Computer Modeling in Engineering & Sciences

Tech Science Press

DOI: 10.32604/cmes.2022.019075

ARTICLE

An Acceptance Model of Using Mobile-Government Services (AMGS)

Ahmad Althunibat[1,*], Mohammad Abdallah[1], Mohammed Amin Almaiah[2], Nour Alabwaini[1] and Thamer Ahmad Alrawashdeh[1]

[1]Department of Software Engineering, Faculty of Science and Information Technology, Al-Zaytoonah University of Jordan, Amman, Jordan

[2]Faculty of Computer Sciences and Information Technology, King Faisal University, Al-Ahsa, Saudi Arabia

[*]Corresponding Author: Ahmad Althunibat. Email: a.thunibat@zuj.edu.jo

Received: 05 September 2021 Accepted: 05 November 2021

ABSTRACT

In recent years, the telecommunications sector is no longer limited to traditional communications, but has become the backbone for the use of data, content and digital applications by individuals, governments and companies to ensure the continuation of economic and social activity in light of social distancing and total closure in most countries in the world. Therefore, electronic government (e-Government) and mobile government (m-Government) are the results of technological evolution and innovation. Hence, it is important to investigate the factors that influence the intention to use m-Government services among Jordan's society. This paper proposed a new m-Government acceptance model in Jordan (AMGS); this model combines the Information System (IS) Success Factor Model and Hofstede Cultural Dimensions Theory. The study was conducted by surveying different groups of the Jordanian community. A structured questionnaire was used to collect data from 203 respondents. Multiple regression analysis has been conducted to analyze the data. The results indicate that the significant predictors of citizen intention to use m-Government services in Jordan are Information Quality, Service Quality, Uncertainty Avoidance, and Indulgence *vs.* restraint. While, the results also suggest that Power Distance is not a significant predictor of citizen intention to use m-Government services.

KEYWORDS

Acceptance test; e-Government; m-Government; acceptance model; IS success factor model; Hofstede cultural dimensions theory

1 Introduction

E-Government is defined as the utilization of ICT, mobile technology and the internet to provide citizens with needed services, improve public agencies' performance, facilitate successful public participation, and include citizens within a total social development process [1]. M-Government is defined as a subset or a complement to the e-Government through the utilization of different mobile and wireless technologies, services, applications and devices to provide information and services to citizens, businesses and all governmental units, thus creating better opportunities for the public to participate and communicate with the government [2]. A mobile service is a service that

is accessible at any time and place, the spread of mobile phone usage is increasing dramatically over time, so attention should be focused on further improving service quality and delivery [3]. Mobile technology services development is based on the end-user's experience to find out what they want, however, when it comes to measuring the usability of any system on this platform, we face many challenges and difficulties because it is dynamic, and varies considerably; it notably depends on the user's reaction [1]. This method of service provision is still under consideration in Jordan due to different challenges in addition to several problems and the incorrect manner of application. In order to avoid such problems and difficulties, some researchers indicated the need to focus on the cultural aspect of the individuals, and the social impact. The social impact is one of the most important causes affecting any person to use a particular technology or not to use it, the culture of persons according to the influence of the surrounding environment and the way they deal and accept them with this technology will directly affect the individual decisions and way of life. In addition, positive social impact plays a big role in the use and acceptance of these services or technology [4].

Mobile internet devices are the most widespread technology in human history [5]. According to the indicators of the Jordanian telecommunication market, mobile internet devices are the most widespread technology with 7,778,770 subscriptions, this number constitutes 79.3% of the Jordanian population (Telecommunication regulatory commission's report 2020). Despite the technological innovation, the m-Government agenda in Jordan suffers from chronic defects.

The motivation for conducting this research is the challenges faced by the m-Government in Jordan, in terms of citizen acceptance of the applications and to study and present a comprehensive overview about the gap between the realization of the public demand and the government priorities to adopt an acceptance model in order to improve the development of the m-Government application in Jordan.

M-Government has many advantages that can be offered to users, in addition to distributing services to the population in different geographical regions and areas; it is very difficult to provide any kind of wired technology through areas such as the desert; this encourages the use of mobile phones, and therefore the government to implement an electronic system rather than the alternative infrastructure which has a high cost implication for the computers and equipment that are required to initialize such an entire system. Thus, the application of the idea of applying m-Government by using a mobile phone is the best option.

In Jordan, as in many countries, the category of people least used for m-Government services is far reaching. Paradoxically, those citizens who are more likely to be users of m-Government services, and who would be the main beneficiaries of e-Government services, are the least likely to use them due to their low capacity and ability to use online technologies [6]. M-Government in Jordan needs to focus on including and privileging vulnerable groups and playing an active role in promoting equality among citizens so that the application becomes available and usable without problems and difficulties for all citizens without exception. Hence, m-Government needs more attention to investigate the needs of users in terms of the m-Government services provided to the public, and to identify the factors that lead to the successful integration of these services such that user needs will eventually be met [6].

2 Literature Review

In this section, we briefly present the concepts related to e-Government, m-Government, e-Government and m-Government in Jordan.

