SYSTEMATIC ANALYSIS OF USER ACCEPTANCE OF E-GOVERNANCE MOBILE APPLICATION IN SULTANATE OF OMAN

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ABSTRACT

Mobile Applications are considered as a very useful application of E-Governance to connect Government with citizens to and use the government applications. In Oman there are total 1.3 million cars in Oman and 1333077 licensed drivers. The users are using ROP Mobile Application to access the information about Traffic Services, nearby police stations, ROP News etc. The purpose of this study is to investigate the acceptability of ROP Mobile Application as an E-Governance application among users. The questionnaire has been created using Google forms and electronically distributed send to the 216 users selected randomly for data collection. The questionnaire consists of 22 survey questions, 5 demographic statements, and 1question related with the use of Mobile App. Data were collected from 179 respondent and 164 are valid responses. The response rate is around 85%. The structural equation modeling (SEM) technique was used to evaluate the causal model and to examine the reliability and validity of the measurement model. The variables used in this study are perceived ease of use, perceived usefulness, Information Quality, Information System Quality, Attitude, Behavior Intention . The seven hypotheses have been tested. The implications of the research have also been discussed.

Keywords: ROP Mobile Application, E-Government, SMS's (Short Message Services), Structural Equation Modeling (SEM), Google Forms.

INTRODUCTION

E-government is simply the use of information and communications technology, for example, The Internet, to improve the processes of government.   E-government might seem to be little more than an effort to expand the market of e-commerce from business to government. Surely there is some truth in this. E-commerce is marketing and sales via the Internet. Since governmental institutions take part in marketing and sales activities, both as buyers and sellers, it is not inconsistent to speak of e-government applications of e-commerce. Governments do after all conduct business.(Chadwick & May, 2003). Successful implementation of the e-government will be more often in the agenda to reduce the cost of the local and national governments and improve the services and user's satisfaction (Warkentin, Gefen, Pavlou, & Rose, 2002). Therefore, it is important to understand the needs of the entrepreneurs as a group of potential e-government (ROP mobile app) users and also help to reduce the administrative burdens of the enterprises.Citizen adoption of e-government services is an important issue for the success of e-government initiatives (Ozkan & Kanat, 2011). The center undertaking of government is administration, the activity of managing society, not showcasing and deals. In present day vote based systems, duty and power for control is partitioned up and shared around the authoritative, official and legal branches of government. Streamlining to some degree, the lawmaking body is in charge of making strategy as laws, the official for executing the approach and law authorization, and the legal for settling legitimate clashes. E-government is tied in with enhancing crafted by these branches of government. The Sultanate of Oman government has taken good initiative in using ICT in order to meet its goals and objectives and to provide structured services to all its stakeholders. Most of the large and international organizations in Oman have effective computer systems to efficiently conduct their business. A number of large organizations have spent huge amounts of money on installing computer systems to support their business processes (Parker & Castleman, 2007).With the advancement of the Internet and supporting information and communication technologies, e-government has emerged as an effective means of delivering government services to citizens. In the recent past, e-government has become popular in many developing countries. Most notably are the Middle Eastern countries that have continued to invest significantly into e-government initiatives in the last five years. The purpose of this article is to highlight e-government initiatives in Oman.

