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Factors Affecting the Adoption of e-Government in Public Sector Organizations of Kurdistan Region

Government institutions digitalization is an important element of development in advanced systems. The adoption of e-Government has great potential for the effective interaction between citizens and policymakers. The trends for development and digitalization of governmental activities raised the necessity for the adoption of the e-government in public sector institutions. The key factors affecting the adoption of e-government in the Kurdistan Region have been investigated in this study. The study has also been made to highlight obstacles that limited government capability to elude the paper-based system and to measure the extent of public support in approaching the new administration, which sought to be a pre-condition for its successful implementation. The exploratory research design has been used and data has been collected through a questionnaire. Four key factors that affect the implementation of e-government in public sector organizations of Kurdistan Region have been identified: motivational factor, personal factor, technical factor and reliability factor. All factors have a positive connection with e-government adoption, but they are not equally influencing the process of its implementation. The motivational factor is more effective compared to other factors due to the perceived benefits of the system to the citizens, but the personal factor has the least impact on the adoption of e-government. It has been determined by the study that citizens appreciate the perceived values created by the e-government as it minimizes routines and inefficiency of public administration that burden their resources. It has been highlighted that there is a positive impression for citizens on the adoption of e-government, which supports the successful implementation of the process. It has been said in the study that IT infrastructure development, adequate training, public awareness and more motivation on perceived benefits can profoundly guarantee the success of e-government adoption and can become an important tool of reform in public sector institutions. Its successful implementation can also improve the quality of public sector management and work on the delivery of public services in an effective and efficient manner.

Keywords: e-government, digitalization, public sector, good governance practice, public administration, governance, efficiency

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Фактори, що впливають на прийняття електронного уряду в організаціях державного сектору Курдистану

Цифровізація державних установ є важливим елементом розвитку передових країн. Впровадження системи електронного урядування має великий потенціал для формування ефективної взаємодії між громадянами та політиками. Тенденції розвитку та цифровізації державної діяльності зумовили необхідність впровадження системи електронного урядування в державних установах. У цьому дослідженні вивчено ключові фактори, що впливають на впровадження системи електронного урядування в Курдистані. Дослідження також було проведено з метою висвітлення перешкод, що обмежують можливості уряду відмовитись від паперової системи, та оцінювання обсягу державної підтримки у наближенні до нової адміністрації. Така підтримка мала стати передумовою її успішного впровадження. Було використано проектні дослідження, а дані було зібрано за допомогою анкети. Визначено чотири ключові фактори, що впливають на впровадження електронного урядування в організаціях державного сектору Курдистану: мотиваційний фактор, особистий фактор, технічний фактор та фактор надійності. Усі фактори мають позитивний зв'язок із впровадженням електронного урядування, але вони не однаково впливають на процес його імплементації. Мотиваційний фактор є більш ефективним у порівнянні з іншими факторами завдяки відчутній вигоді системи для громадян, та особистий фактор найменше впливає на впровадження електронного урядування. Дослідження встановило, що громадяни позитивно оцінюють цінності, створені електронним урядуванням, оскільки він зводить до мінімуму рутину та неефективність державного управління, які забирають їхні ресурси. Було підкреслено, що у громадян склалося позитивне враження щодо прийняття електронного уряду, це підтримує успішне впровадження процесу. Також у дослідженні було сказано, що розвиток IT-інфраструктури, адекватне навчання, обізнаність громадськості та більша мотивація щодо можливих

переваг можуть гарантувати успіх прийняття електронного уряду та можуть стати важливим інструментом реформування в установах державного сектора. Успішне його впровадження також може покращити якість управління державним сектором та дозволити ефективно надавати державні послуги.

Ключові слова: електронне урядування, цифровізація, державний сектор, хороша практика управління, державне управління, управління, ефективність

1. Introduction

The emergence of e-government and developments in the sector of information technology has profoundly influenced the governing process globally. Introducing a large number of ICT-related programs in the last decades has a great potential for public organizations and transforms the traditional methods of governing to up-to-date public affairs management (Hirschfeld, 2012; Reddick, 2010; and Serageldin, 2011). The key objective of e-government is to bid an increased portfolio of government services to the citizens in a very cost-effective manner. The e-government system is also designed to increase transparency and accountability of the public institutions towards the fulfillment of public demands and offering them an increased service (Atkinson and Castro, 2008). In fact, the government is accountable to update its system from time to time based on the necessities of citizens. The classical public administration might be not effective anymore for public policymakers; therefore advanced technology becomes a precondition to the success of any government in modern time. Public institutions and policymakers should undertake a radical change to increase public services, design and encourage good governance practices, empower civil servants through training and education system, minimizing unnecessary costs and expenditure, and finally creating a friendly environment for business entities to foster a productive economy. Here, ICT plays a major role in maintaining and achieving the aforementioned goals and it would be strictly limited without the adoption of e-government system.