2.1 E-Government

E-Government is the evolution of the public administration to provide efficient, convenient and transparent services to citizens and businesses through ICT initiatives to offer better quality and increase openness and participation. E-Government also gives citizens and businesses personalized experience by understanding and responding to the individual need and help to maintain the relationship over time [7]. There are many factors on which the success of the government depends, such as the use of information technology, communications, financial aspects, citizen adoption of electronic service, and finally citizen confidence which is a major contributing factor [1]. User satisfaction is a crucial factor for the continual usage of e-government services and the success or failure of e-Government projects [8].

2.2 From E-Government to M-Government

To connect the research main interest the m-Government and the acceptance model, it is essential to start from the foundation of the e-Government services. Initially, when the internet evolved into a phenomenon and most of the people rely on to use the internet, governments started to build their own e-gates as another channel for public services in terms of improving the quality of service and innovation, which also influenced the political and social development in any country [7]. The applications of e-Government started as a substitute channel of traditional offices that provide public services to citizens and businesses and evolved into a democratic and participation channel, e-voting tool, and social change force [1]. Despite the greet orientation that governments focus on initiating the e-Government channel with continuous development to meet citizens' and businesses' needs, most of these initiatives were met with a low amount of acceptance especially in developing countries. Also, during globalization today the number of mobile phone users will increase to 6.1 billion, which reflects the necessity of the governments to initiate m-Government applications that developed to be more accepted and desirable.

M-Government is defined as the utilization of mobile technology in changing government procedures [9]. It is the use of mobile devices for providing citizens with customized, location-based, real-time information and services, which makes it easier for citizens to access information anytime, anywhere [10]. M-Government is not a replacement for e-Government but a complimentary delivery channel to e-Government, where extra advantages are attained by bridging the internet penetration deficiency [9]. In which the m-Government is a repetition of the e-Government services, however, the tool used for providing this service differs from using the mobile phone. The key advantage can be exploited by making m-Government become the central point of contact between citizens and the government, especially in remote places [8].

The success of m-Government depends on two important phases: the first stage is the adoption of the technology and the second stage which is the post-use phase [3,8,11]. Despite the importance of the second stage, most of the research focusses on the first stage only. This leads to a failure to implement the system [12–14].

M-Government extends the delivery of public services to those who are unable to access public services through the internet specifically in areas where wired telecommunications and ICT services do not exist, or citizens who simply prefer to use mobile devices [2–15].

2.3 E-Government and M-Government in Jordan

Since the year 2000, government was alerted to the need for a digital transformation of their services as a strategic option [8–10]. For the same reasons this research aims to assist the government on the advantages and cost efficiency of the concept of e- and m-Government in the

last two consecutive decades, Jordanian society has not seen notable cooperation between different ministries and departments to contribute to the enhancement of the application success factors in Jordan. Challenges began to emerge slowly, this is due to the complexity of the technology, the solidity, and interdependence of the organizational procedures that are currently in place [2–10], and the variety of attitudes of the individuals towards change, and additionally the skepticism around technology in general [10]. Some ministries, headed by The Ministry of Education in cooperation with the Queen Rania Foundation, succeeded to initiate an integrated platform linking students with their guardians, teachers, and schools in all states and governorates of the Kingdom. The Ministry of Justice is also achieving a remarkable breakthrough in this area, by launching many e-services, like the speed of litigation, approval of ruling and judicial notification, perhaps the most noticeable service was obtaining an e-Clearance of Emission.

Moreover, we find that there is an SMS notification about weather forecasting by the Jordan Meteorological Department, SMS about traffic violations inquiries, water bills inquiry, and many other mobile applications that allow medics and other citizens to obtain access to their information at the right time. There are many other different applications and platforms that are mentioned in the previous studies of e- and m-Government in Jordan.

2.4 M-Government in the Implication of Coronavirus (COVID-19) Pandemic

Although the previously mentioned challenges, barriers, and the lack of strategies that faced the implementation of e-Government and m-Government. Jordan succeeded to prevail as one of the leading countries according to MENA region and came in tenth place globally in the number of recovery cases from COVID-19 pandemic. This reflects the tremendous efforts, capabilities, and the determination of the government's administration throughout the different ministries, to transform and digitize most of their systems and services, during a crisis and implement important requirements in an effort to resolve any current threats. Proving unequivocally, they have the ability to organize such a smooth transaction through a successful e-Management, which in turn helped to overcome most of the different challenges and obstacles that stood in front of e-Management, e-democracy, adhocracy, coordination skills, and also their ability to identify a clear strategic plan. Nevertheless, we cannot dismiss the main and vital role of the Jordanian citizen's cooperation and understanding reflected throughout the COVID-19 pandemic crises, besides their awareness and ability to respond and interact with the government's updates, and demands throughout the general prevention guidelines. Below we will discuss the most important axes and measures that Jordan undertook to control this pandemic, which in turn contributed immensely to developing the e-Government program in Jordan.

3 The Research Models and Hypothesis

This research aims to construct an acceptance model to enhance the use of the m-Government application, below the researcher presents two models that were combined to construct the proposed acceptance model.

3.1 Information System (IS) Success Factor Model

DeLone et al. [16] published their original model of IS success in 1992 to evaluate the success of information systems so that the model was divided into 6 main categories: System Quality, Information Quality, Use, User Satisfaction, Individual Impact, and Organizational Impact. Over the time of the release of the model, many researchers wanted to make adjustments to the model, after DeLone et al. updated the IS success model to solve problems and limitations, the model was released 10 years later [13,14]. The new addition is the Service Quality and Intention to use

it was added to the original model as shown in the research model [16]. Therefore, the model of this research focuses on user behaviour and everything in relation therewith. As for dimensions: Use, User Satisfaction, Individual Impact, and Organizational Impact, were changed by some dimensions from Hofstede's theory.