LITERATURE REVIEW

All over the world peoples are moving towards the use of smart phones from the traditional phones. Most of the country is going digital and by providing location based services to the citizens through smart mobile devices to enhance the quality of E-government services.(Albesher & Stone, 2016; Faisal & Talib, 2016) The important factors of the acceptance of the M-Government technologies are: a) wider acceptance of these technologies by the public sector b) M-Government services are cheaper than computer-based services c) Increase of penetration of mobile devices d) Ease of use for citizens e) Easier interoperability (ITU, OECD; 2011).The M-Government may be considered as an alternative to the existing laptop or desktop based E-Government services.Due to the high penetration of mobile technologies and mobile devices the use of M-Government has been increasing rapidly (Albesher & Stone, 2016). In developing countries, where the penetration of mobile growth is high, they could significantly increase the use of E-Government (Abanumy, Al-Badi, & Mayhew, 2005). (Susanto & Aljoza, 2015)discussed the dimensions of Perceived Ease of Use (PEOU), Perceived Usefulness (PU), and greater mattered aspects of one's decision of using e-government services. . Time, money and energy could be saved simply by making an individual see how useful it is to use an e-government service. An individual's perception on web navigation and whether he/she is able to use it anytime and anywhere depends on the dimensions of Perceived Ease of Use (PEU) of an online public service. Also, the intentions of an individual on whether to use an e-government service are affected by trust and social influence. Factors in designing, developing, managing a d promoting the e-government services should be welcomed and adopted by the government and e-government professionals. (Alshehri et al., 2012) altered UTAUT model on how accepting the user can be and use of e-government in KSA. (Colesca, 2009) states that all the government around the world are using technology or information system to achievetheir goal or government activity.

TECHNOLOGY ACCEPTANCE MODEL (TAM)

Many researches use TAM as a framework to predict and explain a variety of human behaviors in the IT adoption context (Ajzen & Fishbein, 1980; Hu, Chau, Sheng, & Tam, 1999). TAM theorizes that causal linkages flow in a sequence of beliefs, attitudes, intentions, and behaviors. To examine an individual's actual system use, most studies focus on factors affecting the individual's intentions of system acceptance (Gefen, Karahanna, & Straub, 2003).

A general model of TAM is shown in Fig. 1. Prior research suggests that perceived usefulness (PU) and perceived ease of use (PEOU) are two major influential emotional beliefs that determine a user's IT acceptance. (Davis, 1989)defined perceived usefulness as "the degree to which a person believes that using a particular system would enhance his or her job performance" and perceived ease of use as "the degree to which a person believes that using a particular system would be free of effort" (Venkatesh & Davis, 2000).
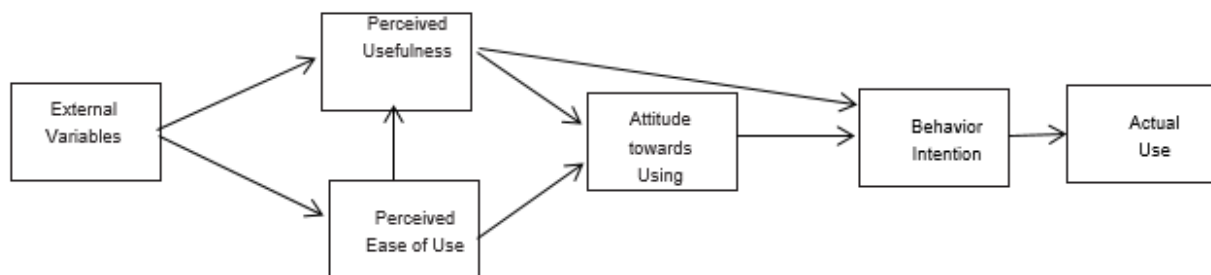
Figure 1: Technology Acceptance Model (Davis, 1989)

This study examines the validity of TAM in the e-Government setting in Oman and focuses on how Citizens behave differently, and exhibit different levels of acceptance, than other Mobile App user users. Information and communications technologies (ICTs) are playing an increasingly vital role in the daily life.(Taylor & Todd, 1995).(Larsen & Rainie, 2002)suggested that e-Government services include information for research, government forms and services, public policy information, employment and business opportunities, voting information, tax filing, license registration, or renewal, payment of fines, and submission of comments to government officials. However, the successful operation of e-Government does not depend on the technology, but rather on the people (Wang & Liao, 2008).