This process simplifies and facilitates the governing process and enables the government to successfully improve the overall quality of life. The digitalizing governing process ensures government regulations and policies to be implemented and it also ensures public participation. The greater public participation, the greater satisfaction could be achieved. Citizens when utilizing e-government may better involve in designing public services and reshape government policies based on their needs. It's also an opportunity to produce active citizens and give them a greater role in the public policymaking process (Abdullah and Abdulrahman, 2015; Ambali, 2010; Bonina and Cordella, 2008; Navarra and Cornford, 2007; Torres et al., 2005). They also stress its potential to connect them quickly and directly, to what the government has to offer – no queues, no waiting, 24/7 services.

The adoption of e-government becomes a precondition to the development of public service delivery and citizen's engagement in the governing process. The notion has been taken seriously by some governments especially in the developed countries. Some Middle Eastern and North African (MENA) governments adopted the notion in their public administration processes such as United Arab Emirates, Qatar and Bahrain. As an emerging economic market, the United Arab Emirates is among the first Middle Eastern country to adopt information and communication technology to further enhance its economy and sustainable development. The UAE has introduced initiated e-government Strategic Framework in 2011-2013 aimed to promote the transformation of all government services through electronic methods within three years. The objective of this plan was to enable citizens to deliver their desired services via ICT devices including their mobile phones and online apps. Through this system as the ruler of Dubai highlighted is to reach out to citizens other than waiting for citizens to come to them. It's the notion of new public management and fulfills the expectation of citizens toward the public institution. The government through the use of modern technology may enhance the delivery of public services and fulfill citizen satisfaction. Thus, the UAE government has signified e-government in its governing process and enabled digitization of government institutions, especially the introduction of electronic voting machines, e-banking, and e-payment. In this regard, a certain mechanism

has been used, such as offering millions for the best technology-driven solution and apps. The award has encouraged experts and IT professionals to compete and create a kind of technology needed by the government to offer efficient and effective services to the citizens. The Kurdistan Regional Government sees Dubai as the role model in the region and tries to make Erbil the second Dubai in the region.

Despite financial and political instability in the region, the 9th cabinet of the KRG attempts to transform towards e-government and digitalization. In the new cabinet, digitalization becomes a vision based on three principles of a customer-centric, shared platform, security and privacy. The government also admits that citizens can better reach government services through digitalization and a shared platform that minimizes costs and maximizes public sector efficiency (KRG, 2021). The government has established the data center. The Data Center is planning to establish the first T3 Data Center to create efficiency in administration. It is creating Digital Identity for the KRG residents and completing the second phase of KRG biometric registration. The government aims to create a digital identity for every citizen in the KRG and then expand its e-government to other services such as e-tax system, e-notary, e-land registry, and company registration. The KRG already created a single portal to the government department (gov.krd). On several occasions, the officials of KRG vowed to digitalize the government. However, implementing e-government is a complicated process. Several factors influence citizens to use the digital system and the KRG is lacked guidelines and infrastructure to perform such a system. Citizens also find it difficult to adapt to the system and to transform from paperwork to online services. The objective of this study is to identify factors affecting the adoption of the e-government system in the Kurdistan Region of Iraq. Understanding these factors helps the KRG to successfully deliver e-services to citizens and to apply a digital system. For that, the study adopted the E-government Adoption and Utilization Model, which is known as (EGAUM). The model is developed by Alghamdi and Beloff (2017). The objective of the EGAUM model is to identify factors that are influencing the intention and belief of users along with their behavior that determines their adoption and the extent of their usages. In this model four dimensions are used as the independent variables which are sought to have a major influence on the adoption of e-government in public sector organizations, including Personal Factor, Motivational Factor, Technical Factor and Reliability Factors.
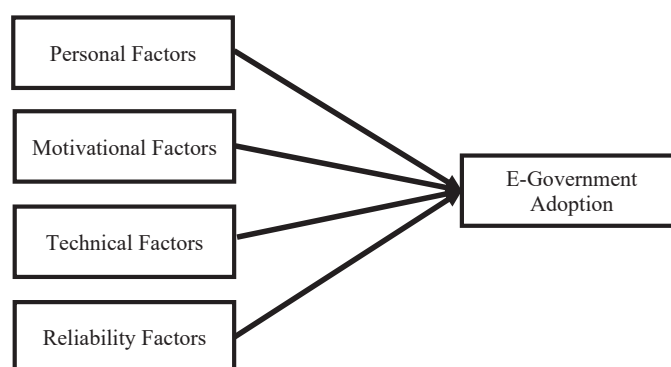

