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THE EFFECTS OF TECHNOLOGY, ORGANISATIONAL, BEHAVIOURAL FACTORS TOWARDS UTILIZATION OF E-GOVERNMENT ADOPTION MODEL BY MODERATING CULTURAL FACTORS

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ABSTRACT

In the new knowledge-age economy, which revolutionary changes in science and technology have buttressed, information and knowledge have become critical elements in economic competitiveness and developing countries must engage in more active roles in formulating national policies and strategies promoting an information economy to garner benefits via economic and social growth development. E-Government is believed to play a fundamental role in achieving these ends. This study objective are to examines factors associated with the adoption of B2G e-government in Iraq and to determine the impacts of its adoption on these businesses by examining the effects of technology, organisational, and behavioural factors towards the utilization of the E-Government Adoption Model among Iraqi Business Organizations using moderating cultural factors in a quantitative exploratory approach. The study utilized listed on the Iraq Stock Exchange including banking, insurance, investment, and service and industrial companies, hotels, and corporate communications sectors. The results of hypothesis testing show several significant relationships such as relative advantages, Compatibility, Security, Management Support, Performance Expectancy, Perceived Usefulness on e-government, and Ease of Use by moderating uncertainty to e-government, IT Infrastructure by moderating language on e-government adoption.

Key words: *Adoption*, *B2G e-government*, *model*, *cultural factors*, *Iraq*

1. INTRODUCTION

To diminish technological gaps with developed countries, many developing countries including Iraq have commenced e-initiatives such as e-government. The Iraqi government has long understood the benefits of e-government and has taken steps to reap these benefits (Pacific Council on International Policy). As part of this program, the United States Agency for International Development (USAID) and the Iraqi Ministry of Science and Technology signed an agreement to develop an e-government project in Iraq with the aim of transforming the country to e-Iraq. The Ministry of Science and Technology and the Ministry of Communication began by starting to develop the communication infrastructure necessary for the e-government implementation project in 2004. By 2010 the communication infrastructure was ready [1] and a few programs had been implemented to encourage the adoption of e-government especially among businesses [2]. However, little knowledge is available concerning the e-government adoption model for businesses in Iraq.

Nonetheless, the most critical issue is not classifying the reasons for failure into categories but is understanding potential failings, thereby becoming better able to deal with such issues if they were to arise Hence, a need exists for further study to narrow the knowledge gap due to limited studies in e-government adoption and implementation that are vital prerequisites for e-government success. Several authors have suggested further study to be conducted in this area to avoid failures of e-government initiatives [3], [4], [5]. Furthermore, Iraq's commitment to e-government necessitates developing an e-government adoption model to assist government agencies in collaborating, sharing

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information and redesigning overlapping responsibilities to increase the efficiency of public services. Agencies can use this e-government adoption model as a mechanism by which to deploy e-government and reap the benefits gained through adopting best e-government practices. Without a model, the government agencies will be unable to change existing practices, which contribute to the inadequacies and imbalances in providing public services

Hence, utilizing Rogers's theory of DOI combined with TOE framework could create a model useful for explaining an organization's adoption of e-initiatives and e-government adoption among business organizations [6],[7]. This combined model is used in the present study to examine the effects of e-government adoption. However, because the level of e-government usage is relatively low in even the most advanced countries [8], an effort is required to create a comprehensive model for evaluating e-government adoption in general. Thus, new theoretical perspectives and concepts that enhance the understanding of e-government processes should be explored.

Past studies have focused on e-government while current ones have focused on the supply side of e-government. In particular, previous research has looked at catalysts and impediments of e-government initiatives [8] models of e-government evolution and growth [9], [10] and practices, effectiveness of implementation and challenges to e-government services. Businesses are being neglected because, in many instances, IT systems in businesses are perceived to be unsophisticated, thus reducing the interest of researchers in examining IT adoption and implementation. The contribution of this current study is to extend the knowledge and understanding on an e-government adoption model for Iraqi business organizations. The research questions examined are as follows, what are the impacts of technical factors, organizational factors, behavioural factors, on e-government adoption among Iraqi business organizations moderating by cultural factors? The main objective of this study is to propose a new model for e-government adoption among businesses in Iraq and to ascertain the factors that drive e-government adoption in Iraqi businesses. To achieve this end, hypotheses are tested and an analysis of the relationship between technical factors, organizational factors, behavioural factors, and the moderating of cultural factors with respect to e-government adoption among Iraqi business organizations is conducted.

2. LITERATURE REVIEW

In this era of globalization, understanding factors related to the successful adoption of ICT is becoming critical for improving adoption success rates [11]. Among other benefits, the adoption of ICT will allow developed countries to trade more efficiently with developing countries. Nevertheless, to date, few studies exist on the adoption of e-government by developing countries and many of these have found high failure rates. For example, [12] analysed more than 40 e-government development projects in developing countries and determined that approximately 35% of these projects totally failed. This figure gives an indication that the failure rate of these projects in developing countries is high, and these projects are riskier compared to similar programs in developed countries. Furthermore, [13] found that not all e-government implementation is accomplished successfully. Approximately 60% of e-government implementation fails or does achieve the expected outcomes. This phenomenon is the motivation for this current exploratory research on e-government in Iraq.

Although the government of Iraq has invested heavily in e-government since 2007, the government still faces problems in e-government adoption and implementation. These challenges encompass infrastructure, identifying e-services applications, back-office functioning. Management, registration and community education. The Dubai School of Government (2008) reported that Middle Eastern countries face common barriers in their e-government initiatives in terms of design and development of e-government. Several authors have suggested possible reasons behind such failures in developing countries in general and in the Middle Eastern nations in particular. [3] and [14] attributed the reasons for the failure of e-government development to infrastructural issues, social and cultural issues, usefulness, accessibility, a lack of trust, a lack of understanding of citizen and business needs, a lack of confidentiality, and a lack of marketing. This finding aligns with the previous works in the e-government adoption literature that also have highlighted these reasons.

Nonetheless, the most critical issue is not classifying the reasons for failure into categories but is understanding potential failings, thereby becoming better able to deal with such issues if they were to arise Hence, a need exists for further study

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to narrow the knowledge gap due to limited studies in e-government adoption and implementation that are vital prerequisites for e-government success. Several authors have suggested further study to be conducted in this area to avoid failures of e-government initiatives [3]. Furthermore, Iraq's commitment to e-government necessitates developing an e-government adoption model to assist government agencies in collaborating, sharing information and redesigning overlapping responsibilities to increase the efficiency of public services. Agencies can use this e-government adoption model as a mechanism by which to deploy e-government and reap the benefits gained through adopting best e-government practices. Without a model, the government agencies will be unable to change existing practices, which contribute to the inadequacies and imbalances in providing public services

The postulated the need for an effective e-government in the Middle Eastern countries pointed out that developing countries attempt to replicate e-government programs from developed countries, ignoring the fact that different countries have different environments. This highlights the fact that one model cannot fit all; each country should have its own framework as it has a different culture, problems, and barriers. [2] Stated that a government's approach to implementing e-government without considering the actual needs of the citizens and understanding the knowledge of the local environment by replicating e-government programs from other countries could lead to a waste of resources.

One presumption is that offering current information in a secure manner on an e-government website will persuade organizations and individuals to download and fill out forms, submit information and conduct transactions with government online. In turn, doing these things could lead to meaningful cost savings and enhanced efficiency for all those who participate [15], [16] suggested more empirical research on the acceptance of e-government services by users, and believed that understanding both why and how businesses use and interact with e-government websites is worthy of investigation Similarly, [2] argued that a misunderstanding exists between the actual needs of businesses and how the government perceives these needs. Currently, the widespread use of e-government public services remains problematic in most countries [17].

A range of models and theories has been used to evaluate and test individual level acceptance of technologies. However, technology acceptance models (TAM) and unified theory of acceptance and the use of technology (UTAUT) has dominated most previous work. Davis' (1989) TAM has been used to explain and predict the behavior of an individual with respect to a new technology, independent of the user population or the technology being introduced. While this theory is useful for understanding why individuals accept particular technologies across a range of populations, the model is ill suited for the investigation of e-government adoption by organization. Therefore, a need exists to utilize organizational theory to explain and predict business adoption of e-government.

Many studies examining firm-level adoption of new technology have utilized Roger's (1995) Diffusion of Innovations (DOI) Theory that suggests that diffusion of an innovation is principally based on the characteristics of the technology and a user's perceptions of that technology. One assumption of research based on the DOI Theory is that an adoption decision is made to increase operational efficiency [6], [7]. Nonetheless, an organizational decision to implement e-government may also be impacted by factors external to the organization (e.g., competitive pressure and government support) that afford both barriers and incentives to e-government adoption. Because widespread adoption of e-government across businesses has not yet happened, institutional factors external to a firm plausibly play a key role in an organizational adoption decision along with the characteristics of the technology. Because of this, grounding this current study in a model that considers the influence of the technology, the organization, and the external factors as influences on the scope and degree of e-government adoption is appropriate Therefore, the use of Tornatzky and Fleischer's in 1990 Technology-Organization-External (TOE) framework can enable the consideration and proposed an investigation of specialized factors likely to influence e-government adoption.

