Modelling Intention to Use ERP Systems among Higher Education Institutions in Egypt: UTAUT Perspective

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***Abstract*— Firms strive to achieve sustainable competitive advantage in diverse and changing marketplaces. Coping with such circumstances has required firms to align information technology with business strategy in order to exploit their capabilities and change business practices. In this regard, an Enterprise Resource Planning (ERP) system has become increasingly important for organizations to build strong capabilities, improve operational performance, enhance business decision making and compete in a global business context. In other words, an ERP system integrates an organization's resources and also involves business processes and organizational changes. With the ubiquitous growth of IS investment, implementation of ERP systems has grown strongly. Recently, Higher Education Institutions (HEIs) have started to adopt ERP systems. An example is Egypt, where they have done so to increase their competitiveness in the global market. However, historically, ERP implementation has been shown to have a high failure rate, which is one of the main reasons users resist using the ERP system. Conversely, users' acceptance of the ERP system is the key to the ERP implementation. Thus, this study attempts to find out the important factors that affect end users' intention to use the ERP system during the pre-implementation phase of the ERP lifecycle in the higher education context. The Unified Theory of Acceptance and Use of Technology (UTAUT) with minor adjustments is the basis of this study. Ultimately, the findings of this research could enrich employees' experience by giving HEIs a tool for better understanding those factors affecting their ability to effectively utilize ERP systems. The proposed model can enhance the current level of the motivating factors influencing employees' motivation to utilize ERP systems.Despite several studies were conducted with the UTAUT model, but researchers paid less attention to the classify the constructs like technological, organizational and individual context. At the same time, limited research was conducted using the variables like compatibility and complexity more especially in educational settings.**

Keywords*—ERP user's acceptance, Intention to use, Symbolic adoption, UTAUT, Enterprise Resource Planning, Higher Education, Egypt.*

1. Introduction

ERP systems are one of the most specific types of systems in any enterprise. They can integrate data throughout the organization and expansively supporting all the major organizational functions. Simply put, the ERP not only integrates a firm's resources, but also encompasses organizational changes and business processes [1, 2]. According to Egdair, et al. [3], Ismail, et al. [4] achieving a competitive advantage by adopting ERP systems has become essential for organizations that are looking for significant performance. Also, the competitive educational environment and the expectations of the stakeholders globally are forcing universities to improve their overall performance [5, 6]. Karia [7] refers to the importance of technology resource like an ERP system to influence a firms' competitive advantage towards moving in the Industry Revolution 4.0. This implies that the ERP system is a valuable resource-capability and its value is crucial for the adoption of ERP system and sustained competitive advantage [8].

Although organizations have made huge investments in ERP [9], ERP implementation has historically been shown to have a high failure rate [10, 11]. Approximately 70 percent of all ERP implementations fail to meet the adopting organizations' expectations [12].

End-users' unwillingness or reluctance to adopt a newly implemented ERP system has been reported as one of the most frequent reasons for lack of adoption [2, 13-17]. In Arabic nations, like Egypt resistance to change is one of the major reasons for ERP failure [6].

In addition, a major criticism is a disproportionate focus on technical issues while the requirements of organizational stakeholders are ignored [18].

The fact that improving decision-making processes and realizing anticipated returns on investments by firms' investment in information technology is highly dependent on the level of IT utilization of users. Likewise, firms' investment in information technology with plans to improve decision-making processes, and realize anticipated returns on their investments, is highly dependent on the level of IT utilization by users [19, 20]. Therefore, identifying significant factors that enhance a user's acceptance of the ERP system is an imperative task for organizations.

As a result, this study has attempted to find out the important factors that affect end users' intention to use the ERP system during the pre-implementation phase in a higher education context. In order to understand the influence of the above-mentioned factors, this study adopts the unified theory of acceptance and use of technology (UTAUT) by [21]. Although UTAUT has been used to examine ERP users' intention to use, it is not examined within the higher education context. When it comes to adopting new IT innovation, using UTAUT within this context might give different results as it does not lend itself toward failures and budget overruns like other environments. Hence, this research addresses the question of whether UTAUT is applicable among HEIs in Egypt, in particular, the intention to use an ERP system. Moreover, discovering the impact of identifying factors on an end user's usage of the ERP system is the purpose of this research. It is expected that the outcomes of this research will contribute to organizations' understanding of the key influential factors of end-user intention to use ERP systems, enabling organizations to take required corrective actions to improve end-users ERP usage, and overall, enhancing the utilization of ERP systems within the higher education sector.

