



Causative Factors for Continuous Usage of M-government Services Among Users of Smart City

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Abstract: This paper presents a quantitative study on assessing causative factors that contributing to continuous usage of M-government services among users using questionnaire survey. The survey was conducted through purposive sampling techniques of selecting the respondents of smart city that are users of M-government of Abu Dhabi police department. The collected data from 379 valid responses of the survey was analysed for its reliability and normality and found that the data was reliable and achieved normality criteria. The data was further used for ranking of the factors based on its importance toward the continuous usage of M-government. It was found that that for Quality of M-Government group, the most significant factor is QG3 which is *M-government system provides up-to-date information*. In Public Value group, the most influence factor is PV9 which is *Using the M-government increases the government accountability*; In Trust group the most influence factor is T5 which is *feel comfortable interacting with the M-government system since it generally fulfils its duties efficiently*; In User Satisfaction group the most influence factor is US7 which is *satisfied with the service received from the M-government*; In Continuous Intention to Use group the most influence factor is CIU9 which is *recommend others to use in the future*. In term of group ranking, it was found that *user satisfaction* group leads other groups then followed by *public value* then *trust* group, *continuous intention to use* and finally the *quality of M-government* groups. This indicates that for M-government services to enhance its usage of the services the main priority should be given to user satisfaction.

Keywords: Causative factor, M-government services

1. Introduction

The UAE government created a smart government plan (M-government) as a replacement vision for its e-government strategy for smart government by 2015. In this context, the smart government reform's goal was to use technology as a strategy for connecting people to the government and facilitating the delivery of integrated public services through smartphone apps. Despite the fact that this transition has been ongoing for more than four years, assessing their effectiveness is difficult. Furthermore, the investigation into how this city became more advanced than the other cities in the UAE offers useful insights or advice for improving M-government adoption in the other cities. Although it is crucial to determine the effectiveness of M-government, research on M-government applications remains scarce (Chen et al., 2016; Ahmad and Khalid, 2017; Almarashdeh and Alsmadi, 2017; Ismagilova et al., 2019; Alharmoodi and Lakulu, 2020). In fact, there are researchers Saadi et al. (2017); Alsaadi et al. (2019) who claimed that the M-government in the UAE is still at an initial stage in comparison to the developed countries. It is well understood that technology does not exist in a vacuum; rather, its execution is influenced by perceived principles (Bannister and Connolly, 2014).

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The application technologies in public services, such as M-government and its principles is intended to aid in the improvement of public-sector management. In this regard, the effect of public value on the use of M-government has been a critical outcome to the initiatives' long-term viability. Cordella and Bonina (2012) state that the concept of public benefit offers an appropriate forum for investigating the dynamic socio-political effects of ICT implementation in the public sector. The public value system views public sector changes as the result of collectively held perceptions of justice, confidence, and credibility, the consequences of which are influenced by the social and political background (Shahzad et al., 2019). Alternatively, Alshammari, Messom, and Cheung (2021) argued that incorporating the idea of public benefit into the evaluation of M-government results from the citizen's perspective is critical. Although there have been researches that consider public value of M-government (Scott, Delone and Golden, 2016; Pereira, Macadar and Luciano, 2017; Agbabiaka, 2018; Criado and Gil-Garcia, 2019), research that considers public value as the determiner of the use of M-government is still lacking. Further, there has been relatively little research into the effect of public value on the continuous usage of M-government. As such, research that investigates the relationship between public value and the use of M-government services is needed.

2. Data Collection and Characterization

Data was collected from the users of M-government services in Abu Dhabi police department who have recently used the services from the period of October, November and December 2020. The respondents were identified from the list that provided by police department in Abu Dhabi. After identifying the respondents, a systematic random sampling was used to select the respondents. Questionnaire were distributed to the targeted respondents through several modes like Facebook, Instagram and WhatsApp. The survey was designed in such a way that enables the respondents to answer all questions before sending. This limits the rate of outliers and maximizes the opportunity to reach a completed sample. However, only 379 respondents were returned with a response rate of 61%, which is in consonance with the requirement imposed by Hair, Anderson (2010) who stated that the minimum response rate for a survey should be more than 50%. The questionnaire consisted of 43 factors which were clustered into five groups namely quality of M-government; public value; trust; user satisfaction and continuous intention to use. The respondents were required to gauge the level of importance of these factors using a 5-point Likert scale.

