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The role of employees' awareness as a mediator factor in the behavior intention to adopt of e- management

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Abstract

Information and communication technology (ICT) has been implemented mainly in government organizations, and electronic management "e-management" has become popular. However, prior research mainly focuses on e-management adoption from the perspective of citizens, and little research has been conducted from the government employee perspective, this study focuses on the employee who use the systems to process users' transactions (G2E) in Libya. This paper addresses the problem of how to determining the factors that influence an employee to adopt an e-management system implemented in the workplace by focusing on acceptance technology theories. The quantitative data collection method was employed in this study by distribute questionnaires. Data analysis for the final study model was performed by Structured Equation Modeling (SEM) using smart PLS software.

الملخص

تم تطبيق تكنولوجيا المعلومات والاتصالات (ICT) بشكل رئيسي في المؤسسات الحكومية، وأصبحت تطبيقات الإدارة الإلكترونية منتشرة بشكل واسع في العالم اليوم. تركز الأبحاث السابقة بشكل أساسي على اعتماد الإدارة الإلكترونية من منظور المواطنين، وقد

تم إجراء القليل من الأبحاث من منظور الموظف الحكومي. تتناول هذه الورقة مشكلة كيفية تحديد العوامل التي تؤثر على الموظف لتبني نظام الإدارة الإلكترونية المطبق في بيئة العمل من خلال التركيز على نظريات قبول التقنية. تم اعتماد الطريقة الكمية في جمع البيانات عن طريق توزيع الإستبيانات على عينة الدراسة. تم إجراء تحليل البيانات لنموذج الدراسة النهائي بواسطة نمذجة المعادلات الهيكلية (SEM) باستخدام برنامج Smart PLS.

Keywords: E-management adoption, G2E, Behavior Intention, Awareness

1. Introduction

The world today lives information age after a long period in the industrial age and one of the advantages of the information age is Information Technology and Communications (ICT). One of the most important developments in ICT in recent years is the electronic government (e-management). The Government in Libya is still managed manually through multi-organizational administrations and Libyan citizens still suffer from face-to-face governmental services. Basically, e-management is composed of information technology, government and people (Waisanen, 2002). There are many problems in the Libyan e-management project implementation such as political, social and technical problems. In developing countries, which is Libya is one of them, this transformation process to e-management has just begun (Ghazal, 2014). E-management is more than a website, email or processing transactions via the internet, moreover it becomes a natural extension of the technological revolution that has accompanied the knowledge society.

This study began by reviewing the relevant literature on the adoption of e-management. Firstly, the list of all articles was collected from the indexing online database “ISI Web of Science” and “Scopus”. At last, 191 articles were retrieved on e-management adoption using the above-searched keywords. The purpose of this was to trace the research that is particularly related to e-management adoption in developing countries. Then research articles were collected from different academic online databases likes the Science

Direct, ACM portal, IEEE, SAGE and Springer Link from the period 2003 to 2020. Having retrieved these articles, the abstracts were read and analyzed, and article that is not related to the area of study were removed.

2. Literature Reviews

E-management has grown rapidly over the past 15 years, since the first attempt of the United Nations to benchmark e-management in 2001. In the 2016 Survey, 29 countries score "very high", with e-management development index (EGDI) values in the range of 0.75 to 1.00, as compared to only 10 countries in 2003. Since 2014, all 193 Member States of the UN have delivered some form of online presence. E-management is now ubiquitous in many more countries, a stark contrast in comparison to 2003 – when 18 countries or about 10% of countries globally were without any online presence.51 percent of countries had "low EGDI" or "medium EGDI" values in 2016, as compared to over 73 per cent of countries in 2003 (UN, 2016).

(Wang & Liao, 2008) and (AlKhatib, 2013) classified e-management into four interaction categories:

1- G2C indicates the interaction between government and citizens to access high-quality government services and information in an easy efficient and effective manner.

2- G2E indicates the interaction between government and employees in a more effective method to enhance productivity by allowing federal employees to access various benefits on-line.

3- G2G indicates the interaction between government agencies with one another on functional and local levels.

4- G2B indicates the interaction between government and businesses by providing interactive advice through the Internet to help various businesses.

There is no universal model to implement e-management (Kor, Orange, Elsheikh, Cullen, & Hobbs, 2008). Thus, it is necessary for any government to take into account the cultural, political and demographic influences in order to narrow the gap between the reality and design. (Heeks, 2003) agreed that this gap is one of the main reasons for the cause of the failure of e-management projects

in developing countries. Libya like many other technologically developing nations, resources such as skills, manpower, finances, infrastructure, are not infinite. There is a need to identify and priorities which e-management services should be developed first and also which are the most important factors in getting acceptance of the technology. Just giving people computers will not make people computer literate: people need training and understanding about the technologies and why it is important to them. Technologies acceptance theories are also suggested as tools to investigate the acceptance factors of e-management services transformation in Libya (Sweisi, 2010).