RESEARCH HYPOTHESES AND MODEL

TAM asserts that intentions to perform behavior determine actual behavior. Intention itself represents an individual's attitude toward the behavior. The TAM indicates that both perceived usefulness (PU) and perceived ease of use (PEOU) are key, independent variables that can determine or influence potential user' attitudes (ATT) toward behavioral intention (BI).(Davis, 1989) called for further research to consider the role of additional external variables that influence PU and PEOU. Two important external variables – information systems quality (ISQ) and information quality (IQ) – have been consistently found to be influential factors that affect the perceived usefulness and ease of use of IT. According to (Ajzen & Fishbein, 1975), attitude and the subjective norms are important factors on the behavioral intention formation, a proposition that is supported by TAM. Users with a more positive attitude toward IT are likely to be more satisfied with system and view it as more useful (Ajzen & Fishbein, 1975) (Heeks, 2006). Therefore, user attitude is hypothesized to positively affect perceived usefulness andbehavioral intention.(DeLone & McLean, 1992)(Delone & McLean, 2003) defined information system quality as quality manifested in a system's overall performance and measured by individuals' perceptions. Because citizens are faceless in e-Government interactions, the information system's quality becomes the "online storefront" upon which first impressions are formed. If a citizen perceives an e-Government system to be of high quality, that citizen will be more likely to use internet systems to submit applications or access other e-Government services online (Wang & Liao, 2008). Information quality (IQ), as assessed by citizens, usually influences their satisfaction and perceived usefulness (Moon & Kim, 2001; Aggelidid & Chatzoglou, 2008).
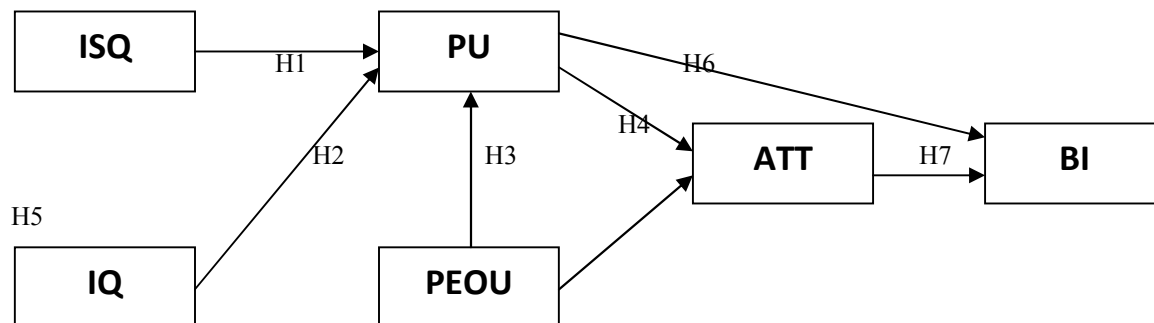
Figure 2: The Research Model

The Mobile application of Royal Oman Police, Oman promises to enhance the delivery of public services and information by redefining the traditional concept.. Based on the technology acceptance model (TAM) theory (Lederer et al., 2000; Lin & Lu, 2000), this study presents the following hypotheses:

H1. The information systems quality of ROP Mobile App systems positively affects the perceived usefulness of using the internet in submitting application forms online.

H2. The information quality of ROP Mobile App filing systems positively affects the perceived usefulness of using the internet.

H3. The perceived ease of use of ROP Mobile App systems positively affects the perceived usefulness of using the internet to fill out applications.

H4. The perceived usefulness of using ROP Mobile App has a positive effect on user attitudes regarding use of the internet.

H5. The perceived ease of use of ROP Mobile App has a positive effect on user attitudes toward the use of e-Government systems.

H6. The perceived usefulness of the ROP Mobile App services has a positive effect on user behavior intentions.

H7. User attitude on using the ROP Mobile App positively affects behavior intentions**.**

SAMPLE DEMOGRAPHICS

The goal of this study was to apply and evaluate the TAM in using internet banking. In this study, e-survey was used to collect the data. In many studies where e-surveys are used, the number of internet users is taken into account when determining the size of the sample (***Couper, 2000***).

