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Consumer Adoption of Broadband in Pakistan

Khalil Khoumbati
University of Sindh, Jamshoro

Banita Lal
University of Bedfordshire

Hsin Chen
Kingston University

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Khalil Khoumbati
Assistant Professor, Institute of Information Technology, University of Sindh, Jamshoro, Pakistan khalil.Khoumbati@gmail.com

Banita Lal
Department of Business & Management, University of Bedfordshire, Luton, UK
banita_lal@hotmail.com

Hsin Chen
Faculty of Business and Law, Kingston University, London, UK
Hsin.Chen@kingston.ac.uk

ABSTRACT

The aim of this study is to provide an understanding of the factors affecting the adoption of broadband Internet in a developing country context in this instance Pakistan. In order to achieve the stated aim this study, identified and examined various attitudinal, normative and control factors to provide insights of broadband adoption. The data on these variables was collected using a survey approach. A self-administered questionnaire was sent between October and December 2006 to 275 consumers with a total of 237 responses obtained from the respondents. The findings of this paper suggest that primary influence, facilitating conditions resources, cost and perceived ease of use are significant factors for explaining behavioral intentions to adopt broadband in Pakistan. The paper also outlines the theoretical contributions, implications for practice and limitations of this research.

Keywords: Pakistan, broadband, adoption, consumer, survey

Introduction

An analysis of literature on broadband adoption and diffusion suggest that although both macro (Choudrie and Lee, 2004) and micro level (Choudrie and Dwivedi, 2006ab) studies were conducted to understand deployment of broadband in developed world and leading countries such as South Korea, a very few studies focused upon developing countries (Dwivedi et al. 2006a). The reason for lack of broadband adoption studies could be the late rollout of broadband services, slow infrastructure development, low tele-density and slow rate of adoption. However, as mentioned above hardly any research evidence available to illustrate/depict existing broadband deployment and diffusion state in developing countries (Dwivedi et al. 2006a). Provided that developing countries such as Pakistan is already far behind in terms broadband adoption and diffusion, it is important to begin research in this area which may help to accelerate the process of consumer adoption.

Since deployment and adoption of broadband is still in embryonic stage in Pakistan, it was thought that this will provide an appropriate context for understanding drivers and barriers of consumer adoption of broadband in developing nation perspective. A recently published report from Pakistan government highlight the problem of slow broadband adoption and possible barriers that inhibiting its' widespread diffusion. The report state that "*even with tremendous growth in the information technology sector over the past five years with the internet reaching almost 2000 towns and villages and the international bandwidth rates dropping by almost 90%, overall ICT usage and penetration in Pakistan is still below international averages and shows a significant room for improvement. Although the availability of broadband infrastructure in itself will not necessarily result in the spread of broadband services in Pakistan, the price of broadband access will play a significant role*" (IT & Telecom Division, 2006). According to this report, barriers including price, last mile access and lack of content may play major inhibiting role in adoption of broadband (IT & Telecom Division, 2006).

Given the situations of Pakistan in terms of demography, telecommunication infrastructure and affordability of Internet by people (IT & Telecom Division, 2006), it was felt that understanding factors including cost of Internet access and subscription affecting consumer adoption and usage might help to encourage further diffusion and management of high speed Internet. Therefore, the aim of this study was *to understand the factors affecting the adoption of the broadband Internet in a developing country such as Pakistan*.

Having introduced the topic of interest this paper now proceeds to provide a brief discussion on the theoretical basis for examining the adoption of broadband is provided in Section 2. Section 3 provides a brief discussion of the utilized research

methods. The findings are presented in Section 4 and a discussion in Section 5. Finally, a conclusion including the contributions and limitations to the research are provided in section 6.