Regarding the previous studies have focused on e-government display, challenges and the acceptance of e-government services, while current ones have focused on the supply side of e-government. In particular, previous research has looked at catalysts and impediments of e-government initiatives [8], models of e-government evolution and growth [9], [10] and practices, the effectiveness of implementation and challenges to e-government services. Businesses are being

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The novelty and the significance of this study combined three models which are named Organization Environment Framework (TOE), Diffusion of Innovation Theory (DOI), and Technology Acceptance Models (TAM), the authors used in the present study to examine the impact of e-government adoption. However, because the level of e-government usage is relatively low in even the most advanced countries an effort is required to create a comprehensive model for evaluating e-government adoption in general. Thus, new theoretical perspectives and concepts that enhance the understanding of e-government processes should be explored. The contribution of this current study is to extend the knowledge and understanding of an e-government adoption model for Iraqi business organizations.

2.1 Organization Environment Framework (TOE)

Tomatzky and Fleischer developed the TOE framework in 1990, which is an organizational level theory explaining how organizational context impacts the adoption and implementation of a new technology. Many studies have utilized the TOE framework to understand different IT adoptions, such as electronic data interchange (EDI), e-commerce and ERP. In addition, some recent studies have examined this framework to investigate the adoption of Cloud computing. The model distinguishes among and between three building blocks that determine the adoption of innovations. These are: 1) the technology context, 2) the organizational context and 3) the environmental context.

The technological context includes internal and external technologies that are relevant to a firm, and technologies may include equipment and processes. The organizational context refers to the characteristics and resources of a firm, including firm size, the degree of centralization, the degree of formalization, managerial structure, human resources, amount of slack resources, and linkages among employees. The environmental context includes the size and structure of the industry, the firm's competitors, the macroeconomic context, and the regulatory environment from Tomatzky & Fleisher in 1990.

Table 1: TOE Definition Factors.

Technological	**Statement**
1. Relative advantage	The degree to which an innovation is perceived as being better than the idea it supersedes
2. Compatibility	The degree to which an innovation is perceived as consistent with existing values, past experiences and adopter needs
3. Complexity	The degree to which an innovation is perceived as relatively difficult to understand and use
Organizational	**Statement**
1. Top management support	Support of the top management (CEO) to the IS adoption initiative

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2. Organizational readiness (size) cost/financial and technical resources)	Comparing to large businesses small businesses face resource poverty and thus difficulties in innovation adoption. Resource poverty manifests itself also in financial constraints and a lack of professional expertise.
3. Information intensity and product Characteristics	The degree to which information is present in the product or service of a business reflects the level of information intensity of that product or service
4. Managerial time	The time required to plan and implement the new IS.

Environmental	**Statement**
1. Industry pressure (competition)	Competition and high rivalry increases the likelihood of innovation adoption for the purpose of gaining a competitive advantage
2. Government pressure/support	Government strategies or an initiative that encourage SMEs to adopt new IS
3. Consumer readiness	Lack of customer readiness Influences the adoption process and is an inhibitor towards IS use

Source: Author Design of TOE Definition Factors

2.2 Diffusion of Innovation Theory (DOI)

One popular sociology model is the Diffusion of Innovations Theory, which has been used to evaluate the dissemination of innovations. [18] described the process of innovation adoption as "the process through which an organisation passes from first knowledge of an innovation to forming an attitude towards the innovation, to a decision to adopt or reject, to implementation of the new idea", and that the awareness of characteristics of an innovation has an impact upon the intention of the individual to use the technology.

Rogers in 1995 describes diffusion as "the process by which an innovation is communicated through certain channels over time among the members of a social society" and the innovation as "an idea, practice, or object that is perceived as new by an individual or another unit of adoption". Innovation distribution is dependent upon the relative complexity, advantage, trialability, compatibility, and observability, with the advantage being "the degree to which an innovation is seen as being superior to its predecessor" [18]. Complexity relates to the degree of difficulty in using and adopting the technology, whilst compatibility is "the degree to which an innovation is perceived as being consistent with the existing values, needs, and past experiences of potential adopters" [19]. Trialability refers to the degree to which an something may be experimented on in limited basis [18], while observability relates to the visibility of an innovation's results. Diffusion theory suggests that an innovation that offers higher relative advantages, triability, compatibility, observability and lower complexity will be disseminated earlier. Most researchers have affirmed that relative advantage, complexity and compatibility are considered the main constructs influencing the diffusion of technology in DOI. However, other variables in DOI such as observability and trialability have been seen as inapplicable for assessing the adoption of new technology [20].

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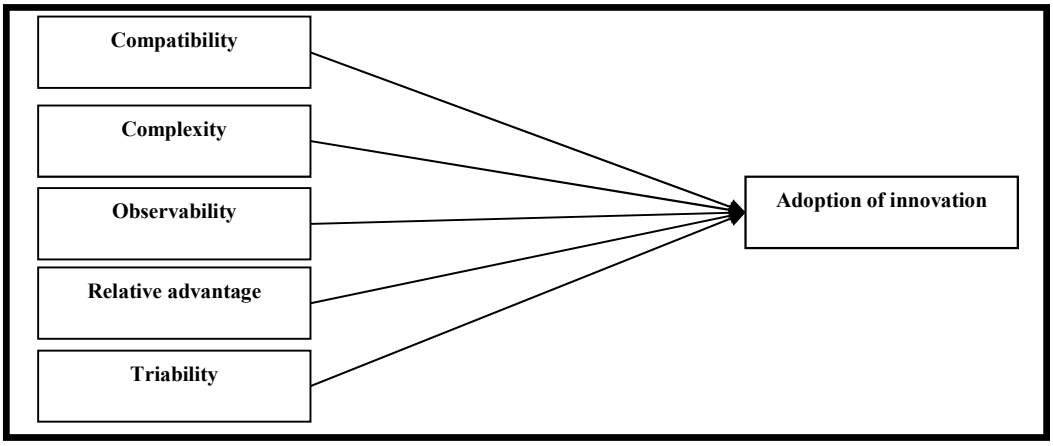

Source: Innovation diffusion theory (Rogers, 1995).

Figure 1: Innovation Diffusion Theory

2.3 The Unified Theory of Acceptance and Use of Technology (UTAUT)

Several competing and complementary models have been developed in information technology acceptance and adoption research over the years. These models evolved because of persistent efforts aimed at the validation and extension of models. Most notable amongst these models are the Theory of Reasoned Action (TRA) [21] the Theory of Planned Behaviour, (TPB), the Technology Acceptance Model (TAM) (Davis, 1989), the Extension of the Technology Acceptance Model (TAM2) [22] the Diffusion of Innovation Model (DOI) (Rogers, 2003), and the Unified Theory of Acceptance and Use of Technology (UTAUT).

The UTAUT is among the latest developments in general technology acceptance models. Similar to earlier acceptance and adoption models, the UTAUT intends to explain the intentions of users to utilize an Information System (IS) and user behaviour created this synthesized model to provide a more complete portrait of the acceptance process than any other previous individual model could do. Eight models that been previously used and had their origins in communications, psychology, and sociology, were joined together in an integrated Model These models are the TRA, TPB, TAM, TAM2, the Motivational Model of Computer Usage (MM), the Model of PC Utilization (MPCU) (Thompson et al., 1991), DOI and Social Cognitive Theory (SCT) [23]. Each model had tried to predict and to explain user behavior using various independent variables. A unified model was created based on the conceptual and empirical similarities

across these eight models. The UTAUT posits that performance expectancy, effort expectancy, social influence, and facilitating conditions are direct determinants of usage intention and behaviour [24] Gender, age, experience, and voluntariness of use are posited thus, to mediate the impact of the four key constructs on usage intention and behaviour. The predictors are defined as follows:

1. Performance expectancy (PE): "is the degree to which an individual believes that using the system will help him or her to attain gains in job performance."
2. Effort expectancy (EE): "is the degree of ease associated with use of the system."
3. Social influence (SI): "is the degree to which an individual perceives that important others believe he or she should use the new system."

3. RESEARCH MODEL AND HYPOTHESES

The research model employed in this research was based on the organization environment framework (TOE), by Tornatsky and Fleischer, the Diffusion of Innovation Theory (DOI) by Rogers and The Unified Theory of Acceptance and Use of Technology (UTAUT) by Venkatesh, Morris, Davis and Davis. The research model in this study will

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examine the effects of the research variables that are merged from technology factors, organisational factors, and behavioural factors. Based on the proposed model of this study, the following are the research hypotheses in the context of e-government adoption model among Iraqi business organizations.