Education

Others 8.9%	
Master's or Higher 14.4%	Bachelor 31.7%
Diploma 45%	45%
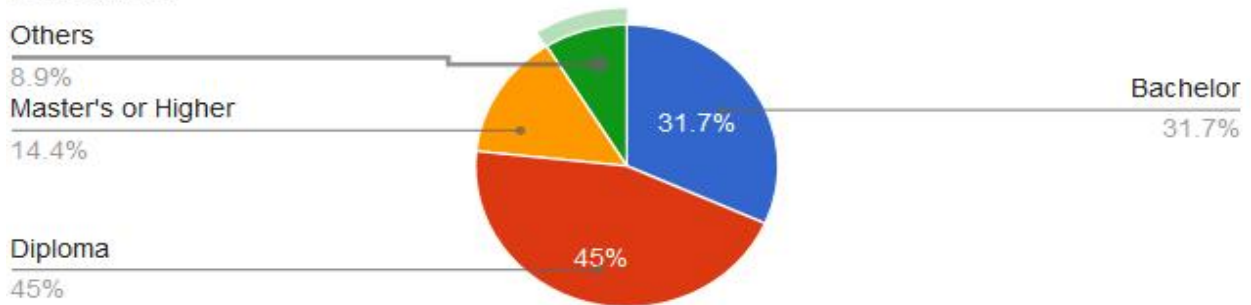
This fig shows that 45% diploma educated , 31.7% bachelor , 14.4% master our higher and 8.9% others.

Gender

Male 49.7%   49.7%   50.3%   Female 50.3%
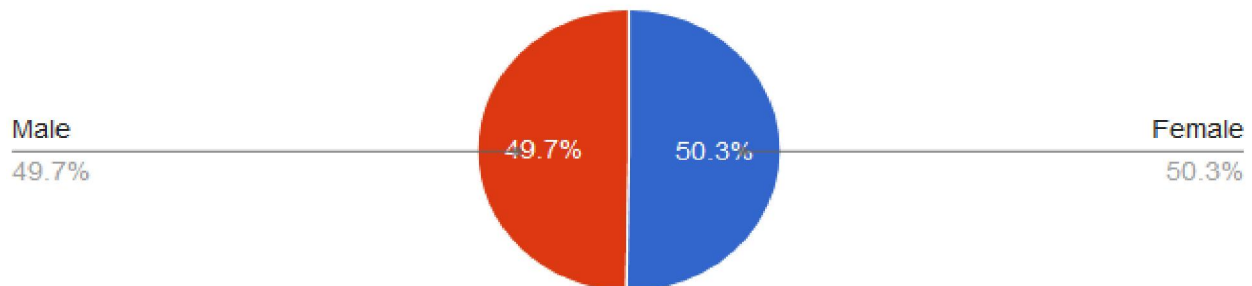
This fig shows that 49.7% male & 50.3% female.

Age

More than 30 years
16.1%
Less than 20 years
7.8%

16.1%

76.1%

Between 20 & 30 years
76.1%
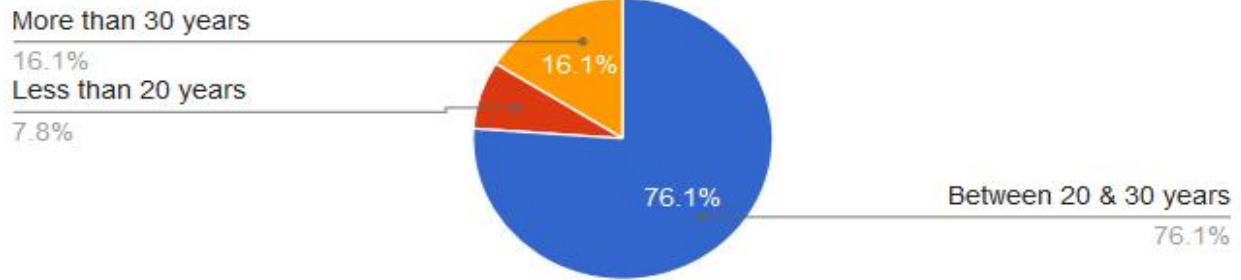
This fig shows the Ags of the pepole who give the data.