From a sole technical perspective, ERP systems might be implemented successfully. Yet, an ERP's overall success hinges on the ERP users' attitudes intangible use of the system [22]. Regardless of the CSF and external factors, the authors desire to build on an inclusive perspective of ERP adoption, which provides a better understanding of users' attitude and behaviors. In summary, the objectives of the current study are:

1. To explore the applicability of the extended UTAUT model among HEIs in Egypt, in particular, intention to use an ERP system.
2. Identify major factors that affect the intention to use ERP systems among HEIs in Egypt.
3. Identify the moderating effect of age and gender on the intention to use ERP systems among HEIs in Egypt.

2. ERP status in Egypt context

There are few studies that have examined ERP stakeholders' intention to use an ERP system and its determining factors among HEIs. In fact, research on the ERP usage among Egyptian EHI is scarce. As a result of such a disparity, there is an inadequate understanding of the factors impacting the use of ERP systems [23]. For instance, the end-users may have divergent roles due to the absence of uniformity in training given to the end-user, and variance in learning orientations. Previous studies discuss that the ERP systems in Egypt have only placed a focus on two phases; pre-implementation and implementation [24].

For instance, some scholars investigate the factors affecting the success of ERP implementation [25] or the success factors during pre-implementation for effective adoption [26]. Others identify factors that contribute towards the relationship between business performance and ERP system [27]. Some researches contribute to the advance of ERP concepts, functionalities and characteristics from HEIs' standpoint and grants practical verification to in the higher education context [28].

Additionally, others explore factors affecting the ERP pre-implementation stage and adoption decision, at the organizational level [29]. However, some studies suggest that there could be a cultural challenge between Egypt and the culture of where the ERP originated, influencing the level of adoption [30].

Recent surveys showed that the success rate of ERP implementations in Egypt is extremely low compared to western enterprises, and half of the ERP implementations in Egypt are considered failures [31]. In Egypt, research on this topic has received limited attention to date. It can be observed that HEIs have been unable to gain the attention of researchers, particularly concerning ERP system usage. There is a clear research gap on

ERP system usage in HEIs overall, especially in Egypt.

Moreover, El-Seoud, et al. [32] clarified that the higher education sector in Egypt is enormous and inclusive of public, private and foreign universities in addition to institutions of technical and skilled training. There are a lot of problems that occur in HEIs and ERP systems can emphatically contribute to changing and diminishing the impacts of these issues [33].

Unfortunately, to date, the complete use of ERP has not been adopted by the foremost part of the higher education sector in Egypt. To the best of our knowledge, this study is one among the few studies that examine the factors of ERP user's acceptance using UTAUT theory within the higher education context in Egypt.

3. Theoretical Background and proposed model

The unified theory of acceptance and use of technology (UTAUT) was first proposed by Venkatesh et al. (2003) as a substitute for TAM. UTAUT includes four main dimensions: (1) performance expectancy, (2) effort expectancy, (3) social influences, and (4) facilitating conditions. There is also a set of variables that moderate the impact of the aforementioned determinants of IT usage in the UTAUT model. The moderators include gender, age, voluntariness, and experience. This theory explains the acceptance of information technology at the individual level along with it fundamentally combines eight models that clarify the acceptance factors and usage of new technologies [18, 34]. UTAUT could successfully predict the adoption of information technology in approximately 70 percent of the cases, but other user adoption models could do so in about 40 percent of the cases [21]. Moreover, UTAUT is considered a new theoretical framework and needs more investigation to validate its robustness [35, 36]. In view of this, the UTAUT model was adopted as the basis of this study. To fill this void, this research proposes an innovative model shown in Figure 1. The model is originated from LR and UTAUT (proposed by Venkatesh et al. (2003)) with few modifications. For instance, intention to use the ERP system is replaced by the combination of behavioral intention and user behavior factors. According to Ali and Arshad [37], the review of the literature the indicates that there are three main factors influencing the acceptance of technology: (1) the technology factor; (2) the individual factor; and (3) the organization factor. With regard to moderating factors, voluntariness and experience have been excluded from the proposed model since the use of the ERP system, in HEIs, is not mandatory for end-users and the research has a cross-sectional study setting [10].