The modification of the model and the selection of variables are based on scenario of Jordan and considering the fact that m-Government is still at its early stage and the focus of this research is on user intention to use, while the other variables such as: Use, User Satisfaction, Individual Impact, and Organizational Impact, were used to test the technology that developed and utilized already, therefore we exclude them from our research model. Since, in our research we attend to study the factors that affect the intention to use the services not the satisfaction of the services on used.

3.2 Hofstede Cultural Dimensions Theory

Hofstede is among many models that have been created and developed to be used in understanding the cultural differences that focus on individuals and their behaviours toward culture [17]. The research focused on using Hofstede's theory, and not others because it was developed based on the assumption of cultural homogeneity of a given country without examining the differences and diversity between culture, this is because the population of the research which borders are limited to those serving in the government and the citizens of Jordan, who were also characterized by the same cultural structure in respect of foreigners and the international businesses [17].

Hofstede (1980) originally provided four dimensions of national culture: Power Distance, Uncertainty Avoidance, Individualism *vs.* Collectivism, and Masculinity *vs.* Femininity [17]. Subsequently two more dimensions were added, resulting in six dimensions: Power Distance, Uncertainty Avoidance, Individualism *vs.* Collectivism, Masculinity *vs.* Femininity, Long Term *vs.* Short Term Orientation, Indulgence *vs.* Restraint [17], this framework is used in many different areas such as cross-cultural management, international business, cross-cultural psychology, and has recently sparked the interest of economists [17].

The Individualism *vs.* Collectivism dimension has been excluded, as this dimension shows the cohesion and strength of societies, and that a society that is built on an individual rule is easy to disintegrate. As for a society that is built on a collective basis, it is stronger and more coherent. The focus in the m-Government model is limited to the individual and not to the group [10]. For example, the use of the application through a citizen alone or a group of citizens is a case that does not matter or focus on because it has no effect on the citizen's behaviour to use the m-Government application. The researcher believes that three remaining dimensions (Power Distance, Uncertainty Avoidance, and Indulgence *vs.* Restraint) directly affect the behaviour of the citizen, as they were taken to study their effect on the intention to use [17].

Numerous published researches in Jordan and around the world that have used the dimensions of Hofstede theory with the TAM model, in which most of the results show that power distance and uncertainty avoidance had significant impacts on the citizens' intention to adopt e-Government, the other three cultural dimensions: individualism, masculinity, and long-term orientation had no discernible impacts [18].

3.3 The Proposed AMGS Model

The researcher developed the Model with the relevant hypotheses which will be tested for its predictive value. Overall, amongst the twelve variables from the IS Success Factor Model and Hofstede Theory tested against the Intention to use m-Government services, the researcher believes

that only five variables are important, therefore these five variables have been incorporated into the intention to use the proposed model. These variables were Information Quality, Service Quality, Power Distance, Uncertainty Avoidance, and Indulgence *vs.* Restraint as shown in the research model depicted in Fig. 1.

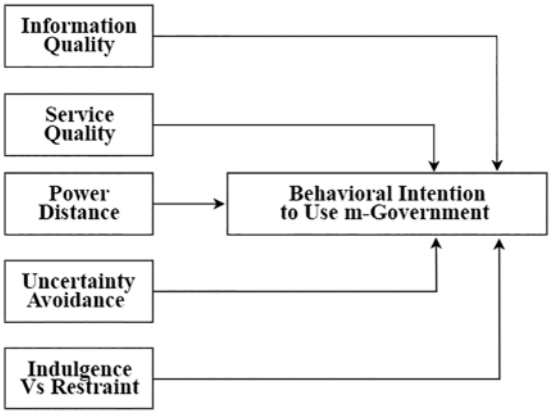

Figure 1: The Proposed Model AMGS

To reduce complexity and understanding the basic requirements in the citizen's perspective to build the application by decision-makers at the public administration, the research combined the IS success factor model with Hofstede theory and also to facilitate analysis of the user's way of thinking, the tendency to technology, and his behaviour based on his culture, therefore it was necessary from the researcher's perspective to construct the below comprehensive model which will reflect the desired goal in a correct manner and provide satisfactory results.

3.3.1 Information Quality

Characteristics of the output offered by the IS, such as availability, security, understandability, accuracy, timeliness, and completeness, Information quality has often been used as a success measure for traditional IS [19]. It is a factor by which we can measure the quality of the system and define it according to the system's outputs. After completion we can approve the system or service after ensuring its quality is correct, and previous studies have proven that it has a significant impact on an individual's behaviour and intention to use [20,21].

The quality of information has an important role in influencing the consumer's intent to accept the use of new technology, for example, a website, everything presented on it is based on the information quality, any individual must have an opportunity to experiment with new technology to take feedback from his/her monitor and his/her reactions while interacting and using it [19]. The information Quality in the m-Government application can be considered as the content that the application provides to the citizen [19].

