

Factors Influencing Electronic Government Adoption: Perspectives Of Less Frequent Internet Users Of Pakistan

Farooq Alam Khan, Basheer Ahmad

Abstract: Much literature on electronic government services research could be found on adoptability issues from government and service provider's point of view. Many studies have looked into adoptability factors from user perspectives and majority captured adoptability perspectives of frequent Internet users, the ones who use Internet applications for more than 10 hours a week. On the contrary the perspectives of majority of Pakistani users which use Internet applications for less than 10 hours per week are never inquired. This paper tries to fill this gap by looking into electronic government adoptability perspectives and expectations of such Internet users of Pakistan which are much greater in numbers than others. An amended UTAUT model with all its moderators is used in this study and the results demonstrate that performance level, ease of effort and social influence strongly effect behavioral intention of users in using electronic government services in Pakistan. The individual's behavioral intention along with presence of appropriate facilitating conditions triggers use behavior of users. The results show that only gender moderates majority of UTAUT relationships and accordingly a modified UTAUT model is presented. The paper provides certain insights for people making policies and academicians for performing further research while it stresses for service proliferation with special attention towards female population.

Index Terms: Electronic Government, E-government Adoption, Adoptability Pakistan, Technology Acceptance, Technology Adoption, Technology Use, E-government users.

1 INTRODUCTION

Utilization of web based applications is getting popular among governments to give electronic government services to their people in numerous countries. Many people are using web based services to meet their day to day requirements such as online tax filing, information gathering on government through interactive queries, online applications for utility connections etc. This results in quick processing of citizens requirements but also provide them a convenient platform for government interactions. In Pakistan different government services such as electronic filing of tax returns, online processing of travel applications, telemedicine etc are also introduced at government level. National Information Technology Board, an organization working Ministry of IT and Telecom is specifically assigned with tasks of developing and maintaining electronic government services for several federal government ministries and departments. Several government agencies are using electronic government services among themselves to improve their processes, procedures and records. Moreover such services are not only used for interaction among different government entities but also used in providing essential citizen services.

2. THEORETICAL BACKGROUND

Electronic government services are utilized by quite a few government users but the same is also to be studied from customer/general public perspective. Research has been performed from citizen's perspective in adoption of e-services. It includes perceptions from adopters of electronic government services but lacks perspectives of non-adopters of electronic government service. This paper intends to complete this gap by exploring challenges and barriers in electronic government services from a non-adopter of electronic government services perspective. Moreover, there are studies on different countries such as Qatar and Saudi Arabia etc where user adoptability perceptions of electronic government services have been researched from people perspective. Research has been carried out to find the challenges as well as barriers of electronic government services from user's perspective. A study published in EMOIS2012 on influencing factors in Electronic government services adoption in Pakistan shows that the factors influencing this are related to ease of use, usefulness, social influence, technological issues, and lack of awareness, data privacy and trust by using UTAUT model [1]. The results of this study are interesting but there is a gap in recognition of perspectives of non-adopters of e-services in Pakistan [1]. Moreover, another study on adaptability factors of electronic government services of Pakistan has also investigated these factors with frequent Internet users and suggests that there is a need to determine which factors influence adaptability of electronic government services from offline respondents or less frequent Internet users perspective [2]. There are various theories which have highlighted the user perceptions for acceptance and usage of electronic government in different countries. Ahmed et al., [1] describes the following: "These consists of the theory of reason action [3], the technology acceptance model (TAM) [4], the motivational model [5], the model of pc utilization [6], the diffusion of innovations (DOI) [7], the theory of planned behavior [8], social cognitive theory [9] and the unified theory of acceptance and use of technology (UTAUT) [10]." Each of these theories has their own limitations and UTAUT model combines different concepts from them to avoid those

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limitations. Accordingly, UTAUT model presents us with four direct variables/constructs pertaining to Performance, Effort, Society, and Proper Conditions for use of technology. The use of technology and its adoptability trends are explained upto 70 percent by these four factors [10]. He argues that these four constructs are the most important straight determinants of technology adoption by users and its usage [10]. The main determinants of use behavior are (BI) and (FC) for (BI) these are (PE), (EE), (SI). Therefore UTAUT model is employed and suggested for use in a similar context by many researchers. According to Rosen [11], the UTUAT model should now considered as a yardstick for the technology adoptability studies because it captures user perceptions in a more comprehensive and pragmatic way than previous ones. The UTAUT model was used by Ahmed et al. [1] to study the factors affecting the electronic government adoption by respondents in the Pakistan who were using the Internet for more than ten hours per week with good Internet proficiency. The model was customized by targeting the university students and the UTAUT model moderators of gender, age and experience was not taken into account. A paper by [12] the UTAUT model has also been used in order to study the electronic government adoption by employees of Pension Management System in India. The studies show that there is low adoptability of electronic government services in Pakistan in frequent Internet users. However, a vast majority of Pakistanis of both sexes are not frequent Internet users. Therefore it would be a good research idea to figure out perceptions of such users to effectively come up with strategies of successful electronic government adoptability in Pakistan. Such as in Qatar [13] the adoptability is appreciating among frequent Internet users how there is also a need to consider and address the perceptions of less frequent Internet users so that overall adoptability figures of electronic government services may increase. Considering this and certain variables of UTAUT model we consider to employee UTUAT model with some variations. We think that in Pakistan a vast majority of less frequent Internet users would be either busy executives, who don't have time to use electronic government services, or busy housewives who are usually engaged in their domestic household assignments or people which do not have easy access to Internet. Moreover education or awareness to electronic government services could also be a factor for less electronic government adoptability in Pakistan. In addition to these trust, lack of confidence in government services or corruption could also be some dimensions which could affect perceptions of our UTAUT variable which are discussed later. The foregoing in view we consider that it would be a good idea based on scholarly evidence that this gap may be researched and contributed for promotion of electronic government service usage by different population segments of Pakistan.