2.1 Profile of the Respondents

To ensure the respondents' objective and impartial sampling, a random sampling system was used, which is one of the probability sampling approaches in which a sample is chosen by chance rather than the researcher's personal decision (Awang, 2012). As seen in Table 1, the sample's demography portrays the sample's size and distribution in terms of location, respective institutions, and academic qualifications.

Table 1 - Respondents demographic profile

Demography information	Frequency	Percentage
<i>Experience with M-government/e-government</i>		
Direct experience	142	37
Both direct and indirect experience	112	30
Indirect experience	125	33
Total	379	100
<i>Experience concerning M-government/e-government services</i>		
Emergency department	79	19.65
Security Department	122	31.67
Traffic Department	178	47
Total	379	100.00
<i>Length of experience dealing with M-government</i>		
Less than 1 year	31	8
Between 2-5 years	91	24
Between 6-10 years	103	27
Between 11 -15 years	95	25
More than 15 Years	59	16
Total	379	100.00
<i>Gender</i>		
Male	261	69
Female	118	31
<i>Users Nationality</i>		
Foreigners	201	53
Local	178	47

Around 27% of those polled have direct experience with M-government between 6 to ten years, followed by those who have been using M-government between 11 to 15 years. This indicates that majority of the respondents have good experience in using M-government, which helps to provide a good understanding about M-government.

2.2 Data Characterization

Hair et al. (2010) exerted that data screening process is important for quality data analysis. The codes were used to assign numbers to each respondent in order to convert the data from the available questionnaire to SPSS. Data screening procedures were carried out after the data was entered into the SPSS data file. They were designed to detect mistakes in the data entry phase, such as out of control values and omitted entries. In this study, the data were collected with all sections were mandatory for the respondents to response. As such, respondents were unable to skip any questions or give incomplete information. Hence, there were no missing values in the questionnaire received from the respondents.

2.2.1 Reliability Assessment

The collected survey data is checked for its internal consistency given by respondents based on the Likert scale scores. Then reliability test was used for the purpose with Cronbach's alpha criterion by George & Mallery (2003) was adopted and the result of the test is as in Table 2.

Table 2 - Results of reliability test

Group	Number of factors	Cronbach Alpha
Quality Of M-Government	10	0.890
Public Value	10	0.957
Trust	7	0.914
User Satisfaction	7	0.958
Continuous Intention to Use	9	0.897
Overall	43	0.923

Cronbach's alpha coefficient indicates the level of inputs' consistency given by the respondents on the factors with the range between 0 and 1 (where 0 is the lowest and 1 is the highest inside consistency). According to Sekaran & Bougie, 2016 and Souza et al., 2017, if the rates of Cronbach's alpha coefficient match or go beyond 70% (0.7), then the data is recognised as reliable. Based on the results in Table 2 of reliability test, it shows that the coefficients/values for five categories of factors are in the range of 0.890 to 0.958 which are exceeding 0.7, thus the collected data is reliable for further analysis.

2.2.2 Normality Assessment

The normal distribution of the data is another important issue that must be addressed to ensure the data is suitable for analysis. According to Hair et al. (2013) normal data distribution is based on the assumption that the data distribution has a bell shape. It is relevant to consider the data distribution when working with SPSS (Hair et al., 2013). The kurtosis and skewness of the distribution can be measured by the researcher to assess the normalization of the data. Kurtosis is the flatness or peakness of the distribution along the Y-axis, whereas skewness is an indication that a variable's distribution is spread to the right or left along the X-axis (Hair et al., 2013). A data is said to have a normal distribution when its kurtosis and skewness values are both zero, but this rarely happens (Hair Jr et al., 2013). Hence, the guiding principle for normal distribution is to accept items whose skewness value is less than 2 and absolute kurtosis value is less than 3. The kurtosis and skewness values of all the items in this study are within the acceptable range, as seen in Table 3.

Table 3 - Normality test results

Code	Factors	Skewness	Kurtosis
QUALITY OF M-GOVERNMENT			
QG1	I can quickly find the information I need in the M-government system	-0.563	-0.035
QG2	M-government system provides complete information	-0.629	-0.122
QG3	M-government system provides up-to-date information	-0.852	0.753
QG4	M-government system provides reliable information	-0.674	-0.134
QG5	M-government system provides relevant information	-0.514	-0.252
QG6	M-government system provides usable information	-0.747	0.316
QG7	The information in the M-government system is simple and understandable.	-0.654	-0.085
QG8	M-government system is easy to use	-0.543	-0.167
QG9	M-government system is easy to learn	-0.754	0.778

