



# Hierarchical Order of User Preference Parameters in Adopting M-government Services

Rashed Hamad Rashed Mohammed Alneyadi<sup>1\*</sup>, Nor Aziati Abdul Hamid<sup>1</sup>

<sup>1</sup>Faculty of Technology Management and Business,  
Universiti Tun Hussein Onn Malaysia, Parit Raja, Batu Pahat, Johor, MALAYSIA

\*Corresponding Author

DOI: <https://doi.org/10.30880/ijscet.2021.12.05.022>

Received 06 June 2021; Accepted 31 December 2021; Available online 31 December 2021

**Abstract:** United Arab Emirates (UAE) has taken continuous initiatives to ease in providing the government services. One of the initiatives is the M-government service but unfortunately, the rate of adopting the M-government service by the people is low. Thus, the government strives for improving the existing system and attracting the people towards the usage of M-government services. This study focused on identifying the common preferences of the people for adopting M-government services. Literature review found 30 people preference parameters and clustered into 6 groups which are Social Influence (SI), Perceived Compatibility (PC), Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Trust in Technology (TT) and Perceived Risk (PR). These preferences were used in the questionnaire development. The questionnaire was distributed randomly amongst the general public however only 263 completed questionnaire forms were received. The collected data from this survey was assessed for normality and multicollinearity and the finding indicated that the data was normal and had no major collinearity, hence the results obtained with the collected data can be generalized. The data was further analysed and found that the people of UAE have chosen the top public's preference belong to the Social Influence category. While the highly agreed parameters are "people who are important to me would find using M-services beneficial" and "gives social comfort to all users". From the findings of this study, it may benefit the government to take appropriate actions for the public interest towards the adoption of M-government services like devising strategies and mechanism to promote the M-government services in UAE.

**Keywords:** M-government, data normality, multicollinearity, descriptive analysis, United Arab Emirates

## 1. Introduction

Adoption of m-government has become necessary in the last decade due to the benefits that such a system can bring to customers, organizations, and the government. These benefits can include improving the efficiency of organizations and their services, facilitating the sharing of information and ideas among various agencies, enhancing the government's economic policy objectives, enhancing transparency, accuracy, and facilitating information transformation between organizations and customers. It also can improve the use of information in decision-making processes, improving trust and communication among various entities. Furthermore, m-government can provide customers, organizations, and government sectors with access to data 24 hours a day, regardless of location or time, improving the quality of public services. Because of these and other benefits, the UAE started taking practical steps toward implementing m-government in various sectors, including health, education, transportation, finance, and jobs.

United Arab Emirate (UAE) is considered as one of the most rapidly developing economies in the Middle East; managers have always been viewed in terms of development for the people (Alhammedi and Memon, 2020). The UAE launched its m-government initiative to make government services available to the public at all times on May 22, 2013,

intending to transfer customer service centers to all customer devices in the belief that a good government goes to customers nationwide. In line with Vision 2021, this initiative envisions a high quality of life centered on world-class public infrastructure, government services, and a diverse leisure climate. According to the United Nations m-government Development Index (EDGI) Report 2018, the UAE is ranked sixth in the world in the Online Services Index, including 193 countries.

The UAE government created My Medic Now, an online platform for all healthcare needs in terms of healthcare. The primary goal of this platform is to assist patients in quickly and efficiently searching for medical services. My Medic Now can help people in the UAE select the best hospitals, clinics, and doctors. It also makes it easier for hospitals, doctors, and patients to communicate with one another. Despite its benefits, there are some drawbacks to using My Medic Now, such as patient privacy, Cloud Integration, complexity in implementation and integration, patient engagement, User Interface (UI), and accessibility for users and administrators. Despite these challenges, My Medic Now remains the most popular health app in the UAE, followed by Dubai Doctors, which was launched by Amani Al-Jasmi, Director of Information Technology at the Dubai Health Authority (Alloghani et al., 2016).

However, several factors may influence m-government adoption. In general, governments face many challenges in incorporating m-Government, such as infrastructure issues, poor financial management, lack of political assistance, lack of managerial skills, lack of training and capacity building. These challenges are reflected in the low level of m-Government implementation globally (Gauld, Goldfinch, and Horsburgh, 2010; Nkohkwo and Islam, 2013; Venkatesh, Chan and Thong, 2012). In addition, the uncertainty of application development can also be a barrier to adopting m-government systems (Bergvall-Kreborn and Howell, 2013). Finally, the market itself has a limited lifespan and is highly competitive (Rokhman, 2011).

Furthermore, the implementation of m-Government services cannot be achieved unless a large population of people participates in the adoption and utilization of this service; this makes the actual execution of mobile m-service applications an uncertain issue that necessitates an examination of users' perspectives on the services (Zaidi, 2017). Besides this, the m-government software requires ongoing input and feedback from people; sharing their voices and ideas is critical to doing m-government work (Zhao and Waxin 2012). Lack of awareness, social and cultural barriers, users' insufficient IT skills, a lack of policy and legal requirements, and trust can hinder the adoption of m-government (Alsaif, 2013). Institutional flexibility in terms of readiness, social barriers in terms of the usability of e-services, and the digital divide are also significant barriers to adopting m-government (Yakubu, 2019). In this regard, the low level of citizen adoption preferences for M-government services should also be considered (Verkijika and De Wet, 2018).

Although many of these barriers do not exist in the UAE, there are still some issues with the usability and adaptability of smart services across the country, such as language issues on m-government websites, e-integration, which requires standardizing internal processes and data to integrate back-office functions, a lack of uptake of m-government services, and the digital divide due to a lack of awareness among the local population. Despite the government's efforts to provide high-quality m-government services, people continue to access services through other channels, such as government agencies. UAE government faces some challenges in this regard, such as obtaining customer satisfaction for services; developing a set of instructions, manuals, and policies; IT skills and background about m-government; the cost of m-government (Al-Jenaibi, 2015); and a lack of e-awareness and readiness among a large portion of the UAE population (Mustafa and Mansour, 2008). In addition, even though the UAE has the highest smartphone penetration globally (81 percent in 2017) and 82 percent of the population is engaged smartphone users (Nordea, 2020), such challenges will impede the nationwide adoption of integrated m-government services.