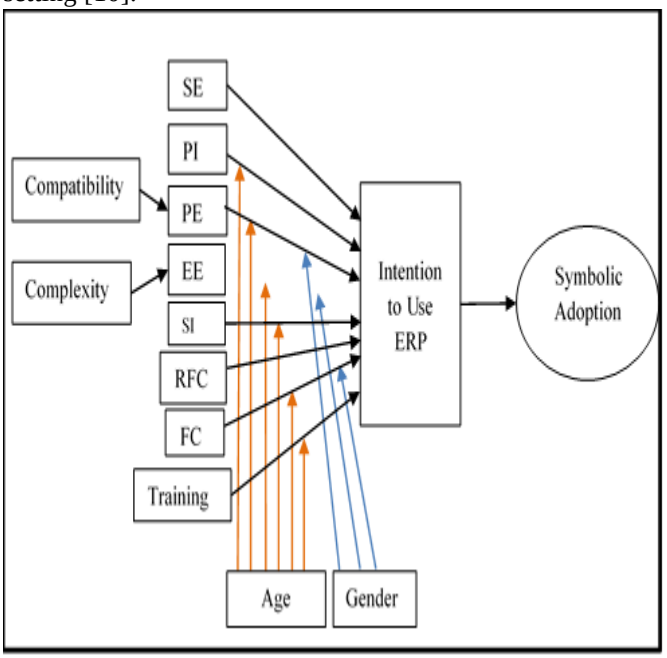

Figure 1. Proposed research framework

Key: SE= Self-efficacy, PI= Personal Innovativeness, PE= Performance expectancy, EE= Effort expectancy, SI= Social Influence, RFC= Readiness For Change, FC= Facilitating

3.1 Individual factors

3.1.1 Self-Efficacy (SE)

The concept of self-efficacy can be defined as a person's perception of their ability to perform particular behaviors such as the capacity to undertake successfully certain tasks [38]. Indeed, prior research in relation to computer self-efficacy has indicated computer self-efficacy plays a crucial role in understanding an individual's information and communication technology acceptance [39]. The study also found that individuals were more likely to succeed at the designated task if they possessed high efficacy expectations [40]. Prior studies indicated that the construct of computer self-efficacy is a robust predictor of intention by users to utilize information and communication technology [41].

H1: Perceived self-efficacy significantly affects individual behavior of using ERP systems.

3.1.2 Personal Innovativeness (PI)

Agarwal and Prasad [42] defined it as the individual's willingness to try out any new information technology. Innovation Diffusion Theory (IDT) by Rogers [43] suggests that individuals with a high level of innovativeness are more willing to adopt positive ideas and changes in

new IT and have more capacity to deal with uncertainty compared with those with a lower level [44]. If individuals are more likely to try new IT, then they can act as change agents and opinion leaders for new IT implementation in organizational settings [42]. Several studies investigated the effect personal innovativeness has on a new IT behavioral intention [44-48].
H2: Personal innovativeness has a positive effect on behavioral intention to use ERP systems.

3.2 Technological factors

3.2.1 Compatibility

Compatibility processes refer to the technological consistency with the existing users' values, past experience, and needs [49]. Despite of the fact that Lowry [50] distinguished the connection between effort expectancy and complexity of building management system, the author did not investigate the association between compatibility and performance expectancy. Hence, this relationship is still indistinct, and it was recommended to be considered in future information systems' implementation. Holsapple, et al. [51] indicated that the fitness factors Like compatibility have significant impacts on ERP satisfaction. Recently, Chin and Lin [49, 52] reported a high correlation between compatibility and PE. In their study, compatibility relates to the behavior intention (BI) through PE and has a significant relationship with PE. Accordingly,
H3: Compatibility of the system will have a direct, positive effect on the performance expectancy of the ERP system.