Theoretical basis

The theoretical constructs included in this study were adapted from Brown and Venkatesh (2005) and Dwivedi (2005). In this study it was postulated that the behavioral intentions (BI) to adopt broadband are determined by the following three types of constructs. These are: (1) **attitudinal constructs** (*relative advantage, utilitarian outcomes, hedonic outcomes, social outcomes and service quality*) represent the consumers' favorable or unfavorable evaluation of the behavior in question (i.e. adoption of broadband) (Brown and Venkatesh, 2005; Dwivedi, 2005; Rogers, 1995; Venkatesh and Brown, 2001); (2) **normative constructs** (*primary influence, work referents' influence and secondary sources' influence*) represent the perceived social pressure to perform the behavior in question (i.e. adoption of broadband) (Brown and Venkatesh, 2005; Dwivedi, 2005; Venkatesh and Brown, 2001); (3) **control constructs** (*knowledge*, *self-efficacy, perceived ease of use, perceived ease of subscribing broadband, cost, declining cost, facilitating conditions resources and perceived lack of needs*) represent the perceived control over the personal or external factors that may facilitate or constrain the behavioral performance (Brown and Venkatesh, 2005; Dwivedi, 2005; Rogers, 1995; Venkatesh and Brown, 2001). It was found that the constructs such as *relative advantage, utilitarian outcomes, hedonic outcomes, primary influence, secondary influence, self-efficacy, facilitating conditions resources* significantly influenced BI to adopt broadband in the UK households (Dwivedi, 2005). However, other constructs are not yet applied to examine broadband adoption but have been successfully employed to investigate PC adoption in US (Brown and Venkatesh, 2005; Venkatesh and Brown, 2001). Since, no prior research have investigated the adoption of broadband adoption in Pakistan, it was decided to include all possible and appropriate constructs from previous studies in this research. Table 1 defines the constructs included in this study to examine consumer adoption of broadband in Pakistan.

Table 1. Definition of factors included to study broadband adoption in Pakistan

Constructs	Definitions of constructs and sources
Behavioural Intention	Behavioural Intention (BI) is defined as a consumer's intention to subscribe (or intention to continue the current subscription) and makes use of Broadband Internet in the future (Brown and Venkatesh, 2005; Venkatesh & Brown, 2001).
Relative Advantage	It is defined as the degree to which broadband Internet is perceived as being better than its predecessor narrowband Internet (Rogers, 1995).
Utilitarian Outcomes	It is the extent to which broadband internet usage enhances the effectiveness of household activities such as, undertaking office work at home, children's homework, information or product search and purchase and home business (Brown & Venkatesh, 2005; Venkatesh & Brown, 2001).
Hedonic Outcomes	Hedonic outcomes are defined as the pleasure derived from the consumption, or use of broadband Internet. For example, the entertainment potential of the Internet via offerings such as, online radio, streaming audio and video, electronic greetings, online games, online casino (Brown & Venkatesh, 2005; Venkatesh & Brown, 2001).
Social Outcomes	The increase in prestige that coincides with the subscription of broadband for home use (Venkatesh and Brown 2001).
Service Quality	Service quality can be defined as the perceived quality of service a consumer obtained or is obtaining from the current Internet service providers. Service quality is measured in terms of, speed of connection and security problem with Internet connections, virus and popup problems with connection and customer support obtained from the ISP providers (DeLone and McLean, 2003; Parasuraman *et al*, 1991; Parasuraman *et al*, 1991).
Primary influences	Primary influences are defined as the perceived influences from friends and family to subscribe to and use (or not to subscribe and use) broadband Internet services (Brown & Venkatesh, 2005; Venkatesh & Brown, 2001).
Workplace referents' influences	The extent to which co-workers influence behaviour (Brown & Venkatesh, 2005).
Secondary Influences	Secondary influences are defined as the perceived influence of information from secondary sources such as advert and news on TV, newspapers to subscribe and use (or not to subscribe and use) broadband Internet services (Brown & Venkatesh, 2005; Rogers, 1995; Venkatesh & Brown, 2001).
Perceived Knowledge	Knowledge is defined as the perceived level of knowledge about broadband Internet, its risks and benefits (Rogers, 1995; Venkatesh & Brown, 2001).
Self-efficacy	Self-efficacy is defined as the perceived ability or skill to operate computers and the Internet (narrowband or broadband) without the assistance of others (Dwivedi, 2005).
Perceived Ease of Use	The degree to which using the PC is free from effort (Venkatesh and Brown 2001).
Perceived Ease of Obtaining	The degree to which subscribing broadband is free from effort.