Believing in the importance of interactions between the government and its people and providing high-quality government services to people, the UAE focused heavily on m-government services as an alternative mode of delivering services to people at any time and from any location via mobile phones. However, appropriate systems are required for the UAE and its offices to implement m-Government and ensure m-Government maintainability effectively. This necessitates the government's awareness of people's preferences and needs and the ability to monitor user experience while using m-government services with effective measures to improve the services. Hence, this study evaluates the people's preferences, characteristics, and factors influencing Emirati people's use of m-government via mobile applications. The primary goal of this study is to prioritize the categories of preferences and associated attributes explaining the intent of people to adopt M-government services.

## 2. Literature Review

During the last two decades, information technology (IT) has advanced significantly. This has resulted in many changes in global communication networks and the use of mass information. Although UAE is regarded as the most prosperous country in terms of resource development and utilization (Almansoori, Rahman and Memon, 2021a), the people are demanding more from governments. They have a direct say in public issues affecting public their lives. Governments sought to improve public sector performance by making mobile-app services available to people via smartphones. Governments and organizations in most developed countries began to consider using such advancements in the Internet and smartphones to provide their services.

Smartphones have advanced significantly in recent years. They can perform computer tasks such as connecting to the Internet, using programs, and organizing daily life. Moreover, smartphones are replacing computers due to their low

price, portability. On the other hand, they need electricity compared to these characteristics of computers, which can motivate governments to focus their strategy on adjusting to such technology to improve the provision of e-services (Aurthur, 2013).

As a result of these advancements in smartphones, governments and organizations realized that they needed to develop their strategies. As a result, they began changing their strategy and shifting to alternative systems such as e-government and m-government to provide their services to their customers. People and policymakers will benefit from the interactive nature of mobile government (m-Government) e-services applications. M-government and e-services applications can provide many benefits to their stakeholders, including reducing corruption, increasing transparency, increasing accountability, providing easy access to public services, reducing administrative burdens, lowering the effective delivery cost of public services such as online transactions, promoting e-democracy, service integration, providing more focus on people, faster adaptation to people's needs, and crossing social divides (Hackney, Jones, and Losch, 2007).

In this new trend, governments and businesses sought to achieve the overall goal of developing high-quality, well-designed mobile applications that could serve people in various fields (e.g., corporations, education, tourism, payments, etc.). It has a direct connection with the government, which increases transparency and participation. Because citizen engagement is critical, mobile government (m-government) apps can assist governments in driving e-service adoption rates by making them more accessible and intuitive to use. These applications also have financial benefits for governments because they deliver services more cost-effectively and allow governments to reduce costly channels, such as mailed paper forms, face-to-face interaction in an office, or over the phone (Smith and Wong, 2016). (Davies, 2015).

The ubiquitous computing and mobility of mobile devices are one of their most essential characteristics. As a result, using m-government services is convenient due to accessibility and availability factors, the primary triggers for adoption preferences. Similarly, the services are precise and can be personalized for content delivery. Furthermore, unlike personal computers, individuals generally use these devices and are not shared by others. Moreover, these devices are more user-friendly and adaptable.

The use of e-government systems, including m-government systems, can have numerous benefits. The benefits are represented to people in terms of cost, time, and effort when interacting with the government, reducing the gap between the two (Löfstedt, 2005; Omari, 2013). Governments' benefits are reflected in direct contact and communication with people, thereby reducing the gap between the public sector and people, allowing the public sector to become more efficient, enhancing the government's reputation, and increasing people's commitment to their environment in the public sector.

According to NOIE (2003), the use of m-government systems can save customers and organizations time, effort, and money, improve service delivery and citizen satisfaction, and create new job opportunities. Similarly, the OECD (2003) cited some benefits of adopting m-government systems, such as improving the efficiency of organizations and their services through a better understanding of customers' requirements, facilitating the sharing of information and ideas between various agencies, enhancing the government's economic policy objectives, enhancing transparency, accuracy, and promoting information transformation between organizations and customers, and improving trust between organizations and customers. Furthermore, according to Alshehri and Drew (2010), m-Government enables customers, organizations, and government sectors to access data 24 hours a day, regardless of location or time, thereby improving the service quality. Indeed, the proper application of m-government can enable a high level of efficiency and effectiveness in government tasks in improving processes and procedures, the quality of public services, and communication between various stakeholders. It also improves information use in decision-making processes.

In the context of the United Arab Emirates (UAE), this country is required to implement m-government systems. According to e-marketing estimates, the UAE has the highest percentage of Smartphone penetration worldwide (81 percent in 2017), and 82 percent of the UAE's total population is active mobile internet users (Nordea, 2020). Figure (1.1) depicts these statistics, which show that the UAE leads the Middle East and Africa (MEA) in terms of Smartphone user penetration (Manyika, 2016). According to the "United Nations E-Government Survey" released in February 2012, the UAE jumped from 99th in 2010 to 7th in 2012. This progress was reflected in the UAE's ranking in the e-Government development index, where the UAE rose from 49th in 2010 to 28th in 2012. This demonstrates the UAE's genuine desire to adopt e-government and m-government systems as a new model of providing services and dealing with its people (Omari, 2013).

With a large number of mobile phone subscribers, Dubai Smart Government has provided a variety of mobile solutions, including "mobile apps," "mobile payment gateways," "a dedicated mobile portal," and "a mobile SMS gateway." As a result, users can access Dubai government services via smartphones by downloading apps from the Google Play store or the Apple App Store (Hameed et al., 2016). Nonetheless, because the apps are relatively new, there is little information about their effectiveness. In addition, the possible factors that may contribute to the success of m-government adoption preferences have not been identified. Therefore, this study attempts to deal with m-government services that could be presented to people in the UAE via their mobile devices, focusing on their preferences for these applications and factors that affect the software's accessibility and availability.