3.2.2 Performance Expectancy (PE)

Performance expectancy (PE) refers to the degree in which an individual believes that using the system will assist him/her to achieve benefits in a job [21]. Originally, PE resulted from the perceived usefulness (PU) as proposed in the TAM Model. According to Davis [53], PU is significantly correlated with self-predicted current usage (R2 0.63) and self-predicted future usage (R2 0.85). Hence, a system with high PU is one that the user believes will ease his/her task uncertainties and ultimately enhance work-related performance [19].
Further studies have also confirmed PE as a strong and highly significant determinant of technology usage [54, 55]. PE is considered the most influential driver to predict the intention to use an ERP system [35]. However, PE has no significance with intention to use mobile banking, because the respondents did not find mobile banking being useful, flexible and a time-saving technology [36]. Thus, the greater the PU in using the ERP system, the more likely it is that the ERP system will be adopted;

H4: Performance expectancy of the system will have a
direct, positive effect on the intention to use the ERP system.

3.2.3 Complexity

Technological complexity (TC) refers to the perceptions of the individual user about the endeavor of grasping a new technology or system [49, 52]. The impact of TC on effort expectancy has been established in former studies [49]. TC has become a main issue in the acceptance of the new system thanks to the difficulties of working with the new system and the difficulties of understanding information from the system displays [56]. Thus, the hypothesis can be:
H5: Technological complexity of the system will have a negative effect on the effort expectancy of the ERP system.

3.2.4 Effort Expectancy (EE)

In UTAUT, effort expectancy is defined as the degree of ease associated with the use of the system. According to [21], this factor was derived from the perceived ease of use factor as proposed in TAM. Davis [53] found that an application perceived by people, which is easier to use, is more likely to be acceptable. This is consistent with previous findings by Davis [53], Venkatesh and Davis [57], Amoako-Gyampah and Salam [58], Ramayah and Lo [59] Abu-Al-Aish and Love [45], and Chung, et al. [40] who found that effort expectancy (PEU) influenced behavioral intention to use the ERP system through influencing perceived usefulness. However, Adel Ali and Rafie Mohd Arshad [55] found an insignificant relation between effort expectancy and behavioural intention. Hence,
H6: Effort expectancy of the system will have a direct, positive effect on the intention to use the ERP system.

3.3 Organizational factors

3.3.1 Social Influence

Social influence (SI) factor is related to one of the factors of TAM2 such as subjective norm, whereas TAM2 is the extension of TAM by Venkatesh & Davis, (2000). Subjective norm factor has been used as a direct effect on the intention to use in TAM2 by bypassing the perceived usefulness factor for mandatory systems. For the voluntary system, however, the social influence constructs were not found as a significant predictor of intention to use factor [21]. Venkatesh et al. (2003) argued that subjective norm has a significant influence on perceived usefulness when people consider the outcome will benefit to their social status and recognition. This case is common among

people in their early stage of job enrolment where they want to improve their job performance by gaining know-how on a particular system. Accordingly, SI factor significantly relates to intention to use different technologies [36, 55]. However, this normative pressure will be weakened by the passage of time when people have already gained social status and experience. Therefore, social factor is not found as a strong basis for behavioral intention to use a system Lee [60, 61].
H7: Social influence related to the system will have a direct, positive effect on the intention to use the ERP system.

3.3.2 Facilitating Condition (FC)

FC is defined as the degree to which an individual believes that organizational and technical infrastructure exists to support the use of a system [21]. Hence, the underlying constructs have been developed to address organizational and technical aspects. These constructs were designed to remove the barriers to use the system [21]. Additionally, the aim of the FC constructs is to measure the differences between an individual's own style of work and the use of the system in an organizational setting [62]. Thus, the objective of FC in ERP setting is the same as tapping the fit between the working style of the individual and the use of the system in the organization. Many works of literature indicate that the facilitating condition has a positive effect on behavior intention to use ERP systems [2, 10]. Hence,
H8: Facilitating conditions related to the system will have a direct, positive effect on the intention to use the ERP system.