3. RESEARCH FRAMEWORK AND HYPOTHESIS

3.1 Research Framework

In our study the UTAUT model was employed to determine the effects of Effort Expectancy (EE), Social Influence (SI) and Performance Expectancy (PE) on Behavioural Intention (BI) and of Facilitating Conditions (FC) on Use Behaviour (UB) from less frequent Internet user's perspective. In this study demographic factor such as age, gender etc will be used as moderating variable as per the UTAUT model. The research

framework figure below shows the original UTAUT model in a slightly altered way that all four moderating variables are included for all possible relationships:

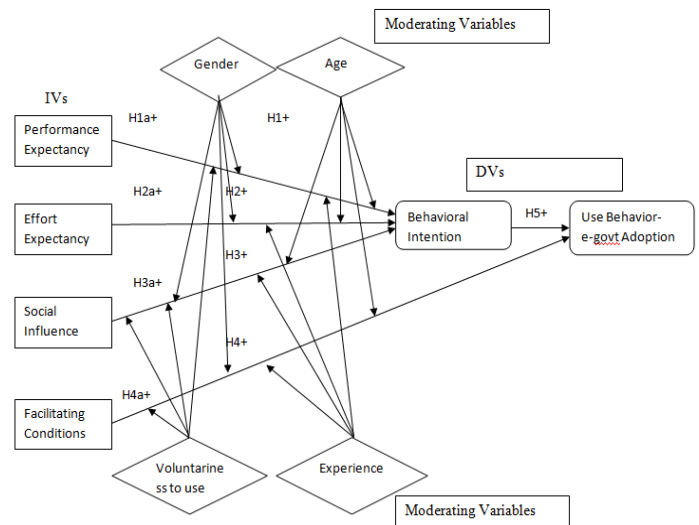


Fig 1. Research Framework

3.2 Hypotheses

- H1: PE impact on BI will be affected by all moderating variables.
- H1a: PE will positively influence BI of electronic government services users.
- H2: EE impact on BI will be affected by all moderating variables.
- H2a: EE will positively influence BI of electronic government services users.
- H3: SI impact on BI will be affected by all moderating variables.
- H3a: SI will positively influence BI of electronic government services users.
- H4: FC impact on UB of electronic government adoption will be affected by all moderating variables.
- H4a: FC will positively influence users UB of electronic government adoption.
- H5: BI will influence users UB of electronic government adoption.

4. RESEARCH METHOD

This study captured data from a cross sectional survey questionnaire distributed among professionals, students and other Internet users in Islamabad/Rawalpindi area only. The respondents were of different age groups and educational levels. The selection of instrument, tests of reliability and validity of constructs are explained herewith. The questionnaire was adopted for this study from UTAUT study of Venkatesh et al. [10] while necessary changes in accordance to our constructs and operational definitions were made. A data requirement table was created to capture all the necessary dimensions of elements in relation to their constructs. Moreover, the same was aligned in a nomological network for clean and clear alignment of our constructs with their dimensions and their corresponding items/elements. The questionnaire included necessary demographic questions regarding gender, experience, Internet literacy and usage of

Internet and electronic government services of Pakistan. The questionnaire further included 33 customized questions to cater our all major construct as detailed in nomological network. The study started with a pilot phase where 60 questionnaires were circulated and among them 50 instruments returned with a response rate of 83.33 %. From these 10 were returned invalid, and were not considered for data entry. All items of constructs were measured through a (05) five point likert scale from (1) as strongly agree to (5) as strongly disagree option. Reliability of all measures used in this study was considered to determine multiple measure consistency during pilot phase. The face validity of instrument was achieved by expert review and peer review while instrument's content validity was checked through reliability analysis of SPSS. The 50 responses of pilot testing were analyzed and it was realized that one item in FC construct area was not feasible. To address this problem factor analysis was performed and it was found appropriate to drop that item from final questionnaire. Accordingly the Cronbach alpha values for reliability test were determined for entire instrument as well as for individual construct items. These values exceed 0.70 for all 32 elements together and for each construct individually for both less frequent and frequent Internet users. Considering this all 32 items were considered appropriate and outcome of reliability measures are shown in tables below.