Therefore, the following hypothesis is presented:

H1: Information Quality has a significant effect on behavioural intention to use m-Government services in Jordan.

3.3.2 Service Quality

Support of users by the IS department, often measured by the responsiveness, reliability, and empathy of the support organization, the selected service quality elements are: Availability, Reliability, Integrity, Functionality, and Efficiency [21]. It is used to measure the quality of service to the satisfaction of the customer because there is no direct interaction between the server and the user through a direct manner, or through the application of m-Government in this instance, we should therefore focus on the service quality [19].

Because of the importance of this variable we propose the following hypothesis:

H2: Service Quality has a significant effect on behavioural intention to use m-Government services in Jordan.

3.3.3 Power Distance

It means that the position and level of the citizen in society greatly affects his/her behaviour and the behaviour of citizens towards them, in return, the less powerful citizen expects inequality so that the level of strength for every citizen in his/her surroundings is clear, starting from powerful to the least powerful despite the inequality and the presence of injustice, but all individuals agree and accept this fact, the power distance differs from one country to another, and indicates greater clarity of the differences between citizens, and the greater the power distance [22,23]. Although societies try to reduce inequality in power and wealth, this matter is impossible to achieve, for every citizen, he/she must know his/her rightful place in the hierarchy, and this matter is very important for brands that must address the inequality for their success [24].

The relationship between culture and technology is an ongoing relationship with influence from both sides, beginning with the behaviour of citizens to adopt technology through culture, and the manner in which the technology affects the culture of the individual [22]. This shows, therefore, that culture is changeable with the use of technology. The Power of distance affects the citizen's confidence in the technology. In which we conclude that the relationship between the authority and the acceptance of information technology is an increasing relationship, because the greater the individual's authority in society, the greater the opportunity for using and accepting technology has become, due to many factors and based on the environment that resulted from, which makes him/her ready to use everything new [24]. Hence, we proposed the following hypothesis:

H3: Power Distance has a significant effect on behavioural intention to use m-Government services in Jordan.

3.3.4 Uncertainty Avoidance

It is about confronting individuals with an unknown future accordingly, the level of tension in society, and it is the behaviour of individuals or their reaction in vague or unusual situations and the individual's sense of threat [24]. This dimension indicates the tolerance of these disorganized positions, the dimension of avoiding uncertainty refers to avoiding risks in unknown situations and trying to get away from them and to believe in the truth through logical rules of conduct [24]. Increasing ambiguity and uncertainty leads to the reduction of the chance to use anything new. Therefore, a citizen who has a high level of uncertainty, although provided with the opportunity, willingness and inclination to try new and incomprehensible technology is very small and is in contradiction to the citizen that has a lower level of uncertainty.

We have to take into account the problem of mystery and fear of the future and resolve it, this is because the controller between subjective criteria and behavioural intention is uncertainty, and this problem can be resolved by influential or famous people in the community. Through their

influence on other individuals to use new technology, they can persuade other people to feel safe and confident, encourage them, and direct their behaviour towards following the correct path [13].

Hofstede also pointed out that the elderly citizens maintain their way of communicating with the government through the traditional channels, when they need to interact or inquire about any information, and accordingly we find that the greater the percentage of ambiguity and uncertainty are among this segment of the culture, their adherence is strictly in accordance with the rules and structured circumstances [25]. Hence, the following hypothesis is posited:

H4: Uncertainty Avoidance has a significant effect on behavioural intention to use m-Government services in Jordan.

3.3.5 Indulgence vs. Restraint

This dimension represents the methods and behaviours of a society controlled in a way that satisfies their basic and natural desires, the way of control varies from society to society to satisfy their desires, there are tolerant societies such as South and North America, Western Europe and parts of the South African desert. As for the societies that are characterized by restraint, they are Eastern Europe, Asia, and the Islamic world. As for Central Europe, it is average among them [24]. A less disciplined community is more willing to try everything new as long as it is in the interest of their happiness and satisfying their needs in a certain manner, here the importance of citizen notification must be explored. This will be in his/her interest and will gain his/her satisfaction when using it, this idea will then be acceptable to them in a greater way [26].

Based on these discussions, we, therefore, posit that:

H5: Indulgence *vs.* Restraint has a significant effect on behavioural intention to use m-Government services in Jordan.

3.3.6 Behavioral Intention

Intention to use is an important factor that influences the decision to accept the individual and his/her behaviour [3], and the behaviour of the individual is the result of an equation consisting of a set of factors, which the behaviour of the individual towards a particular situation so that the actual behaviour of the individual is a result of the intention of the individual and the intention is the result of two factors with each other that produce it; namely, attitude toward subjective norm and performing the behaviour, and this is the life cycle of the behavioural, in addition to external influences that have a major role in influencing the behaviour of the individual [3,9]. Also, many factors affect behavioural intent, and when examining and studying these factors we can control the behaviour or expect the behaviour before it occurs through certain means and methods, it was therefore necessary to examine all the factors that affect the behaviour, whether direct or indirect [27].

4 Methodology

The research population consists of the entire Jordanian society and its number 10,550,000 people [28]. The sample was chosen to be 384 questionnaires, distributed to citizens from various regions, ages, cultural and educational levels, accordingly 384 questionnaires were distributed and 285 were retrieved. Also, 83 questionnaires were excluded because they were not valid for analysis, making the final sample 203 questionnaires. Also, the KMO and Barlett's test of Sphericity was tested to construct the validity, the results showed that the sample was sufficient and accordingly the sample was accepted for analysis.

