

# User Acceptance of E-Governance: An Indian Perspective

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**Abstract**—Development of a nation can be measured by the steps it has taken to promote the applications of Information and Communication Technology (ICT). E-government initiatives by the government are trying to integrate the applications of ICT to deliver cost effective services to the stake holders in a transparent and efficient manner. The mode of governance is rapidly changing in India due to the revolutionary nature of ICT. This paper analyse the influence of demographic variables specifically gender, region, age and past internet experience on intention to use e-governance. The result reveals that urban respondents show more intention to use e-government services than rural, but Gender has no significant influence. Also respondents having more internet experience show significant influence on intention to use e-government services. It is further found that a greater number or individuals are willing to change over with the enhancement of service quality with high speed un interrupted services.

**Keywords**—Intention to Use, Gender, Region, Age, Internet usage experience.

## I. INTRODUCTION

E-governance is a process of reform in the way government of a country work, share information and deliver services to external and internal clients (Bhatnagar, 2002). E-governments harness information technologies such as Wide Area Networks, internet, and mobile computing, to transform relations with citizens, businesses, and other arms of government. It is reported that that the citizens are benefiting from a more advanced e-service delivery, better access to information, more efficient government management, and improved interactions with various departments of state, primarily as a result of increasing use of ICT (Information and Communication Technologies) (The United Nations e-government, 2010 ). Moon and Norris(2005) defined e-governance as means of delivering government information and service to the public more transparently.

E-Governance uses application of ICT for delivering and integration of various Government services and systems between Government to citizen (G2C),Government to Business(G2B),Government to Government(G2G) and Government to Employees(G2E) (Carter and Belanger, 2003; Tan et al., 2005).Lee et al. (2005) described e-Government is mainly used for building better government-to-citizen (G2C) relations for government services, similar to the function of Customer Relationship Management (CRM) in the business sector. Lam, W., 2005, in his study “Barriers to e-government integration” reports an e-government service provides greater efficiency, accountability, transparency and citizen

empowerment. Hence it is highly relevant to concentrate the study on G2C services and how the demographic variables contribute to the user acceptance of e-governance services.

## II. REVIEW OF LITERATURE

Various researches emphasized that e-governance acceptance is more than a technological matter; it is influenced by many factors such as organizational, human, economic, social, and cultural issues. Sharma (2015) developed a model establishing relationship between service quality, demographic variables, and the willingness to use e-government services in Oman. He showed that eventhough service quality dimensions namely reliability, security, efficiency and responsiveness were the key determinants influencing willingness to use, age and education level of respondents also showed a statistically significant relationship with willingness to use e-government services and noted that user profile is an important field of information technology for understanding user’s behaviour.

Venkatesh et.al. (2014) analysed the effect of gender on the adoption of Internet technologies. The authors have shown the relationship of education and personality traits with the use of e-government portal in rural India.

Regarding technology adoption, age, gender, region and internet experience are important factors related to learning and accepting new technology; older people are found to be more likely to face difficulty in learning to use new technologies than their younger counterparts. The moderating role of demographic characteristics of individuals such as age, experience, gender, education, and voluntariness of use of technology has been explored in B2C e-commerce (Venkatesh, Morris, Davis, & Davis, 2003). A study in Turkey found that gender difference were huge in terms of perceived acceptance of internet and e-government and concluded that gender gap existed in accessing e-governance services (Akman, Yazici, Mishra, & Arifogulu, 2005).The situation may not be same in other places as cultural tendencies can lead to different communication styles by men and women. It is reported that there is consensus in the e-government literature that those with higher education and higher income are more likely to use e-government information and services (Dimitrova& Chen, 2006). It is noted that users’ computer self-efficacy and experience of the internet affects their intention to use (Tung &Rieck, 2005; Moon & Norris, 2005).

### Intention to use e-government services

Intention is a measure of one's urge to perform a specified behaviour. According to intention-based theories, user adoption and user behaviour are determined by the intention to use. It is a kind of 'self prediction' or 'behavioural expectation' indicated as one of the most accurate predictors available for an individual's future behavior (Davis F. D.,1989). Many previous studies considered the intention to use as a measure of user acceptance of technology and identified the predictors of user's intention through combinations of various technology acceptance models, especially in e-governance research (Carter & Belanger, 2003; Horst, Kuttschreuter, and Gutteling, 2007). In this study Intention to use is selected as the dependent variable for analyzing the influence of demographic variables.