Figure 1: EGAUM model (Alghamdi and Beloff 2017)

2. Literature Review

Electronic government (E-government) also known as the digital government is an online government that refers to the use of information technology by the citizens to access government services, business and other related matters (Alrashidi, 2012). In advanced government systems, technology is a primary source of information and the bridge between citizens and officials. The E-government system has eased the governing process and citizens can access different kinds of services without having any physical contact with service providers. The general concept of e-government does not solely concentrate on public service delivery (government-to-citizen),

but also government-to-business, government-to-government, and government-to-employees (Layne and Lee, 2001). Sometimes, other than intra-government affairs, e-government is used to connect governments all around the world.

The goal of e-government is to deliver public services to the citizens promptly (Tola, 2020). The efficient governing process eases public service delivery and conveniences which consequently bring up public service satisfaction. The advanced information technology becomes an opportunity for the governments to communicate with citizens, bring citizens closer to the government and deliver smarter services (Tola, 2020; OECD, 2010). Thus, e-government services enhance accountability, transparency and accessibility of the government which delivers services to citizens efficiently and cost-effectively (West, 2004). These factors are important for citizens to adopt this innovative governing tool. Citizens in the 21st century are expecting the government to provide an efficient and effective method to deliver public services as the private sector has developed their online systems and is competing to deliver their services and products to the citizens in a timely and quality manner. Besides, public participation becomes an issue in a classical governing system where less power is left for citizens. However, one of the motives of e-government adoption as found by Norazah and Ramayah (2011) is increasing individual power within the government. The following sections explain how PMTR derived from the EGAUM model impacts on e-government adoption around the world.

2.1 Personal Factors

The previous study has shown relationships between age and adoption of e-government. The personal factors encompass age, gender, education, location and individual income. Hill et al. (1998), Baker, Qahtani, and Hobuna (2007) concluded in their study that age is an important factor of e-government adoption. Adults are more likely to use technology than the elder and younger generations. For that, the countries with more young citizens are more likely to adopt e-government systems. However, age might not be important in every situation, but there are other important demographic factors such as public awareness that need to be considered while analyzing the relationship between personal factors and the

actual adoption of e-government. Al Otaibi and Al Zahrani (2009), Al Rawi and Alsabri (2009) have given more insight on the age factor. They found that older people are easily getting bored with using technology and they are more likely to oppose the use of modern technology. In contrast, the same study highlighted that people below 25 years are more likely to use technology and they are more into the e-government process in their interaction with the government.

The gender factor is also considered to be another personal factor that likely impacts on the adoption of e-government. The gender issue here is more related to the fact that women in closed societies have little or less knowledge on the use of technology as they lack technology training and awareness. In this regard, Al Ghamdhi and Billof (2014) believe that there is a relationship between literacy and the use of e-government. They found that lack of literacy negatively impacts the use of e-government.

The geographical location of citizens is also considered to be another personal factor that determines the level of e-government usage and the success of the process. There is a gap between citizens from the urban area to the rural areas in terms of technology awareness, knowledge, and accessibility. People who are living in remote and poor areas are less likely to use technology compared to the people in urban areas. Thus, a strong relationship is found by Al Omari, Wuduz, and Sandur (2010), Al Subhi, WiberCodi, and Kamal (2010). Also, citizens in remote areas might not have access to modern technology and that becomes a barrier to their tendency towards e-government adoption. Thus, the first hypothesis could be stated as:

H1: Personal factor is positively affecting on the citizen's use of e-government

2.2 Motivational factor

The construct of the motivation factor is also important when studying the adoption of e-government. The motivation factor refers to the perceived benefits citizens might get in dealing with the new system. Citizens are likely to use a particular system to receive or get something in return. The critical changes in values, culture, government structure and business behavior has been made as a motivational factor that affects the use of

e-Government services (A. Al-Shehry, et al, 2006). It has been argued that motivational factor helps policymakers to reduce risk factors and appreciate success in e-Government adoption (Alrashidi, 2012).

In constructing the EGAUM model, Alghamdi and Beloff (2014) have used motivational factors as an important variable to the utilization of e-government. The author has used four main factors relating to motivational factors towards e-government adoption including perceived benefits, socio-cultural and awareness. The perceived benefit refers to the extent to which e-government offers functional and non-functional benefits to its users. More clearly, the perceived benefits create understanding where users believe they can get benefits from using the system. The functional benefits relate to the benefits that users can gain from the utilization of e-government. The benefits include the online services, history of services or archives, reforming bureaucracy which troubles citizens to complete their daily works.