Occupation

Business Sector
8.9%
Government Employee
12.2%
Others
15%

Student
63.9%

63.9%

15%
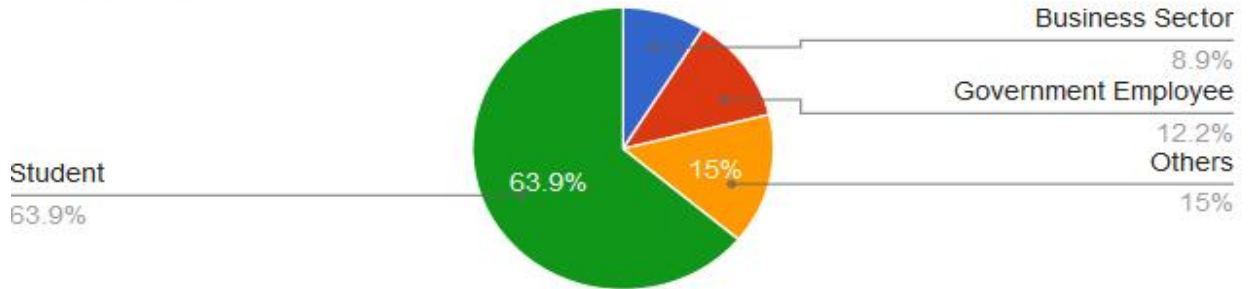
This fig shows the occupation of the respondents.

How many times did you use Mobile Application per week

More than 5 times
46.1%

46.1%

38.9%

15%

0-2 times
38.9%

3-5 times
15%
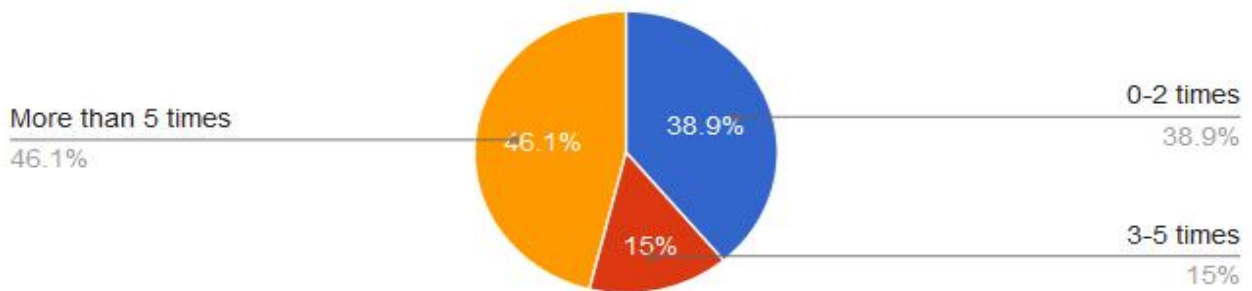
This fig shows the number of times an user is using application

DATA ANALYSIS AND RESULTS

Descriptive Statistics of the seven (7) constructs are shown in Table 1.The standard deviation of all the constructs are ranging from .775 to 1.09, and all the means above 3.0.

Factors	Constructs	N	Minimum	Maximum	Mean	Std. Deviation	Variance
Attitude Towards using	ATT1	179	1	5	3.60	.951	.905
	ATT2	179	1	5	3.36	.853	.727
	ATT3	179	1	5	3.47	1.002	1.003
Perceived Usefulness	PU1	178	1	5	3.04	.862	.744
	PU2	179	1	5	3.17	.813	.661
	PU3	175	1	5	3.34	.914	.836
Perceived ease of Use	PEOU1	176	1	5	3.34	.886	.784
	PEOU2	176	1	5	3.43	1.000	1.000
	PEOU3	175	1	5	3.18	.838	.702
	PEOU4	175	1	5	3.37	.961	.923
Information System Quality	ISQ1	174	1	5	3.29	.900	.810
	ISQ2	175	1	5	3.39	.896	.803
	ISQ3	174	1	5	3.53	1.090	1.187
	ISQ4	174	1	5	3.34	.870	.757
Information Quality	IQ1	174	1	5	3.26	.898	.806
	IQ2	174	1	5	3.22	.992	.984
	IQ3	173	1	5	3.14	.775	.601
	IQ4	174	1	5	3.24	.802	.644
	IQ5	174	1	5	3.25	.861	.742
Behavioral Intention to use	BI1	172	1	5	3.25	.906	.820
	BI2	175	1	5	3.20	.858	.736
	BI3	173	1	5	3.40	1.016	1.033
Valid N (list wise)		164					