Subscription	
Facilitating Conditions Resources	Facilitating conditions resources is defined as the perceived level of resources when subscribing to broadband (Venkatesh & Brown, 2001).
Cost	The extent to which the current cost of a broadband subscription is too high (Venkatesh and Brown 2001).
Declining cost	The extent to which the cost of broadband subscription is decreasing in such a way that it inhibits adoption (Venkatesh and Brown 2001).
Perceived lack of Needs	The extent to which the respondents feel that they do not have need of subscribing broadband

Research methodology

For the purpose of examining broadband adoption in Pakistan, researchers considered a survey as a suitable research method (Choudrie and Dwivedi, 2005). A number of techniques are available to capture the data. A self-administered questionnaire was considered to be the primary survey instrument for data collection in this investigation. This is because it addresses the issue of reliability of information by reducing and eliminating differences in the way that the questions are asked, and how they are presented (Fowler, 2002). Furthermore, questionnaires facilitate the collection of data within a short period of time from the majority of respondents and this was a critical issue for this research (Fowler, 2002). Fowler (2002) has suggested that, "if one is going to have a self-administered questionnaire, one must reconcile oneself to closed questions, which can be answered by simply checking a box or circling the proper response from a set provided by the researcher" (Fowler, 2002). Therefore mainly multiple and closed questions were included in the questionnaire. The literature review provided an initial understanding of the broadband adoption and the basis for the development of a draft questionnaire. The final questionnaire consisted of a total of 14 questions. All 14 questions were close-ended, multiple, likert scale type in nature. The Likert scale type questions were adapted from Dwivedi et al (2006b) and Choudrie and Dwivedi (2006b) and demographic categories were adapted from Choudrie and Dwivedi (2006a).

Due to the uncertainty regarding personnel using the broadband facility, the researchers adopted the snowball or chain sampling (Dwivedi et al. 2006a; Fridah, 2002) method when selecting the respondents for the survey. In order to identify the first few respondents with Internet connection, one of the researcher located in Karachi, Pakistan approached friends and colleagues who possess the broadband connections at home using email in order to complete the questionnaire. The respondents were also requested to recommend their friends and family contacts that had Internet connections at home. This strategy led to the questionnaire being administered to a total of 275 broadband users utilizing either via email attachment or postal services during the periods of August and November 2006. All the respondents who replied were located in Sindh region (mainly from Karachi) of the Pakistan. Of the 250 questionnaires administered, 237 respondents returned the completed/usable questionnaire. Thus the obtained a response rate was 86.5%.18

The initial stage of data analysis involved checking the responses, and providing a unique identification number to each response. Using SPSS (version 14) the research generated the descriptive statistics (i.e. frequencies, percentage and tables) and conducted reliability test and regression analysis to analyze and present the research data obtained from the questionnaire.

Findings

Of the 237 respondents, only 39.7 percent represented the adopters of broadband and the remaining 60.3 percent were the non-adopters. The non-adopters of broadband include respondents accessing the Internet utilising narrowband (dial-up) at home and those who do not have Internet access at all. Of the 60.3 percent non-adopters category, 27.4 percent possessed a narrowband connection and 32.9 percent stated that they do not have any means of Internet access at home.

Reliability test

Cronbach's coefficient alpha values were estimated to examine the internal consistency of the measure (Table 2). Cronbach's α varied between 0.87 for the hedonic outcomes and 0.56 for perceived ease of use construct. Both secondary sources' influence and cost possessed a reliability value of 0.82. Three constructs namely, utilitarian outcomes, primary influence and service quality possessed a reliability value of 0.86. Four constructs including social outcomes, work referent's influence, facilitating conditions resources and perceived lack of needs demonstrated the reliability value of 0.76. Two constructs, namely perceived ease of obtaining subscription and self-efficacy, had Cronbach's α at 0.80 and for relative advantage and declining cost constructs the value of alpha was 0.83 and 0.67. Cronbach's α value for behavioural intention was 0.79. Hinton et al. (2004) have suggested four cut-off points for reliability, which includes excellent reliability (0.90 and above), high reliability (0.70-0.90), moderate reliability (0.50-0.70) and low reliability (0.50 and below) (Hinton et al 2004). The

aforementioned values suggest that of the 18 constructs, 16 possess high reliability and the remaining two illustrate moderate reliability. None of the constructs demonstrated a low reliability (Table 2). The high Cronbach's α values for all constructs imply that they are internally consistent. That means all items of each constructs are measuring the same content universe (i.e. construct). For example, all items of BI are measuring the same content universe of behavioural intention. Similarly, all items of UO are measuring the content universe of utilitarian outcomes construct. In brief, the higher the Cronbach's α value of a construct, the higher the reliability is of measuring the same construct.