The questionnaire items were adapted from earlier studies [3,8,13,28–30]. One of the advantages in using the IS Success Factor Model and Hofstede Theory were that it had a well-validated measurement inventory.

The questionnaire was distributed to a number of professors in the field to assess its appropriateness in terms of the phrasing of questions, the complexity of language, response scale, and redundancy of questions. The procedures were used to ensure that the questionnaire was well designed and the items measured the relevant dimensions. Inappropriate items or questions were revised accordingly. The final form of the questionnaire was translated into Arabic and judged by many academic bilinguals to check the appropriateness of its language.

Accordingly, the researcher proved 44 questions divided into two parts. Part 1: Eight questions are designed to elicit the respondent's demographics data (Age, Gender, Qualification, etc.) Part 2: Includes 36 questions on the research model items, divided into six main dimensions: Information Quality, Service Quality, Power Distance, Uncertainty Avoidance, Indulgence *vs.* Restraint, and behavioural intention to use.

The research primary data was collected through soft copies using Google forms. Next, the researcher extracted all the collected data from the collected surveys and entered them into a database, using the Statistical Package for Social Sciences (SPSS) program version. Through the SPSS many analytics and statistical tests were implemented to test the research hypothesis.

The main characteristics of the respondents participated in the research are expressed by demographic data filled in the survey instrument in the first section. These characteristics included Gender, Age, Education, Internet Usage Frequency, E-Government Services Usage, and eventually the using the M-Government services. Table 1 presents the characteristics of respondents.

Table 1: Results of the demographic questions

Respondent's characteristics	Frequency	Percentage
Gender		
Male	118	58.1
Female	85	41.9
Total	**203**	**100.0**
Age		
18–30 Years	109	53.7
31–50 Years	67	33.0
51–69 Years	19	9.4
70 Years and more	8	3.9
Total	**203**	**100.0**
Education		
Diploma	36	17.7
Bachelor	132	65.0
Masters	27	13.3
PhD	8	3.9
Total	**203**	**100.0**

(Continued)

Table 1 (continued)

Respondent's characteristics	Frequency	Percentage
Internet Usage		
Few times a Week	4	2.0
Few times a Month	6	3.0
Few times a Day	191	94.1
Once a Week	2	1.0
Total	**203**	**100.0**
M-Government Services Usage		
Yes	155	76.4
No	47	23.2
Total	**203**	**100.0**
Using Mobile for M-Government Services		
Never used at all	42	20.7
Rarely	28	13.8
Sometimes	39	19.2
Usually	37	18.2
Always	57	28.1
Total	**203**	**100.0**

In this research, the researcher will check Multicollinearity through variance inflation factor "VIF". VIF is related measures indicate the degree to which one independent variable is explained by the other independent variable. VIF is a measure of how much the variance of the estimated regression coefficients is inflated because of the Collinearity. The greater the VIF than 10 then there is a serious problem, Therefore, the rule of thumb, Multicollinearity becomes a cause for concern, when "VIF" is larger than 10 [31]. See Table 2.

Table 2: Results variance inflation factor of the research independent variables

Dimension	Tolerance	VIF
Information quality	0.318	3.146
Service quality	0.321	3.119
Power distance	0.982	1.018
Uncertainty avoidance	0.684	1.461
Indulgence *vs.* restraint	0.776	1.289
Variance Inflation Factor "VIF" $\leq$ *10*		

By reviewing Table 2. It could be noticed that the "VIF" values for each of the independent variables is less than 10. The results of the Collinearity statistics of VIF denote that there is no Multicollinearity within the data, which in turn strengthens the model of the research by avoiding

the problem of having interchangeable "β" values between independent variables reducing the bias resulting from Type II error results.

To determine the internal consistency reliability of the elements, "Cronbach's alpha" was used. Eraslan et al. [29] provided the following categories for reliability: "(≥0.9) Excellent, (≥0.8) Good, (≥0.7) Acceptable, (≥0.6) Questionable, (≥0.5) Poor, and (<0.5) Unacceptable". The larger value of Cronbach's alpha coefficient reflects a higher degree of internal consistency. See Tables 3 and 4.

Table 3: Cronbach's alpha for the research independent variables

Variable	Information quality	Service quality	Power distance	Uncertainty avoidance	Indulgence *vs.* Restraint
Alpha	0.932	0.935	0.953	0.890	0.686
No. of items	9	10	4	4	3

Note: *Cronbach's Alpha* ≥ 0.600.

Table 3 shows the result of the Cronbach's Alpha that was used to test the reliability of the research independent variables that include information quality, service quality, power distance, uncertainty avoidance, and indulgence *vs.* restraint. Nevertheless, by reviewing Table 3 the Alpha values exceeded the value 0.600 for all the research variables indicating that the research variables have achieved the assumption of the reliability for the independent variables.

Table 4: Cronbach's alpha for the research dependent variable

Variable	Behavioral intention to use m-Government
Alpha	0.910
No. of items	3

Note: *Cronbach's Alpha* ≥ 0.600.