The non-functional benefits, on the other hand, refers to intangible benefits that citizens can get from the utilization of the e-government system including time-saving, crown avoidance, satisfaction in conducting services, reducing bribery and efforts to obtain services. Thus, the second hypothesis concerning motivation factor could be stated as:

H2: Motivation factor is positively affecting on the citizen's use of e-government

2.2.1 Awareness

Awareness is very important in the implementation of public policy. People who are aware of the importance of the policy, will not resist its implementation. The use of technology in public sector organizations requires awareness from citizens as well as government employees. For that, (20) indicates that perceived awareness is a major contributor to e-government adoption. The failure to spread public awareness of digital tools and technology will create a situation where chances of success become very limited. The process of spreading awareness is more needed in the remote and rural areas where people might find it difficult to deal with the modern system as they used to complete their paper works through face-to-face interaction. To spread awareness in society,

several methods can be used to successfully maintain the process including the use of social media, interactive advertisement, and some other methods that could be applicable in this matter. It has been found by Abdelsalam et al (2013) and Zheng (2013) that social media is the most influential method that increases the level of awareness concerning e-government interactions.

2.2.2 Socio-cultural.

The socio-cultural factor is also studied by other scholars as a motivational factor influencing e-government adoption. The authors have classified sociocultural into the social aspect and cultural aspect and identified a positive correlation between the two dimensions. The social aspect mainly refers to the extent of influence created by the social norms. Individuals could be under the influence of their family members and friends to use e-government services. (40 and 41) have argued that colleagues, family members and friends have a major impact on the adoption of users toward new technology particularly when it comes to e-government. The cultural aspects, on the other hand, refer to the norms, values, profession and behaviors of social groups, which have a fundamental impact on the people's intention towards e-government adoption. The socio-cultural factor is explained from various angles including image, the influence of others and resistance. Image is a motive when using technology, especially in developing nations. When someone is proficiently using modern technology that indicates the person is highly educated and modern. Such understanding adds more value to the adoption of new technology that consequently facilitates e-government adoption.

The influence of others is rooted in culture. Thus, the most powerful indicator which changes individual attitude is the influence of others. Such influence is even higher in societies where individuals are interrelated and coherent. The use of e-government adoption, in this case, could be influenced by people's factors where individuals influence each other and become a common norm to use technology to deliver public sector services.

Since the adoption of new technology is highly related to human or cultural factors, to adopt e-government, resistance from people should be taken into consideration. Usually,

people resist changes in the first place and that affects the process. So, the successful implementation of e-government is highly related to the openness of people towards the use of modern technology which sometimes happens due to the security and trust issue. However, as the author highlighted, in some cases users avoid new technology as they prefer face-to-face interaction, which they believe, affects customer confidence.

The influence of connection or interpersonal social networks is another issue related to the implementation of e-government. Corruption is widespread in developing countries and becomes a social norm where sometimes citizens get to benefit from the process. Applying e-government in the public management process makes it very difficult for them to use any sort of connection as the e-government system is electronically controlled. This case led to some resistance especially from authorities and their relatives to reject the idea of e-government adoption as they find it as a threat. Usually, in the traditional public administration system, a manager can easily break down the system and complete paperwork without having many rules and regulations to do so, but the full control is concentrated in the hand of the manager. For that, e-government adoption becomes a barrier for people seeking corruption and desiring to break the rules to process their paperwork and relatives' application.

The factors affecting the adoption of e-government vary from one country to another based on the characteristics of that country including culture, society, economy and politics (Alsaif, 2013). In studying e-government adoption in Saudi Arabia, Alsaid (2013) also identified management, technical and human factors. The author highlighted such factors highly impact on the adoption of e-government and that's what differentiates between developed and developing countries as their culture and social and psychological related issues are different. In this regard, the author has identified in his research that in terms of e-government adoption in developing nations the culture or individual citizens should not be blamed, but relevant technology should be used that goes well with social and cultural values.

2.3 Technical factor

Adopting e-government requires strong technical support. Technical support could be in the form of infrastructure and human resources (Aliyu et al. 2019, p.3) or it could be theoretical: such as simplicity, interface design, reaching out e-services and service description and hints (Alghamdi and Beloff, 2014). The technical support that relates to the technology infrastructure is discussed by Aliyu et al. (2019) who believes that to implement an e-government system, there must be available physical infrastructure and upgrading the existing technologies. The availability of technology may impact on the use of e-government systems and solutions should be available to overcome technical issues and update the existing system. Besides technology infrastructure, the availability of human resources in terms of technical competency is required to influence citizens. Thus, the author recommends human capital investment. Human capital development could be in the form of skill development, ICT competency building and promoting personal abilities to examine and use data. The two factors are complementary to each other. The availability of physical infrastructure does not complete the process, but technical support in the forms of human capital is needed to promote and deal with the system.