3.1 Technology Context

Chen and Wu's adaptation of the TOE model in 2011 suggests some technological predictors of adoption – relative advantage, complexity, and compatibility. Relative advantage is the degree to which a new technological factor is seen as providing a greater benefit than a previous technology (Rogers 1983). Complexity is the degree to which an innovation is perceived as relatively difficult to understand and to use (Rogers, 1995). Users often take a long time to understand new technologies; therefore, implementing new technologies could be a long and arduous process because of their complexity. Last, compatibility refers to the degree to which a new technology fits with the existing values, practices, and needs of a company (Rogers, 1983).

[24] Examined e-government services among citizens in Malaysia and found that adopters and prospective adopters are more prepared to adopt e-government if it is compatible with their existing work practices, their environments, and their firm's objectives. Relative advantage was found to have a significant and positive relationship with citizens' intention toward using e-government services and perceived complexity had a negative relationship with the intention to use e-government services.

[25] Examined the factors (compatibility and relative advantage) that influence e-government adoption in Cambodia and found a positive association between compatibility, relative advantage and innovation adoption support to use e-government services in Cambodia. Based on previous studies on e-government by [26] [19], [27] , [28] and [29] the suggestion has been forwarded that relative advantage and compatibility are the most relevant constructs in adoption research as influencers of technological innovation diffusion. Long has it been recognized that higher levels of perceived relative advantage increase the intentions of a business

Furthermore, [30] found that complexity was negatively related to innovation adoption of new technology. Technologies that are perceived as not being complex are more likely to be adopted In addition, [29] examined e-commerce adoption in Jordan and found no relationship between complexity, trialability, observability, and cost with the adoption of e-commerce in Jordan.

Based on the findings of previous studies on e-government by [26], [19], [27] the suggestion has been made that relative advantage and compatibility are the most relevant constructs that influence technological innovation diffusion. Although many IS and e-government studies have examined the association between technological attributes and IS or e-government adoption, the results have been inconsistent and inconclusive. Meanwhile, other studies on inter-organizational IT, such as Internet technologies, have examined other technological factors that were perceived to either drive or inhibit technology adoption and implementation [31].

[32] Observed that IT infrastructure is a key stone of e-government as the availability of IT infrastructure is crucial for successful e-government adoption. In no small measure that is because IT infrastructure is crucial the linkage of information and knowledge integration necessary for e-government adoption [33]. Indeed, [34] argued that any realistic assessment of a country's drive to full e-government should start with a clear cut understanding of what really exists in terms of infrastructure and policies. Indeed, an adequate technology infrastructure is a key for successful e-government adoption especially in the developing countries including Jordan.

[35] Posited that technology that is compatible with organizational beliefs and values and IT infrastructure will promote its successful adoption. [36], [32] infrastructure includes server tools comprising data and content management tools, application development tools, hardware and operating systems, and system's management platforms. [35] stated that IT infrastructure involves all components of IT, including hardware, software, communication and networks infrastructure, software application, legacy systems and the current organization's technology and electronic systems. [36] Highlighted that limited availability of IT to build the necessary infrastructure can act as a deterrent to the adoption of Internet technologies. Conversely, [37], who investigated IS adoption among Taiwan's ICT industry, revealed that IT infrastructure has no significant effect on ERP systems adoption by firms in the ICT industry. Therefore, IT infrastructure deserves further

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investigation in the context of developing countries including Iraq.

According to [38] security issues such as privacy and confidentiality of information are critical for e-government just as they are for e-commerce. Indeed, security is a recurring issue in e-commerce and e-government research [39]. Security poses a critical challenge in implementing e-government. For example, legitimate concerns exist about the balance between a citizen's rights to privacy and the state's national-security concerns. On one hand, people are concerned that government could know too much about them and utilize that information inappropriately. On the other hand, the government is concerned that too easy access to information by the public that could undermine national security and social stability [40]

[41] assessed the security of websites, and the results suggested that the security issue should be more accounted for to enhance the acceptance of a website by business. Indeed, many have found that the main challenge in using technology related to the Internet is security issues [42]. These include vulnerability to attacks by worms, virus, and denial of service attacks; [7] found a positive association between security and innovation adoption. [43], [42], [44] the security issue as a major obstacle in utilizing the Internet and for the adoption of e-government. Other issues related to e-government adoption by businesses have been found to include a lack of technology, a lack of web staff, limited financial resources, information about e-government applications, the need to upgrade technologies, convenience fees for online transactions and lack of support from the elected officials.

Organizations depend upon their IS for day-to-day operations because IS databases contain crucial data about business transactions, customers, suppliers, and processes. A compromise of the security of these systems can prove extremely costly to an organization in terms of lost trust, loss good of will, a damaged reputation and potential litigation. Because web services are vulnerable to various threats, these services pose new security problems to organizations [42]. Many studies have found security to be the most significant element in e-government adoption [5], [43], [42], [44] and a key barrier to e-government adoption among citizens and businesses. [24] Asserted that, to increase the actual participation of businesses in the adoption of e-government initiative, issues related to security and availability of IT infrastructure should be further explored, therefore the hypotheses are posited in Table 2.

Table 2: Technology Hypotheses.

Number	Hypothesis
H1	Relative Advantages will impact e-government adoption.
H2	IT infrastructure will impact e-government adoption.
H3	Compatibility will impact on e-government adoption,
H4	Complexity will impact e-government adoption.
H5	Security will impact e-government adoption.

3.2 Organisational Context

The organizational factor comprises different characteristics, mechanisms, and structures that influence the propensity to adopt and to assimilate an innovation Tornatzky & Fleischer in 1990. Many people have studied organisational context as related to the adoption of new technology. Among these, top management support, organizational culture, resources and business nature have been seen as vital. Top management support is essential for gaining the resources required to adopt a new technology [12] and top management can increase an organization's adoption of innovation by promoting a friendly culture, such as valuing change, efficiency and goal setting. Organizational culture is another key influence on an organization's decision to adopt new e-initiatives, including e-government among business organizations [16] and resources such as human resources and hardware and software influence the adoption of technology [37]. Lastly, the nature of the business including firm size impacts the adoption of a new technology.

[6] Utilized the TOE framework to scrutinise the impact of organizational factors (top management support, organizational readiness, IS experience, organizational size, and industry sector), and environmental factors (competitive pressure, external IS support, and market scope) on the adoption of enterprise systems (ERP, CRM, SCM and e-procurement) by Small and Medium Enterprises (SMEs) in Northwestern England. Several factors were found to be significant in influencing the adoption of enterprise systems adoption by SMEs including organizational readiness, relative advantage, size, trialability, and top management support Surprisingly,

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environmental factors were found to be insignificant. This result contradicts the findings [14], which emphasized that exogenous reasons affected the decision-making process regarding the adoption of ERP systems by SMEs more than do business-related factors. However, it is consistent with [42] findings who suggested that the decisions of SMEs are based on internal factors.

As such, IS innovations are highly differentiated technologies for which no single adoption model can be solely used [6]. The model presented in [7] study offers eleven propositions based on Tornatzky and Fleischer's in 1990 TOE framework that help to explain the organizational contexts in which a firm adopts and implements an innovation. As adoption behaviour is a significant component of organizational effectiveness, a better understanding of its determinants will improve overall organizational performance. Hence, these factors deserve further investigation in this research, which are represented by the following hypotheses in Table 3.

Table 3: Organizational Hypotheses.

Number	Hypothesis
H6	Management support will impact e-government adoption.
H7	Finance resources will impact e-government adoption.
H8	Business nature will impact e-government adoption.

3.3 Behavioral Factors

The Unified Theory of Acceptance and Use of Technology (UTAUT) model of Venkatesh is a recent explanation for the acceptance and use of information technology by end users. The theory examines four key constructs: 1) performance expectancy, 2) effort expectancy, 3) social influence, and 4) facilitating conditions. The behavioral factor examines effort expectancy, performance expectancy, and social influence and gender, age, and experience are posited as mediating factors. According to [45] performance expectancy could be measured by perceptions of using e-government services in terms of perceived benefits such as saving time, money and effort, facilitating communication with government, improving the quality of government services and by providing citizens with an equal basis on which to carry out their business with the government. The empirical data from their study of 880 students attending Kuwait University revealed that performance expectancy, effort expectancy, and peer influence determined the behavioral intentions of these students. Moreover, facilitating conditions and behavioral intentions determined the use of e-government services and decision makers were advised that these services must be genuinely useful to the intended users.