Libya is unstable situation country where it has impressive literacy rate among the population, but the major issuesare that there are less personnel with Information Technology, ICT skills and Social factors exert considerable impact on implementation of new technologies. A large number of Libyan citizens don't accept this kind of communication system, because of many reasons such as low educational system possibility of using new technology, high cost of implementing new technology. Libya is in its early stage of E-management development, and there is much more to be done (Aref Busoud & Živković, 2016).

This study was concentrated on G2E services mostly because it is the most developed area in e-management project in Libya. Whereas, in Libya as a developing country culturally do not use from the electronic ways for doing their activities, e-management is a new way of doing governmental work in Libya. Creating new systems and procedures is not enough; maintenance, ICT training and social acceptance are as equally important. A basic condition for user acceptance of e-management services is their dependability on user satisfaction.

3. Theoretical background

Lindgaard, 1994) argues that even with the best methodology and model used in the design of a usable interactive system, still you need to assess the design and test the system to ensure they meet the end-user requirements. Furthermore he stated that usability dimensions should be captured so that they can directly be translated

into meaningful quantitative statements. Among the usability dimensions identified were effectiveness, learnability, flexibility and attitude. (Lindgaard, 1994) defined requirements as a set of condition needed by the user to achieve an objective or condition; they must be met by a system to satisfy standard specification. The end user acceptance of the online airline reservation system as a new technology is the critical key aspect of the systems' establishment. Without such acceptance no technology can exist on the market. According to Dillon & Morris, (1996), user acceptance is defined as the demonstrable willingness within a user group to employ information technology for the tasks it is designed to support. User perception of the system is influenced by the way people around him evaluate and use the system (Trevino et al. 1987).

All theories consider attitude to be a relationship between a person and an object (Davis, 1989). User acceptance is an essential factor determining the success or failure of any information system project, (Davis, 1989). Many studies on information technology report that user attitudes and human factors are important aspects affecting the success of information system (Davis, 1989). In the context of information technologies, there have been distinctive approaches to the study of attitude which one of them are theory reasoned action (TRA), technology acceptance model (TAM), extended technology acceptance model, social information processing and also innovation diffusion theory (IDT) approach, as well as unified theory of acceptance and use of technology (UTAUT).

4. Study Model

In a preliminary review of the literature that conducted on ISI and Scopus papers by using indexing databases which are web of science and Scopus, only a few studies located related to adoption technology from the employee perspective at the workplace circumstances environment. Based on theories and models of technology acceptance, also the related previous studies, the framework for this study has been adapted by conducting systematic literature review.

This study focused on the review of the existing literature related to the adoption of technology theories in IT/IS. In the context of the adoption of e-management system, the researchers also addressed the need to recognise more factors that may be relevant. Also, the present study was addressed in light of previous studies on technology adoption in general, and IT / IS in particular.

4.1. Behavior Intention (BI)

TAM considers intention as a proper proxy for the prediction and examination of a user's behaviour to a given system. Numerous studies have consistently shown a significant relationship between technology adoption and BI. A significant path also connects BI and technology adoption in the TAM, DRPB, and TPB models. BI has a large influence on user adoption; so, BI is important in the prediction of adoption behaviour. In the previous hypotheses, BI was considered a dependent variable and refers to the subjective probability of a person performing a certain behaviour (Fishbein & Ajzen, 1977). Earlier studies have shown that BI has a significant and positive impact on adoption behaviour (Ajzen, 1991; Venkatesh et al., 2003); hence, this study aims to validate this hypothesis (H) among employees in Libya. Thus, it is hypothesized that:

H1: BI hasinfluence on employees' adoption of e-management systems.

H2: BI hasinfluence on employees' awareness to adopt e-management systems.

4.2. Awareness

Self-awareness theory, developed by (Duval & Wicklund, 1972; Okon, Kayode-Adedeji, T Afolayan, & Iruonagbe, 2019) states that "when we focus our attention on ourselves, we evaluate and compare our current behaviour to our internal standards and values". This elicits a state of objective self-awareness. described awareness as "users going through a process of knowledge, persuasion, decision and confirmation before they are ready to adopt a product or service". Awareness, as per (Rogers & Shoemaker, 1971), can be described as users undergoing a process of knowledge, decision, persuasion, and confirmation before being ready to accept a product. E-management system has mainly been adopted in developing nations and is considered a recent trend (Mustafa et al., 2020; Norris & Moon, 2005). Therefore the individual must be conscious of nature, drawbacks and security, usability and benefits of public sectors e-

management system before deciding whether or not to adopt the new systems and applications (Ibrahim & Zakaria, 2016). The intent of a person to adopt a new system can be influenced by his / her attitudes as already identified by both TPB and TRA use determinants. Individual beliefs are more probable to be established if individuals are aware of e-management system when they are introduced initially. Awareness means the extent people are aware of e-management system (Charbaji & Mikdashi, 2003). A prior study showed that users' awareness of IT development in general and of e-management system, in particular, is essential for improving their behaviours (Charbaji & Mikdashi, 2003). From the above scholars' view, the researchers can find that the connection between awareness and behaviour intention will have a significant impact on the BI; therefore, the proposed hypothesis is:

H3: Awareness has a significant influence on employees to adopt e-management systems.