TABLE 1
RELIABILITY TEST RESULTS

Content Reliability Test Results (Instrument)			
Internet hours spend per week	Cronbach's Alpha		
	Cronbach's Alpha	Standardized Items	N of Items
less than 10 hours	.957	.957	32
more than 10 hours	.943	.944	32

TABLE 2
CONSTRUCTS RELIABILITY TESTS

Content Reliability Test Results (Constructs)			
Construct	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Behavioral Intention (BI)			
less than 10 hours	.824	.826	4
more than 10 hours	.842	.842	4
Performance Expectancy (PE)			
less than 10 hours	.907	.907	10
more than 10 hours	.869	.871	10
Effort Expectancy (EE)			
less than 10 hours	.814	.814	5
more than 10 hours	.849	.850	5
Facilitating Conditions (FC)			
less than 10 hours	.734	.734	3
more than 10 hours	.658	.660	3
Social Influence (SI)			
less than 10 hours	.856	.857	7
more than 10 hours	.863	.865	7
Use Behavior e-govt adoptability			
less than 10 hours	.752	.751	3
more than 10 hours	.714	.713	3

After the reliability analysis, the final questionnaire was distributed to general population in Islamabad/Rawalpindi area. The survey was performed both offline and online and a total of 350 questionnaires were distributed offline and out which 320 were returned valid. In response to online survey a total of 67 results were entered however only 50 were found usable. Considering this the total sample size was 370 consisting of both frequent and less frequent Internet users. The tests were run from both less frequent and frequent Internet users and both categories were compared however the focus was on results achieved for less frequent Internet users only.

5. DATA ANALYSIS AND RESULTS

The following table summarizes the demographic results for the entire population results:

TABLE 3
POPULATION DEMOGRAPHICS

Total Survey Statistics			
	Value	Label	N
Internet hours spend per week	0	less than 10 hours	267
	1	more than 10 hours	103
Gender of Respondent	0	Female	116
	1	Male	254
Age of respondent	1	16 or below	8
	2	17-25 years	255
	3	26-35 years	79
	4	36-45 years	21
	5	46 or above	7
Experience e-government service	0	No	149
	1	yes	221
Voluntariness to use	0	No	108
	1	Yes	262

In addition to above the following table shows demographic results distribution separately for less frequent Internet users and frequent Internet users.

TABLE 4
DEMOGRAPHICS OF FREQUENT AND LESS FREQUENT USERS

Demographic Factors Statistics: Less and Frequent Internet Users			
Internet hours spend per week	Value	Label	N
less than 10 hours	0	Female	91
	1	Male	176
Age of respondent	1	16 or below	7
	2	17-25 years	189
	3	26-35 years	50
	4	36-45 years	14
	5	46 or above	7
Experience e-government service	0	No	108
	1	yes	159
Voluntariness to use	0	No	76
	1	Yes	191
more than 10 hours	0	Female	25
	1	Male	78
Age of respondent	1	16 or below	1
	2	17-25 years	66
	3	26-35 years	29
	4	36-45 years	7
Experience e-government service	0	No	41
	1	yes	62
Voluntariness to use	0	No	32
	1	Yes	71

In addition to these, the six constructs are tabulated in following table which clearly shows that all UTAUT variables were significantly and positively correlated for both categories.

TABLE 5
CORRELATIONS

Pearson Correlations							
Internet hours spende per week	UB	PE	FC	EE	SI	BI	
less than 10 hours	UB	1	.724**	.592**	.617**	.555**	.554**
	PE		1	.677**	.748**	.738**	.686**
	FC			1	.625**	.594**	.603**
	EE				1	.719**	.615**
	SI					1	.684**
	BI						1
more than 10 hours	UB	1	.578**	.405**	.608**	.525**	.419**
	PE		1	.606**	.632**	.554**	.519**
	FC			1	.565**	.380**	.575**
	EE				1	.685**	.593**
	SI					1	.556**
	BI						1

** significant correlation at 0.01 level (2-tailed).

The general linear model and regression analysis were used to check validity of all hypotheses. Tests were run to test the original UTAUT variables with all moderating variables effects and accordingly significant results were achieved. The following section explains the results of each hypothesis.

4.1 H1: PE impact on BI will be affected by all moderating variables.

General linear model was run between PE and BI, with all UTAUT moderators first to see the significance of these variables impact on the DV. The following table shows the results of the test for both less frequent and frequent Internet users:

TABLE 6
GLM TEST RESULTS

GLM Test Results						
Internet hours spende per week	Source	Type III Sum of Squares	df	Mean Square	F	Sig.
less than 10 hours	Corrected Model	88.100 ^a	8	11.013	30.478	.000
	Intercept	6.544	1	6.544	18.112	.000
	Gender	.184	1	.184	.510	.476
	Age	.957	4	.239	.662	.619
	Experience	1.404	1	1.404	3.886	.050
	Volunteentouse	.769	1	.769	2.129	.146
	PE	69.633	1	69.633	192.717	.000
	Error	93.221	258	.361		
	Total	1492.813	267			
	Corrected Total	181.322	266			
more than 10 hours	Corrected Model	20.785 ^b	7	2.969	6.123	.000
	Intercept	5.647	1	5.647	11.646	.001
	Gender	.844	1	.844	1.740	.190
	Age	.810	3	.270	.557	.645
	Experience	.140	1	.140	.288	.593
	Volunteentouse	.344	1	.344	.710	.401
	PE	14.102	1	14.102	29.080	.000
	Error	46.069	95	.485		
	Total	554.000	103			
	Corrected Total	66.854	102			

a. R square = .436 (Adjusted R square = .470)

b. R square = .311 (Adjusted R square = .260)

It could be seen from the above mentioned results that age is the least significant moderator for less frequent Internet users therefore it would be appropriate to run the analysis without considering age to determine results on other factors. Accordingly several iterations were performed one by one without inclusion of least significant factors and finally the following results were achieved.