Rodrigues (2016) defines mobile government (M-government) as the use of Information and Communication Technology (ICT) such as mobile web services, cloud computing, and others to improve government service delivery. In the quest to provide better services to people across the UAE, efforts to adopt projects are receiving much attention from officials, particularly the Telecommunications Regulatory Authority (TRA), which stated that the government should improve its M-government applications. Previous research (e.g., Abdelhafez, 2014; Johansson, 2014; Alloghaniet al., 2016; Bataineh and Al-Mutawa, 2016; Ud Din et al., 2017), the success factors for developing m-government can be divided into two categories: pre-interactive and interactive. People, institutional attributes, and technology are the three dimensions of pre-interactive factors. Pre-interactive factors are factors that should be considered prior to the delivery of government services. At the same time, interactive factors play a role in service implementation. Product/service attributes, transactional delivery and fulfillment of services, and information content attributes are all divided into three dimensions in the interactive category as described in table 1.

**Table 1 - M-government success factors**

Category	Dimensions	Factors/preferences
<b>Pre interactive</b>	Citizen	“Subjective norms, individual demographics, culture, past experiences, the propensity to trust, benevolence, credibility, competency, fairness, honesty, integrity, openness, general intention to trust and use of e-services.”
	Institutional attributes	“Organisational reputation, accreditation, innovativeness, generally perceived trustworthiness of the organization.”
	Technology	“Hardware and software that deliver security and effectiveness such as interface design, public key encryption, integrity.”
<b>Interactive</b>	Product/ service attributes	“Reliability, availability, quality, and usability”
	Transactional delivery and fulfillment of services	“Usability, security, accuracy, privacy, interactivity, quality.”
	Information content attributes	“Completeness, accuracy, currency, quality.”

This study aims to find the common preferences defined by various parameters in the adoption of M-government services from the perspective of UAE people. According to a review of the literature, six categories commonly explain the influence of people' adoption preferences towards m-government services: Social Influence (SI), Perceived Compatibility (PC), Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Trust in Technology (TT), and Perceived Risk (PR). Table 2 contains a description of these categories and their associated parameters.

**Table 2 - Preference parameters and categories**

Items	Sources
<b>Category 1: Social Influence (SI)</b>	
SI1 - People can influence other to use M-Government services	Thomas & Streib, 2003; Hart-Teeter, 2003; Wei & Zhao, 2005; Dimitrova & Chen 2006; Graafland-Essers & Ettetdgui, 2003;Meijer & Bekkers, 2015; Bertot et al., 2016
SI2 - People can suggest to use M-Government services	
SI3 - People find benefit of using M-services	
SI4 - Gives social comfort to all users	
SI5 - It gives social respect regard to the people	
<b>Category 2: Perceived Compatibility (PC)</b>	
PC1 - It is Comfortable at every level of engagement	Carter & Belanger, 2005; Welch et al., 2005; Sun et al., 2015
PC2 - Easily adoptable by people	
PC3 - Easy interact with government agencies	
PC4 - Compatible interaction with M-government systems	
PC5 - Suitable for a wide range of functions and tasks	
PC6 - There is no difficulty in usage	
<b>Category 3: Perceived Ease Of Use (PEOU)</b>	
PEOU1 - It is easy to use M-Government services easy	Tolbert and Mossberger, 2006; Graafland-Essers and Ettetdgui, 2003; Sun et al., 2015
PEOU2 - Learning to use M-Government services would be easy for me	
PEOU3 - N-Government services are clear and understandable	
PEOU4 - It would be easy to get M-Government services when needed	
<b>Category 4: Perceived Usefulness (PU)</b>	
PU1 - Using M-Government services can accomplish things quickly	Thomas & Streib, 2003; Hart-Teeter, 2003;Wei & Zhao, 2005; Dimitrova &
PU2 - Using e-government services makes my life easier	

<b>PU3</b> - M-Government services is useful to my life	Chen 2006; Graafland-Essers &
<b>PU4</b> - Using M-Government services increase my productivity	Ettegui, 2003;Meijer & Bekkers, 2015; Bertot et al., 2016
<b>Category 5: Trust in Technology/e-services (TT)</b>	
<b>TT1</b> - Willing to give away personal information when using the service	
<b>TT2</b> - Expect good quality of M-Government service	Welch et al., 2005;
<b>TT3</b> - Able to control the costs when using M-Government service	Phang et al., 2006;
<b>TT4</b> - Trust the technology of M-Government service	Carter et al., 2016
<b>TT5</b> - Able to protect privacy when dealing with M-Government service	
<b>TT6</b> - Worry about the security of the M-Government service	
<b>Category 6: Perceived Risk (PR)</b>	
<b>PR1</b> - Safeguard information exchange	
<b>PR2</b> - Personal details are secured while accessing M-government services	UNDPEPA&ASPA, 2002;
<b>PR3</b> - Credible and consistency in providing information	Reddick, 2005;
<b>PR4</b> - Does not involve liability in case of human mistakes/errors	Bertot et al., 2016
<b>PR5</b> - Trustworthy when using the M-government services	

### 3. Research Method

The research method describes the procedure used to collect and analyze data to conclude the study. The quantitative, qualitative, or mixed-mode of research methodology may be used. According to Sekaran and Bougie (2016), quantitative research is conducted when a researcher is unfamiliar with the situation or has little knowledge. It aids in determining the true nature of the problems and solutions (Marshall and Rossman, 2014). Quantitative research is deductive because researchers draw conclusions based on direct observations with the primary goal of describing cause and effect. It allows the researcher to derive meaningful results from large amounts of data as cited by (Almansoori, Rahman, and Memon, 2021b). Qualitative research, also known as descriptive research, is a study that explains a phenomenon (Salkind, 2000). It is used to record and explain the phenomenon of interest (Marshall and Rossman, 2014). It provides a direct response to the who, what, where, where, why, and how (6 Ws) of the research problem, with data typically collected via a questionnaire survey, interviews, or observation (Maxwell, 2012). It is critical for any research study to align the research method with the research questions and objectives (Dang and Pheng 2015; Saunders, Lewis, and Thornhill 2009). The purpose of this study was to gather, analyze, and measure statistical data from a large selected sample to see if there is a relationship between the different variables (Mostashari, 2009). Quantitative techniques can measure specific characteristics from a large representative sample using structured data collection procedures, and the results can be projected to the entire population (Creswell, 2013).