Table 2. Reliability of Measurements (N=237)

Constructs	Number of Items	Cronbach's Alpha (α)
BI: Behavioural Intentions	3	0.79
RA: Relative Advantage	4	0.83
UO: Utilitarian Outcomes	12	0.86
HO: Hedonic Outcomes	9	0.87
SO: Social Outcomes	3	0.76
PI: Primary Influence	4	0.86
WR: Work Referents' Influences	2	0.76
SI: Secondary Sources' Influence	4	0.82
PES: Perceived Ease of Obtaining Subscription	4	0.80
PEOU: Perceived Ease of Use	3	0.56
SE: Self-efficacy	3	0.80
FCR: Facilitating Conditions Resources	2	0.76
SF/C: Cost	2	0.82
DC: Declining Cost	3	0.67
PK: Perceived Knowledge	3	0.72
PLN: Perceived Lack of Need	4	0.76
SQ: Service Quality	4	0.86

Descriptive Statistics

Attitudinal Factors

Table 3 presents the means and standard deviations of the items related to all five attitudinal constructs included in the study to measure the perceptions regarding broadband adoption. The means and standard deviations of aggregated measures for all the five constructs are also illustrated in the Table 3. A strong agreement was made for the utilitarian outcomes with highest average score of aggregate measure (M = 5.49, SD = 0.98) amongst attitudinal category where item UO1 scored the maximum (M = 6.02, SD = 1.42) and minimum (M = 4.37, SD = 2.06) for item UO10. The respondents also agreed strongly for all of the items of the relative advantage constructs, where item RA4 scored the maximum (M = 5.58, SD = 1.66) and minimum (M = 5.19, SD = 1.94) for item RA1 with the second highest average score of aggregate measure (M = 5.34, SD = 1.41) amongst attitudinal category. A moderately strong agreement was also made for the social outcomes (M = 4.49, SD = 1.62) and service quality (M = 4.34, SD = 1.63) constructs by survey respondents. The importance of hedonic outcomes was comparatively less agreed with a lowest average mean score of 4.29 and standard deviations of 1.42 (Table 3).

Table 3. Descriptive statistics of attitudinal factors and their items

Factors/Detailed Factors		Mean	Std. Deviation	Ranking
Relative Advantage (RA)	SCALE_RA	5.34	1.41	2
	RA1	5.19	1.94	
	RA2	5.36	1.76	
	RA3	5.23	1.56	
	RA4	5.58	1.66	
Utilitarian Outcomes (UO)	SCALE_UO	5.49	0.98	1
	UO1	6.02	1.42	
	UO2	5.94	1.53	

	UO3	5.79	1.45	
	UO4	5.62	1.57	
	UO5	5.58	1.53	
	UO6	5.97	1.33	
	UO7	5.38	1.57	
	UO8	5.73	1.47	
	UO9	5.21	1.48	
	UO10	4.37	2.06	
	UO11	4.84	1.56	
	UO12	5.39	1.61	
Hedonic Outcomes (HO)	SCALE_HO	4.29	1.42	5
	HO1	4.47	2.04	
	HO2	4.75	2.01	
	HO3	3.74	2.14	
	HO4	3.70	2.19	
	HO5	3.90	2.20	
	HO6	3.16	2.18	
	HO7	5.39	1.70	
	HO8	5.12	1.66	
	HO9	4.43	2.02	
Social Outcomes (SO)	SCALE_SO	4.49	1.62	3
	SO1	4.68	1.93	
	SO2	4.68	1.94	
	SO3	4.13	2.07	
Service Quality (SQ)	SCALE_SQ	4.34	1.63	4
	SQ1	4.36	2.12	
	SQ2	4.16	1.93	
	SQ3	4.32	1.97	
	SQ4	4.53	1.76	

Normative Factors

Table 4 presents the means and standard deviations of the items and aggregated measures related to all three normative constructs included in the study to measure the perceptions regarding broadband adoption. Amongst the normative constructs, primary influence rated above average (M = 4.49, SD = 1.62) and was agreed more strongly than other two constructs in this category namely secondary influence which was rated slightly lower than average score of primary influence (M = 3.65, SD = 1.80) and work referents' influences construct with lowest average score (M = 4.38, SD = 1.75) within this category on a 7 point likert scale (Table 4).