TABLE 7
GLM TEST RESULTS

GLM Test Results							
Internet hours spende per week	Source	Type III Sum of Squares	df	Mean Square	F	Sig.	
less than 10 hours	Corrected Model	86.291 ^a	2	43.145	119.860	.000	
	Intercept	5.940	1	5.940	16.502	.000	
	Experience	1.004	1	1.004	2.789	.096	
	PE	85.995	1	85.995	238.899	.000	
	Error	95.031	264	.360			
	Total	1492.813	267				
	Corrected Total	181.322	266				
	more than 10 hours	Corrected Model	18.010 ^b	2	9.005	18.436	.000
		Intercept	4.038	1	4.038	8.308	.005
		Experience	.022	1	.022	.045	.832
PE		17.334	1	17.334	35.488	.000	
Error		48.844	100	.488			
Total		554.000	103				
Corrected Total		66.854	102				

a. R square = .476 (Adjusted R square = .472)

b. R square = .269 (Adjusted R square = .255)

It could be seen from the above mentioned results that now all factors are significant while experience is significant at 10% for less frequent Internet users. Considering these results we can say that all the moderators are not significant on relationship between BI and PE at 5% while experience could be considered moderator at 10% for less frequent users.

4.2 H1a: PE will positively influence BI of electronic government services users.

A linear regression was run to check the impact of PE on BI. The test showed an R Square value of 0.470 for less frequent Internet users and 0.269 for frequent Internet users. The following tables summarizes the results of linear regression analysis for both categories of users.

TABLE 8
LINEAR REGRESSION TEST RESULTS

ANOVA ^a						
Internet hours spende per week	Model	Sum of Squares	df	Mean Square	F	Sig.
less than 10 hours	1 Regression	85.287	1	85.287	235.342	.000 ^b
	Residual	96.035	265	.362		
	Total	181.322	266			
more than 10 hours	1 Regression	17.988	1	17.988	37.178	.000 ^b
	Residual	48.866	101	.484		
	Total	66.854	102			

a. IV, PE

b. DV, BI

TABLE 9
COEFFICIENTS RESULTS

		Coefficients ^a				
		Unstandardized Coefficients			Standardized Coefficients	
Internet hours spende	Model	B	Std. Error	Beta	t	Sig.
less than 10 hours	1 (Constant)	.501	.115		4.252	.000
	PE	.723	.047	.686	15.341	.000
more than 10 hours	1 (Constant)	.749	.244		3.072	.003
	PE	.612	.100	.519	6.097	.000

a. DV: BI

The direct effect of PE on BI was significant at p=.000; The R square value demonstrates that 47% of less frequent users behavioural intention to use electronic government services could be because of performance expectancy of the service. This direct effect result implies that PE has an impact on BI. The beta value is 0.723 which shows that PE strongly influences BI. This is true in accordance with UTAUT model as well therefore we can say that Behavioural Intention of less frequent Internet users to use electronic government services is strongly influenced by their perceived performance expectancy of electronic government services. It could also be seen from the above tables that the same holds true for frequent Internet users as well and for the PE also strongly influence BI. Therefore it could be implied that based on UTAUT model PE is one main determinant of BI of Internet users in their adoptability of electronic government services.

4.3 H2: EE impact on BI will be affected by all moderating variables.

General linear model was run between EE and BI, with all UTAUT moderators first to see the significance of these variables impact on DV. The following table shows the results of the test for both less frequent and frequent Internet users:

TABLE 10
GLM TEST RESULTS

		GLM Test Results					
		DV: BI					
Internet hours spende	Source	Type III Sum of Squares	df	Mean Square	F	Sig.	
less than 10 hours	Corrected Model	73.658 ^a	8	9.207	22.063	.000	
	Intercept	13.329	1	13.329	31.942	.000	
	Gender	1.893	1	1.893	4.533	.034	
	Age	1.697	4	.424	1.016	.399	
	Experience	1.379	1	1.379	3.304	.070	
	Volunteerouse	1.137	1	1.137	2.725	.100	
	EE	55.189	1	55.189	132.249	.000	
	Error	107.665	258	.417			
Total	1492.813	267					
Corrected Total	181.322	266					
more than 10 hours	Corrected Model	25.948 ^b	7	3.707	8.609	.000	
	Intercept	6.202	1	6.202	14.403	.000	
	Gender	.473	1	.473	1.098	.297	
	Age	.343	3	.114	.266	.850	
	Experience	.224	1	.224	.521	.472	
	Volunteerouse	1.117	1	1.117	2.594	.111	
	EE	19.266	1	19.266	44.742	.000	
	Error	40.906	95	.431			
Total	554.000	103					
Corrected Total	66.854	102					

a. R square = .406 (Adjusted R square = .388)
b. R square = .388 (Adjusted R square = .343)

It could be seen from the above mentioned results that age is the least significant moderator for less frequent Internet users therefore it would be appropriate to run the analysis without

considering age to determine the results on other factors. Accordingly further iteration was performed without inclusion of least significant factors and finally the following results were achieved.