For this research works, the sample size to collect the data was calculated with the formula used by Enshassi and Al Swaity (2015) with the assumption of unlimited population availability. According to the formula, Sample Size (SS) is:

$$SS = \frac{Z^2 \times P (1 - P)}{C^2}$$

Where,

SS = Sample Size

Z = Z value (1.96 for 95% confidence level)

P = percentage picking a choice expressed as a decimal (0.5 used for sample size needed)

C = margin of error (9 %), the maximum error of estimation can be 9 or 8% (Enshassi and Al Swaity, 2015).

$$SS = \frac{1.96^2 \times 0.5 (1 - 0.5)}{0.09^2} = 118.57 \cong \approx 119$$

According to the above equation, 119 samples are sufficient to collect and analyze to arrive at the required conclusion. However, according to Williams et al. (2012), the standard statistical analysis recommends that the sample size be 200 or greater. The responses of the personnel involved in data collection were recorded using a 5-point Likert scale. Because it is reliable and reflects the respondents' feelings, the Likert scale is very useful in measuring attitudes (Jupp 2006). When asked a Likert scale question, respondents can express their level of disagreement or agreement with any statement (Kulas and Stachowski, 2013). The understanding was graded on a scale of strongly disagree to strongly agree. This was rated on a scale of 1 to 5, with 1 being strongly disagree, 2 disagree, 3 neutral, 4 agreeing, and 5 strongly agreeing. Missing value analysis, normality test, mean value, and multicollinearity test were used to analyze data collected for this study.

The data must adhere to the assumption of normality. According to Tabachnick and Fidell (2013), abnormal data causes errors in the results, leading the researcher to draw an incorrect conclusion. The normality test examines the data distribution at the individual variable level to determine how far it deviates from the normal probability curve. It can be

assessed using graphs like histograms, box plots, and stem-and-leaf plots, as well as skewness and kurtosis measures and omnibus statistical tests like Shapiro-Wilk and z-test approximation (Hair et al. 2010). In this study, the skewness and kurtosis method is used to determine the normality of the data. Pituch and Steven (2016) recommend comparing computed values with a magnitude of  $\pm 2$  to determine normality using the skewness and kurtosis criterion. Values above this limit are thought to violate the normality assumption, while those within 2 are considered to approximate a normal distribution. The assessment of multicollinearity is critical. It determines whether or not there is a strong relationship between the variables (Pallant, 2011). According to Haier et al. (2010), the correlation between any two variables should not exceed 0.90.

#### 4. Results and Discussions

This paper discusses the preference of the people of UAE in adopting M-government services. The study involved a survey through a questionnaire where 263 people belonging to different stakeholder categories participated. The factual information of the participants taking part in the survey is presented in figure 1 below.