Table 4. Descriptive statistics of normative factors and their items

Factors/Detailed Factors		Mean	Std. Deviation	Ranking
Primary Influence (PI)	FAC_PI	4.49	1.62	1
	PI1	4.60	1.93	
	PI2	4.64	1.87	
	PI3	4.44	1.91	
	PI4	4.32	1.94	

Work Referents' Influences (WR)	FAC_WR	4.38	1.75	3
	WR1	4.46	1.93	
	WR2	4.29	1.97	
Secondary Sources' Influence (SI)	FAC_SI	4.47	1.57	2
	SI1	4.67	1.81	
	SI2	4.50	2.02	
	SI3	4.60	1.85	
	SI4	4.10	2.07	

Control Factors

Table 5 presents the means and standard deviations of the items and aggregated measures related to all eight control constructs included in the study to measure the perceptions regarding broadband adoption. Self-efficacy was rated stronger (M = 5.67, SD = 1.33) than the other control constructs, namely perceived knowledge (M = 5.52, SD = 1.32), perceived ease of use (M = 5.46, SD = 1.17), declining cost (M = 5.25, SD = 1.31), perceived ease of obtaining subscription (M = 5.08, SD = 1.28), cost (M = 4.98, SD = 1.75), facilitating conditions resources (M = 4.84, SD = 1.68) and perceived lack of needs (M = 4.31, SD = 1.66) (Table 5).

Table 5. Descriptive statistics of control factors and their items

Factors/Detailed Factors		Mean	Std. Deviation	Ranking
Facilitating Conditions Resources (FCR)	FAC_FCR	4.84	1.68	7
	FCR1	4.56	1.95	
	FCR2	5.12	1.79	
Perceived Ease of Use (PEOU)	FAC_PEOU	5.46	1.17	3
	PEU1	5.46	1.52	
	PEU2	5.18	1.82	
	PEU3	5.74	1.48	
Perceived Ease of Obtaining Subscription (PES)	FAC_PES	5.08	1.28	5
	PES1	5.08	1.64	
	PES2	5.13	1.57	
	PES3	5.22	1.63	
	PES4	4.90	1.69	
Cost (C)	FAC_SFC	4.98	1.75	6
	C1	5.04	1.88	
	C2	4.91	1.93	
Declining Cost (DC)	FAC_DC	5.25	1.31	4
	DC1	4.78	1.81	
	DC2	5.24	1.72	
	DC3	5.70	1.46	
Perceived Knowledge (PK)	FAC_PK	5.52	1.32	2
	PK1	5.63	1.48	
	PK2	5.49	1.83	
	PK3	5.43	1.64	
Self-efficacy (SE)	FAC_SE	5.67	1.33	1
	SE1	5.70	1.54	
	SE2	5.58	1.59	
	SE3	5.71	1.62	

Perceived Lack of Needs (PLN)	FAC_PLN	4.31	1.66	8
	PLN1	3.62	2.41	
	PLN2	4.48	2.07	
	PLN3	4.57	2.11	
	PLN4	4.58	2.09	

Behavioural Factors

Table 6 presents the means and standard deviations of the items related to both the behavioural constructs included in the study to measure the perceptions regarding broadband adoption. The means and standard deviations of aggregated measures for both the constructs are also illustrated in this Table. The respondents showed strong agreement for all of the items of the behavioural intentions (BI3 and BI1), as the mean score varies between 5.32 (SD=1.70) and 4.95 (SD=1.72) (Table 6) with an average score of 5.18 (SD=1.45) (Table 6).

Table 6. Descriptive statistics of behavioural intention factor and its items

Factors/Detailed Factors		Mean	Std. Deviation
Behavioural Intention (BI)	FAC_BI	5.18	1.45
	BI1	4.95	1.72
	BI2	5.28	1.76
	BI3	5.32	1.70

Regression analysis: Influence of independent variables on behavioural intentions (BI) to adopt broadband

The regression analysis was performed with behavioural intentions as the dependent variable and a total of 15 variables including relative advantage, utilitarian outcomes, hedonic outcomes, social outcomes, primary influence, work referent's influence, secondary influence, facilitating conditions resources, perceived ease of use, perceived ease of obtaining subscription, cost, declining cost, perceived knowledge, self-efficacy and perceived lack of needs as the predictor variables. A total of 237 cases were analyzed. From the analysis, a significant model emerged (F (15, 237) = 9.0, p < .001). The adjusted R square was 0.357. Four predictor variables included in the analysis were found to be significant (Table 7). These include FAC_FCR (β = .28, p = .000), FAC_PI (β = .24, p = .011), FAC_PEOU (β = .169, p = .031) and FAC_C (β = .159, p = .017). All other predictor variable was not found to be significant (See Table 7). As illustrated in Table 7, the constructs are arranged according to their size of β values in decreasing order. The size of β suggests that FCR construct has the largest impact in the explanation of variations of BI. This is followed by the primary influence and perceived ease of use constructs and then cost (See Table 7).