[42] Developed an integrated model by using UTAUT and initial trust and outlined the factors leading to the adoption of e-government services in Pakistan. Their analysis revealed that performance expectancy, social influence, and initial trust positively influenced the behavioral intention to use e-government services. While, in the same context, [46] examined the adoption of e-government services in the state of Qatar. They examined the impact of performance expectancy and effort expectancy on the intention to use e-government. The results showed that the e-government services initiatives in Qatar has been successful in promoting wider access to the Internet. As a result, the adoption factors such as performance expectancy and effort expectancy had a significant impact on the intention to use Qatari e-government services.

Various scholars have defined perceived ease of use (PEOU). According to Davis in 1989, perceived ease of use is "the degree to which a person believes that using a particular system would be free of effort" (p. 320). Similarly, [33] stated that the degree to which an innovation is easy to understand or use could be considered as perceived ease of use. According to [21], this definition also includes the extent to which a person believes that using a system required no significant effort to learn. [16] found that PEOU has a positive effect on the intentions of a user[42] said that perceived ease of use in e-banking referred to the degree to which a person believed that using a system would be free of effort..

In the UTAUT model, social influences were recognized among the four determinants of behavioral intention to use. [13] found that social influences play a key role in determining the acceptance and usage behavior of new adopters of technological innovations. Social influences are related to a person's attitudes about e-government services and are based on personal innovativeness. Personal innovativeness in using IT reflects the willingness to try a new technology. Innovations create uncertainty about their expected consequences, and individuals who are uncomfortable with uncertainty are inclined to

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interact with their social network before making a decision. Thus, friends and colleagues can significantly influence the use of an innovation. See Table 4.

Table 4: Behavioral Hypotheses.

Number	Hypothesis
H9	Performance expectancy will impact e-government adoption.
H10	Effort expectancy will impact e-government adoption.
H11	Social influence will impact e-government adoption.
H12	Perceived usefulness will impact e-government.
H13	Ease of use will impact e-government adoption.

3.4 Cultural Factors

Different mixtures of values and practices distinguish cultures, and these include elements of both national and organizational cultures. Both types national and organizational cultural factors have a profound impact on user behavior because culture shapes individuals and their values of Hofstede in 1997. Indeed, Hofstede also asserted that culture impacts the behavior of an individual and varies across countries. One such dimension of cultural is that uncertainty, which is the extent to which the members of a group or society perceive that they are threatened by unknown situations. In studying the acceptance of e-government services in Iraq, uncertainty is an issue worthy of study

Mostly, the theories and models of technology acceptance have been studied in the United States and only a few studies have been tested in non-U.S cultures said that cultural and contextual variations must be accounted for when information technologies are adopted. They stressed that the influence of culture is even greater when borrowed technology is being employed in a developing country. Therefore, managers must be conscious that factors influencing technology adoption will vary depending on the prevailing culture.

Language has been recognized as a socio-cultural barrier that hinders access to information and to the Internet and participation in e-services. A large percentage of Iraqis are illiterate, and uneducated people have limited access to information on the web because information is usually in form of a written language. Thus, illiterate people cannot understand the written languages that are utilized to circulate information on the Internet. Beyond the issue of language in general, English is the primary language in many Western countries wherein new technologies arise. English is the dominant language in IT and e-commerce and is the principal language of the Web.

In Iraq, language problems are the cause of many barriers to using technology. One issue is illiteracy in all languages. Another is caused by a preference for Arabic and with other language; this reduces the maximum benefit to be gained from the Internet, especially with respect to websites presented in other languages. Finally, about 82% of Web sites across the world are in English and this presents an enormous obstacle for Arabic-speaking natives who can only write and read Arabic. This barrier, coupled with the shortage of Arabic software, also contributes to the hesitation of Arab consumers to use the Internet. In Iraq, about 35% of the total population of Iraq spoke English as a second language in 2012. The level of English language skills overall remains low, even amongst educated professionals and academics. Although students have access to the Internet and personal computers, poor English-language skills have limited their access to English-language Internet sites and services. English-language teaching and training are improving at the university level, but inadequate training, large class sizes, outdated teaching methodologies hinder their progress.

Hofstede report in 1980, uncertainty avoidance is to the extent to which ambiguities and uncertainties are tolerated. For example, the level of stress and anxiety for individuals possessing high uncertainty avoidance increases more in the presence of an uncertain situation occurs compared to the level of stress and anxiety for individuals possessing low uncertainty avoidance. In the research, some authors have posited a direct effect of uncertainty avoidance on technological adoption, with high uncertainty avoidance cultures hypothesized to be less accepting of technological change. Uncertainty avoidance has also been hypothesized to play a moderating role in a number of TAM relationships.

In an educational context, [47] predicted that uncertainty avoidance would have a moderating effect on the relationships between both Perceived Usefulness and Perceived Ease of Use on Behavioral Intention, arguing that these factors would help to resolve unclear situations and that this information would have a relatively greater

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influence on the behavior of high Uncertainty Avoidance samples. They compared samples of educators from Nordic (high individualism, low uncertainty avoidance) and Mediterranean (low individualism, high uncertainty avoidance) cultural settings. The results supported a moderating effect of Perceived Ease of Use on Behavioral Intention, with Perceived Ease of use more likely to encourage usage among the Mediterranean e-learning system users (where uncertainty avoidance was higher). However, the results with respect to Perceived Usefulness were counter-intuitive, with Perceived Usefulness having a bigger effect on Behavioral Intention for Nordic users (the lower uncertainty avoidance group). This may be due to the confounding impact of individualism. See Table 5

Table 5: Moderating Hypotheses.

Number	Hypothesis
H14	There is an impact of perceived usefulness by moderating language on e-government adoption.
H15	There is an impact of ease of use by moderating language on e-government adoption.
H16	There is an impact of perceived usefulness by moderating uncertainty on e-government adoption.
	There is an impact of ease of use by moderating uncertainty on e-government adoption.
H18	There is an impact of effort expectancy by moderating language on e-government adoption.
H19	There is an impact of IT infrastructure by moderating language on e-government adoption.
H20	There is an impact of complexity by moderating uncertainty on e-government adoption.

4. RESEARCH METHOD

Research comprises a systematic process of discovery, and to achieve a specific research purpose, a suitable research design should be developed. According [42] "a research design is defined as a plan, structure, and strategy of the investigation so conceived as to obtain answers to research questions or problems" (p. 95). The plan includes an outline of what the researchers will do from writing the hypotheses and their operational implications for the final analysis of data [48]. This current study applies a quantitative exploratory approach and explains the relationships among and between variables through hypothesis testing. The data were collected using a survey. The study aims to analyze the relationships among variables which include independent variables and dependent variables.

4.1 Population and Sample

The target population for this study was managers and employees in the business sector in Iraq in companiesthat are listed companies on the Iraqi Stock Exchange in the banking, insurance, investment, and service and industrial companies, hotels, and corporate communications sectors. The number of listed companies was 88 in November of 2013. As [49] suggested, a large sample can have significant relationships even with low values of R2. The questionnaires were posted online using Facebook groups for Iraqi business organization. There were 727 responders who filled up the questionnaires in the 6 month period from December 2017 May 2018.

4.2 Measurement Development

The first part of the survey included background information about the respondents, including the type of company and some information related to the ownership, and number of the employees. The second part asked the respondents about the current status of using E-government services. The third part asked the respondents about the variables of interest in this study, which included technology factors, organisational factors, and behavioural factors. All the items were measured using a 5-point Likert-type scale with responses ranging from strongly agree = 1 to strongly disagree = 5. The items in the questionnaire were adapted from the prior related studies to ensure content validity. Items used are noted in Table 6 below.

Table 6: Questionnaire Items.

Technology Factors	Items	Total	Source(s)
Relative Advantage	1-4	4	Al-Zu'bi, 2012
Compatibility	5-6	2	Al-Zu'bi, 2012
IT infrastructure	7-11	5	Al-Zu'bi, 2012
Complexity	12-14	3	Hasan, 2007
Security	15-17	3	Al-Zu'bi, 2012
Organizational Factors			
Management support	18-21	4	Al-Zu'bi, 2012

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Finance Resources	22-23	2	Al-Zu'bi, 2012
Business Nature	24-27	4	Al-Zu'bi, 2012
Behavioural Factors			
Performance expectancy	28-31	4	Al-Shafi & Weerakkody, 2009
Effort Expectancy	32-34	3	Al-Shafi & Weerakkody, 2009
Social influence	35-37	3	Al-Shafi & Weerakkody, 2009
Perceived Usefulness	38-39	2	(Davis, 1989)
Ease of Use	40-42	3	(Davis, 1989)
Cultural Factors			
Language	43-47	5	(Mahadeo & Mahadeo, 2009)
Uncertainty	48-49	2	(Tarhini, Hone, Liu, & Tarhini, 2017)

Note: All scales were 5-point Likert-type scales.

Cronbach's alpha was used to measure the reliability of the research questionnaire.