Simplicity, on the other hand, is a theoretical technical factor that may impact the use of e-government. Simplicity refers to the ease of use that allows citizens to adapt to the system without any difficulties. It's been used as a key factor in the adoption of e-government (Alghamdi and Beloff, 2014; Olaitan, 2015 and Idris, 2012). Al Jujran (2013) argues that the extent to which citizens believe the system is easy to use changes the attitude of citizens towards the use of the system. The author tested the relationship between the perceived ease of use and citizens' intentions toward the use of the e-government system and the results show a significant relationship between the two variables. The ease of use and perceived usefulness of the system account for 5.6% of the variances ($R2=0.542$). Likewise, Aliyu and Virgiyantid found a positive relationship between e-government adoption and ease of use in the case of Nigeria. The author used system recoverability, friendliness of the system and user interface as dimensions of ease of use.

Alghamdi and Beloff (2014) argued that the

design of the e-government interface impacts on its adoption. The website design in terms of simplicity to use, design, layout, color contrast, fonts labels, easiness of the searches, language options and lack of spelling errors can all influence the citizens' use of the system. When the websites are designed in the proper way, citizens will have more intention to use them. Citizens could have difficulty in finding information and data if the interface is not well designed to facilitate the usage.

Locating and navigating digital information is part of technical issues when adopting e-government. The search engines should be designed in a way that citizens can easily reach the information, otherwise, any difficulty in reaching out digital information insignificantly impacts on e-government adoption (Alghamdi and Beloff, 2014). The authors also discuss that clear and comprehensive guidelines should be available for the users to be able to understand how their information is processed and delivered. Thus, the third hypothesis could be stated as:

H3: Technical factor positively effects on the citizen's use of e-government

2.4 Reliability Factor

The reliability factor such as trust in the system is very important in adopting e-government. The new users of online government need trust more than any other parties and their expectations should be fulfilled to enhance the possibility of success. Warkentin et al. (2002) believes that strong judicial support to e-government adoption is a major factor that can build trust with citizens. The author in his study proposed the use of perceived risk, perceived behavioral control and avoidance of uncertainty impacts on the adoption of e-government and could be used as the independent variable. The perceived risk here refers to the fear of losing control over personal information and being monitored by the government. In light of such fears, individual users are looking for trust and assurance from the system on how and when their information will be used. The other variable that the author used is uncertainty avoidance that relates to trust for e-government adoption. Usually, individual citizens do not want to approach the risks of losing control over their personal information. Thus, the author highlights that trust is the most important factor of e-government adoption

among other factors (Kumar et al., 2007).

The reliability variable was also used by Gilbert and Balestrini (2004) as an independent dimension within perceived barriers. The perceived barriers used by the author include confidentiality, personalization, control, cost, convenience and avoidance of individual interaction. The reliability factor plays a major role in citizen's intentions to use e-government services as it was also confirmed in the case of Jordan. However, trust is not an easy process that can be built in a short period and effort. The use of the digital system is not a simple issue because major studies have found that e-government and online services negatively affect public citizens' privacy and security (Kramer, 1999). On that issue, Al-Khouri (2012) believes that trust is not a gradual, but a cumulative process. As recommended, to successfully implement an e-government system, citizens should have the intention to be involved in the process to send and receive information through the system. Thus, the fourth hypothesis could be stated as:

H4: Reliability factor positively effects the citizen's use of e-government

3. Methodology

The study has conducted the exploratory research design to examine factors affecting e-government adoption in Kurdistan Region. These factors have not been found before in the case of Kurdistan, but this study tries to investigate and figure out these factors along with the existing limitations. Simple random sampling was used for this study as the target population are citizens. This method of data collection is derived from the objective of the study that tries to understand the factors from citizens' perspectives. A questionnaire was designed based on the previous literature and relevant questions were added to make it suitable for the respondents to answer each question. The first part of the questionnaire included 5 items for the background of the information, not included as the research found it unnecessary, but important for the validity of the responses. The 5 liker scale was used and this part of the questionnaire was classified into 5 sub-sessions, namely: personal factor (7 items), motivational factor (13 items), reliability factor (5 items), technical factor (9 items) and e-government adoption (17 items). The study collected data from respondents with

different backgrounds and different positions, mostly concentrated on Erbil, the capital of the Kurdistan Region. Gender balance was considered and 120 questionnaires were distributed. The total amount questionnaire returned was 105, 11 questionnaires were never returned and 4 questionnaires were mistakenly filled. After confirming the validity of the primary data received from respondents, the data were analyzed through SPSS. At first, the internal consistency was tested by using Cronbach's alpha to verify the consistency of the measures and reliability of the study, then followed by the correlation coefficient. Mean value and standard deviation were used to provide a robust answer to the research objectives.