TABLE 11
GLM TEST RESULTS

		GLM Test Results					
		DV: BI					
Internet hours spende	Source	Type III Sum of Squares	df	Mean Square	F	Sig.	
less than 10 hours	Corrected Model	71.939 ^a	4	17.980	43.099	.000	
	Intercept	13.386	1	13.386	33.268	.000	
	Gender	1.660	1	1.660	3.977	.047	
	Experience	1.500	1	1.500	3.593	.059	
	Volunteerouse	1.603	1	1.603	3.840	.051	
	EE	56.876	1	56.876	136.257	.000	
	Error	109.362	262	.417			
	Total	1492.813	267				
Corrected Total	181.322	266					
more than 10 hours	Corrected Model	25.605 ^b	4	6.401	15.208	.000	
	Intercept	8.238	1	8.238	19.573	.000	
	Gender	.700	1	.700	1.664	.200	
	Experience	.250	1	.250	.595	.442	
	Volunteerouse	1.272	1	1.272	3.022	.085	
	EE	20.195	1	20.195	47.978	.000	
	Error	41.249	98	.421			
	Total	554.000	103				
Corrected Total	66.854	102					

a. R square = .397 (Adjusted R square = .383)

b. R square = .383 (Adjusted R square = .358)

It could be seen from the above mentioned results that now all factors are significant while experience and voluntariness to use are significant at 10% for less frequent Internet users. Considering these results we can say only gender is the significant moderating variable for relationship between BI and EE at 5% while experience and voluntariness to use could be considered moderators at 10% for less frequent users.

4.4 H2a: EE will positively influence BI of electronic government services users.

Linear regression was run between check the impact of EE on BI. The test showed an R Square value of 0.615 for less frequent Internet users and 0.593 for frequent Internet users. The following tables summarize the results of linear regression analysis for both categories of users.

TABLE 12
LINEAR REGRESSION TEST RESULTS

		ANOVA ^a					
Internet hours spende	Model	Sum of Squares	df	Mean Square	F	Sig.	
less than 10 hours	1 Regression	68.534	1	68.534	161.023	.000 ^b	
	Residual	112.788	265	.426			
	Total	181.322	266				
more than 10 hours	1 Regression	23.480	1	23.480	54.674	.000 ^b	
	Residual	43.375	101	.429			
	Total	66.854	102				

a. IV, EE

b. DV: BI

TABLE 13
COEFFICIENTS RESULTS

		Coefficients ^a				
		Unstandardized Coefficients		Standardized Coefficients		
Internet hours spend	Model	B	Std. Error	Beta	t	Sig.
less than 10 hours	1 (Constant)	.670	.128		5.220	.000
	EE	.664	.052	.615	12.689	.000
more than 10 hours	1 (Constant)	.798	.197		4.052	.000
	EE	.644	.087	.593	7.394	.000

a. DV: BI

The direct effect of EE on BI was significant at p=.000; The R square value demonstrates that 61.5% of less frequent users behavioral intention to use electronic government services could be because of effort expectancy of the service. This direct effect result implies that EE has an impact on BI. The beta value is 0.664 which shows that EE strongly influences BI. This is true in accordance with UTAUT model as well therefore we can say that Behavioral Intention of less frequent Internet users to use electronic government services is strongly influenced by their perceived effort expectancy required in using electronic government services. It could also be seen from the above tables that the same holds true for frequent Internet users as well and for the EE also strongly influence BI. Therefore it could be implied that based on UTAUT model EE is one main determinant of BI of Internet users in their adoptability of electronic government services.

4.5 H3: SI impact on BI will be affected by all moderating variables.

General linear model was run between SI and BI, with all UTAUT moderators first to see the significance of these variables impact on DV. The following table shows the results of the test for both less frequent and frequent Internet users:

TABLE 14
GLM TEST RESULTS

		GLM Test Results				
		Type III Sum of Squares				
Internet hours spend	Source	Squares	df	Mean Square	F	Sig.
less than 10 hours	Corrected Model	89.466 ^a	8	11.183	31.411	.000
	Intercept	8.744	1	8.744	24.561	.000
	Gender	1.666	1	1.666	4.680	.031
	Age	1.154	4	.289	.811	.519
	Experience	1.649	1	1.649	4.632	.032
	Volunteerouse	1.361	1	1.361	3.822	.052
	SI	70.999	1	70.999	199.417	.000
	Error	91.856	258	.356		
	Total	1492.813	267			
	Corrected Total	181.322	266			
more than 10 hours	Corrected Model	25.371 ^b	7	3.624	8.300	.000
	Intercept	8.772	1	8.772	20.089	.000
	Gender	.519	1	.519	1.189	.278
	Age	1.541	3	.514	1.176	.323
	Experience	.232	1	.232	.532	.468
	Volunteerouse	1.399	1	1.399	3.204	.077
	SI	18.688	1	18.688	42.798	.000
	Error	41.483	95	.437		
	Total	554.000	103			
	Corrected Total	66.854	102			

a. R square = .493 (Adjusted R square = .478)
b. R square = .379 (Adjusted R square = .354)

It could be seen from the above mentioned results that age is the least significant moderator for less frequent Internet users therefore it would be appropriate to run the analysis without considering age to determine the significance of results on other factors. Accordingly further iteration was performed without inclusion of least significant factors and finally the following results were achieved.