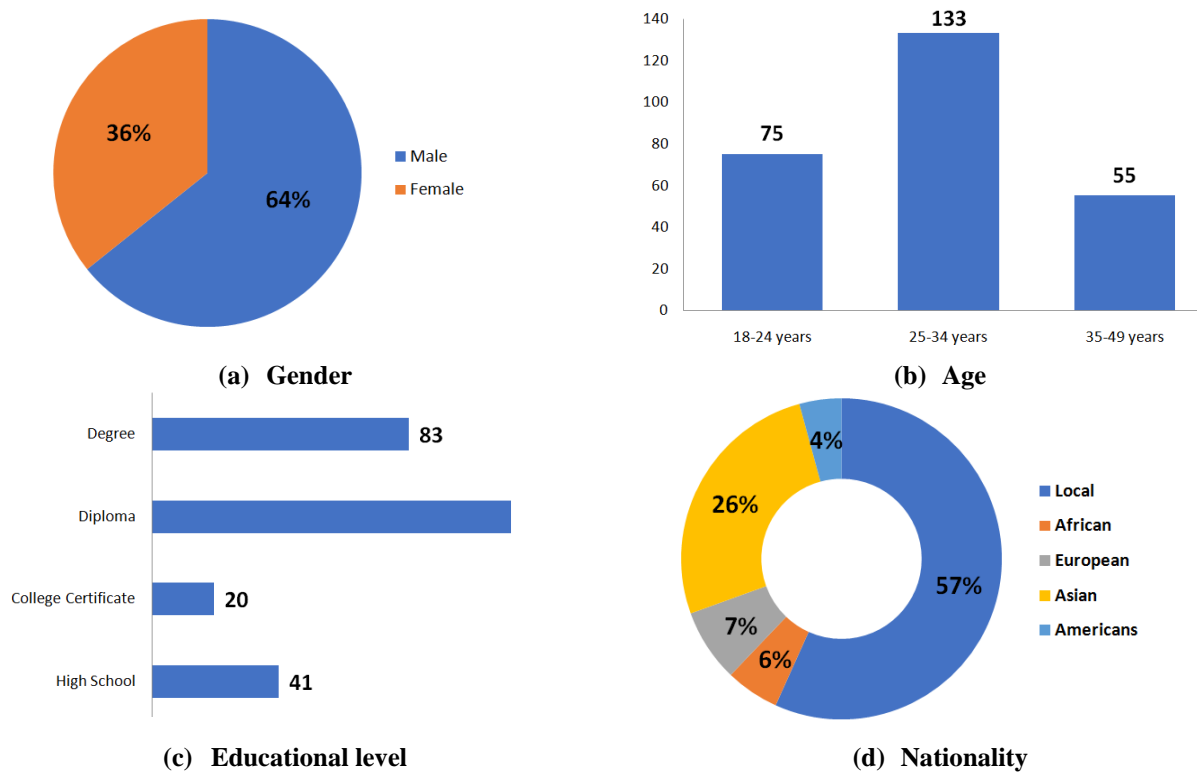


Fig. 1 - Respondents factual information

According to Figure 1, 64 percent of respondents are male, while 36 percent are female. More than half of the respondents are between the ages of 25 and 34, with 28.5 percent between 18 and 24 and 21 percent between 35 and 49. According to the respondents' qualification status, 44.1 percent have completed a Diploma, 31.6 percent have obtained a degree, 15.6 percent have a high school diploma, and 7.6 percent have a college diploma. These respondents are nationals of various countries, with Emiratis constituting 55.9% of the total. Aside from these, 25.9 percent of respondents are Asian, 7.2 percent are Europeans, and 9 percent are Africans or Americans.

#### 4.1 Missing Value Analysis

One of the most persistent problems in data analysis is missing data (Tabachnick and Fidell 2013). Missing data occurs when valid values on one or more variables are missing from the working dataset. This might result from a respondent's deliberate non-response or failure to respond to specific questions (Hair et al., 2010). The pattern of missing data in a given dataset can cause a massive issue in the final result. Hair et al. (2010) and Tabachnick and Fidell (2013) emphasized the diagnostic process required to identify and correct missing values in a dataset. The following steps are involved in the procedure:

- i. Determine whether the missing values are ignorable or not. The ignorable missing values are anticipated from the start of the research, i.e., they were built into the research design. They are typically caused by non-sample observation, design instruments, and censored data. Non-ignorable missing values, on the other hand,



- are those that occurred unexpectedly, such as respondents failing to complete all of the items in the questionnaire due to, for example, question sensitivity and data entry errors (Hair et al., 2010).
- ii. Determination of the extent to which missing values exist. According to Hair et al. (2010), missing values less than 10% of the case level are considered negligible.
  - iii. Determining the randomness of the missing value's occurrence. At this point, the missing value pattern is evaluated to determine whether it is random or not. Then, using Little's MCAR test, a statistical computation of the expected randomness of the missing values is performed. When Little's MCAR test yields a  $p > 0.05$  result, the decision rule is to accept the hypothesis that the missing values occur at random and to reject the result otherwise (Hair et al. 2010).
  - iv. Resolve the missing value issue. This is usually accomplished by employing an imputation method that is appropriate for the nature of the missing value pattern. For example, Tabachnick and Fidell (2013) identify five imputation methods that can be used to address missing value issues in a dataset. On the other hand, Hair et al. (2010) recommended using the Expectation Maximisation (EM) method for a randomly missing value pattern.

Data collected for this study also applied Missing Value Analysis (MVA) before the data is ranked for driving the conclusion. The results of the MVA are presented in Table 3.

**Table 3 - Missing value analysis**

Parameters	N	Mean	Std. Deviation	Missing		No. of Extremes	
				Count	%	Low	High
<b>SI1</b>	262	4.27	.637	1	.4	1	0
<b>SI2</b>	261	4.17	.664	2	.8	1	0
<b>SI3</b>	263	4.43	.594	0	.0	0	0
<b>SI4</b>	262	4.43	.595	1	.4	0	0
<b>SI5</b>	260	4.38	.625	3	1.1	0	0
<b>PC1</b>	262	4.35	.618	1	.4	0	0
<b>PC2</b>	263	4.34	.639	0	.0	0	0
<b>PC3</b>	262	4.02	.793	1	.4	0	0
<b>PC4</b>	263	4.10	.871	0	.0	14	0
<b>PC5</b>	263	4.35	.692	0	.0	2	0
<b>PC6</b>	263	4.30	.686	0	.0	0	0
<b>PEOU1</b>	263	4.33	.671	0	.0	0	0
<b>PEOU2</b>	263	4.39	.614	0	.0	0	0
<b>PEOU3</b>	263	4.21	.690	0	.0	4	0
<b>PEOU4</b>	263	4.22	.695	0	.0	3	0
<b>PU1</b>	263	4.21	.730	0	.0	4	0
<b>PU2</b>	263	4.17	.684	0	.0	2	0
<b>PU3</b>	260	4.16	.764	3	1.1	4	0
<b>PU4</b>	263	4.21	.703	0	.0	1	0
<b>TT1</b>	259	4.36	.675	4	1.5	3	0
<b>TT2</b>	263	4.32	.668	0	.0	3	0
<b>TT3</b>	263	4.29	.672	0	.0	4	0
<b>TT4</b>	263	4.29	.736	0	.0	3	0
<b>TT5</b>	262	4.38	.711	1	.4	3	0
<b>TT6</b>	263	4.33	.700	0	.0	2	0
<b>PR1</b>	263	4.30	.662	0	.0	1	0
<b>PR2</b>	263	4.28	.656	0	.0	1	0
<b>PR3</b>	259	4.39	.614	4	1.5	0	0
<b>PR4</b>	263	4.23	.690	0	.0	1	0
<b>PR5</b>	263	4.27	.658	0	.0	2	0

Table 3 revealed a pattern of missing data in the MCAR-compliant data. The table showed that TT1 and PR3 have four missing values, accounting for (1.5 percent) of the data. According to Little's MCAR test (Chi-Square = 601.215, DF = 581, Sig. = 0.272), the chi-square test is above the threshold, implying that the values are missing at random. As a result, to fill in the blanks, the mean imputation method was used. Where the technique simply computes the mean of all non-missing individuals' observed values for that variable.

### 4.2 Normality Test

Skewness and kurtosis values of the variable categories were computed with the help of SPSS software Packages, and the results are presented in Table 4.

