up its IT infrastructures with Vodafone International. Integrating finance, HR, and Supply chain sectors gave the firm many benefits, including a better workflow, more control, and operational efficiency (Amin Azab, El Sheikh, Moharram, Ibrahim, & Yehia, 2016).

Badr, Elabd, and Abdelkader (2016) proposed a framework to facilitate the ERP integration with the other applications. That is due to the ERP integration can be challenging because of information heterogeneity. However, the proposed framework provides horizontal alignment (to allow sharing of a business process) and vertical alignment (to achieve integration by verifying compatibility among business processes) to prove the integration among the business processes and make it shareable. Also, a conceptual model based on the form-based model was introduced by merging the advantages of the hierarchical structure of ERP systems with a Feature Model (FM) to increase the ERP stakeholders' commitment to the process engineering requirements (Ali, Nasr, & Geith, 2016).

An ERP study was conducted to investigate how the internal audit function reacts to the corporate governance pressures after the introduction of an ERP system in the banking and food and beverage sectors in Egypt (Elbardan & Kholeif, 2017). The Egyptian enterprises realized the importance of the adoption of the management accounting practices involving ERP systems (Hussein, 2017). The CSFs in implementing an ERP system were investigated in the National Research Centre

(NRC) in Egypt. NRC is a research and development centre to support basic and applied scientific research. The NRC launched a tailored ERP system by its technical team supported by the ERP consultants to cover the business processes and functional units within the centre, generating different types of reports (Elmoniem, Nasr, & Gheith, 2017).

The ERP selection criteria were investigated as an early phase in the ERP lifecycle in the Egyptian context. It is critical because it assures the ERP project success by utilizing a simple multi-attribute rating technique for assessment (Haddara, 2018). There is a particular concern to business intelligence ERP systems that enable Egyptian HEIs to monitor their key performance indicators (KPIs) and make changes when needed to achieve high performance and competitiveness (El Haddad, 2017).

To conclude, after reviewing the ERP studies in the Egypt setting, it is found that a lack of research on the higher education context, as well as the focus on the pre-implementation phase, is missing. Hence, this study will contribute to the body of knowledge about investigating ERP systems in the higher education context in Egypt by applying a pre-implementation measurement framework that can provide an evidence-based analysis of the ERP perceived values among Egyptian HEIs.

1.2.2 ERP Initiative Among Egyptian HEIs

Rabaa'i et al. (2009) stated that scholarly publications that discuss ERP systems implementations in HEIs in Australia were rare to find. This deduction was also valid in U.S.A (Bradford, 2011). The situation was not different in the United Kingdom (Allen & Kern, 2001). The same status applied to the Egyptian higher education sector. Haddara (2018), Mohamed (2015), Abdellatif, H. J. (2014), and Al Kilani et al. (2012)

conducted a literature review and revealed that only very few. Recent studies were conducted on ERP systems in Egypt. The higher education sector in Egypt is quite diverse, including the public, private universities, and technical and academic institutions (SCU, 2019).

However, HEIs in Egypt have faced some issues because of the absence of ERP systems. For example, lack of integration of their business processes leading to asynchronies in their databases, work duplications, ineffective resource allocation, lack of campus-wide integration on a single platform, and difficulty of providing accessible and user-friendly students support services. Also, other issues like growing dependence on paperwork and manual procedures, loss of data integrity, validity, and reliability are critical. There is difficulty in producing meaningful reports for decision making, information security issues, and excessive loss of time and cost (Abdellatif, H. J., 2014; Al Kilani et al., 2012). However, the ERP system, with its database that can be shared with the same accuracy, can contribute to mitigating the effects of such problems.

As a result, the Egyptian Cabinet's Information and Decision Support Centre (IDSC) declared a cooperation initiative, including the application of ERP systems to the Egyptian HEIs. IDSC, as an eminent think tank in Egypt, mainly aims to support the decision-makers to foster the economic, social, and political development. This initiative provides several e-services for the HEIs by supporting the electronic link between the branches of the HEI that are located in more than a geographical range. Also, it provides the staff and students with electronic correspondence, discussion, and self-education. For instance, IDSC launches the application of the institutional electronic memory system "EMS" at the University of Banha in Egypt by providing

training to its staff on how to use it. EMS is the specialized government system for effectively managing enterprise resources and capabilities at a high technical level for transforming data into knowledge, strategic planning, and decision-making. Moreover, IDSC attempts to improve relations among Egyptian ministries and government agencies by focusing on electronic information dissemination to measure society's attitudes towards national issues (IDSC, 2017).