Table 1. Descriptive Statistics

Construct validity and reliability have been tested to ensure the consistency and reliability of the results. Table 2 shows the reliability statistics in which the cronbach's alpha is .934 which shows that our constructs are highly reliable.

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.933	.934	22

Table 2: Reliability Statistics

The following table 3 shows the item total statistics.

Table 3. Reliability Statistics

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
ATT1	69.17	154.142	.515	.466	.932
ATT2	69.39	153.798	.590	.589	.931
ATT3	69.30	153.094	.524	.535	.932
PU1	69.73	155.256	.541	.439	.931
PU2	69.56	156.800	.499	.456	.932

PU3	69.38	153.280	.578	.459	.931
PEOU1	69.45	152.789	.631	.525	.930
PEOU2	69.32	150.797	.621	.524	.930
PEOU3	69.59	153.545	.627	.503	.930
PEOU4	69.38	151.539	.624	.567	.930
ISQ1	69.48	153.110	.594	.486	.930
ISQ2	69.38	152.089	.649	.524	.930
ISQ3	69.26	148.931	.644	.539	.930
ISQ4	69.44	153.892	.587	.454	.931
IQ1	69.52	152.091	.652	.630	.930
IQ2	69.55	153.145	.528	.570	.932
IQ3	69.60	153.959	.644	.694	.930
IQ4	69.54	153.416	.663	.661	.930
IQ5	69.51	153.601	.593	.475	.930
BI1	69.51	152.165	.629	.635	.930
BI2	69.57	151.633	.699	.629	.929
BI3	69.37	149.683	.662	.570	.929

The following Table 4 shows the relationship between factors. The table shows that the coreelation between ATT, PU, PEOU,ISQ, IQ and BI are positive and significant.

Table 4. Correlation Analysis							
Correlations							
		ATT	PU	PEOU	ISQ	IQ	BI
ATT	Pearson Correlation	1	.500**	.559**	.511**	.411**	.507**
	Sig. (2-tailed)		.000	.000	.000	.000	.000
	N	179	179	178	175	175	175
PU	Pearson Correlation	.500**	1	.597**	.539**	.574**	.534**
	Sig. (2-tailed)	.000		.000	.000	.000	.000
	N	179	179	178	175	175	175
PEOU	Pearson Correlation	.559**	.597**	1	.667**	.635**	.692**
	Sig. (2-tailed)	.000	.000		.000	.000	.000
	N	178	178	178	175	175	175
ISQ	Pearson Correlation	.511**	.539**	.667**	1	.663**	.665**
	Sig. (2-tailed)	.000	.000	.000		.000	.000
	N	175	175	175	175	175	174
IQ	Pearson Correlation	.411**	.574**	.635**	.663**	1	.622**
	Sig. (2-tailed)	.000	.000	.000	.000		.000
	N	175	175	175	175	175	174
BI	Pearson Correlation	.507**	.534**	.692**	.665**	.622**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	175	175	175	174	174	175

REGRESSION RESULTS OF HYPOTHESIS TESTING

H1. The information systems quality of ROP Mobile App systems positively affects the perceived usefulness of using the internet in submitting application forms online.