**Table 4 - Univariate normality**

Category of preferences	N	Mean	Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
SI	263	4.3344	.46416	-.287	.150	-.354	.299
PC	263	4.2412	.49130	-.323	.150	-.407	.299
PEOU	263	4.2852	.51314	-.458	.150	.012	.299
PU	263	4.1866	.55954	-.569	.150	.977	.299
TT	263	4.3295	.46675	-.508	.150	.039	.299
PR	263	4.2907	.49935	-.278	.150	-.317	.299

Table 3 reveals that all the variable categories have skewness and kurtosis values within  $\pm 2$ , which is an indication that the data is approximately normal.

### 4.3 Multicollinearity Assessment

To determine the presence of multicollinearity in the research, the correlation matrix of the constructs was used where Pearson's correlation coefficients can range from +1 to -1. Table 5 displays Pearson's correlation coefficients between the constructs

**Table 5 - Correlation matrix of research categories**

Category of preferences	PEOU	PU	SI	PR	TT	PC
PEOU						
PU	.039					
SI	.146	.482				
PR	.046	.046	.005			
TT	.026	-.092	-.043	-.016		
PC	.044	-.004	-.171	.226	.266	

As shown in Table 5, the highest correlation is 0.482 between SI and PU, while the lowest correlation is 0.004 between PC and PU. This indicates that there is no unnecessary multicollinearity between constructs, which could jeopardize the result's validity. As a result, all constructs were included in the structural model evaluation.

### 4.4 Hierary of the Factors

The descriptive statistics show how many people answered each questionnaire item, the minimum and maximum scale values based on the responses, the mean response, and the standard deviation. As a result, the variable attributes were ranked and displayed in table 6.

**Table 6 - Descriptive statistics**

Parameters / preferences	N	Minimum	Maximum	Mean	Std. Deviation	Rank
SI3	263	3	5	4.43	0.594	1
SI4	263	3	5	4.43	0.594	2
SI5	263	3	5	4.39	0.625	3
SI1	263	2	5	4.27	0.637	4
SI2	263	2	5	4.17	0.665	5



PC1	263	3	5	4.35	0.618	1
PC5	263	2	5	4.35	0.692	2
PC2	263	3	5	4.34	0.639	3
PC6	263	3	5	4.30	0.686	4
PC4	263	1	5	4.10	0.871	5
PC3	263	2	5	4.02	0.793	6
PEOU2	263	3	5	4.39	0.614	1
PEOU1	263	3	5	4.33	0.671	2
PEOU4	263	1	5	4.22	0.695	3
PEOU3	263	1	5	4.21	0.69	4
PU1	263	1	5	4.21	0.73	1
PU4	263	1	5	4.21	0.703	2
PU2	263	2	5	4.17	0.684	3
PU3	263	1	5	4.17	0.765	4
TT5	263	1	5	4.38	0.71	1
TT1	263	1	5	4.37	0.675	2
TT6	263	2	5	4.33	0.7	3
TT2	263	2	5	4.32	0.668	4
TT3	263	2	5	4.29	0.672	5
TT4	263	1	5	4.29	0.736	6
PR3	263	3	5	4.40	0.614	1
PR1	263	2	5	4.30	0.662	2
PR2	263	2	5	4.28	0.656	3
PR5	263	2	5	4.27	0.658	4
PR4	263	2	5	4.23	0.69	5

Table 6 shows the descriptive statistics for all of the indicators that were used to create the research constructs. The indicators SI3 and SI4 have the highest mean  $M= 4.43$ ,  $SD=.594$ , while PC3 has the lowest mean  $M= 4.02$ ,  $SD=.793$ . Examining the results in the preceding table, it can be seen that in the category Social Influence (SI), the attributes SI3 and SI4 are reported as the most common parameters and are ranked first with a mean value of 4.43. The category Perceived Compatibility (PC) results revealed that PC1 is the highest-ranked variable, followed by PC5, ranked second. On the other hand, PEOU2 and PEOU are reported as the first and second-ranked parameters in Perceived Ease Of Use (PEOU), respectively. At the same time, PU1 is the most agreed variable in the class of Perceived Usefulness (PU) (PU). This is followed by PU4, which comes in second place. TT5, with a mean value of 4.38, is the most common parameter in the Trust in Technology/m-services (TT). TTI ranks second in this category, with a mean value of 4.37. Ranking the parameters in the class Perceived Risk (PR) revealed that PR3 and PR1 are the top two attributes, with mean values of 4.40 and 4.30, respectively.

## 5. Conclusion

This study analyzed the parameters describing the preference of the people of UAE to adopt M-government services offered by the government. M-government system focuses on providing efficient and quick services to the public by creating information sharing with advanced information technology tools such as smartphones. In achieving the objectives of the study, 263 questionnaire forms collected from the people of UAE were analyzed statistically. A total 30 parameters were evaluated, which were divided into six categories as Social Influence (SI), Perceived Compatibility (PC), Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Trust in Technology (TT), and Perceived Risk (PR). From the analysis of the data, it was found that the parameters “*people who are important to me would find using M-services beneficial*” and “*gives social comfort to all users*” are the most common parameters of the preferences of the people in adopting M-government. Both parameters belong to the Social Influence category. The findings of this study will be helpful to the authorities to develop strategies for encouraging the people to adopt M-government services.