Table 4 shows the result of Cronbach's Alpha for the behavioral intention to use m-Government. Accordingly, the Alpha values exceeded the value 0.600, indicating that the behavioral intention to use m-Government has achieved the assumption of the reliability.

However, based on the given results in Tables 3 and 4 it can be noticed that the internal consistency values reflect values of the research instrument has high internal consistency due to its Alpha values that exceeded the 0.600. Therefore, it can be concluded that the research instrument has high reliability to serve the research goals.

5 Data Analysis and Result

Multiple regression analysis was used to examine the effect of the independent variables (information quality, service quality, power distance, uncertainty, and indulgence *vs.* restraint) on the behavioural intention to use m-Government services. Table 5 reveals the results of the Multiple Linear Regression, the correlation coefficients (R = 0.682) indicating that there is a strong positive correlation between the independent variables and the dependent variable. This means that the independent variables and dependent variable change in the same direction. The R value is a gauge of how well the model predicts the observed data. The value of R2 = 0.465 indicates that the independent variable can explain 46.5% of the variation and change in the dependent variable (behavioural intention to use m-Government services). The Adjusted R2 pertained to the

generalizability of the model. It allows generalizing the results taken from the respondents to the whole population. It is noticed that the value of (Adjusted R2) is very close to the value of R2, in which R2 = 0.465, if the Adjusted R2 is excluded from R2, 0.465–0.452, the value will be 0.013. This amount of reduction means that if the whole population participates in the research and the model has been fitted then. There will be 1.30% less variance in the outcome. Referring back to the analysis of variation, which allows us to statistically test the main null hypothesis. From the table below, it can be concluded that the (F) value for the collected data is 34.265 which is significant at the level of $\alpha < 0.05$ (sig. = 0.000), this result tells us that there is less than 0.05% chance that a F ratio of this value would happen by chance solely. Therefore, this research concludes that there is a statistically significant effect of the independent variables (collectively) on the behavioural intention to use m-Government services.

Table 5: Results multiple linear regression

Variables	Value	*P*-value			
R	0.682				
R^2	0.465				
Adj. R^2	0.452				
F value	34.265	0.000			
Model	Unstandardized coefficients		Standardized coefficients	T	Sig.
	B	Std. error	Beta		
(Constant)	0.199	0.349		0.571	0.317
Information quality	0.114	0.114	0.093	1.003	0.020
Service quality	0.265	0.113	0.216	2.348	0.000
Power distance	0.011	0.026	0.023	0.429	0.077
Uncertainty avoidance	0.126	0.071	0.112	1.779	0.000
Indulgence *vs.* restraint	0.439	0.058	0.449	7.591	0.000

However, in regards to the research hypotheses (H1; 2; 3; 4; and 5). This research has developed five hypotheses to identify which variable has the most influential effect on the behavioural intention to use m-Governmental services. Moreover, to identify which one affects and which one does not. Table 5 shows the multiple regression coefficients for the (information quality, service quality, power distance, uncertainty avoidance, and the indulgence *vs.* restraint). While their β and *P*-values for the Information Quality $\beta = 0.114$ $\alpha = 0.020$; Service Quality $\beta = 0.265$ $\alpha = 0.000$; Power Distance $\beta = 0.011$ $\alpha = 0.077$; Uncertainty Avoidance $\beta = 0.126$ $\alpha = 0.000$; and Indulgence *vs.* Restraint $\beta = 0.439$ $\alpha = 0.000$, respectively. However, these results suggested that the Information Quality, Service Quality, Uncertainty Avoidance, and Indulgence *vs.* Restraint has a statistically significant effect over the Behavioral Intention towards m-Government services due to their alpha levels that are less than 0.050 ($\alpha \leq 0.05$). while this research revealed that the Power Distance, does not have a statistically significant effect on the behavioural intention towards using the m-Government services as its significance level is more than 0.050 ($\alpha \geq 0.05$). Therefore, this research supports the hypotheses named H1, H2, H4, and H5, while rejecting the hypotheses named (H3).

The testing of the null hypothesis "denoted by H0" which is assumed true but tested for possible rejection. To answer the questions related to the research problem regarding the nature of the effect between the independent variables and the dependent variable. Additionally, to detect which independent variable has the most influential effect on the dependent variable. Therefore, this research used both simple and multiple linear regression analysis to test the research hypotheses. The results of the research hypotheses are presented in Table 6.

Table 6: Hypotheses testing results

Hypothesis	Result
H1: Information quality has a significant effect on behavioural intention to use m-Government services in Jordan.	Support
H2: Service Quality has a significant effect on behavioural intention to use m-Government services in Jordan.	Support
H3: Power distance has a significant effect on behavioural intention to use m-Government services in Jordan.	Reject
H4: Uncertainty avoidance has a significant effect on behavioural intention to use m-Government services in Jordan.	Support
H5: Indulgence *vs.* Restraint has a significant effect on behavioural intention to use m-Government services in Jordan.	Support

6 Conclusions

This study contributes to a theory by proposing a model combined six dimensions from the Information System (IS) Success Factor Model and Hofstede Cultural Dimensions Theory to the context of m-Government services. Such a perspective indicates that by examining Information Quality, Service Quality, Uncertainty Avoidance, and Indulgence *vs.* restraint on Behavioral Intention to use m-Government services settings can be effectively improved. These six factors act as the critical drivers for user acceptance of m-Government services. Our findings have academic implications both for IS service acceptance and e/m-Government development literature. This study has taken a step toward implementing mechanisms to improve user acceptance of m-Government services for practitioners. Such findings demonstrate the importance of Information Quality, Service Quality for implementing m-Government services effectively. The results of this study emphasize that significant effect, of Uncertainty Avoidance, and Indulgence *vs.* restraint on the Behavioral Intention to use m-Government services, which prove that the cultural diminutions can affect the acceptance of using the new technologies.