5. RESULTS AND DISCUSSION

The linear model is a model to examine the relationship between construct, significance, and r-square of the research model. The structural model is evaluated by using r-square for the dependent construct, t-tests and the significance of the parameters. This research uses Partial Least Square (PLS) to identify the relationship among variables of research model and test research hypothesis.

5.1. Construct Model Evaluation

5.1.1 Convergent validity evaluation

This evaluation is done by looking at the value of the loading factor (outer loading) on each indicator. If the value is greater than 0.50 [49] then the indicator is said to be valid. See Table 7.

Table 7: Loading Factor for Each Indicator.

Variable	Item	Outer loading
Relative Advantage (X1)	X1.1	0.913
	X1.2	0.917
	X1.3	0.941
	X1.4	0.762
IT Infrastructure (X2)	X2.1	0.785
	X2.3	0.785
Compatibility (X3)	X3.1	0.821
	X3.2	0.893
	X3.3	0.969
	X3.4	0.897
	X3.5	0.870
Complexity (X4)	X4.1	0.937
	X4.2	0.878
	X4.3	0.890
Security (X5)	X5.1	0.781
	X5.2	0.868
	X5.3	0.918
Management Support (X6)	X6.1	0.935
	X6.3	0.935
Finance Resources (X7)	X7.1	0.950
	X7.2	0.962
	X7.3	0.736
	X7.4	0.906
Business Nature (X8)	X8.1	0.859
	X8.2	0.950
	X8.3	0.898
	X8.4	0.902
Performance Expectancy (X9)	X9.2	0.808
	X9.3	0.907
	X9.4	0.886
	X9.5	0.747
Effort Expectancy (X10)	X10.1	0.888
	X10.2	0.853
	X10.3	0.918
Social Influence (X11)	X11.1	0.799
	X11.3	0.829
	X11.4	0.842
Perceived Usefulness (X12)	X12.1	0.900
	X12.2	0.900
Ease of Use (X13)	X13.1	0.870
	X13.2	0.948
	X13.3	0.973
Language (X14)	X14.1	0.825
	X14.2	0.902
	X14.3	0.825
	X14.4	0.902
	X14.5	0.862
Uncertainty (X15)	X15.1	0.785
	X15.2	0.785
E-Government Adoption (Y)	Y.1	0.894
	Y.2	0.870
	Y.4	0.944

The test results in Table 7 show that all values of construct indicator outer loading have a

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value above 0.7; an indicator with a loading value < 0.7 should be considered and included in the next analysis as it is valid. The test results in Table 7 show that all values of construct indicator loading have values above 0.7; therefore all indicators after evaluation have been able to be used for subsequent analysis.

5.1.2 Discriminant validity evaluation

Discriminant validity is done by comparing whether the average variance extracted is greater than the square correlations between the construct and each of the other constructs in the model. This highlights that one construct differs from the others. To make the calculation process agile, a reverse procedure is carried out. That is, to determine to construct discriminant validity, the square root of the AVE is calculated, and it should be greater than each of the construct correlations. Table 8 shows the square root of the AVE and construct correlations from all variable in the model.

Table 8: PLS correlation matrix. Diagonal elements (values in parentheses) are the square root of the AVE.

	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12	X13	X14	X15	Y
X1	**(0.886)**															
X2	0.146	**(0.785)**														
X3	0.115	0.366	**(0.892)**													
X4	0.014	0.079	0.566	**(0.902)**												
X5	0.204	0.302	0.563	0.478	**(0.858)**											
X6	0.309	0.346	0.536	0.478	0.564	**(0.935)**										
X7	0.115	0.287	0.626	0.556	0.556	0.519	**(0.893)**									
X8	0.167	0.261	0.523	0.417	0.503	0.333	0.510	**(0.903)**								
X9	0.131	0.156	0.506	0.552	0.512	0.514	0.427	0.427	**(0.840)**							
X10	0.076	0.237	0.412	0.486	0.503	0.553	0.365	0.259	0.544	**(0.887)**						
X11	0.365	0.148	0.476	0.503	0.452	0.502	0.478	0.475	0.490	0.406	**(0.823)**					
X12	0.296	0.303	0.608	0.556	0.609	0.654	0.590	0.467	0.533	0.533	0.564	**(0.900)**				
X13	0.131	0.339	0.664	0.582	0.612	0.599	0.660	0.490	0.516	0.483	0.501	0.647	**(0.932)**			
X14	0.111	0.264	0.562	0.515	0.545	0.503	0.678	0.467	0.386	0.357	0.439	0.558	0.624	**(0.864)**		
X15	0.206	0.244	0.371	0.368	0.419	0.587	0.435	0.205	0.401	0.428	0.396	0.524	0.473	0.451	**(0.785)**	
Y	0.250	0.336	0.599	0.544	0.622	0.674	0.587	0.421	0.540	0.565	0.524	0.682	0.654	0.567	0.551	**(0.903)**

Based on Table 8, the values of the root square of AVE in latent variables Relative Advantage (X1) (0.886), IT Infrastructure (X2) (0.785), Compatibility (X3) (0.892), Complexity (X4) (0.902),Security (X5) (0,858), Management Support (X6) (0.935), Finance Resources (X7) (0.893), Business Nature (X8) (0.903), Performance Expectancy (X9) (0.840), Effort Expectancy (X10) (0.887), Social Influence (X11) (0.823), Perceived Usefulness (X12) (0.900), Ease of Use (X13) (0.932), Language (X14) (0.864), Uncertainty (X15) (0.785), and E-Government Adoption (Y) (0.903) are greater than each of the construct correlations, so it can be said that discriminant validity of the measurement model is good.

5.1.3 Construct reliability evaluation

Construct reliability evaluation is done by using the composite reliability value. The evaluation of the measurement model using composite reliability is to determine whether the construct has a high reliability or not. A value of composite reliability greater than 0.700 indicates that the constructed variable is reliable. As for the value of composite reliability of each construct, each variable is described in Table 9 below.

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Table 9: Composite Reliability of Each Construct Variable.

Variable	Composite Reliability
Relative Advantage (X1)	0.936
IT Infrastructure (X2)	0.762
Compatibility (X3)	0.951
Complexity (X4)	0.929
Security (X5)	0.893
Management Support (X6)	0.933
Finance Resources (X7)	0.940
Business Nature (X8)	0.946
Performance Expectancy (X9)	0.905
Effort Expectancy (X10)	0.917
Social Influence (X11)	0.863
Social Influence (X11)	0.895
Perceived Usefulness (X12)	0.951
Ease of Use (X13)	0.936
Language (X14)	0.763
Uncertainty (X15)	0.930
E-Government Adoption (Y)	0.936

Based on Table 9, the value of composite reliability on latent variable Relative Advantage (X1) (0.936), IT Infrastructure (X2) (0.762), Compatibility (X3) (0.951), Complexity (X4) (0.929),Security (X5) (0,893), Management Support (X6) (0.933), Finance Resources (X7) (0.940), Business Nature (X8) (0.946), Performance Expectancy (X9) (0.905), Effort Expectancy (X10) (0.917), Social Influence (X11) (0.863), Perceived Usefulness (X12) (0.895), Ease of Use (X13) (0.951), Languange (X14) (0.936), Uncertainty (X15) (0.763), and E-Government Adoption (Y) (0.930) are greater than 0.700, and it can be said that composite reliability of the measurement model is good.

5.2 Structural Model Evaluation

A structural model evaluation is done to see the role of the independent variable to the dependent variable in the model through R^2value, also to know the goodness of fit model through the Tennenhaus Goodness of Fit (GoF) value and Q^2 predictive relevance of the model. This study examined the relationship between independent variables (Relative Advantage (X1), IT Infrastructure (X2), Compatibility (X3), Complexity (X4),Security (X5), Management Support (X6), Finance Resources (X7), Business Nature (X8), Performance Expectancy (X9), Effort Expectancy (X10), Social Influence (X11), Perceived Usefulness (X12), and Ease of Use (X13)) and dependent variable (E-Government Adoption (Y) by including moderating variables (Language (X14) and Uncertainty (X15)) in the model. Therefore, the test was done twice. The first test is done on the model without including the moderating variables, and the second test was done on the model that includes the moderating variable, which aims to determine the effect of moderating variables on the relationship of independent variables with the dependent variable.

5.2.1 R^2 of model

After the estimated model meets the criteria of convergent validity, discriminant validity, and construct reliability the next step is the testing of the structural model (inner model). Assessing the inner model is to look at the relationship between the latent construct by looking at the estimation result of the path parameter coefficient and its significance level. R^2 of the dependent variable in the model shows how much independent variable can explain the variance of the dependent variable. Cohen encouraged using the adjusted R^2 to evaluate the inner model. Cohen said that $0{,}45 < R^2 \leq 0{,}70$ means that the independent variables in the model can explain the variance of the model very well or all independent variables strongly affect the dependent variable. A $0{,}25 < R^2 \leq 0{,}45$ means that independent variable in the model can explain the variance of the model well or all independent variables moderately affect dependent variable, and a $R^2 \leq 0{,}25$ means independent variable in the model can explain the variance of the model quite well or all independent variables poorly affect the dependent variable.