## Acknowledgement

The authors would like to thanks UTHM for supporting this study

## References

- Abdelhafez, H. A. (2014), "E-government in selected Arab countries: Analysis and hallenges", *Egyptian Computer Science Journal*, Vol. 38, No. 2, pp. 67-84.
- Al-Jenaibi, B. N. (2015), "The new electronic government: Are the federal authorities ready to use e-Government?", *International Journal of Knowledge Society Research*, Vol. 6, No. 3, pp. 45-74. doi: 10.4018/IJKSR.2015070104
- Alloghani, M., Hussain, A., Al-Jumeily, D., Fergus, P., Abuelma'Atti, O., and Hamden, H. (2016), "A mobile health monitoring application for obesity management and control using the internet-of-things", Paper presented in the Sixth International Conference on the Digital Information Processing and Communications (ICDIPC).
- Alhammadi, A. S. A. M. And Memon, A. H. (2020), "Inhibiting Factors of Cost Performance in UAE Construction Projects", *International Journal of Sustainable Construction Engineering and Technology*, Vol. 11, No. 2, pp. 126-132.
- Almansoori, M.T.S., Rahman, I.A., and Memon, A.H (2021a), "Grading of Factors Affecting PMO Implementation in UAE Construction Industry", *Turkish Online Journal of Qualitative Inquiry (TOJQI)*, Vol. 12, No. 6, pp. 1025- 1032
- Almansoori, M. T. S., Rahman, I. A., and Memon, A. H. (2021b), "Correlation between the Management Factors Affecting PMO Implementation in UAE Construction", *International Journal of Sustainable Construction Engineering and Technology*, Vol. 12, No. 3, pp. 155-165.
- Alsaif, M. (2013), "Factors affecting people' adoption of E-government moderated by socio-cultural values in Saudi Arabia", Unpublished doctorate dissertation, University of Birmingham, UK.
- Alshehri, M. and Drew, S. (2010), "Implementation of e-Government: Advantages and challenges", *IASK E-ALT2010 Conference Proceedings*,79-86. Retrieved from <https://core.ac.uk/download/pdf/143886366.pdf>
- Aurthur, C. (2013), "Smartphones will replace the personal computer", In R. Espejo (Ed.), *Smartphone*. Detroit: Greenhaven Press.
- Bataineh, E. and Al Mutawa, S. (2016), "An analysis study of factors that determine e-services usage by end users: A case study", *Journal of e-Government Studies and Best Practices*, pp. 1-15. doi:10.5171/2016.371910
- Bergvall- Kåreborn, B. and Howcroft, D. (2013), "The future's bright, the future's mobile: A study of Apple and Google Mobile application developers", *Social Informatics Luleå University of Technology and Manchester Business School*.
- Bertot, J., Estevez, E., and Janowski, T. (2016), "Universal and contextualized public services: Digital public service innovation framework", *Government Information Quarterly*, Vol. 33, No. 2, pp. 211-222.
- Carter, L. and Belanger, F. (2005), "The utilization of e-government services: Citizen trust, innovation and acceptance factors', *Information Systems Journal*, Vol. 15, pp. 5-25.
- Carter, L., Weerakkody, V., Phillips, B., and Dwivedi, Y. K. (2016), "Citizen adoption of e-government services: Exploring citizen perceptions of online services in the United States and United Kingdom", *Information Systems Management*, Vol. 33, No. 2, pp. 124-140.
- Creswell, J. W. (2013), "Research design: Qualitative, quantitative, and mixed methods approaches", London: Sage publications.
- Dang, G. and Pheng, S. L. (2015), "Infrastructure investments in developing economies", Singapore: Springer Science.
- Davies, R. (2015), "E-government Using technology to improve public services and democratic participation", European Union

- Dimitrova, D. V. and Chen, Y. C. (2006), "Profiling the adopters of e-government information and services: the influence of psychological characteristics, civic mindedness, and information channels", *Social Science Computer Review*, Vol. 24, No. 2, pp. 172-188.
- Enshassi, A., and Al Swaity, E. (2015), "Key stressors leading to construction professionals' stress in the Gaza Strip, Palestine", *Journal of Construction in Developing Countries*, Vol. 20, No. 2, pp. 53 - 79.
- Gauld, R., Goldfinch, S., and Horsburgh, S. (2010), "Do they want it? Do they use it? The 'demand-side' of e-government in Australia and New Zealand", *Government Information Quarterly*, Vol. 27, No. 2, pp. 177-186.
- Graafland-Essers, I. and Etedgui, E. (2003), "Benchmarking e-government in Europe and the US", *Statistical Indicators Benchmarking the Information Society. RAND:Europe*.
- Hackney, R., Jones, S., and Losch, A. (2007), "Towards an e-Government efficiency agenda: the impact of information and communication behaviour on e-reverse auctions in public sector procurement", *European Journal of Information Systems*, Vol. 16, No. 2, pp. 178-191.
- Hair, J. F., Black, W., Babin, B., and Anderson, R. (2010), "Multivariate data analysis", 7<sup>th</sup> ed. Upper Saddle River, NJ: Prentice Hall.
- Hameed, I., Khan, M. B., Shahab, A., Hameed, I., and Qadeer, F. (2016), "Science, technology and innovation through entrepreneurship education in the United Arab Emirates (UAE)", *Sustainability*, Vol. 8, No. 12, pp. 1280.
- Hart-Teeter. (2003), "The new e-government equation: Ease, engagement, privacy and protection", Retrieved from <http://www.cio.gov/>
- Internet World Stats (2019), "Internet usage in the Middle East: Middle East Internet usage and population statistics", Retrieved from <https://www.internetworldstats.com/stats5.htm>
- Johansson, D. (2014), "Two shades of service Mobility: Application mobility and mobile E-services", University of Technology Skelleftea, Sweden.
- Jupp, V. (2006), "The sage dictionary for social research methods", London: The Sage publications Ltd.
- Kulas, J. T., and Stachowski, A. A. (2013), "Respondent rationale for neither agreeing nor disagreeing: Person and item contributors to middle category endorsement intent on Likert personality indicators", *Journal of Research in Personality*, Vol. 47, No. 4, pp. 254-262. doi:10.1016/j.jrp.2013.01.014
- Löfstedt, U. (2005), "E-Government -assessment of current research and some proposals for future directions", *International Journal of Public Information Systems*, Vol. 1, pp. 39-52.
- Manyika, J. (2016), "Digital Globalisation: The new era of global flows", San Francisco.
- Marshall, C. and Rossman, G. (2014), "Designing qualitative research", 2<sup>nd</sup> ed., Thousand Oaks, CA: Sage.
- Maxwell, J. A. (2012), "Qualitative research design: An interactive approach", London: Sage publications.
- Meijer, A., and Bekkers, V. (2015), "A metatheory of e-government: Creating some order in a fragmented research field", *Government Information Quarterly*, Vol. 32, No. 3, pp. 237-245.
- Mostashari, E. (2009), "Impact of organizational leadership on organizational performance: a study on small and medium size private companies in three cities of Tehran, Mashhad, Isfahan, Iran", Unpublished Ph.D. dissertation, British University in Dubai.
- Mustafa, A. and Mansour, E. (2008), "The impact of privatization on the United Arab Emirates (UAE) federal public sector", *International Public Management Review*, Vol. 9, No. 2, pp. 66-89.
- Nkohkwo, Q.N.A. and Islam, M.S. (2013), "Challenges to the successful implementation of e-government initiatives in Sub-Saharan Africa: A literature review", *Electronic Journal of e-Government*, Vol. 11, No. 2, pp. 253-267.