The new proposed model has taken the effect of culture on m-Government which offers fresh insight because most of the factors in the constructed model have a positive effect on enhancing the use of m-Government in Jordan. Therefore, the Jordanian government needs to consider this research. According to the researcher's knowledge, this research is the first of its kind that constructed this model which reflects the importance of dropping cultural dimensions

on the one hand, on the other hand dropping the moderating effect of the IS success factors, which will enhance the ability of the citizen to carry out m-services regardless of his/her culture and geographical location. The responsible environment with its wise leadership revealed by the Coronavirus pandemic has a major impact on increasing interactivity, reliability, and cooperation that were the biggest obstacles among the development of m-Government. The results of this research are relative and vary from one country to another, because of many factors affecting these results. In which the importance, which is the culture of each country, reflecting on the citizen demands, and how we provide such services based on his/her culture. Besides, it is relative and variable because it is about culture and time, and it varies from time to time. Hence, if we decide to repeat this research in the same country after several years, we may certainly find different results.

The findings of this research show five hypotheses (Information Quality, Service Quality, Uncertainty Avoidance, Indulgence *vs.* restraint, and Behavioral Intention) are accepted and have a significant effect on m-Government services in Jordan, while there was one hypothesis rejected which is Power Distance. The outcome of this study would be beneficial to private and public services, various government service providers, business communities, and the people of Jordan.

One specific interesting avenue for future work would be to explore further multiple case studies on the same context; therefore, a comparative study of these dimensions in the context of developed and underdeveloped countries can provide a rich picture. Another area of research in m-Government services would be to determine the characteristics and behaviours of citizens in various m-Government services adopter categories, such as innovators, early adopters, early majority, late majority and laggards. The research proposed a new m-Government acceptance model, but one single study cannot describe and solve the problem from all sides, so this study has some limitations. Here are some examples: the research was conducted only in Jordan; the final sample was 203 randomly selected citizens; and the proposed model contains a specific set of variables that affect m-Government acceptance, not all-inclusive.

Funding Statement: This research funded by Al-Zaytoonah University of Jordan.

Conflicts of Interest: The authors declare that they have no conflicts of interest to report regarding the present study.

References

1. Abu-Shanab, E. (2017). E-government familiarity influence on Jordanians' perceptions. *Telematics and Informatics, 34(1),* 103–113. DOI 10.1016/j.tele.2016.05.001.
2. Althunibat, A., Alrawashdeh, T. A., Muhairat, M. (2014). The acceptance of using m-Government services in Jordan. *11th International Conference on Information Technology: New Generations*, pp. 643–644. Las Vegas, NV, USA.
3. Althunibat, A., Zin, N. M., Ashaari, N. S. (2011). Modelling the factors that influence mobile government services acceptance. *African Journal of Business Management, 5(34),* 13030–13043. DOI 10.5897/AJBM11.2083.