3.3.3 Training

Lack of training may lead to building a negative attitude among the end user toward accepting a new system. Thus, the most effective training program can build confidence and highlight perceived benefit among the end user to accept and use an ERP system [63]. Additionally, the increased experience of the end user with certain technology eventually influences the perceived ease of use [59]. Therefore, training has been considered as an effective tool to accelerate the level of skills, knowledge, and efficiency of the end users which further influence their behavior to use a system. Huang, et al. [64] found that lack of training or "insufficient user training" was ranked the third among top ten risk factors of ERP failure. Additionally, Umble, et al. [65] also argued that sometimes employees invent their own style of doing tasks if they do not comprehend how the current system work. In doing this they manipulate the existing systems where they found easy to gain access which may create complexities in the future. Hence,
H9: Training related to the system will have a direct, positive effect on intention to use the ERP system

3.3.4 Readiness for Change (RFC)

It refers to the extent to which organizational members hold positive views about the need for organizational change, as well as their belief that changes are likely to have positive implications for them and the organization. Readiness for change plays a crucial role in mitigating resistance to change and thus in reducing the failure rate [66]. Effective ERP system implementation requires enterprise-wide initiatives, bringing large-scale change generally requiring a large investment of resources; failure results in a significant loss.
Creating the belief that organizational change is needed requires an agreement that there is a gap between the current and desired end states. In general, an ERP system is introduced into a company to improve its organizational effectiveness and fill any performance gap [38]. A prior study of ERP implementation by Amoako-Gyampah [19] suggested that a push for change from top management was likely to produce a positive perception. When employees are positive about and ready for organizational change, they appear to be more willing to try out a system. Also, when informed about the ERP system and its impact they have less uncertainty about the technical changes [67]. Thus, when employees are ready for change, they will find the systems more useful. Therefore, it is hypothesized:
H10: Readiness for change has a positive effect on the intention to use the ERP system.

3.4 Intention to use the ERP system

Intention to use the ERP system is the behavioral intention of the end users of an organization to use the ERP system within an organizational setting and subsequently refers to the actual use of that ERP system. In the literature, several studies used the same dependent variable in the past [19, 58, 59].
Literature suggests that there is a strong correlation between behavioral intention and actual behavior Venkatesh and Davis [57]. Thus, the end users will use the ERP system when they have higher perceived ease of use. Additionally, Amoako-Gyampah and Salam [58] emphasized to examine the behavioral intention to use the system when the practice might be mandatory. Therefore, in these circumstances, behavioral intention can be viewed as the likelihood that a user will utilize an ERP system in the future. Thus, this construct was

adopted for this research endeavor indicating that end-users intend to utilize the ERP system.

3.5 Outcome: Symbolic Adoption

Symbolic adoption indicates end-user acceptance of mandatory technology [68-70]. Recently, Symbolic Adoption has been measured in ERP setting [15, 71-73] Less user resistance and high user acceptance will lead to a higher level of Symbolic Adoption in the mandatory complex information system [74]. In mandatory context, user resistance would help predict the degree of Symbolic Adoption of a new ERP system [72]. About symbolic adoption, Wang, et al. [75] explained individuals within the organization with high symbolic adoption is more likely to invest time and effort to engage in systematic learning. As a result, the hypothesis is:
H11: End-user intention to use ERP system has a positive impact on the symbolic adoption of the user.

3.6 The Moderating Effect

3.6.1 Moderator effect - Age

Venkatesh, et al. [21] argued that literature about job-related attitudes found that younger workers are focusing more on extrinsic rewards. In contrast, it is hard to find older end users to accept and adopt the new system in the organization. Similarly, older people tend to give low effort to learn a new system. Consequently, older people have a lower performance expectancy because they are giving less effort to learn a new system. Additionally, they do not believe that increased effort will increase their job performance. Venkatesh, et al. [21] identified age as a moderating variable for the following relationship:
H12: The influence of personal innovativeness on user intention will be moderated by age.
H13: The influence of performance expectancy on user intention will be moderated by age.
H14: The influence of effort expectancy on user intention will be moderated by age.
H15: The influence of social influence on user intention will be moderated by age.
H16: The influence of facilitating conditions on user intention will be moderated by age.
H17: The influence of training on user intention will be moderated by age.