The role of demographic characteristics in e-government adoption is to be substantiated theoretically and empirically. This study aims to bridge this gap by identifying the difference and similarities with respect to gender, Urban-Rural divide of the respondents on intention to use e-government services.

### III. NEED FOR THE STUDY

E-governance plays a major role in the development of the state and its success depends on adoption of the services by the citizens. In Kerala, even though the first IT Park and first electronic enterprise has started in 2008 the adaption of e-services among the public is poor and is only 1.4 percentages in 2016-17. (*Performance Report of Dept of IT, Government of Kerala, 2018*). Hence it is highly significant to identify the factors influencing the adaption of e-government services in Kerala. Various studies in the field of Information Technology (IT) and IT enabled services like e-governance focuses the role of demographic variables and internet usage period, it mainly concentrate on developed countries with little focus on developing countries like India and particularly in Kerala. The study investigates the relationship between User acceptance of e-governance and various demographic variables viz Gender, region, Educational qualifications and Internet usage period.

### IV. OBJECTIVES OF THE STUDY

The main objective of the study is to examine the influence of various demographic variables, specifically Gender, Region, Age and Internet usage period on intention to use e-government services. The study also aims to explore the influence of the combined effect of gender and region on intention to use e-government services.

### V. HYPOTHESIS FOR THE STUDY

For finding the answers to the above objectives, the following hypotheses were formulated.

Hypothesis 1 ( $H_0$  1): Respondents belonging to different gender and region would remain homogenous on their scores on Intention to use e-government services.

The above hypothesis can be further divided as

$H_0$  1.1: Respondents belonging to different gender would remain homogenous on their scores on Intention to use e-government services.

$H_0$  1.2: Respondents belonging to different region would remain homogenous on their scores on Intention to use e-government services.

$H_0$  1.3: Respondents belonging to different gender and region would remain homogenous on their scores on Intention to use e-government services.

Hypothesis 2( $H_0$ 2): Respondents belonging to different age groups would remain homogeneous on their scores on Intention to use e-government services.

Hypothesis 3 ( $H_0$  3): Respondents having different internet usage experience would remain homogeneous on their scores on Intention to use e-government services.

### VI. RESEARCH METHOD

National e-governance policy, Government of India envisages e-governance as one of the major component in smart city implementation. Among the 100 cities identified for the implementation of smart city project in India, Trivandrum and Ernakulum are the two cities selected in Kerala. Hence it has been decided to select samples from these districts in order to assess the acceptance of e-governance and to compare with the rural and urban divide.

There are 124 villages in rural area and 13 municipalities & a corporation in urban area in Ernakulum district ([www.ernakulam.gov.in](http://www.ernakulam.gov.in)). Similarly there are 120 villages in rural area and 6 municipalities & a corporation in urban area in Trivandrum district ([www.trivandrum.gov.in](http://www.trivandrum.gov.in)).

In Ernakulum district, 10 villages from rural area and 3 municipalities & 7 corporation wards from urban area were selected through lottery method. Similarly 10 villages in rural and 2 municipalities & 10 wards from urban area were identified for collection of data from Trivandrum. The sample size was arrived at using the Krejcie and Morgan's formula. The maximum sample size required as per Krejcie and Morgan's table is 384 at 95% confidence level. Multistage sampling method has been used for administering the questionnaire. A total of 425 respondents were selected to be included in the sample and 398 questionnaires were used for final analysis after discarding the incomplete samples.

The measurement scale "Intention to Use" used for the study is adopted from the Technology Acceptance scale by Davis, 1989. Likert rating scale was used for measuring construct. The scale uses a five point rating from "1" to "5", where "5" represents "Strongly Agree" and "1" represents "Strongly Disagree".

In the demographic variable respondents belonging to age group of 18-30 years is grouped as "Youth", 31-60 years is grouped as "Middle aged" and above 60 years of age is classified as "Old aged". Similarly respondents having less than one year of internet using experience is classified as "less internet experience" and more than one year is classified as "More internet experience"

VII. ANALYSIS AND INTERPRETATION

**Hypothesis 1:** Respondents belonging to different gender and region would remain homogenous on their scores on Intention to use e-government services.

The male and female respondents belonging to urban and rural are exposed to different conditions with respect to internet resources and other facilitating condition including availability of personal computers. In order to assess whether the male and female respondents belonging to rural and urban regions would remain homogenous on their scores on Intention to use e-government services and to test the hypothesis “Respondents belonging to different gender and region would remain homogenous on their scores on Intention to use e-government services”, 2x2 ANOVA has been worked out and the result is tabled as Table 1.1 and Table 1.2.