NOIE (2003), "E-government benefits study", Commonwealth of Australia, Canberra.

Nordea (2020), "E-commerce in the United Arab Emirates", Retrieved from <https://www.nordeatrade.com/>

OECD (2003), "E-Government Flagship Report, The E-Government Imperative", Public Management Committee, Paris: Author.

Omari, A. (2013), "Technology adoption in the Arabian gulf countries: the case of e- government", International Journal of Computer Science, Engineering and Information Technology (IJCEIT), Vol. 3, No. 3, pp. 1-8. doi : 10.5121/ijceit.2013.3301

Pallant, J. (2011), "A step by step guide to data analysis using the SPSS program: Survival manual", 4<sup>th</sup> ed., McGraw-Hill, Berkshire.

Phang, C., Sunanto, J., Kankanhalli, A., Li, Y., Tan, B., and Teo, H. (2006), "Senior people' acceptance of information systems: A study in the context of e-government services", IEEE Transactions on Engineering Management, Vol. 53, No. 4, pp. 555-569.

Pituch, K. A., and Stevens, J. P. (2016), "Applied multivariate statistics for the social sciences", 6<sup>th</sup> Ed, Routledge: New York.

Reddick, C. G. (2005), "Citizen Interaction with E-government: From the Streets to Servers?", Government Information Quarterly, Vol. 22, pp. 38-57.

Rodrigues, G. (2016), "Factors that influence consumer adoption of e-government services in the UAE: A UTAUT model perspective", Dubai: Faculty of Business, University of Wollongong in Dubai, UAE.

Rokhman, A. (2011), "Potential users and critical success factors of e-Government services: The case of Indonesia", Proceedings of the International Conference on Public Organization, Yogyakarta.

Salkind, N. J. (2000), "Exploring research", Prentice Hall Upper Saddle River, N.J

Saunders, M., Lewis, P., and Thornhill, A. (2009), "Research methods for business students", London: Pearson Education.

Sekaran, U., and Bougie, R. (2016), "Research methods for business: A skill building approach", John Wiley and Sons.

Smith, L. C., and Wong, M. A. (2016), "Reference and Information Services: An Introduction", An Introduction. ABC-CLIO.

Sun, P. L., Ku, C. Y., and Shih, D. H. (2015), "An implementation framework for E-Government 2.0", Telematics and Informatics, Vol. 32, No. 3, pp. 504-520.

Tabachnick, B. G., and Fidell, L. S. (2013), "Using multivariate statistics", 6<sup>th</sup> ed., Boston: Allyn and Bacon.

Thomas, J. C., and Streib, G. (2003), "The new face of government: Citizen-initiated contacts in the era of E-government", Journal of Public Administration Research and Theory, Vol. 13, No. 1, pp. 83-102.

Tolbert, C. J. and Mossberger, K. (2006), "The effects of e-government on trust and confidence in government", Public administration review, Vol. 66, No. 3, pp. 354-369.

Ud Din, I., Xue, M., Ali, A., Shah, T., Ilyas, A., and Bendall, M. (2017), "Role of information and communication technology (ICT) and e-governance in health sector of Pakistan: A case study of Peshawar", doi: 10.1080/23311886.2017.1308051

Venkatesh, V., Chan, F. K., and Thong, J.Y. (2012), "Designing e-government services: Key service attributes and people' preference structures", Journal of Operations Management, Vol. 30, No. 1, pp. 116-133.

Verkijika, S. F., and De Wet, L. (2018), "A usability assessment of e-government websites in Sub-Saharan Africa", International Journal of Information Management, Vol. 39, pp. 20-29.

Wei, X. and Zhao, J. (2005), "People' requirement analysis in Chinese e-government", ACM International Conference Proceeding Series. Vol.113.

Welch, E. W., Hinnant, C. C., and Moon, M. J. (2005), "Linking citizen satisfaction with e-government and trust in government", Journal of Public Administration Research and Theory, Vol. 15, No. 3, pp. 371-391.

Williams, B., Brown, T., and Onsmann, A. (2012), "Exploratory factor analysis: A five-step guide for novices", Journal of Emergency Primary Health Care, Vol. 8, No. 3, pp. 1-13.

Yakubu, Y. (2019), "Contextual challenges of planning and implementing e-governance in Nigeria", International Journal of Current Innovations in Advanced Research, Vol. 2, No. 5, pp. 1-5.

Zaidi, S. F. (2017), "E-government services effectiveness evaluation framework (E-GEEF): a case study of Indian e-tax service", Unpublished Doctoral dissertation, Metropolitan University, London.

Zhao, F. and Waxin, M. (2012), "Key issues and challenges in e-government development: An integrative case study of the number one eCity in the Arab world", Information Technology and People, Vol. 25, No. 4, pp. 395 - 422.