3.6.2 Moderator effect– Gender

Literature suggests that gender has a moderating effect on the behavioral intention to use the new system. For example, Venkatesh, et al. [76] argued that male and female exhibited different results on the use of information system in different situations. Literature related to gender differences found that men are highly task-oriented than female. Thus, men have higher performance expectations in that job that are highly tasked accomplishment oriented [21]. On the other hand, female end users were found as less task oriented. Additionally, they exhibited a higher level of computer anxiety comparing with their male colleagues. Like Venkatesh, et al. [21] this study use gender as a moderator for the following relationships:
H18: The influence of performance expectancy on user intention will be moderated by gender.
H19: The influence of effort expectancy on user intention will be moderated by gender.
H20: The influence of facilitating conditions on user intention will be moderated by gender.

4. Methodology: Sampling size and technique

This research is a part of multi-phased research aiming to investigate the use of the ERP system by HEIs in Egypt. The goal of this research is to identify the factors that affect the intention to use the ERP system among end users in Egyptian higher education setting. This research proposes the conceptual model by extension the Unified Theory of Acceptance and Use of Technology (UTAUT) by five new variables: compatibility, complexity, readiness for change, self-efficacy, personal innovativeness, and training. Additionally, the hypotheses are developed with the table of constructs and measurement items. Hypotheses will be tested by a quantitative method that based on the seven-point Likert scale questionnaires for its highest variance [77], ranging from “strongly disagree” to “strongly agree”, taken from relevant prior research and adapted to ERP usage that will be distributed to collect data from end users of ERP systems in Egyptian HEIs (See Appendix A). Finally, in order to generate the integrated model, Structural Equation Model (SEM) will be applied to analyze the data collected.
Using Faul, et al. [78] G*Power statistical software to compute the adequate sample size—for a fixed model using linear multiple regression with R2 deviated from zero—for a 0.15 medium effect size, 0.80 statistical power, 0.05 significance, and nine indicators per independent variables, the minimum sample size needed to be was 114 users. Many challenges due to time, money and access prevent a researcher to collect data from the entire population of study. Sampling thus gives higher accuracy and faster results. According to [79], there are two techniques of sampling, namely, probability sampling and non-probability sampling. In contrast to the probability sampling method, the probability of choosing each element from a population as a

sample subject is not known. Additionally, when the generalizability is not mattered, the non-probability technique is generally used [80]. On the other hand, the researchers resort to the non-probability technique when they would obtain preliminary information than generalize their study's findings [79].

In this research, due to some limitations in selecting a random sample of the ERP end-users within HEIs with the inability to obtain the listing of their names and address, they scattered all around the country, a high cost to conduct the study at every ministry, and a hard time to access certain groups or classes of employees, the researcher has decided to apply a non-probability sampling with a convenience sampling technique. This technique is considered fast and easy where 114 ERP end users can be selected because of their convenient accessibility and proximity to the researcher [79].

5. Discussion, Conclusion and Future Research

This study provides a novel model for ERP intention to adopt by the end-users in the higher education context. Therefore, this research provides an understanding of the ERP adoption factors from the individual perspective among the HEIs in Egypt by identifying and investigating the factors affecting the users' intention to utilize the ERP system. In addition, the paper's objective was to develop a conceptual model that identifies the factors affecting the intention to use ERP systems in Egypt. The model developed in this study suggests that the Independent variables of self-efficacy, personal innovativeness, compatibility, performance expectancy, complexity, effort expectancy, social influences, facilitating conditions, and training, which are the factors of the intention of end-users to utilize ERP systems.

It also can contribute to the literature review of IT adoption, ERP, and higher education by 1) improving our understanding of the adoption stage of the ERP by the end-users within the higher education context, unlike in previous studies which examined ERP adoption within other contexts, 2) identifying factors of successful ERP adoption by ERP stakeholders among HEIs wishing to gain a competitive advantage, and 3) extending the use of the UTAUT model by adding five external variables and two moderating variables, which proposes a new model.

Hence, this contribution might eliminate or reduce the risk of failure, as well as improving the chances of success of their ERP projects.