4. Findings and Discussion
4.1 Internal Consistency

In this current study, the internal consistency was measured using Cronbach's alpha. Reliability of data indicates the consistency of data which relies on consistency between diverse items of the same test. Reliability is measured through Cronbach's Alpha that should exceed 0.6-0.7 to reach the accepted level of reliability (Ursachi, Horodnic and Zait, 2015). If the value is above 0.8, it's even better; however, if the obtained value is greater than 0.95 it's not a preferred level. The values of Cronbach's Alpha in respect of all the constructs used in this study well exceed the threshold of 0.7 and did not reach 0.95 which is not a good level of reliability. However, as shown in Table 1, it suggests that the data collected in respect of all the constructs are reliable and all the statements used to measure the opinion of respondents about the respective constructs well explain these constructs with an excellent degree of internal consistency.

Table 1

Cronbach's coefficient for entrepreneurship competencies

Slno.	Domains	Cronbach's Alpha	No. of Items
1	Personal Factor	0.859	7
2	Motivational Factor	0.741	13
3	Technical Factor	0.948	9
4	Reliability Factor	0.810	5
5	E-government adoption	0.937	17

4.2 Correlations among factors affecting the adoption of e-government

Table 2 demonstrates the correlation between factors affecting the adoption of e-government in the Kurdistan Region. The results indicate a positive correlation between all variables. The level of relationships is somehow different between predictors and e-government adoption. Based on the below table, personal factor is positively correlated with adoption of e-government in Kurdistan Region with a Beta Coefficient of 0.201. This indicates the approval of H1. The relationship between the motivational factor and e-government adoption was also tested and the result shows a Beta Coefficient of 0.438**, which indicates a positive and medium relationship and the acceptance of H2. The value of the motivation factor is the highest and has a greater impact on the successful adoption of e-government. This finding is consistent with Alghamdi and Beloff (2014) concerning the motivational factor as they used it as the main variable in their study. The motivational factor creates an image that influences citizens to use the system due to the perceived benefits they receive from the system and avoid problems such as bureaucracy, routines, nepotism, bribes. The process is timely and effective compared to the traditional paper-work, which disturbs citizens and provides no benefits other than facilitating the corruption act, which serves the minority people and leaves the majority with the ineffective administrative process. On the other hand, the obtained value of the relationship between the technical factor and reliability factor indicates a positive but weak relationship both between predictors and the e-government adoption. That result indicates the acceptance of H3 and H4. In this current study, the technical factor is more important than trust with the Beta Coefficient of 0.280**, but the obtained value of Beta Coefficient reliability factor is 0.244*, which is the least factor after personal factor that includes gender, age, education and economic background dimensions. Despite the positive relationship between reliability factor and e-government

adoption, it contradicts the findings of Al Hujran, Anas, and Ikhlas (2013) who found out that trust in government and reliability to the system plays the most important role in convincing citizens to use e-government as well as impacts their level of satisfaction. The author used reliability as three independent dimensions under services quality variable towards citizen's intention to use e-government services. As discussed, the motivational factor is more important among all other factors and is followed by the technical factor.

Table 2

Correlations among factors affecting the adoption of e-government

Domains	Personal Factor	Motivational Factor	Reliability	Technical Factors	E-government adoption
Personal Factor	1				
Motivational Factor	.606**	1			
Reliability	.509**	.619**	1		
Technical Factors	.566**	.564**	.483**	1	
E-government adoption	.201*	.438**	.244*	.280**	1

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

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

4.3 Personal factor of e-government adoption

The below tables display the personal factor items. According to the table, having limited financial support does not limit the use of e-government with the mean value of 3.0962. However, the financial background, including social class, might influence the capability of the citizens to use e-government. This item is followed by the education level which is believed not to become an obstacle to the use of e-government. However, participants somehow believe that having physical IT infrastructure is important. This result is partially consistent with Al Subhi, WiberCodi and Kamal (2010), who believe people in urban areas are using e-government more commonly compared to the rural areas due to the availability of ICT infrastructure. The availability of personal computers, as well as other means of communication, is important for the users to embrace the system.