The PLS result shows that adjusted R^2 of the model without including the moderating variables is 0,948, which means independent variables in the model can explain the variance of the model very well or all independent variables strongly affect the dependent variable. Meanwhile, the adjusted R^2 of that includes the moderating variable is 0,081, which means independent variable in the model can explain the variance of the model quite well or all independent variables poorly affect the dependent variable. The results of the PLS show that by including the moderating variables in the model this will decrease the influence of independent variables on the dependent variable in this study.

5.2.2 Q^2 predictive relevance

Geisser developed the Q^2 test to assess the predictive relevance of the endogenous constructs. This test is an indicator of how well-observed values are reproduced by the model and its parameter estimates. Two types of Q^2 can be

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determined depending on the form of a prediction; these are cross-validated communality and cross-validated redundancy suggests using the latter to examine the predictive relevance of the theoretical/structural model. A Q^2 of greater than 0 implies that the model has predictive relevance, whereas a Q^2 of less than 0 suggests that the model lacks predictive relevance.

PLS result shows that adjusted Q^2 of the model without including the moderating variables is 0,998. Meanwhile, the adjusted Q^2 of the model that includes the moderating variable is 1,000. Both model without including the moderating variables and model that includes the moderating variable have Q^2 more than 0 that means the model has good predictive relevance.

5.2.3 Tennenhaus Goodness of Fit (GoF)

In PLS, no global criterion is optimized and, consequently, no criteria exists that allows for an evaluation of the overall model. Trying to surmount this problem, Tenenhaus proposed a global criterion of goodness-of-fit (GoF) that represents an operational solution for this gap, which can be seen as an index for globally validating the PLS model. This GoF measure is the geometric mean of the average commonality and the average R^2. Cohen (1998) provides guidelines about goodness-of-fit (GoF) criterion to decide whether the model is good or not. Cohen states $0,1 \leq GoF < 0,25$ means that the model has small goodness-of-fit (GoF), $0,25 \leq GoF < 0,36$ means that the model has medium goodness-of-fit (GoF), and $GoF \geq 0,36$ means that the model has large goodness-of-fit (GoF). Vinzi adds a GoF value less than 0.1 indicates that the model's prediction power is very weak and considered to be acceptable.

The PLS result shows that Tennenhaus goodness-of-fit (GoF) of the model without including the moderating variables is 0,875 means model has large goodness-of-fit (GoF). Meanwhile, the Tennenhaus goodness-of-fit (GoF) of the model that includes the moderating variable is 0,268 means that the model has medium goodness-of-fit (GoF). Both the model without including the moderating variables and the model that includes the moderating variable have Tennenhaus goodness-of-fit (GoF) of more than 0.1, which means the model is good and can be acceptable.

5.3 Hypothesis Testing

Hypothesis testing is done by testing the significance of path coefficient of Partial Least Square (PLS). The path coefficient shows the influence of one independent variable to the dependent variable. If the p-value of path coefficient $< \alpha = 0,05$ (5%) then it can be said that the result supported the research hypothesis, which means the independent variables have a significant effect on dependent variables. The path coefficient in this study can be seen in Figure 3 below.

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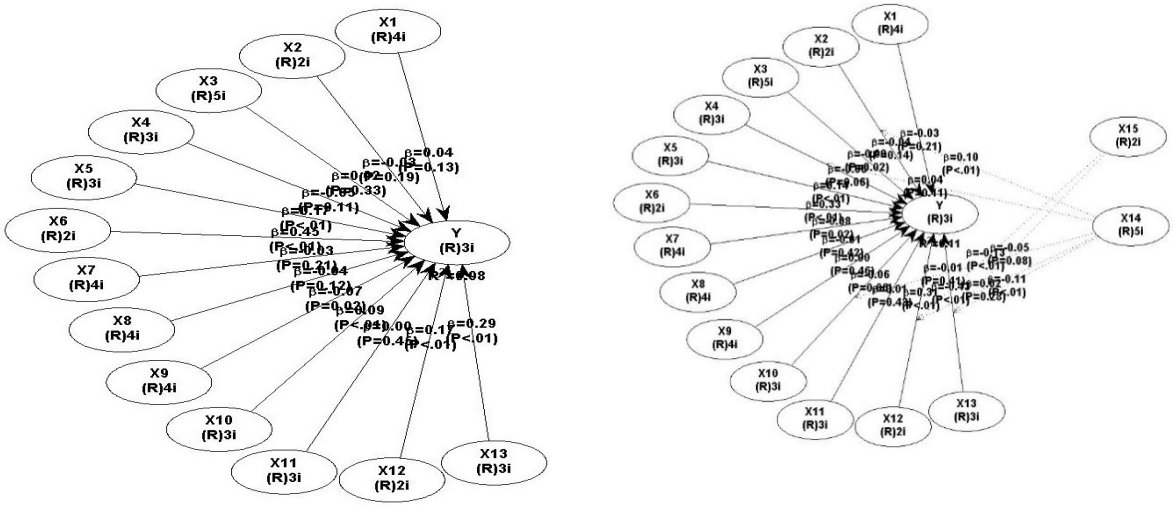

(a) (b)

(a) Moderating Variable Excluded; (b) Moderating Variable Included

Figure 3. Path Coefficients of the Partial Least Square (PLS) Result

The value of path coefficient obtained from Partial Least Square (PLS) was then used to test the effect on this research hypothesis.

Table 10: Path Coefficient of the Partial Least Square (PLS) Result.

Model Without Including The Moderating Variables		
Effect	**Path Coefficient**	***P-value***
Relative Advantage (X1) -> E-Government Adoption (Y)	0,042	0,129
IT Infrastructure (X2) -> E-Government Adoption (Y)	-0,033	0,186
Compatibility (X3) -> E-Government Adoption (Y)	0,016	0,333
Complexity (X4) -> E-Government Adoption (Y)	-0,045	0,111
Security (X5) -> E-Government Adoption (Y)	0,171	<0,001
Management Support (X6) -> E-Government Adoption (Y)	0,466	<0,001
Finance Resources (X7) -> E-Government Adoption (Y)	-0,030	0,212
Business Nature (X8) -> E-Government Adoption (Y)	-0,044	0,119
Performance Expectancy (X9) -> E-Government Adoption (Y)	0,072	0,025
Effort Expectancy (X10) -> E-Government Adoption (Y)	0,088	0,009
Social Influence (X11) -> E-Government Adoption (Y)	0,004	0,454
Perceived Usefulness (X12) -> E-Government Adoption (Y)	0,172	<0,001
Ease of Use (X13) -> E-Government Adoption (Y)	0,289	<0,001

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Model Including The Moderating Variables		
Relative Advantage (X1) -> E-Government Adoption (Y)	-0,030	0,210
IT Infrastructure (X2) -> E-Government Adoption (Y)	-0,039	0,143
Compatibility (X3) -> E-Government Adoption (Y)	-0,076	0,020
Complexity (X4) -> E-Government Adoption (Y)	-0,059	0,055
Security (X5) -> E-Government Adoption (Y)	0,140	<0,001
Management Support (X6) -> E-Government Adoption (Y)	0,328	<0,001
Finance Resources (X7) -> E-Government Adoption (Y)	-0,078	0,017
Business Nature (X8) -> E-Government Adoption (Y)	-0,007	0,422
Performance Expectancy (X9) -> E-Government Adoption (Y)	0,004	0,456
Effort Expectancy (X10)-> E-Government Adoption (Y)	-0,058	0,057
Social Influence (X11) -> E-Government Adoption (Y)	0,006	0,431
Perceived Usefulness (X12) -> E-Government Adoption (Y)	0,307	<0,001
Ease of Use (X13) -> E-Government Adoption (Y)	-0,435	<0,001
IT Infrastructure (X2) * Languange (X14) -> E-Government Adoption (Y)	0,098	0,004
Complexity (X4) * Languange (X14) -> E-Government Adoption (Y)	0,045	0,112
Effort Expectancy (X10) * Languange (X14) -> E-Government Adoption (Y)	-0,009	0,407
Perceived Usefulness (X12) * Languange (X14) -> E-Government Adoption (Y)	0,022	0,277
Ease of Use (X13) * Languange (X14) -> E-Government Adoption (Y)	-0,107	0,002
Perceived Usefulness (X12) * Uncertainty (X15) -> E-Government Adoption (Y)	-0,052	0,081
Ease of Use (X13) * Uncertainty (X15) -> E-Government Adoption (Y)	-0,133	<0,001

H1: Relative advantages will impact e-government adoption.