TABLE 15
GLM TEST RESULTS

		Type III Sum of Squares				
Internet hours spend	Source	Squares	df	Mean Square	F	Sig.
less than 10 hours	Corrected Model	88.310 ^a	4	22.078	62.191	.000
	Intercept	8.258	1	8.258	23.262	.000
	Gender	1.582	1	1.582	4.456	.036
	Experience	1.657	1	1.657	4.668	.032
	Volunteerouse	1.648	1	1.648	4.643	.032
	SI	73.228	1	73.228	206.275	.000
	Error	93.010	262	.355		
	Total	1492.813	267			
Corrected Total	181.322	266				
more than 10 hours	Corrected Model	23.830 ^b	4	5.958	13.570	.000
	Intercept	8.866	1	8.866	20.195	.000
	Gender	.988	1	.988	2.251	.137
	Experience	.351	1	.351	.800	.373
	Volunteerouse	1.909	1	1.909	4.349	.040
	SI	18.420	1	18.420	41.956	.000
	Error	43.024	98	.439		
	Total	554.000	103			
Corrected Total	66.854	102				

a. R square = .487 (Adjusted R square = .479)
b. R square = .356 (Adjusted R square = .330)

It could be seen from the above mentioned results that now all factors are significant at 5% for less frequent Internet users. Considering these results we can say gender, experience and voluntariness to use are the significant moderating variables for relationship between SI and BI at 5% for less frequent users.

4.6 H3a: SI will positively influence BI of electronic government services users.

Linear regression was run between check the impact of SI on BI. The test showed an R Square value of 0.684 for less frequent Internet users and 0.556 for frequent Internet users. The following tables summarize the results of linear regression analysis for both categories of users.

TABLE 16
LINEAR REGRESSION TEST RESULTS

		ANOVA ^a				
Internet hours spend	Model	Sum of Squares	df	Mean Square	F	Sig.
less than 10 hours	1 Regression	84.791	1	84.791	232.772	.000 ^b
	Residual	96.531	265	.364		
	Total	181.322	266			
more than 10 hours	1 Regression	20.698	1	20.698	45.292	.000 ^b
	Residual	46.156	101	.457		
	Total	66.854	102			

a. IV, SI
b. DV: BI

TABLE 17
COEFFICIENTS RESULTS

		Coefficients ^a					
		Unstandardized Coefficients		Standardized Coefficients			
Internet hours spend ed	Model	B	Std. Error	Beta	t	Sig.	
less than 10 hours	1	(Constant)	.492	.119		4.141	.000
		SI	.732	.048	.684	15.257	.000
more than 10 hours	1	(Constant)	.845	.209		4.041	.000
		SI	.571	.085	.556	6.730	.000

a. DV: BI

The direct effect of SE on BI was significant at $p=.000$; The R square value demonstrates that 68.4% of less frequent users behavioral intention to use electronic government services could be because of social influence on them. This direct effect result implies that SI has an impact on BI. The beta value is 0.732 which shows that SI strongly influences BI. This is true in accordance with UTAUT model as well therefore we can say that Behavioral Intention of less frequent Internet users to use electronic government services is strongly influenced by social influence on them. It could also be seen from the above tables that the same holds true for frequent Internet users as well and for the SI also strongly influences BI. Therefore it could be implied that based on UTAUT model SI is one main determinant of BI of Internet users in their adoptability of electronic government services.

4.7 H4: FC impact on UB of electronic government adoption will be affected by all moderating variables.

General linear model was run between FC and UB, with all UTAUT moderators first to see the significance of these variables impact on DV. The following table shows the results of the test for both less frequent and frequent Internet users:

TABLE 18
GLM TEST RESULTS

		GLM Test Results					
		Type III Sum of Squares		df	Mean Square	F	Sig.
less than 10 hours	Corrected Model	69.241 ^a	8	8.655	20.149	.000	
	Intercept	25.711	1	25.711	59.854	.000	
	Gender	2.548	1	2.548	5.932	.016	
	Age	2.212	4	.553	1.287	.275	
	Experience	.220	1	.220	.513	.474	
	Volunteentouse	2.475	1	2.475	5.761	.017	
	FC	45.137	1	45.137	105.076	.000	
	Error	110.828	258	.430			
	Total	1587.444	267				
	Corrected Total	180.070	266				
more than 10 hours	Corrected Model	11.573 ^b	7	1.653	3.453	.002	
	Intercept	17.007	1	17.007	35.518	.000	
	Gender	.033	1	.033	.069	.794	
	Age	1.197	3	.399	.833	.479	
	Experience	.029	1	.029	.060	.808	
	Volunteentouse	.614	1	.614	1.282	.260	
	FC	9.299	1	9.299	19.421	.000	
	Error	45.489	95	.479			
	Total	547.111	103				
	Corrected Total	57.061	102				

a. R square = .385 (Adjusted R square = .365)

b. R square = .203 (Adjusted R square = .144)

It could be seen from the above mentioned results that experience is the least significant moderator for less frequent Internet users therefore it would be appropriate to run the analysis without considering experience to determine the results on other factors. Accordingly several iterations were performed one by one without inclusion of least significant factors and finally the following results were achieved.