H2. The information quality of ROP Mobile App filing systems positively affects the perceived usefulness of using the internet.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.612[a]	.375	.367	.53804

a. Predictors: (Constant), IQ, ISQ

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	29.816	2	14.908	51.498	.000[b]
1	Residual	49.792	172	.289		
	Total	79.609	174			

a. Dependent Variable: PU

b. Predictors: (Constant), IQ, ISQ

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics
		B	Std. Error	Beta			Tolerance
	(Constant)	1.076	.215		5.017	.000	
1	ISQ	.265	.075	.283	3.520	.001	.561
	IQ	.383	.080	.386	4.795	.000	.561

H3. The perceived ease of use of ROP Mobile App systems positively affects the perceived usefulness of using the internet to fill out applications

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.597[a]	.357	.353	.54686

a. Predictors: (Constant), PEOU

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	29.223	1	29.223	97.717	.000[b]
1	Residual	52.635	176	.299		
	Total	81.858	177			

a. Dependent Variable: PU

b. Predictors: (Constant), PEOU

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics
		B	Std. Error	Beta			Tolerance
1	(Constant)	1.274	.199		6.403	.000	
	PEOU	.579	.059	.597	9.885	.000	1.000

H4. The perceived usefulness of using ROP Mobile App has a positive effect on user attitudes regarding use of the internet.

H5. The perceived ease of use of ROP Mobile App has a positive effect on user attitudes toward the use of e-Government systems.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.598[a]	.358	.350	.63472

a. Predictors: (Constant), PU, PEOU

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	39.256	2	19.628	48.721	.000[b]
	Residual	70.502	175	.403		
	Total	109.758	177			

a. Dependent Variable: ATT
b. Predictors: (Constant), PU, PEOU

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics
		B	Std. Error	Beta			Tolerance
1	(Constant)	1.004	.256		3.917	.000	
	PEOU	.450	.085	.401	5.304	.000	.643
	PU	.307	.087	.265	3.506	.001	.643

H6. The perceived usefulness of the ROP Mobile App services has a positive effect on user behavior intentions.
H7. User attitude on using the ROP Mobile App positively affects behavior intentions.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.601[a]	.362	.354	.62723

a. Predictors: (Constant), ATT, PU

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	38.348	2	19.174	48.737	.000[b]
	Residual	67.668	172	.393		
	Total	106.015	174			

a. Dependent Variable: BI
b. Predictors: (Constant), ATT, PU

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics
		B	Std. Error	Beta			Tolerance
1	(Constant)	.809	.255		3.168	.002	
	PU	.429	.081	.373	5.300	.000	.748
	ATT	.315	.069	.320	4.538	.000	.748

SUMMARY OF HYPOTHESIS TESTING

Hypothesis	Specification	Result
H1	The information systems quality of ROP Mobile App system positively affects the perceived usefulness of using the internet in submitting application forms online	Supported (R=.612, R^2=.375 β = .265, p < .001)
H2	The information quality of ROP Mobile App filing system positively affects the perceived usefulness of using the internet	Supported (R=.612, R^2=.375 β = .383 , p < .001)
H3	The perceived ease of use of ROP Mobile App system positively affects the perceived usefulness of using the internet to fill out applications	Supported (R=.597, R^2=.357 β = .597 , p < .001
H4	The perceived usefulness of using ROP Mobile App has a positive effect on user attitudes regarding use of the internet.	Supported (R=.598 R^2=.358 β = .265 , p < .001
H5	The perceived ease of use of ROP Mobile App has a positive effect on user attitudes toward the use of e-Government systems	Supported (R=.598 R^2=.358 β = .265 , p < .001
H6	The perceived usefulness of the ROP Mobile App services has a positive effect on user behavior intentions	Supported (R=.362, R^2=.354 β = .320, p < .001)
H7	Attitude on using the ROP Mobile App positively affects behavior intentions	Supported (R=.362, R^2=.354 β = .320, p < .001)

CONCLUSION

This paper presents the finding obtained from the data analysis of the survey that was collected to examine the intention to use ROP E-government application. It is observed that all the independent variables used in the research significantly influenced the respective dependent variables.

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