Table 10 shows a positive impact with a path coefficient of 0,042, and the relationship between Relative Advantage (X1) and E-Government Adoption (Y) in Iraq had a p-value > 0,05 (α = 5%). Thus, hypothesis H1 was not met, and the website is increased E-Government Adoption will increase and vice versa.conclusion can be reached that there is no significant impact of Relative Advantage (X1) on E-Government Adoption (Y) in Iraq with a fault tolerance (α) of 5%. The results of hypothesis testing show that a change in Relative Advantage will not affect E-Government Adoption.

H2: IT infrastructure will impact e-government adoption.

Table 10 shows a negative impact with a path coefficient of -0,033, and the relationship between IT Infrastructure (X2) and E-Government Adoption (Y) in Iraq had a p-value > 0,05 (α = 5%). Thus, hypothesis H2 was not met and the conclusion can be reached that there is no significant impact of IT Infrastructure (X2) on E-Government Adoption (Y) in Iraq with a fault tolerance (α) of 5%. The results of hypothesis testing show that a change in IT Infrastructure will not affect E-Government Adoption.

H3: Compatibility will impact e-government adoption.

Table 10 shows a positive impact with a path coefficient of 0,016, and the relationship between Compatibility (X3) and E-Government Adoption (Y) in Iraq had a p-value> 0,05 (α = 5%). Thus, hypothesis H3 was not met and the conclusion can be reached that there is no significant impact of Compatibility (X3) on E-Government Adoption (Y) in Iraq with a fault tolerance (α) of 5%. The results of hypothesis testing show that a change of Compatibility will not affect E-Government Adoption in Iraq.

H4: Complexity will impact e-government adoption.

Table 10 shows a negative impact with a path coefficient of -0,045, and the relationship between

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Complexity (X4) and E-Government Adoption (Y) in Iraq had a p-value > 0,05 (α = 5%). Thus, hypothesis H2 was not met and the conclusion can be reached that there is no significant impact of Complexity (X4) on E-Government Adoption (Y) in Iraq with a fault tolerance (α) of 5%. The results of hypothesis testing show that a change of Complexity will not affect E-Government Adoption.

H5: Security will impact e-government adoption.
Table 10 shows a positive and significant impact with a path coefficient of 0,140 between Security (X5) and E-Government Adoption (Y) in Iraq with a p-value < 0,05 (α = 5%). Thus, hypothesis H5 was met, and the conclusion can be reached that there is significant impact of security (X5) on E-Government Adoption (Y) in Iraq with a fault tolerance (α) of 5%. The results of hypothesis testing show a change of Security will affect E-Government Adoption. That is, if the Security of increases then E-Government Adoption will increase.

H6: Management Support will impact e-government adoption.
Table 10 shows a positive and significant impact with a path coefficient of 0,466 between Management Support (X6) and E-Government Adoption (Y) in Iraq with a p-value < 0,05 (α = 5%). Thus, hypothesis H6 was met, and the conclusion can be reached that Management Support (X6) has a significant impact on E-Government Adoption (Y)in Iraq with a fault tolerance (α) of 5%. The results of hypothesis testing show that a change of Management Support will affect E-Government Adoption. If Management Support from the Government increases then E-Government Adoption will increase and vice versa.

H7: Finance Resources will impact e-government adoption.
Table 10 shows a negative impact with a path coefficient of -0,030 between Finance Resources (X7) and E-Government Adoption (Y) in Iraq with a p-value > 0,05 (α = 5%). Thus, hypothesis H7was not met, and the conclusion can be reached that there is no significant impact of Finance Resources (X7) on E-Government Adoption (Y) in Iraq with a fault tolerance (α) of 5%. The results of hypothesis testing show that a change of Finance Resources will not affect E-Government Adoption.

H8: Business Nature will impact e-government adoption.
Table 10 shows a negative impact with a path coefficient of -0,044 between Business Nature (X8) and E-Government Adoption (Y) in Iraq with a p-value > 0,05 (α = 5%). Thus, hypothesis H8 was not met, and the conclusion can be reached Finance Business Nature (X8) had no significant impact on E-Government Adoption (Y) in Iraq with a fault tolerance (α) of 5%. The results of hypothesis testing show a change of Business Naturewill not affect E-Government Adoption in Iraq.

H9: Performance Expectancy will impact e-government adoption.
Table 10 shows a positive and significant impact with a path coefficient of 0,072 between Performance Expectancy (X9) and E-Government Adoption (Y) in Iraq with a p-value < 0,05 (α = 5%). Thus, hypothesis H9 was meet, and the conclusion can be reached that Performance Expectancy (X9) had a significant impact on E-Government Adoption (Y) in Iraq with a fault tolerance (α) of 5%. The results of hypothesis testing show that an change of Performance Expectancy will affect E-Government Adoption. That is, if Performance Expectancy increases then E-Government Adoption in Iraq will increase and vice versa.

H10: Effort Expectancy will impact e-government adoption.
Table 10 shows a positive and significant impact with a path coefficient of 0,088 between Effort Expectancy (X10) and E-Government Adoption (Y) in Iraq with a p-value < 0,05 (α = 5%). Thus, hypothesis H10 was met, and the conclusion can be reached that Performance Effort Expectancy (X10) impacts E-Government Adoption (Y) in Iraq with a fault tolerance (α) of 5%. The results of hypothesis testing show that a change of Effort Expectancy will affect E-Government Adoption in Iraq. That is if Effort Expectancy increases then E-Government Adoption will increase and vice versa.

H11: Social Influence will impact e-government adoption among businesses in Iraq.
Table 10 shows a positive impact with a path coefficient of 0,042 between Social Influence (X11) and E-Government Adoption (Y) in Iraq with a p-value > 0,05 (α = 5%). Thus, hypothesis H11 was not met, and the conclusion can be reached Social Influence (X11) had no significant impact E-Government Adoption (Y) in Iraq with a fault tolerance (α) of 5%. The results of hypothesis

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testing show that a change in Social Influence will not affect E-Government Adoption.

H12: Perceived Usefulness will impact e-government adoption.
Table 10 shows a positive and significant impact with a path coefficient (0,172) between Perceived Usefulness (X12) and E-Government Adoption (Y) in Iraq with a p-value < 0,05 (α = 5%). Thus, hypothesis H12 was met, and the conclusion can be reached that Perceived Usefulness (X12) has a significant impact on E-Government Adoption (Y) in Iraq with a fault tolerance (α) of 5%. The results of hypothesis testing show that a change in Perceived Usefulness will affect E-Government Adoption in Iraq. That is, if Perceived Usefulness increases then E-Government Adoption will increase and vice versa.

H13: Ease of Use will impact e-government adoption.
Table 10 shows a positive and significant impact with a path coefficient of 0,289 between Performance Ease Of Use (X13) and E-Government Adoption (Y) in Iraq with a p-value < 0,05 (α = 5%). Thus, hypothesis H13 was meet, the conclusion can be reached that Ease of Use (X13) had a significant impact on E-Government Adoption (Y) in Iraq with a fault tolerance (α) of 5%. The results of hypothesis testing show that a change of Ease of Use will affect E-Government Adoption in Iraq. That is, if Ease of Use increases then E-Government Adoption will increase and vice versa.

H14: There is an impact of perceived usefulness by moderating language on e-government adoption.
Hypothesis testing of moderator path variant coefficient (X12 * X14) shows the result that in the variable of the interaction of Perceived Usefulness (X12) and Language (X14) had a p-value equal to 0,277 with a path coefficient of 0,022. The p-value is greater than 0.05 (α = 5%). This test shows that H14 was not met, and the conclusion can be reached that moderating language had no significant effect on e-government adoption among businesses in (α = 5%). This test shows that H17 was meet, and the conclusion can be reached that there is significant effect Ease Of Use by moderating Uncertainty to e-government adoption among businesses in Iraq. The results of hypothesis testing show that any change of Ease Of Use by moderating Iraq. The results of hypothesis testing show that a change of Perceived Usefulness by moderating language will not affect E-Government Adoption.

H15: There is an impact of ease of use by moderating language on e-government adoption.
Hypothesis testing of moderator path variant coefficient (X13 * X14) shows the result that in the variable of the interaction of Ease Of Use (X13) and Language (X14) had a p-value equal to 0,002 with a path coefficient of -0,107. The p-value is less than 0.05 (α = 5%). This test shows that H15 was met, and the conclusion can be reached that there is is significant effect of Ease of Use by moderating language to e-government adoption among businesses in Iraq. The results of hypothesis testing show that an change of Ease Of Use by moderating language will affect E-Government Adoption negatively. The negative value means if Ease Of Use by moderating language increases then E-Government Adoption will decrease and vice versa.