1.2.3 ERP Preliminary Study Among Egyptian HEIs

The purpose of this study is to investigate the Egyptian HEIs' perception of the ERP system as a new integrating tool for its value and benefits. The study was conducted among 40 HEIs in Egypt, during the first semester of the academic 2016/2017. A total of 40 IT managers of these HEIs were given the questionnaire, and all of them returned the completed questionnaire. Paper-based survey questionnaires were used to collect the data. The questionnaire of closed format questions (2 questions) was applied (e.g., "Does your organization use ERP system?"). Previous studies have used this type of question format to determine the availability of new technology usage and its value (Taharim, Lokman, Isa, & Noor, 2015). This study used the IBM Statistical Package for Social Science (SPSS) Version 25 to code and analysed the gathered data.

Furthermore, Figure 1.1 (see Table 1, Appendix B) reveals that the majority (92.5%) of HEIs has not used the ERP system yet. These findings are in line with the researches of Abdellatif, H. J. (2014), Al Kilani et al. (2012), and Albadri (2012). Therefore, this issue needs to be considered by researchers to investigate the ERP

perceived factors that may affect the ERP adoption, particularly in the pre-implementation stage.

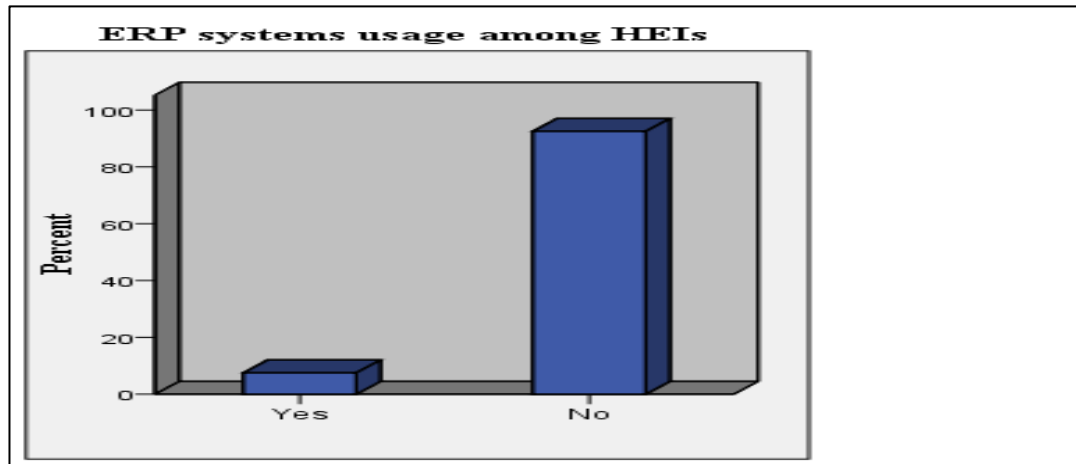


Figure 1.1. ERP usage among Egyptian HEIs

Figure 1.2 (see Table 2, Appendix B) reveals that the results about HEIs' opinion of ERP system as 75% of the IT managers believed that the ERP system is ('a good idea and they would like to use it'), while 17.5% considered ('it is a good idea, but they would not like to use it'). Only 7.5% of them ('do not think it is a good idea'). These results are in line with the studies of Badewi et al. (2018), Almahamid and Awsi (2015), Seo (2013), Abugabah and Sanzogni (2010), Bologna et al. (2009) and King (2002).