TABLE 1.1: F-ratio showing the levels of Gender and Region on Intention to Use e-government services

Source of variation	Sum of squares	df	Mean square	F	P-value
Between Genders	0.276	1	0.276	1.136	0.287
Between Regions	197.67	1	197.67	812.916	0.02
Interaction between gender and Region	6.32	1	6.32	24.808	0.0
Error	95.805	394	0.243		
Corrected Total	301.81				

TABLE 1.2: Showing the mean and SD of Intention to use

Dimension	N	Mean	SD
Male*Rural	103	2.993	0.6009
Male*Urban	91	4.156	0.2761
Female*Rural	108	2.6907	0.6326
Female*Urban	96	4.350	0.3125
Rural	211	2.8370	0.6339
Urban	187	4.2556	0.3102
Male	194	4.0262	0.7292
Female	204	4.0293	0.6249

The above hypothesis have made more specific and divided into three as  $H_{01.1}$ ,  $H_{01.2}$ , and  $H_{01.3}$ .

$H_{01.1}$ : Respondents belonging to different gender would remain homogenous on their scores on Intention to use e-government services.

The result (Table 1.1) revealed that  $F(1, 1.136) = 0.287$ ,  $p > 0.05$ , the calculated value did not achieve the level of statistical significance at 0.05 confidence level. Hence, the null hypothesis,  $H_{01.1}$  is accepted. It may be concluded that the male and female respondents does not have significant difference on Intention to use e-government services.

Table 1.2 shows that both mean and standard deviation of male and female respondents shows high positive association towards intention to use e-government system since both scored high on Intention to use.

$H_{01.2}$ : Respondents belonging to different region would remain homogenous on their scores on Intention to use e-government services.

Table 1.1 shows that  $F(1, 812.96) = 0.00$ ,  $p < 0.05$ , has achieve the level of statistical significance at 0.05 confidence level. Hence the null hypothesis  $H_{01.2}$  is rejected. The alternate hypothesis “Respondents belonging to different

region would differ on their scores on intention to use e-government services” is accepted. This shows that there is significant influence on urban and rural divide on user acceptance e-government services. By observing mean and standard deviation in Table 1.2 it can be identified that urban respondents scored high on intention to use e-government services compared to the rural respondents.

$H_{01.3}$ : Respondents belonging to different gender and region would remain homogenous on their scores on Intention to use e-government services.

Table 1.1 shows that  $F(1,812) = 0.02$ ,  $p < 0.05$ , has achieve the level of statistical significance at 0.05 confidence level. Hence the null hypothesis  $H_{01.3}$  is rejected. The alternate hypothesis “respondents belonging to different gender and region would differ on their scores on intention to use e-government services” is accepted. By observing Table 1.3 it can be identified, those male respondents belonging to urban region scored high compared to the male respondents belonging to the rural region. Similarly the female respondents belonging to urban region scored high compared to the female respondents belonging to the rural region.

TABLE 1.3: Showing the mean of Gender and region

Gender	Region	Mean	Std. Error	95% Confidence Interval	
				Lower Bound	Upper Bound
Male	Rural	2.990	.049	2.895	3.086
	Urban	4.156	.052	4.054	4.258
Female	Rural	2.691	.047	2.597	2.784
	Urban	4.350	.050	4.251	4.449

**Hypothesis 2 ( $H_0 2$ ):** Respondents belonging to different age groups would remain homogeneous on their scores on Intention to use e-government services.

In order to test the null hypothesis ( $H_0 2$ ) that “There is no association between the age of the respondents and their Intention to use e-government services” One way ANOVA has been worked out (Table 2.1). Table 2.1 shows that the F-ratios relating to all the three effects have achieved statistical significance at 0.05 confidence level. Hence, the null hypothesis formulated was rejected.

TABLE 2.1: Showing the F-value of Age category

Source	Mean Square	df	F-Value	p-Value
Corrected Model	3.231	2	7.204	0.001
AgeGroup	8860.179	1	19755.020	0.000
Error	3.231	2	7.204	0.001
Total	0.449	544		

A significant F-value, in the case of independent variables that have more than two levels has to be followed up by running a post hoc test. Tukey’s HSD has been worked out to identify the mean differences among the various age groups namely youth, Middle aged and old aged people.