4.3. Mediator Role of Employees' Awareness

The current study examined the role of employees' awareness in mediating the relationship between Behavior Intention and employees' adoption of e-management systems in Libya based on assuming of more favourable attitude will generate more positive behaviour intention to adopt e-management.

H4: Employees' awareness has a mediated role between BI and employees' adoption of e-management systems.

5. Methodology

Data collection from the government employees, the questionnaires were sent to their offices after prior arrangement. The government departments were sampled at this phase; the selection of the relevant departments was based on their influence and level of involvement in the Libyan e-government. The sampling strategy requires that all the targeted departments must be active in the provision of e-services and e-transactions to citizens and other stakeholders. Hence, the government employees at the operational level who are actively involved in e-government were selected for this study.

Out of the 500 distributed questionnaires, only 254 questionnaires were returned with quantitative data. After processing the returned questionnaires for incomplete responses and random responses, 49 responses were found not usable, leaving a total of 205 responses for the analysis. This study consisted of a sample size of 205 respondents belonging to the employees of Libyan Interior Ministry. Figure 1 shows the study model which was analysed by using a survey instrument constructed in the light of earlier studies. A five point Likert scale ranging from strongly disagree (1) to strongly agree (5) is utilised to represent the features of the variables which entails the characteristics that highlight the requirements of the variables. The items of Awareness (AWR), Behavior Intention (BI) are adapted from previous studies. As shown in Figure 1.

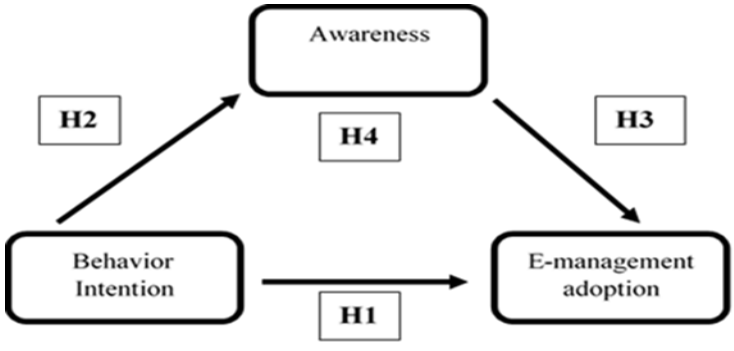

Figure 1 The study model

6. Results

This part concentrates on the data analysis process and results. Data has been gathered from the government employees who use e-management to provide better services in Libya.

Partial least squares structural equations modelling (PLS-SEM) is a factor analysis and multiple regression combination which contains several statistical methods that permit complex relationships between one or more dependent variables and one or more independent variables.

The measurement model assessment requires rules for calculating the latent variables based on the variables observed and defines the

measuring properties of the variables observed. That is to say, measurement model assessment links the observed. As illustrated in Table 1, all constructs have acceptable internal consistency.

Table 1, illustrates the Construct Reliability and Validity

Constructs	Items	Loading	Cronbach's Alpha	CR	AVE
Adoption (ADP)	ADP1	0.882	0.904	0.933	0.776
	ADP2	0.865			
	ADP3	0.873			
	ADP4	0.903			
Awareness(AW)	AWR1	0.837	0.929	0.946	0.778
	AWR2	0.913			
	AWR3	0.859			
	AWR4	0.885			
	AWR5	0.914			
Behaviour Intention (BI)	BI 2	0.873	0.885	0,920	0.743
	BI 3	0.864			
	BI 4	0.866			
	BI 5	0.845			

When a construct differs from other constructs by empirical standards, discriminatory validity is defined. Therefore, forming discriminant validity implies that a construct is different and captures phenomena not defined in the model by other constructs (Hair et al., 2016).In PLS v.3, a new method has emerged for establishing the discriminant validity assessment through heterotrait-monotrait (HTMT) ratio of correlations method (JörgHenseler, Ringle, &Sarstedt, 2015), as shown in Table 2.