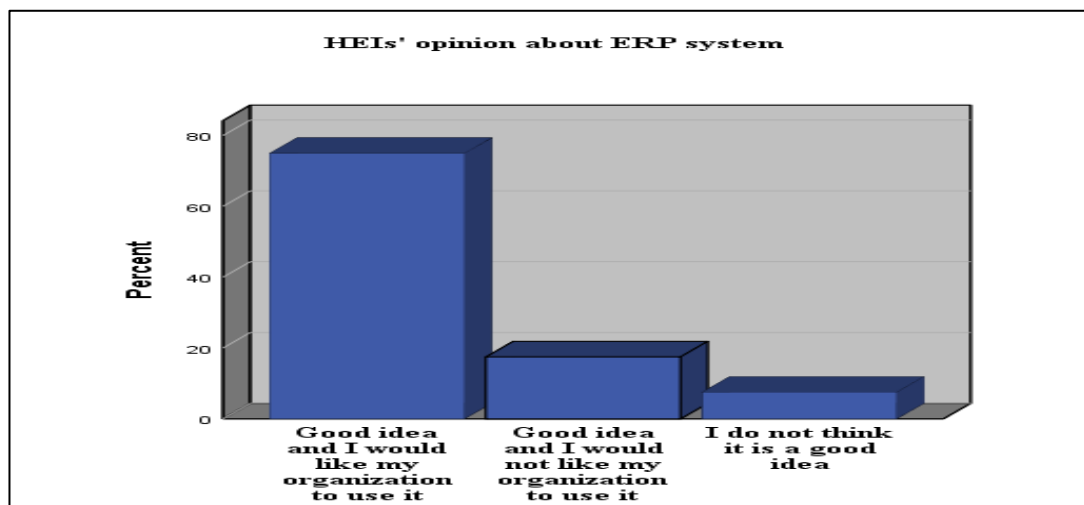


Figure 1.2. Egyptian HEIs' opinion about ERP systems

Overall, the results revealed that most of them had a positive attitude about the ERP system as an integrated system. Although the positive attitude towards ERP systems, a high percentage of HEIs have not adopted these systems yet.

Consequently, Egyptian HEIs and ERP vendors should take steps to clarify/remove any barriers and accelerate the adoption process of these new systems because of the value and benefits the HEIs can perceive. Also, this study will contribute to the body of knowledge by investigating the significant factors of ERP perceived value that may affect the ERP adoption among Egyptian HEIs at the pre-implementation stage.

1.3 Problem Statement

HEIs might encounter common challenges, whereas ERP systems can provide the right solutions. Stand-alone software for HEIs, not only can be complicated to manage but also can add a lot of redundant data, lack of internal communication, higher support and maintenance fees, lack of backup of the whole system as well as information ambiguity within the same HEI (Abugabah & Sanzogni, 2010; Al Kilani et al., 2012; Bett, 2018; Bhat et al., 2013; Profmax, 2019). Moreover, there is a great deal of attention given to the higher education sector in Egypt in recent years by a governmental call for reforming and IT development (World Bank, n.d.). This conclusion is in line with the sustainable development strategy (SDS) 2030 for Egypt. It includes the economic, social, and environmental dimensions where education reform is a part of the social dimension (Ahmed, 2018).

However, to date, the complete use of ERP technology has not been adopted by the majority of HEIs in Egypt, and there are not many ERP adoption studies

(Abdellatif, H. J., 2014; Al Kilani et al., 2012; Elbardan & Kholeif, 2017; Haddara, 2018). That can be explained in two main reasons.

First, according to the research of Terminanto and Hidayanto (2017), ERP implementation has a high failure risk of 72%. Bradford (2011) confirmed that the situation of ERP implementations in the higher education context is not different. Moreover, the rate of success of the ERP implementation in developing countries like Egypt is meagre (Asemi & Jazi, 2010; Tobie, Etoundi, & Zoa, 2016), and approximately fifty per cent of the Egyptian ERP projects are considered as failures (Abdelghaffar, 2012). They have failed to deliver their expected benefits and goals (Haddara & Paivarinta, 2011). Such failures identified are a schedule or cost over-runs, an inability to deliver objectives, and a delay or cancellation of projects (Abdellatif, H., 2014). As a result, Egyptian HEIs still are not convinced with the ERP system as a source of emerging innovation capability that will improve their organizational performance and service efficiency. This conclusion explains why ERP adoption is albeit slow among HEIs in Egypt.