QG10	M-government system is well-organised	-0.734	-0.178
PUBLIC VALUE			
PV1	Using this M-government saves me money.	-0.85	0.51
PV2	I value the use of M-government services	-0.482	-0.197
PV3	M-government reduces the cost of providing the government services	-0.717	0.158
PV4	M-government saves me time	-0.455	-0.213
PV5	M-government provides a quicker response	-0.439	-0.409
PV6	I can accomplish things more quickly because of using this M-government services	-0.555	-0.245
PV7	M-government service is an efficient way to communicate with government	-0.237	-0.127
PV8	M-government services increases the government accountability	-0.352	-0.265
PV9	M-government increases the government accountability	-0.559	0.017
PV10	M-government services improves well-being of the society	-0.465	-0.078
TRUST			
T1	The information offered by the M-government system is genuine	-0.555	-0.245
T2	M-government system are trusted application	-0.494	-0.313
T3	I can rely on M-government system for information about different services	-0.687	0.253
T4	M-government system serves the best interest of its users	-0.409	-0.631
T5	I feel comfortable interacting with the M-government system to perform duties	-0.636	-0.022
T6	Feel confident on this M-government system to interact with it	-0.555	-0.245
T7	In all account, the M-government system is trustworthy	-0.494	-0.313
USER SATISFACTION			
US1	The M-government Service exactly provides what I need.	-0.409	-0.631
US2	I am very pleased with my past experience of using M-government service	-0.636	-0.022
US3	M-government system able to improve the efficiency and accelerate the business.	-0.555	-0.245
US4	M-government service provides satisfied public service that meet expectations	-0.444	-0.353
US5	M-government services make my life easy and happy.	-0.573	-0.137
US6	I can easily recommend M-government Service to my friends and family.	-0.774	0.768
US7	I am satisfied with the service I received from the M-government	-0.754	-0.128
CONTINUOUS INTENTION TO USE			
CIU1	I will keep continue using M-government service	-0.352	-0.265
CIU2	I am Using M-government services regularly.	-0.687	0.253
CIU3	The likelihood of my using M-government to access and use the services is high.	-0.843	0.724
CIU4	I use UAE M-government service to communicate to government office always	-0.674	-0.134
CIU5	I intend to increase the use of M-government in the future	-0.614	-0.252
CIU6	I use UAE M-government service to know many things related to government policies	-0.748	0.516
CIU7	I intend to use M-government web service regardless of the price	-0.494	0.253
CIU8	Whenever possible, I intend to use UAE M-government web service portal always.	-0.687	-0.631
CIU9	I will recommend others to use in the future	-0.559	0.017

Table 3 shows that the skew and kurtosis value scores for measurement items are between -1 and +1, which according to Pallant (2011) and Kline (2011) that the collected data has achieved normal distribution pattern.

3. Ranking of Factors

The data was further analysed to determine the rank of each factor within its group. The rank is based on the mean score of the factor. And if more factors are having the same score, then factor having smallest standard deviation is ranked higher. The results of the rankings of the factors are as in table 4

Table 4 - Ranking of factors

Groups	Factors	Factors Mean score	Standard deviation	Rank based On level of importance
<i>QUALITY OF M-GOVERNMENT</i> [mean score = 3.46]	QG1	3.50	1.204	4
	QG2	3.46	1.207	5
	QG3	3.87	0.933	1
	QG4	3.55	0.975	3
	QG5	3.40	1.194	6
	QG6	3.63	1.036	2
	QG7	3.34	0.888	7
	QG8	3.21	1.045	9
	QG9	3.31	1.126	10
	QG10	3.34	1.123	8
<i>PUBLIC VALUE</i> [mean score = 3.62]	PV1	3.70	1.077	5
	PV2	3.44	1.154	9
	PV3	3.57	1.106	6
	PV4	3.43	1.105	10

	PV5	3.44	0.96	8
	PV6	3.46	1.141	7
	PV7	3.80	1.112	2
	PV8	3.76	1.125	4
	PV9	3.84	1.186	1
	PV10	3.78	1.214	3
<i>TRUST</i> [mean score = 3.45]	T1	3.46	0.935	3
	T2	3.42	1.125	5
	T3	3.54	1.011	2
	T4	3.33	1.259	7
	T5	3.54	0.969	1
	T6	3.46	1.188	4
	T7	3.42	1.216	6
<i>USER SATISFACTION</i> [mean score = 3.63]	US1	3.33	1.255	8
	US2	3.54	1.127	2
	US3	3.46	1.178	6
	US4	3.42	1.319	7
	US5	4.51	1.004	4
	US6	3.51	1.204	5
	US7	3.64	1.207	1
<i>CONTINUOUS INTENTION TO USE</i> [mean score = 3.68]	CIU1	3.76	0.933	2
	CIU2	3.54	0.975	4
	CIU3	3.44	1.194	7
	CIU4	3.56	1.036	3
	CIU5	3.43	0.888	8
	CIU6	4.63	1.045	6
	CIU7	3.54	1.126	5
	CIU8	3.42	1.123	9
	CIU9	3.84	1.077	1