Table 2, illustrates the Discriminant Validity HTMT

	Adoption	Awareness(A)	Behaviour Intention (BI)
Adoption		-	-
Awareness(AW)	0.625	-	-
Behaviour Intention (BI)	0.660	0.534	-

The results show all indicators' outer loadings on their constructs are greater than all of their loadings on other constructs. So there is no cross loading in this data set.

Path analysis is a statistical method based on linear regression. According to the research model that includes mediator, it is possible to evaluate the direct effects of one variable on the dependent variable and also mediating effect as an interaction term between independent variables and mediators. When it is confirmed that the construct assessments are genuinely valid and reliable, the following stage addresses the measurement of the structural model (Hair et al., 2014). It entails analysing the predictive capabilities of the model and also the relationships between the constructs. The primary standards for measuring the structural model assessment in smart PLS-SEM are considered the measurement of collinearity among the predictor construct, the significance of the path coefficients, the level of the R2 values, and the predictive relevance (Q2), and the f2 effect size. Table 4 and figure 2 show the path coefficient results of this study

Table 4, illustrates the Path Coefficients

Variables	Adoption (ADP)	Awareness(A)
Awareness(A)	0.090	-
Behaviour Intention (BI)	0. 660	0.584

SEM-PLS was applied for testing and evaluating the research hypotheses.

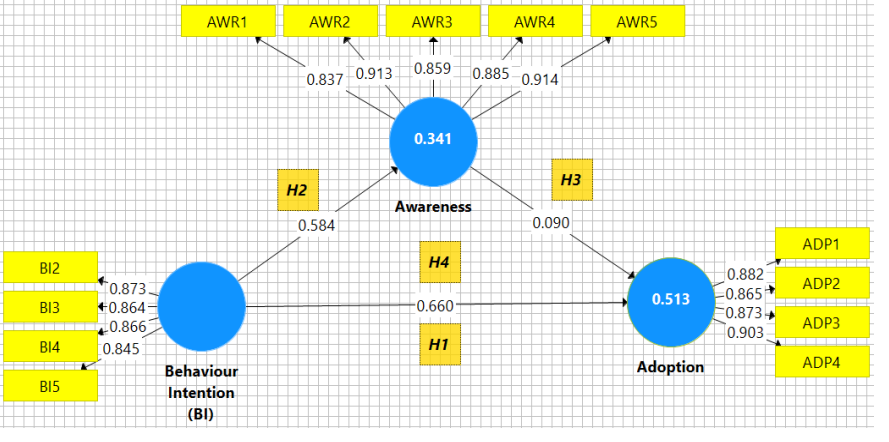

Figure 2: Path Model

The results of the bootstrapping method shown in Table 5, demonstrate a p-value for each path. Taking into account p-value < 0.05, all of the two structural model relationships "hypothesis" were significant. In this model, all significant IV's had positive path coefficients.

Table 5, illustrates the T-Values and P-Values

	T Statistics (|O/STDEV|)	P Values
Awareness -> Adoption	**1.433**	**0.153**
Behaviour Intention (BI) -> Adoption	**10.436**	**0.000**
Behaviour Intention (BI) -> Awareness	**12.981**	**0.000**

To test the accuracy of the model, calculate the Coefficient of Determination R2. Theresults as shown in table 6.

Table 6, illustrates the R square

Variables	R square
Adoption	**0.513**
Awareness(A)	**0.341**

When the exogenous constructs are excluded from the model, a change in the R2 value can be used to determine if the omitted construct primarily affects the endogenous constructs. This measurement is known as the size of the effect f2.The values for assessment of effect sizes f2 are as shown in Table 7.

Table 7, illustrates the F square

	Adoption	Awareness(A)
Adoption		-
Awareness(A)	**0.011**	-
Behaviour Intention (BI)	**0.588**	**0.518**

7. Conclusion

The target of this study is to identify and understand the main factors affecting the employees in the workplace environment to adopt the technology. The gap between theory and practice in new technology is considered the main issue in the developing countries. E-management can make a valuable contribution to development. However, at present, the majority of e-management for development projects fail either totally or partially (Heeks, 2003).

These underlying cause of failure as a result of the oversize gaps between project design and on-the-ground reality (known as 'design-reality gaps'). The transformation from traditional government to e-management services is complex, touching the political, cultural, organisational, and technical aspects of everything that the government and other public service providers do. (Heeks, 2002) posited that e-management success and failure depends on the size of gap that exists between current realities and design of the e-management project.

Based on the study results revealed the most critical factors that impact government employees intent to adopt e-management. These two significant relationships which are:

BI has significant influence on employees' adoption of e-management systems.

BI has significant influence on employees' awareness to adopt e-management systems.

Awareness has nonsignificant influence on employees to adopt e-management systems.

This research has provided useful and valuable information to decision-makers' and designers that will help e-management employees with the required understanding to increase users' adoption.

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