Second, with substantial financial investments and the risks associated with the ERP implementations, the executives request tangible evidence on how to identify and measure the value of these ERP systems (Fadellelmoula, 2018). However, the literature might provide an uncertainty about the ERP perceived value when linked with high financial investments, the demand for fundamental changes and re-engineering of the HEIs' internal processes (Althonayan & Althonayan, 2017). Prior studies also reveal the lack of research on the existence of tangible evidence of the ERP perceived value in the higher education context (Eid & Abbas, 2017). In contrast, ERP systems are fully realized in organizations and yield significant benefits (Badewi et al., 2018).

Therefore, the main problem lies in that most Egyptian HEIs have not yet perceived the ERP value and benefits to justify the adoption costs (Abdellatif, H. J., 2014; Haddara & Elragal, 2013), not only in dollars but also in the effort for adopting the ERP systems as well as the resources necessary to provide the sustained competitive advantage in the onward-and-upward phase. As a result, the leaders of the Egyptian HEIs are rightfully raising their concerns about how to identify and measure the ERP perceived value before the adoption decision (i.e., at the ERP pre-implementation stage). That is in line with the primary objective of the current study to investigate the factors of the ERP perceived value during the pre-implementation phase.

Moreover, a preliminary study was conducted in 2017 to investigate the Egyptian HEIs' perception of the ERP system as a new integrating tool for its value and benefits. The results demonstrated their positive attitude towards the value of ERP systems. However, a high percentage of them have not adopted these systems yet. However, the majority of the HEIs' management showed their concerns about the ERP system and its value and benefits.

In conclusion, the specific problem addressed in this study is the lack of robust theoretical understanding and empirical research regarding investigating the factors of ERP perceived value at the pre-implementation stage among Egyptian HEIs that influence their organizational performance. According to Kuan and Chau (2001), adopter firms of an innovation perceive a higher level of strategic benefits than non-adopter firms do. Hence, HEIs will perceive strategic benefits if adopting ERP systems in terms of organizational performance. Also, the critical sustainability factors in the pre-implementation phase that maximize the perceived value of ERP systems remain unidentified yet. Also, there is a growing concern on the ERP pre-implementation

phase in the Egyptian context to ensure the ERP project success (Haddara, 2018). Hence, the original research question that guides this study is; what are the significant ERP perceived value factors at the pre-implementation phase to increase organizational performance among HEIs in Egypt to justify their ERP adoption?

1.4 Research Objectives

Consistent with the research problem, this study generated the following research objectives:

RO1: To identify factors of the ERP perceived value during the pre-implementation phase.

RO2: To examine the impact of the TOE factors on ERP perceived value.

RO3: To examine the impact of the ERP technological readiness on ERP perceived value.

RO4: To test the relationship between the ERP perceived value and organizational performance.

RO5: To test the moderating effect of organizational learning capability (OLC) on the relationship between ERP perceived value and organizational performance.

1.5 Research Questions

The present research attempts to answer the following questions:

1. What are the factors of the ERP perceived value during the pre-implementation phase?

2. What are the TOE factors that impact ERP perceived value during the pre-implementation phase?
3. What is the impact of the ERP technological readiness on the ERP perceived value?
4. What is the relationship between the ERP perceived value and organizational performance?
5. Does organizational learning capability (OLC) moderate the relationship between ERP perceived value and organizational performance?

1.6 Research Motivation

Educational ERP system is critical to HEIs since it integrates all facets of academic operations and administrative functions that allow a wide range of information sharing for better decision-making (Bett, 2018). Moreover, ERP systems are fully realized in organizations and yield significant benefits (Badewi et al., 2018). However, Egyptian HEIs have not realized the significance of the ERP systems yet. That is due to a few successful implementations as well as they have not yet perceived the ERP value and benefits to justify the adoption costs. This approach assumes when they perceive the value of the ERP systems earlier, it will be a motivating step to adopt these systems to gain the competitive advantage that will result from a successful ERP implementation in the future. As a result, the study's motivation is mainly to investigate the EPV factors that may affect the ERP adoption decision, particularly at the pre-implementation stage, to formulate strategies that will guarantee imminent successful ERP implementation.