Table 4 indicates that *Quality of M-Government* group, the most significant factor is QG3 which is M-government system provides up-to-date information. While the following groups are as follow;

- In *Public Value* group, the most influence factor is PV9 which is Using this M-government increases the government accountability.
- In *Trust* group the most influence factor is T5 which is I feel comfortable interacting with this M-government system since it generally fulfils its duties efficiently.
- In *User Satisfaction* group the most influence factor is US7 which is satisfied with the service I received from the M-government.
- In *Continuous Intention to Use* group the most influence factor is CIU9 which is recommend others to use in the future

4. Ranking of Factors

The results of mean score from the individual factors are averaged to form the mean score for the group. The mean scores for the groups are used to generate histogram graph as figure 1.

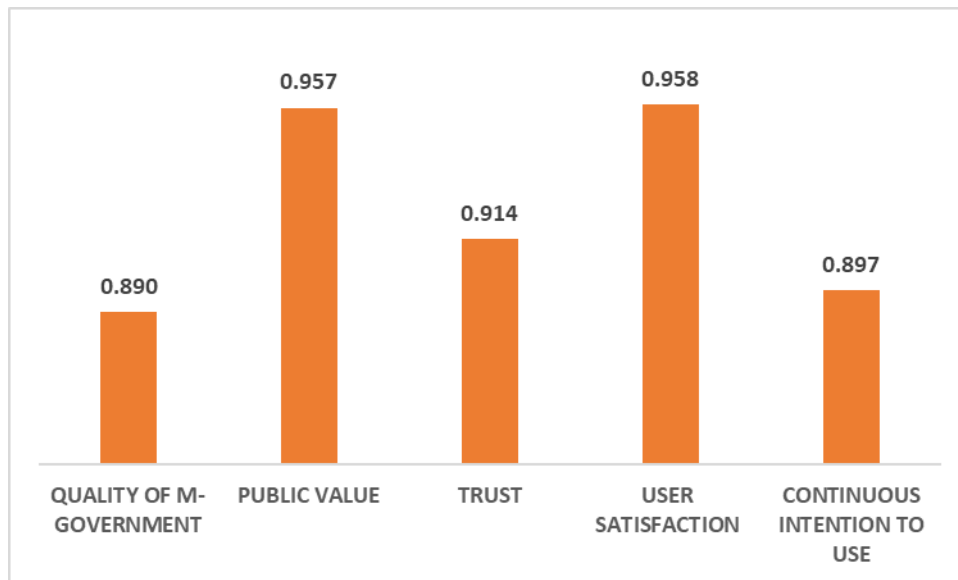


Fig. 1 - Ranking of M-government groups

From figure 1, shows that user satisfaction group is the leading group followed by public value then trust group, continuous intention to use and finally the quality of M-government group. This indicates that for M-government services to enhance its usage of the services the main priority should be given to user satisfaction.

5. Conclusion

This paper has demonstrated a study on factors contributing or influencing the continuous usage of M-government services in UAE police department. The study had identified 43 factors and clustered in to five categories. The data collected from the questionnaire survey was analysed for its reliability and normality and found that the data was reliable and achieved normality criteria. The data was further used for ranking of the factors based on its importance toward the continuous usage of M-government. It was found that that for Quality of M-Government group, the most significant factor is QG3 which is *M-government system provides up-to-date information*. In Public Value group, the most influence factor is PV9 which is *Using the M-government increases the government accountability*; In Trust group the most influence factor is T5 which is *feel comfortable interacting with the M-government system since it generally fulfils its duties efficiently*; In User Satisfaction group the most influence factor is US7 which is *satisfied with the service received from the M-government*; In Continuous Intention to Use group the most influence factor is CIU9 which is *recommend others to use in the future*. In term of group ranking, it was found that user satisfaction group leads other groups then followed by public value then trust group, continuous intention to use and finally the quality of M-government group. This indicates that for M-government services to enhance its usage of the services the main priority should be given to user satisfaction.

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