Table 3

Personal factor of e-government adoption

Items	Rank	Mean	Std. Deviation
I have adequate information on using e-government	4	3.0680	1.25450
My financial background does not limit my ability to use e-government.	5	2.9524	1.36847
The education system is supportive for the use of e-government.	3	3.4038	1.30361
The education level will never become an obstacle to use e-government	2	3.5096	1.42103
Regardless of geographical location, the government provides e-government services to the citizens	6	2.8750	1.22821
The lack of physical IT infrastructure is not an obstacle in using e-government	7	2.9143	1.27184
I can use an e-government system with limited financial resources.	1	3.0962	1.29614

4.4 Motivational Factors and e-government adoption

The below table shows that the motivational factor is so important in adopting the e-government system. The mean value of the motivational factor shows that people are eager to use e-government to get rid of something that becomes a routine in public sector institutions where citizens have to wait for hours to complete their official matters. Adopting e-government can solve this issue and that's the most important motivation

factor that people support digitalization and e-government. In addition, people believe that they can become a citizen of the 21st century by using the e-government system. The current traditional system of public administration is outdated and troubles citizens. That shifting from paperwork into digitalization can help to become a modern citizen in that aspect.

The least value that somehow becomes a justification for the change denial is the lack of available resources; however, it's the least motivational factor compared to other items. Overall, all motivational factors assured a good level of acceptance by the respondents and higher than other factors of e-government adoption.

Table 4

Motivational Factor of e-government adoption

Item	Rank	Mean	Std. Deviation
I have adequate resources for the use-government system	10	3.2381	3.08072
Given the resources, opportunities and knowledge, it would be easy for me to use the system.	12	3.0095	1.18074
Society has an influence on me to use the e-government system to complete my official works.	8	3.4667	1.20947
Through a public awareness campaign, the government was able to encourage employees and citizens to more focus on digitalization in their work.	9	3.2404	1.26564
The existing rules and regulations in KRG are supportive in adopting e-government	11	3.1553	1.22680
I have adequate resources to use the e-government system.	13	3.0000	1.24635
If using the e-government, I can complete my work efficiently.	5	3.8667	1.18538
By using an e-government system, I get rid of bureaucracy and routines	7	3.7981	1.10057
By adopting e-government, people will not have to queue up and waste a lot of time completing their official matters	1	4.0857	1.16944
Social media networks become an important factor to think about the e-government system.	6	3.8190	1.23865
I become a modern citizen by using the e-government system	2	4.0385	1.00410
People with special needs will get more advantage by using the e-government system in public sector administration.	4	3.8846	.96851
People with special needs can complete their official matters without the help of other people; thus, encouraging the use of e-government	3	3.9615	1.01372

4.5 Reliability Factor of e-government adoption

Table 5. shows how respondents see the reliability factor as a precondition to the adoption of e-government. Overall participants agreed that the security of the e-government system is an important factor of its adoption with a mean value of 3.61. Besides, people still have trust in the system and believe that the government will complete citizens' official matters online including the banking transaction, which is an important aspect of e-government. The reliability is one of the main concerns of the citizens when using e-government as their data is recorded online and is a subject to attacks and hackers. However, this study highlights trust on government capability that their data will be protected from

hackers and spam attacks. Although people trust in government, there is still a concern in this matter as people believe that the government may or may not adopt the proper standard in the digitizing process of public sector organization in terms of data protection. In addition to that, the type of information is somehow important to be highlighted that people need to provide to the government as its concern for the people. It's related to the existing rules and regulations regarding data protection in the Kurdistan Region. This argument is consistent with Warkentin et al. (2002) who agrees that law enforcement is effective in adopting e-government. So, having special rules and relations can serve the goal of e-government and offer more reliability to the public when using e-government system.

Table 5

Reliability Factor of e-government adoption

Item	Rank	Mean	Std. Deviation
I believe in the security of the e-government system.	4	3.3398	1.27996
The government can protect my confidential information and it will not be used for a special purpose that harms me.	6	3.3173	1.36719
The government adopted proper standards in the digitizing process of public sector organizations in terms of security and data protection.	9	3.1154	1.25650
The government is capable to protect the system and public data from hackers.	3	3.4000	1.26795
I trust the government to complete my official matters online including banking transactions.	2	3.4615	1.32872
I can provide all my personal information to the government institution for the adoption of-government system.	7	3.1553	1.31177
There is a special law that supports e-government adoption and avoids the misuse of the system.	5	3.2308	1.20057
The government issued the law of information and data protection for citizens and people who know the use of the system.	8	3.1429	1.27422
In general, I believe the security of the e-government system is an important factor in its adoption.	1	3.6154	1.20119

4.6 Technical Factor of e-government adoption

The results demonstrate that citizens of the Kurdistan Region find e-government easy to use if they have adequate training to develop their ICT skills. Training could be systematic and should be provided by the government for government employees and through media and public channels to citizens. Olaitan (2015) in his study found a similar result as the author explains that the citizens' capacity to use digital information is an effective factor that simplifies and motivates citizens to adopt the system. It's also important because accessing public information online without much burden ensures public service delivery and trust in government which partially explains the technical as well as reliability factor of the e-government system. Therefore, due to the technical issues concerning internet connectivity, the government is better to provide information that does not require high connectivity, so everyone can access them. Improving the technical capacity of the government is significant in maximizing the chance of successful e-government adoption.