The Egypt setting is a stimulating and significant context for this study for several reasons. First, the current study is consistent with a recent initiative by the

Egyptian IDSC comprising the application of ERP systems to the Egyptian HEIs. Second, Egypt, as the most highly populated country of the Arab states in the Middle East with a growing market for education, has a lot of HEIs requiring continuous development. Third, Egypt is more advanced in the field of IT than other developing countries. Forth, IT spending on ERP systems in Egypt is around 70 % that reflects a more considerable interest in these systems (Elbardan & Kholeif, 2017). Finally, the author is well connected with this country since it is his home and has enough ERP technical background with academic working experience.

Although the literature has many motivations classifications of ERP adoption, they are mostly categorized (Table 1.2) into technical, operational, and strategic aspects (Holland & Light, 1999).

Table 1.2

Motivations for ERP Adoptions. Source: adapted from Holland and Light (1999)

Motivation	Features
Technical	<ul style="list-style-type: none"> - Common platform and standardization. - Scattered and incompatible systems.
Operational	<ul style="list-style-type: none"> - Database capacity overload and inconsistency. - Data visibility and transparency. - Enhance reporting. - Process enhancements/best practices. - Improve financial management.
Strategic	<ul style="list-style-type: none"> - Ensure data security and control. - Partnerships and value networks. - Facilitate enterprise growth. - Enhanced decision making. - Globalization. - Compliance with government regulations. - Cost reduction. - Enhance customer responsiveness.

Consequently, investigating the significant factors of ERP perceived value that may affect the ERP adoption among Egyptian HEIs is critical, and understanding the potentials of this system that may improve their performance and service quality motivates the researcher to conduct this study.

1.7 Scope of The Study

The higher education sector in Egypt consists of three categories, the public, private universities, and private technical/academic institutions (SCU, 2019). It is selected as the research setting to measure the ERP perceived value at the pre-implementation stage for several reasons. The growing need by HEIs of integrating all businesses functions on a single platform like an ERP system for better decision making and organizational performance. Moreover, the university context is a valuable analytical focus for the ERP study, since its structure is designed to meet the needs of multiple stakeholders (Wagner & Newell, 2004). Finally, there has been minimal research effort on ERP in the higher education context at the pre-implementation stage. Accordingly, this study aims to investigate the key factors that influence ERP perceived value at the pre-implementation stage by HEIs in Egypt.

The purpose of this study is to explore the significant factors to perceive the ERP value. The focus on the pre-implementation stage within the organizational level since ERP systems so far have not been adopted by most HEIs in Egypt. Therefore, the first stage for the adoption decision is based on the organizational level. That is due to the decision to adopt an ERP system is highly critical, since the transformation from the manual or stand-alone systems to an ERP technology requires extensive planning by the HEIs' leaders.

To sum up, the targeted population is Egyptian HEIs. This population is appropriate because ERP research is scarce in Egypt setting (Mohamed, 2015) within the higher education context (Abdellatif, H. J., 2014), especially regarding the perceived value at the ERP pre-implementation stage (Eid & Abbas, 2017). The targeted respondents are the HEIs' IT managers. That is due to their awareness of their

institutions' technical resources and the potential benefits of implementing the new systems along with the issues of the current stand-alone systems. They are, also more likely to show their institutions' readiness to employ the ERP systems. Experienced HEIs' IT managers may provide a richer understanding of an ERP system's complexity. Hence, the implications for a positive social change include the potential to enhance the HEIs' development and increase their performance and competitiveness.

1.8 Significance of The Study

In terms of theoretical contribution, this study is one of the first attempts that advance the ERP perceived value, particularly at the firm level providing tangible evidence of the ERP perceived value in the higher education context to justify the adoption decision. This study also has successfully determined the significant factors of ERP perceived value, such as relative advantage (RA), competitive environment, and ERP technological readiness (ETR). Besides, this study found ERP perceived value (EPV) and organizational learning capability (OLC) to be significant, affecting HEIs' organizational performance (OP). The significant relationships between EPV and OP set a new direction for future studies. This study also shows the significant moderating effect of organizational learning capability on the relation between ERP perceived value and organizational performance.

The proposed model extends the research models of Pan and Jang (2008), Dwivedi, Papazafeiropoulo, Ramdani, Kawalek, and Lorenzo (2009), Ramdani, Chevers, and A. Williams (2013), Haddara and Elragal (2013), Lotfy (2015), Lian, Yen, and Wang (2014) and Mohtaramzadeh, Ramayah, and Jun-Hwa (2017) by systematical addition of TRI and RBV theories and testing their influence on ERP

Perceived value from the organizational perspective. This combination of these theories regarding the ERP perceived value and organizational performance in a new context (higher education), new user group (HEIs), and new cultural setting (Egypt), which is a critical step to advance a model (Alvesson & Kärreman, 2007).