TABLE 19
GLM TEST RESULTS

		GLM Test Results					
		Type III Sum of Squares		df	Mean Square	F	Sig.
less than 10 hours	Corrected Model	66.896 ^a	3	22.299	51.819	.000	
	Intercept	32.972	1	32.972	76.622	.000	
	Gender	2.640	1	2.640	6.135	.014	
	Volunteentouse	1.489	1	1.489	3.461	.064	
	FC	48.969	1	48.969	113.797	.000	
	Error	113.174	263	.430			
	Total	1587.444	267				
	Corrected Total	180.070	266				
	more than 10 hours	Corrected Model	10.375 ^b	3	3.458	7.334	.000
		Intercept	18.511	1	18.511	39.203	.000
Gender		.006	1	.006	.014	.907	
Volunteentouse		1.027	1	1.027	2.178	.143	
FC		8.799	1	8.799	18.658	.000	
Error		46.686	99	.472			
Total		547.111	103				
Corrected Total		57.061	102				

a. R square = .372 (Adjusted R square = .364)

b. R square = .182 (Adjusted R square = .157)

It could be seen from the above mentioned results that now all factors are significant while voluntariness to use is significant at 10% for less frequent Internet users. Considering these results we can say only gender is the significant moderating variable for relationship between FC and UB at 5% while experience and voluntariness to use could be considered moderators at 10% for less frequent users.

4.8 H4a: FC will positively influence users UB of electronic government adoption.

Linear regression was run between check the impact of FC on UB. The test showed an R Square value of 0.592 for less frequent Internet users and 0.405 for frequent Internet users. The following tables summarize the results of linear regression analysis for both categories of users.

TABLE 20
LINEAR REGRESSION TEST RESULTS

ANOVA ^a							
Internet hours spende per week	Model		Sum of Squares	df	Mean Square	F	Sig.
less than 10 hours	1	Regression	63.112	1	63.112	142.997	.000 ^b
		Residual	116.958	265	.441		
		Total	180.070	266			
more than 10 hours	1	Regression	9.347	1	9.347	19.786	.000 ^b
		Residual	47.714	101	.472		
		Total	57.061	102			

a. IV: FC

b. DV: UB

TABLE 21
COEFFICIENTS RESULTS

Coefficients ^a							
Internet hours spende per week	Model		Unstandardized Coefficients		Standardized Coefficients		
			B	Std. Error	Beta	t	Sig.
less than 10 hours	1	(Constant)	.969	.118		8.196	.000
		FC	.564	.047	.592	11.958	.000
more than 10 hours	1	(Constant)	1.309	.208		6.304	.000
		FC	.406	.091	.405	4.448	.000

a. DV: UB

The direct effect of FC on UB was significant at p=.000; The R square value demonstrates that 59.2% of less frequent users use behavior of electronic government adoptability could be because of facilitating conditions. This direct effect result implies that FC has an impact on UB. The beta value is 0.564 which shows that FC strongly influences UB. This is true in accordance with UTAUT model as well therefore we can say that use behavior of less frequent Internet users is strongly influenced by facilitating conditions available to them. It could also be seen from the above tables that the same holds true for frequent Internet users as well and for the FC also strongly influences UB. Therefore it could be implied that based on UTAUT model FC is one main determinant of UB of Internet users in their adoptability of electronic government services.

4.9 H5: BI will influence users UB of electronic government adoption.

Linear regression was run between check the impact of BI on UB. The test showed an R Square value of 0.554 for less frequent Internet users and 0.419 for frequent Internet users. The following tables summarize the results of linear regression analysis for both categories of users.

TABLE 22.
LINEAR REGRESSION TEST RESULTS

ANOVA ^a							
Internet hours spende per week	Model		Sum of Squares	df	Mean Square	F	Sig.
less than 10 hours	1	Regression	55.330	1	55.330	117.546	.000 ^b
		Residual	124.739	265	.471		
		Total	180.070	266			
more than 10 hours	1	Regression	10.037	1	10.037	21.559	.000 ^b
		Residual	47.024	101	.466		
		Total	57.061	102			

a. IV: BI

b. DV: UB

TABLE 23.
COEFFICIENTS RESULTS

Coefficients ^a							
Internet hours spende per week	Model		Unstandardized Coefficients		Standardized Coefficients		
			B	Std. Error	Beta	t	Sig.
less than 10 hours	1	(Constant)	1.072	.120		8.895	.000
		BI	.552	.051	.554	10.842	.000
more than 10 hours	1	(Constant)	1.339	.194		6.916	.000
		BI	.387	.083	.419	4.643	.000

a. DV: UB

The direct effect of BI on UB was significant at p=.000; The R square value demonstrates that 55.4% of less frequent users use behavior of electronic government adoptability could be because of their behavioral intention to use the service. This direct effect result implies that BI has an impact on UB. The beta value is 0.552 which shows that BI strongly influences UB. This is true in accordance with UTAUT model as well therefore we can say that use behavior of less frequent Internet users is strongly influenced by their behavioral intention to use electronic government services. It could also be seen from the above tables that the same holds true for frequent Internet users as well and for them BI also strongly influences UB. Therefore it could be implied that based on UTAUT model BI is one main determinant of UB of Internet users in their adoptability of electronic government services.