Table 2.2 shows that the mean difference in the scores of Youth and Middle aged people are not statistically significant on Intention to use e-government services. Hence it can be concluded that youth in the age group of 18-30 years is homogenous with middle aged people in the age group 31-60 years of age on user acceptance of e-governance. But it can be

identified that the mean difference in scores between youth and old aged people has achieved statistical significance on Intention to use e-government services.

TABLE 2.2: Showing the Post Hoc Test of different age groups on Intention to Use government services

Test	(I) Respondants Age Group	(J) Respondants Age Group	Mean Difference (I-J)	Sig.
Tukey HSD	Youth	Middle aged	.1456	.093
		Old aged	.2633	.001
	Middle aged	Youth	-.1456	.093
		Old Aged	.1176	.226
	Old aged	Youth	-.2633*	.001
		Middle aged	-.1176	.226

**Hypothesis 3 (H<sub>0</sub> 3):** Respondents having different internet usage experience would remain homogeneous on their scores on Intention to use e-government services.

The influence of internet experience in predicting the intention to use the e-Government services is measured using independent t-test (Table 3.1). Table 3.1 shows that p-values have achieved the level of statistical significance at 0.05 confidence level. Hence the null hypothesis H<sub>0</sub> 3 is rejected. The alternate hypothesis “Respondents having different internet usage experience would differ on their scores on Intention to use e-government services” is accepted.

TABLE 3.1: Comparison between Internet usage experience and Intention to Use e-government service

		Levene's Test for Equality of Variances		t-test for equality of means		
		F	Sig	t	df	Sig (2-tailed)
Intention to Use	Equal variance assumed	143.662	0.000	-10.702	396	0.000
	Equal variance assumed	-11.5939	0.000	-11.593	324.692	0.000

Further by observing mean and standard deviation in Table 3.2 it can be identified that more internet experienced respondents scored high on intention to use e-government services compared to the less experienced.

TABLE 3.2: Showing the Mean and standard deviation

Intention to use	Internetexperience	N	Mean	Std.Deviation
	Less	223	3.138	0.953
	More	175	3.969	0.431

VIII. MAJOR FINDINGS

- Intention to use e-government services is influenced by urban and rural divide. Urban Respondents shows more intention than rural respondents in availing e-government services.
- Gender has no significance in predicting the intention to use e-government service. Both male and female respondents show high positive intention.
- Intention to use e-government services is influenced by the combined effect of Gender and region. Male and female respondents of urban region show more interest on

Intention to use e-government services than those of rural region.

- Age has significant influence on intention to use e-government services. Youth and middle aged people do not differ in user acceptance, whereas old aged people finds it difficult to use e-government service adoption. This may be because of the reason that youth and middle aged people are more interested and comfortable to use online system than old aged people.
- Intention to use e-government services is strongly influenced by the previous internet usage experience of the respondents. Respondents with more internet usage experience show more intention for using e-government services.

IX. SUGGESTIONS

The ultimate purpose of implementing e-governance is to provide government services in a transparent and affordable way to the citizens at any time and from anywhere. The study suggests that the rural citizens are still not able to utilize the e-government services compared to urban citizens. This may be due to lack of awareness and internet resources compared to urban. Government agencies should promote more intermediaries like Akshaya Centers in rural in order to improve the usage of e-governance. Also Government agencies shall provide more advertisement through media in order to make rural citizens more aware of the benefits of using e-government system. More training on internet usage has to be provided especially to the rural people in order to familiarize with the various services and method of usage of e-government services through self service portal. The demand on e-Government services is much lower among people who are having less internet usage experience. Government should make available the internet resources like personal computer and unlimited high speed internet connectivity at affordable cost to the rural people also.

X. CONCLUSION

E-governance can create great impact among the minds of the citizens in interacting with government services, if the government focuses on well defined strategies for implementing and maximizing the usage of the system. The paper analyses the impact of demographic variables like Gender, Region, Age and previous internet experience. Urban and rural divide has significant difference due to the scarcity of internet resources in rural region. Similarly previous internet usage experience also contributes for adoption of e-government services.

The main limitation is that the study is mainly concentrated only in two districts of Kerala and before generalizing, study may be conducted in other geographical areas of Kerala also. Also the study mainly focuses on Government to Citizen (G2C) services. The study does not explore other services like Government to Business (G2B), Government to Government (G2G) that comes under the e-government system. Also the study has considered only the demographic variables and did not consider other extraneous variable that could impact the user acceptance. Some of the

areas of future research are more study in areas other than Trivandrum and Ernakulam districts may be carried out for further supporting the findings of this study. Future research can also examine the role of ICT in G2B and G2G environments.

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