H16: There is an impact of Perceived Usefulness by moderating uncertainty on e-government.
Hypothesis testing of moderator path variant coefficient (X12 * X15) shows the result that in the variable of the interaction of Perceived Usefulness (X12) and Uncertainty (X15) had p-value equal to 0,081 with a path coefficient -0,052. The p-value is greater than 0.05 (α = 5%). This test shows that H16 was not met, and the conclusion can be reached that be concluded that there is no significant effect on perceived usefulness by moderating uncertainty to e-government adoption among businesses in Iraq. The results of hypothesis testing show that an change of Perceived Usefulness by moderating uncertainity will not affect E-Government Adoption in Iraq.

H17: There is an impact of Ease Of Use by moderating uncertainty on e-government adoption.
Hypothesis testing of moderator path variant coefficient (X13 * X15) shows the result that in the variable of the interaction of Ease of Use (X13) and Uncertainty (X15) had a p-value <0,001 with a path coefficient of -0,133. The p-value is less than 0.05

Uncertainty will affect E-Government Adoption in Iraq. The path coefficient shows a negative value which means that if Ease of Use by moderating Uncertainty increased then E-Government Adoption in Iraq decreased and vice versa.

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H18 : There is an impact of Effort Expectancy by moderating language to e-government adoption among businesses in Iraq.

Hypothesis testing of moderator path variant coefficient (X10 * X14) shows the result that in the variable of interaction of Effort Expectancy (X10) and Languange (X14) had a p-value equal to 0,447 with a path coefficient of -0,009. The p-value is greater than 0.05 (α = 5%). This test shows that H18 was not met, and the conclusion can be reached can be concluded that there is no significant effect Effort Expectancy by moderating language to e-government adoption among businesses in Iraq. The results of hypothesis testing show that is a change of Effort Expectancy by moderating language will not affect E-Government Adoption in Iraq.

H19: There is an impact of IT Infrastructure by moderating language to e-government adoption among businesses in Iraq.

Hypothesis testing of moderator path variant coefficient (X2 * X15) shows the result that in the variable of interaction of IT Infrastructure (X2) and Languange (X14) had a p-value of 0,004 with path coefficient of 0,098. The p-value is less than 0.05 (α = 5%). This test shows that H19 was met, and the conclusion can be reached there is asignificant effect IT Infrastructureby moderating Language to e-government adoption among businesses in Iraq. The results of hypothesis testing show that a change of IT Infrastructure by moderating Languange will affect E-Government Adoption in Iraq. The path coefficient had a positive value, which means, that if IT Infrastructure by moderating Language increases then E-Government Adoption in Iraq will increase and vice versa.

H20: There is an impact of Complexity by moderating language to e-government adoption among businesses in Iraq.

Hypothesis testing of moderator path variant coefficient (X4 * X14) shows the result that in the variable of interaction of Complexity (X4) and Languange (X14) had a p-value equal to 0,045 with a path coefficient of 0,112. The p-value is greater than 0.05 (α = 5%). This test shows that H20 was not met, and the conclusion can be reached that there is no significant effect on Complexity by moderating language to e-government adoption among businesses in Iraq. The results of hypothesis testing show that a change of Complexity by moderating language will not affect E-Government Adoption in Iraq.

6. Discussion

This study developed a framework to examine the effects of technology, organizational, and behavioral factors on the utilization of an E-Government Adoption Model by the moderating cultural factors among Iraqi business organizations. This current study had several findings.

1. The results indicated that a positive impact of relative advantages exists on e-government adoption among businesses in Iraq. Thus, the finding of this study that the degree to which an innovation is perceived as being better than the idea it supersedes aids adoption is consistent with the Diffusion of Innovations described by Rogers and the TOE framework developed by Tomatzky and Fleischer .

2. The study found a negative impact of IT infrastructure on e-government adoption among businesses in Iraq. The reason could be that the government of Iraq still has challenges encompassing infrastructure, identifying e-services applications, back-office and management, registration and community education.

3. The study found a positive impact of Compatibility on e-government adoption among businesses in Iraq, which was similar to [25], [26], [9]

4. The study found a negative impact of Complexity on e-government adoption among businesses in Iraq, which could be related to the level of education of participants in E-government, to not being fully aware of using the system or to a lack of training.

5. The study found a positive and significant impact of Security on e-government adoption among businesses in Iraq. This finding was consistent with previous studies that have found security to be the most significant element in e-government adoption
Iraq. This finding was similar that of other authors [12]

6. The study found a positive and significant impact of Management Support on e-government adoption among businesses in

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7. The study found a negative impact of Finance Resources on e-government adoption among businesses in Iraq, which may be because most Iraqi public organizations have received funds for developing IT.

8. Business Nature had a negative impact on e-government adoption among businesses in Iraq, which is important for the implementation of e-government in businesses [29]. This is because some businesses do not need to use E-government in a wide manner such as the service sector, which includes hotels and car services, among others.

9. The study found a positive impact of Performance Expectancy on e-government adoption among businesses in Iraq, a positive impact of Effort Expectancy on e-government adoption among businesses in Iraq, and a positive impact of Social Influence on e-government adoption among businesses in Iraq which are consistent with The Unified Theory of

10. The study found a positive impact of Perceived Usefulness on e-government adoption among businesses in Iraq, and a positive impact of Ease of Use on e-government adoption, which is consistent with UTAUT model 1.

11. With respect to moderating language, the study found a negative impact of perceived usefulness by moderating language to e-government adoption because language is a very important factor for the population and most of the population in Iraq use the Arabic language and English is the dominate language of the internet. Ease of use by moderating language had a positive impact on e-government adoption among businesses in Iraq; this is consistent with [50] .
12. There was a negative impact an Ease of Use by moderating uncertainty to e-government adoption among businesses in Iraq. This could be because a new user will be highly influenced by instructors in using the system as they are more likely to be cautious towards technology and the views of others provide useful information that reduces uncertainty.
13. There was a positive impact of Ease of Use by moderating uncertainty to e-government adoption among businesses in Iraq. In this context; [47] predicted that uncertainty would have a moderating effect on the relationships between Ease of Use to usage, arguing that these factors would help to resolve unclear situations and that this information would have a relatively greater influence on the behaviour of high uncertainty samples.

14. There was negative impact of Effort Expectancy by moderating language on e-government adoption among businesses in Iraq because the Effort Expectancy and Language problems caused by the preference for Arabic, or unfamiliarity with other languages reduces the maximum benefit to be gained from the Internet, especially with regard to websites offered in other languages. About 82% of Web sites are in English, and this represents a huge obstacle for Arabic-speaking natives in Iraq who can only write and read Arabic. These users prefer the Arabic language and will not expend the effort to use translation websites or software to understand the sentences.
15. There was a positive impact of IT Infrastructure by moderating language on e-government adoption among businesses in Iraq. This is similar to the argument that IT infrastructure is a crucial element to the linkage of information and knowledge integration in e-government adoption.
16. Lastly, there was a negative impact of Complexity by moderating language on e-government adoption among businesses in Iraq. This finding is similar with that [24] . Probably the users feel there is complexity by moderating language to e-government adoption because most of them are from the old generation and they still have some difficulties when using a PC, and they not knowledgeable of the English language. Indeed, the number of people who speak English (as a second language) comprised about 35% of the population of Iraq in 2012. Thus, the level of English language skills overall is low.

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7. CONCLUSION

In the overall, after examined twenty hypotheses, the authors answered and proven that sixteen variables some factors have positive and others have negative impacts as discussed in the previous section. The authors proposed a new module could guide the Iraqi government to consider some of the technology, organizational, behavioural factors towards utilization of e-government among Iraqi Business Organizations. The contribution of this study is in extending the literature by using integrated three theoretical research streams, which are TOE, DOI, and UTAUT model and the examining the effects of Technology, Organisational, Behavioural Factors towards Utilization E-Government Adoption Model by moderating cultural factors among Iraqi business organizations. Because of the consequence of the successful implementation of electronic government services and from a practical perspective, the government, and other responsible bodies should take a positive position towards the factors that influence system acceptance. The present study attempted to give a better understanding of the e-government adoption profile among businesses in Iraq. It proposed a model for e-government adoption for businesses in Iraq. In this study, an effort was made to ensure that all e-government applications are relevant to the implementation stages in the framework adoption. However, there might be other possible factors that can be included in the framework but which may have been overlooked and have not been taken into account. Therefore, future research work should examine new relevant factors, which may affect the e-government Adoption in Iraq. Furthermore, the same approach should be replicated with different samples elsewhere.

8. LIMITATIONS

One of the limitations that was faced by the researcher while conducting this study was the lack of prior relevant research. This means that this research is not as strongly grounded due to a lack of prior research. Moreover, participants may possess certain attributes that differ from those in other parts of the world. Future research may use more diversified random sampling to verify the dimensions developed in this study. Regarding the methods which were used by the researcher to investigate the e-government adoption, it is suggested that future studies use both quantitative and qualitative methods to enhance the results of the field.

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