On the practical side, this research provides an understanding of some of the difficulties faced when rolling out large-scale IS infrastructures, particularly in the higher education sector in Egypt. It offers insights into strategies that higher education management may want to follow when they decide to adopt ERP technology. Moreover, the findings of this study suggest that practitioners or managers in Egypt should focus on the level of technological innovation within the organization before adopting the ERP system. This implies that when end users are more likely to invest their time in learning ERP knowledge, they are more willing to use the ERP system. A higher level of symbolic adoption is an indicator to the managers of the readiness of the end users to use ERP.

However, this research has several limitations such as a lack of empirical study and a limited number of factors pertaining to the ERP adoption stage at the individual level. Hence, there is a need for future research which investigates more factors in order to get an agreeable set of CSFs and also usability []. The outcomes of this research are also limited due to the geographical focus on Egyptian HEIs. Overall, this research is important in helping HEIs to achieve competitive advantages through the adoption of ERP by focusing on user acceptance at the individuals' level.

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Appendix A: Table 1. The measures

Construct	Corresponding adapted Items	Items Sources
Performance Expectancy	PE1. Using ERP system will improve my performance PE2. Using ERP system will save my time PE3. Using ERP system will increase my productivity PE4. I will find ERP system useful PE5. Using ERP system will increase my chances of getting a better quality of the work.	Luarn and Lin [81] Venkatesh, et al. [21]
Effort Expectancy	EE1. Learning to use the ERP system is easy for me EE2. Becoming skillful at using ERP system is easy for me EE3. Interaction with the ERP system is easy for me EE4. I would find ERP system is easy to use	Venkatesh, et al. [21] and Luarn and Lin [81]
Social Influence	SI1. People who are important to me think that I should use the ERP system SI2. People who are familiar with me think that I should use the ERP system SI3. People who influence my behavior think that I should use the ERP system SI4. Most people surrounding with me use ERP system SI5. I have support from my manager on the use of the ERP system for my job	Venkatesh, et al. [21] and Luarn and Lin [81]
Facilitating Conditions	FC1. My living environment supports me to use ERP system FC2. My working environment supports me to use ERP system FC3. Using ERP system is compatible with my life FC4. Help is available when I get the problem in using the ERP system	Venkatesh, et al. [21] and Luarn and Lin [81]
Compatibility	C1. Using ERP system will be compatible with all aspects of my subordinates' work C2. I think using ERP system will fit well with the way my subordinates like to work C3. I believe my subordinates' work style will be in line with the ERP system	Chin and Lin [49]
Technological Complexity	TC1. I have no difficulty using ERP system menus to check records TC2. I have no difficulty working with ERP system TC3. I have no difficulty importing and exporting data from other devices	Chin and Lin [49]
Personal Innovativeness	PInn1. I like to experiment with new information technologies. PInn2. When I hear about new information technology, I look forward to examining it. PInn3. Among my colleagues, I am usually the first to try out a new innovation in technology.	Agarwal and Prasad [42] Abu-Al-Aish and Love [45]
Self-Efficacy	I can use the ERP system …. SE1. If I have the built-in help guidance for assistance SE2. If someone shows me how to do it SE3. If I have seen someone else using it SE4. If I can call someone for help	Venkatesh, et al. [21], and Luarn and Lin [81]
Readiness for Change	RFC1. I look forward to changes at work RFC2. I find most change to be pleasing RFC3. Other people think that I support change RFC4. I am inclined to try new ideas RFC5. I usually support new ideas RFC6. I often suggest new approaches to things RFC7. I intend to do whatever is possible to support change	Dunham, et al. [82], and Kwahk and Lee [38]
Training	TR1. The kind of training provided to me should be complete TR2. My level of understanding will be substantially improved after going through the training program. TR3. The training will give me confidence in working with ERP system TR4. The training should be of adequate length and detail TR5. The trainers should be knowledgeable and will aid me in my understanding of the ERP system	Soto-Acosta, et al. [83]
Intention to use	When dealing with work, ITU1. I prefer to use the ERP system ITU2. I intend to use the ERP system ITU3. I would use the ERP system	Venkatesh and Zhang [41] Luarn and Lin [81]
Symbolic adoption	SA1. I am enthusiastic about using ERP SA2. I am excited about using ERP SA3. It is my desire to see full implementation of the ERP system	Nah, et al. [68] Seymour, et al. [69] AlHirz and Sajeev [72]