4. López-Nicolás, C., Molina-Castillo, F. J., Bouwman, H. (2008). An assessment of advanced mobile services acceptance: Contributions from TAM and diffusion theory models. *Information & Management, 45(6),* 359–364. DOI 10.1016/j.im.2008.05.001.
5. Zhao, X., Cheng, W., Zhu, H., Ge, C., Zhou, G. et al. (2020). A high gain, noise cancelling 2515–4900 MHz CMOS LNA for china mobile 5G communication application. *Computers, Materials & Continua, 64(2),* 1139–1151. DOI 10.32604/cmc.2020.010220.
6. Almaiah, M. A., Nasereddin, Y. (2020). Factors influencing the adoption of e-government services among Jordanian citizens. *Electronic Government, an International Journal, 16(3),* 236–259. DOI 10.1504/EG.2020.108453.
7. Nguyen, N. A. (2016). A cross-cultural study on e-Government services delivery. *Electronic Journal Information Systems Evaluation, 19(2),* 121–134. DOI 10.34190/EJISE.16.19.2.0014.
8. Alawneh, A., Al-Refai, H., Batiha, K. (2013). Measuring user satisfaction from e-Government services: Lessons from Jordan. *Government Information Quarterly, 30(3),* 277–288. DOI 10.1016/j.giq.2013.03.001.
9. Abu-Shanab, E., Haider, S. (2015). Major factors influencing the adoption of m-government in Jordan. *Electronic Government, An International Journal, 11(4),* 223–240. DOI 10.1504/EG.2015.071394.
10. Almaiah, M. A. (2018). Acceptance and usage of a mobile information system services in University of Jordan. *Education and Information Technologies, 23(5),* 1873–1895. DOI 10.1007/s10639-018-9694-6.
11. Althunibat, A., Zin, N. M., Ashaari, N. S. (2011). Identifying user requirements of mobile government services in Malaysia using focus group method. *Journal of E-Government Studies and Best Practices, 25(2),* 103–110. DOI 10.5171/2011.141651
12. Sahu, K., Alzahrani, F. A., Srivastava, R. K., Kumar, R. (2021). Evaluating the impact of prediction techniques: Software reliability perspective. *Computers, Materials & Continua, 67(2),* 1471–1488. DOI 10.32604/cmc.2021.014868.
13. Landrum, H., Prybutok, V. R. (2004). A service quality and success model for the information service industry. *European Journal of Operational Research, 156(3),* 628–642. DOI 10.1016/S0377-2217(03)00125-5.
14. Petter, S., McLean, E. (2009). A meta-analytic assessment of the DeLone and McLean IS success model: An examination of IS success at the individual level. *Information & Management, 46(3),* 159–166. DOI 10.1016/j.im.2008.12.006.
15. Anita, R., Bharani, V., Nityanandam, G. N., Sahoo, P. K. (2011). Deep iCrawl: An intelligent vision-based deep web crawler. *International Journal of Computer and Information Engineering, 5(2),* 128–133. DOI 10.5281/zenodo.1057081.
16. DeLone, W. H., McLean, E. R. (2016). Information systems success measurement. *Foundations and Trends® in Information Systems, 2(1),* 1–116. DOI 10.1561/2900000005.
17. Beugelsdijk, S., Welzel, C. (2018). Dimensions and dynamics of national culture: Synthesizing Hofstede with Inglehart. *Journal of Cross-Cultural Psychology, 49(10),* 1469–1505. DOI 10.1177/0022022118798505.
18. Al-Hujran, O., Al-Debei, M., Chatfield, M. A., Migdadi, M. (2015). The imperative of influencing citizen attitude toward e-government adoption and use. *Computers in Human Behavior, 53(3),* 189–203. DOI 10.1016/j.chb.2015.06.025.
19. Chen, C. D., Cheng, C. Y. (2009). Understanding consumer intention in online shopping: A re-specification and validation of the DeLone and McLean model. *Behaviour & Information Technology, 28(4),* 335–345. DOI 10.1080/01449290701850111.
20. Zhang, N., Zhu, K., Ying, S., Wang, X. (2020). Software defect prediction based on stacked contractive autoencoder and multi-objective optimization. *Computers, Materials & Continua, 65(1),* 279–308. DOI 10.32604/cmc.2020.011001.
21. Zaied, A. N. H. (2012). An integrated success model for evaluating information system in public sectors. *Journal of Emerging Trends in Computing and Information Sciences, 3(6),* 814–825. DOI 10.1.1.685.8039.
22. Tamilmani, K., Rana, N. P., Dwivedi, Y. K. (2021). Consumer acceptance and use of information technology: A meta-analytic evaluation of UTAUT2. *Information Systems Frontiers, 23(4),* 987–1005. DOI 10.1007/s10796-020-10007-6.

23. Mensah, I. K. (2020). Impact of power distance and uncertainty avoidance on the adoption of electronic government services. *International Journal of E-Services and Mobile Applications, 12(3),* 1–17. DOI 10.4018/IJESMA.
24. de Mooij, M., Hofstede, G. (2015). The Hofstede model: Applications to global branding and advertising strategy and research. *International Journal of Advertising, 29(1),* 85–110. DOI 10.2501/S026504870920104X.
25. Almarashdeh, I., Alsmadi, M. (2016). Heuristic evaluation of mobile government portal services: An experts' review. *11th International Conference for Internet Technology and Secured Transactions*, pp. 427–431. Barcelona, Spain, IEEE.
26. Osman, N. B., Osman, I. M. (2013). Attributes for the quality in use of mobile government systems. *International Conference on Computing, Electrical and Electronic Engineering*, pp. 274–279. Khartoum, Sudan, IEEE.
27. Almaiah, M., Al-Khasawneh, A., Althunibat, A., Khawatreh, S. (2020). Mobile government adoption model based on combining GAM and UTAUT to explain factors according to adoption of mobile government services. *International Journal of Interactive Mobile Technologies, 14(3),* 199–225. DOI 10.3991/ijim.v14i03.11264.
28. Almaiah, M. A., Al-Khasawneh, A., Althunibat, A., Almomani, O. (2021). Exploring the main determinants of mobile learning application usage during COVID-19 pandemic in Jordanian universities. In: *Emerging technologies during the era of COVID-19 pandemic*, pp. 348–375. UK: Springer Nature.
29. Eraslan, M., Karafil, A. Y., Atay, E. (2017). Evaluation of strategies for managing stress among muay thai sportsmen participating in intervarsity sports competitions Üniversiteler arası spor müsabakalarına katılan muay thai sporcularının stres ile başa çıkma stratejilerinin değerlendirilmesi. *Journal of Human Sciences, 14(3),* 2915–2924. DOI 10.14687/jhs.v14i3.4591.
30. Al-Debei, M. M., Al-Lozi, E. (2014). Explaining and predicting the adoption intention of mobile data services: A value-based approach. *Computers in Human Behavior, 35(2),* 326–338. DOI 10.1016/j.chb.2014.03.011.
31. Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., Tatham, R. (2006). *Multivariate data analysis*. Upper Saddle River, NJ, Hmelo: Prentice Hall.