6. DISCUSSION AND CONCLUSION

6.1 Findings

It could be seen from our analysis that Performance Expectancy, Effort Expectancy and Social Influence all has positive effect on Behavioral Intention to use electronic government services upon less frequent Internet users as well as frequent Internet users. This validates the original UTAUT model for main determinants of Behavioral Intention. In addition to this the analysis also showed and validated that Facilitating Conditions are the main determinant of use

behavior along with Behavioral Intention. It is also important that the findings showed that all four moderating variables together do not all together moderate any relationships of UTAUT model as per our proposed framework. The moderating effects significance on UTAUT relationships are summarized as follows:

TABLE 25
MODERATING EFFECTS SIGNIFICANCE

Relationship	Significant Moderator at 5%	Significant Moderator at 10%
PE→BI	None	Experience
EE→BI	Gender	Experience, Voluntariness to Use
SI→BI	Gender	Experience, Voluntariness to Use
FC→UB	Gender	Voluntariness to Use

It is evident from the above table that only gender is the moderating variable for three relationships at 5% and all other UTAUT moderators does not play much role in our context for less frequent Internet users. Therefore, on the basis of the finding the UTAUT model may be revised for electronic government services as follows:

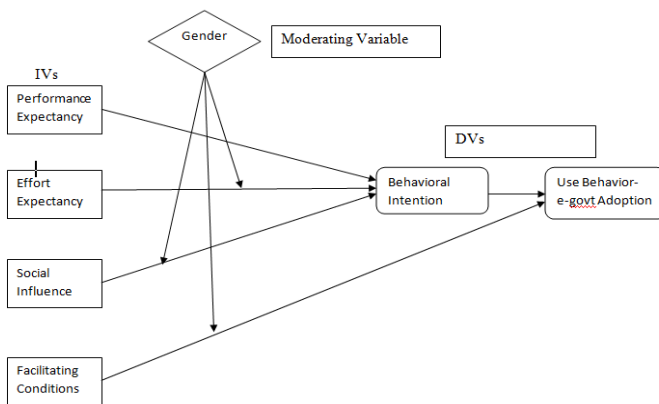


Fig-2 Proposed UTAUT for e-office adoptability tests

6.2 Implications

This study provides both theoretical implications and policy implications for electronic government adoption among less frequent Internet users in Pakistan. The study shows that UTAUT model variables are used to check the adoption of electronic government services in Pakistan. The study provides practical support and validates the findings of previous research. Theoretically, the research shows that majority of the users are less frequent Internet users in Pakistan and all previous studies were done from frequent user's perspectives. So this study is of importance to cater the needs of less frequent users in electronic government adoptability by focusing on less frequent Internet users because if we focus them we would be able to drive a large number of populations towards use of electronic government services. Policy implications of this study implies that less frequent Internet users in Pakistan tend to agree with system performance requirements, system effort expectations and societal influence while having the behavioural intention to use these services. They also agree with the facilitating conditions requirements therefore the government must ensure that more

and more electronic government based applications and services may be introduced in the country while promoting the same through advertisement and word of mouth efforts. The government must focus on these factors while preparing, launching and operating electronic government services. Most importantly they should cater the gender difference and special programs and incentives may be started for females. The same efforts could lead less frequent Internet users to quickly adopt and gain most benefits of electronic government services. Lastly but not the least the study implies that experience, age or voluntariness to use does not impede the acceptance of electronic government services. Therefore policies must be made to encourage use of electronic government services in Pakistani nation as a whole with more focus towards female population.

6.3 Limitations and recommendations

The research only considered less frequent Internet users which use Internet for less than 10 hours per week. This research study did not consider illiterate Pakistani citizens who do not know how to read or write at all. In addition to this the study was performed only in metropolitan area therefore its results could be applied to similar areas and might differ from village or remote areas. The study did not included factors like trust, security, education etc which may also affect the user acceptance levels towards technology adoption. It is recommended that efforts to proliferate use of electronic government services may started with a focus on needs of users which do not use Internet frequently because they are the majority of Internet users of the sample. For this purpose it is also recommended that special attention may be given to gender and tailored programs for females may be introduced. It is also recommended that technological factors of electronic government services may be studied. Moreover the study may be performed in other cities so that different cultural backgrounds of the country could be covered and a detailed comprehensive analysis could be performed so that results could be generalized to entire Pakistan. It is also suggested that qualitative perspectives may also be checked through qualitative studies in future. Future studies may be performed to determine perceptions of illiterate populations and some research may be performed while considering factors like trust, security, education etc which may also affect the user acceptance levels towards technology adoption in Pakistan.

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