Table 6

Technical factor of e-government adoption

Item	Rank	Mean	Std. Deviation
Learning to operate the e-government system is easy for me.	5	3.3333	1.06551
I would find the e-government system easy to use if I got suitable training.	1	3.6923	1.07104
E-government system via the Internet will not be useful due to the inefficient availability of government information and services on the e-government portal.	2	3.3592	1.05584
Overall, I believe that the online government system is easy to use.	4	3.4904	1.08829
I do not see any big limitations to avert the use of e-government adoptions.	3	3.5048	1.24903

4.7 E-government adoption

The adoption of e-government as shown in below table improves public service delivery and minimizes the level of corruption and nepotism. The paper-based administration increases the chance of corruption in public sector organizations due to the nature of the process. However, when things are digitized, fraud, nepotism and bribes are not likely to happen and some sort of justice could be achieved for the public. The e-government system also expedites the process of public administration and makes things more efficient with less human

error. The result saves resources to the government that was misused in the paper-based system and minimizes government expenditure. That result is inconsistent with West (2004) who believes that e-government adoption minimizes government spending as the process is efficient. The table below explains more about the result for each item from the perspective of respondents.

Table 7

E-government adoption

Item	Rank	Mean	Std. Deviation
The adoption of e-government reduces the act of corruption in public sector institutions.	7	4.0476	1.17981
The adoption of e-government solves the issue of bribe and nepotism.	2	4.1048	1.08241
The adoption of e-government solves the trust issue between government and citizens	14	3.9429	.89688
The adoption of e-government resolves routines and slow delivery of public services	13	3.9619	.89790
The adoption of e-government creates a positive image for the government	12	3.9714	.97524
The adoption of e-government results in good governance practice.	16	3.8846	.95843
The adoption of e-government minimizes public expenditure.	4	4.0769	.97236
The adoption of e-government empowers the government	10	4.0095	.93537
The adoption of e-government improves public service delivery.	1	4.1078	.83140
The adoption of e-government increases public participation and improves representation.	11	3.9709	.83380
The adoption of e-government helps the government to provide online services to the citizens.	13	3.9619	.89790
The e-government adoption attracts foreign direct investment and encourages foreign investors to invest their money here.	8	4.02885	.864137
Adopting e-government improves the quality of public sector institutions and facilitates the reform process.	9	4.0286	.94520
The adoption of e-government increases the transparency and accountability of the government.	15	3.9423	.96368
The adoption of e-government helps the exchange of information between a public institution and, thus, increases the efficiency of the public sector.	3	4.0874	.90864
The adoption of e-government supports and empowers the education system.	6	4.0481	.92830
The adoption of e-government improves business citizens' communication and results in market development.	5	4.0667	.84656

5. Conclusion and Recommendation

The widespread use of e-government has persuaded the government to make some reforms and digitalize their system to be more open and transparent towards their citizens. The main problem of this study was a lack of understanding of factors that impact e-government adoption in Kurdistan. Besides, the lack of public understanding and motivation among citizens was another factor that caused the slow implementation of the process. The study concluded that the four factors: personality, motivation, technical ones and reliability are important in adopting e-government. The global trends of development leave no justification for the Kurdistan Regional Government other than e-government adoption. However, robust policy and strategies are needed to achieve that goal. The e-government system, as concluded in this study, improves public service, citizens' satisfaction, openness, transparency, accountability, efficiency and effectiveness. Besides, it solves problems of nepotism, corruption and the misuse of public funds,

mistreatment, routines, bureaucracy, government spending, misconducts, bribery and many other services. Therefore, to achieve these goals of development, the government should create value for the citizens to motivate them to use the digital system. Citizens should understand the benefits of such a system before using it. Thus, it motivates citizens to be able to approach the modern system. Besides, citizens should be assured of the data protection and reliability of the system. For the government employees to work with the system with fewer errors and more efficiency, this study recommends that having a training and development program is a must. The study also suggests organizing training courses for employees, which is necessary, but the government has not found any solution so far, which may become a major problem for e-government adoption. Strengthening the IT infrastructure can also help government efforts to successfully implement e-government with public access to e-services.

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