This study initially developed and empirically validated the applicability of the EPV model in understanding the ERP perceived value within the Egyptian higher education as a new context. Also, this study initially investigated new technology factors (i.e., ETR and OLC), that were empirically tested in the ERP setting within the Egyptian higher education context. These factors were found significant in predicting EPV and OP. Hence, the study provides a model of the ERP perceived value during the pre-implementation phase.

Additionally, this study provocatively developed a set of ranked TOE factors based on the Pareto analysis from the IT innovation literature to be uniquely tested in the ERP setting at the pre-implementation stage in the higher education context. This study also highlights the importance of technological readiness in the ERP setting. It broadens the TRI theory by making relation with ERP perceived value. Similarly, it will also contribute to RBV literature in the ERP pre-implementation stage since minimal research is available within this stage (Haddara, 2018).

Furthermore, this research contributes in terms of knowledge from a few perspectives. The study's contribution to the knowledge domain lies in bringing together the concepts of the ERP perceived value and organizational performance with TOE, TRI, and RBV theories. Additionally, from the review of literature, the research offers a clear description of the ERP perceived value at the pre-implementation stage. In this respect, this study presents the factors that influence the HEIs' ERP perceived

value. Also, it has been found that the number of studies conducted on the ERP adoption in Egypt is minimal. Therefore, this research has majorly contributed to the knowledge in the area of information technology adoption in Egypt as the perceived value of ERP systems by HEIs has not been investigated yet.

Additionally, the study findings have significant practical implications for ERP vendors since giving an insight into the influential factors of the ERP adoption to support their decision making and marketing plans. ERP vendors play a critical role in a successful ERP implementation since they have conceivable long-term connections with organizations for consultation and technical support. The research model can be used to assist ERP vendors not only to set marketing strategies targeting potential adopters but also to develop strategies to increase the ERP adoption among HEIs.

In terms of practical contribution, this research provides managerial guidelines for the HEIs' management and ERP vendors. Such guidelines include the system characteristics that can be included in the ERP adoption and the challenges that will encourage the embracing of this new technology. Hence, this research supports the HEIs' management in better understanding the perceived value towards a new system being implemented. IT managers can take the necessary steps by improving the groundwork if they can identify the predictors of ERP perceived value in the ERP pre-implementation stage. This conclusion would help any organization in the long run and protect it from any catastrophe caused by ERP errors.

Moreover, this study supports ERP vendors through identifying their potential clients' readiness to adopt their systems in the higher education context and to rethink the potential client-end problems before implementing these systems. Practically, the ERP vendors are being guided for their investments through tailoring more rigorous

marketing plans that appeal to non-adopters. Marketing policies should offer HEIs supportive and promotional programs that focus on the perceived value and organizational performance. These aspects are more critical for Egyptian HEIs and boost the ERP adoption.

Methodologically, the study will reduce the risk of common method bias by the implementation of a marker variable, as suggested by Lindell and Whitney (2001). According to Podsakoff, MacKenzie, Lee, and Podsakoff (2003), marker variables let researchers control the effect of method bias by partial out the correlation between the marker variable and the other variables within the model used.

1.9 Definitions of Key Terms

Organizational performance (OP) refers to the strategic benefits or indirect ones to be realized after perceiving the value of adopting an IT innovation like an ERP technology (Iacovou, Benbasat, & Dexter, 1995; Kuan & Chau, 2001; Lian et al., 2014). Improving the organization's image, improving the strategic advantage, improving the service quality, improving customer services, and improving the relationship with business partners will also be critical.

ERP Perceived Value (EPV) is more narrowly defined here as a concept of nonmonetary value consisting of derived benefits enjoyed by the organization. Organization judges the value of the system according to how it will improve the job performance of its employees as well as increased productivity, quality, and organizational competitiveness (Bernroider, 2008; Klöcker, Bernnat, & Veit, 2014; Kotler et al., 2009).