Table 7. Regression analysis: coefficients (Dependent variable: behavioural intentions)

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.615	.549		1.120	.264
FAC_FCR	.240	.066	.282	3.612	.000
FAC_PI	.212	.082	.240	2.568	.011
FAC_PEOU	.212	.098	.169	2.177	.031
FAC_C	.135	.056	.159	2.411	.017
FAC_RA	.081	.070	.080	1.154	.250
FAC _UO	-.089	.126	-.061	-.709	.479
FAC_HO	.085	.074	.084	1.140	.256
FAC_SO	-.048	.068	-.053	-.712	.477
FAC_WR	-.020	.075	-.024	-.268	.789
FAC_SI	-.042	.070	-.046	-.600	.549
FAC_PES	-.065	.094	-.057	-.685	.494

FAC_DC	.010	.081	.009	.125	.900
FAC_PK	.154	.091	.134	1.684	.094
FAC_SE	.088	.089	.079	.996	.320
FAC_PLN	-.067	.067	-.070	-.998	.320

Discussion

The internal consistency of measures was assessed utilizing a reliability test (i.e. Cronbach's α). For an exploratory study, reliability should be equal to or above 0.60 (Straub et al. 2004). Reliability or the Cronbach's α value of various constructs in this research varies between 0.56 and 0.87 and only one construct possess the reliability slightly below the recommended level of .60 (Table 2). This means that all but one constructs possessed reliability values above the minimum recommended level (Table 2). This suggests that measures of this study demonstrate an appropriate level of internal consistency.

Previous studies suggested significant role of attitudinal factors such as relative advantage, utilitarian outcomes, hedonic outcomes and service quality on influencing behavioral intention to adopt computer (Brown and Venkatesh, 2005) and broadband (Dwivedi, 2005; Dwivedi at al., 2006b). In contrast, outcome of this exploratory study suggest that none of attitudinal variables are significant in terms of influencing behavioral intentions to adopt broadband in Pakistan. Also, paths from only first normative construct that is primary influence to BI were significant and influence of work referents was found insignificant. This is consistent with findings from previous studies (Brown and Venkatesh, 2005; Dwivedi, 2005; Dwivedi at al., 2006b). However, in contrast to previous findings (Brown and Venkatesh, 2005; Dwivedi, 2005; Dwivedi at al., 2006b) one normative constructs (secondary sources' influences) was insignificantly related to the behavioural intention. Of the control category, three constructs, namely facilitating conditions resources, perceived ease of use and cost was significantly related to BI which is consistent with findings of previous studies (Brown and Venkatesh, 2005; Dwivedi, 2005; Dwivedi at al., 2006b); however, influence of all other control constructs was non-significant on BI.

The predictive power of the regression model of this research can be compared to guiding model of broadband adoption (Dwivedi, 2005). The comparison of previous study (Dwivedi, 2005) for the adjusted R^2 obtained for both behavioural intention clearly demonstrates that the adoption model of this research performed as well as the previous study (Dwivedi, 2005). With regards to the behavioural intention value of the adjusted R^2 reported in Dwivedi (2005) study was 0.43, the adjusted R^2 for this study is found to be 0.357, which suggests the appropriate level of explained variance. This means that independent variables considered in this study are important for understanding consumer's behavioral intention to adopt broadband in Pakistan.

Implications

The analysis of the empirical data derived from the survey of broadband consumers revealed many lessons that will be helpful to Internet Service Providers (ISPs) or broadband service providers and policymakers seeking to encourage consumer adoption of broadband in Pakistan. These lessons, implications and theoretical contributions are summarized below:

As discussed above, empirical data have suggested that primary influence, facilitating conditions resources, cost and perceived ease of use comprise of factors that affect the consumer adoption of broadband. This finding extends the body of knowledge in the area of consumer adoption of broadband, as aforementioned factors were not examined as important factors in the literature to explain adoption of subscription-based technologies such as broadband in context of developing countries. Therefore, the theoretical contribution of this research is that it integrates the appropriate IS literature in order to enhance the knowledge of technology adoption from the consumer perspectives in developing world.

The findings of this research generate a number of issues that may assist both policy makers and ISPs for understanding consumer adoption of broadband. By utilizing experience and research findings gained from developed world, policy makers emphasizing role of cost/price, content and last mile access for encouraging growth and diffusion of broadband in Pakistan (IT & Telecom Division, 2006). Whilst our research suggest that factors that responsible for widespread adoption of broadband adoption in developed world are less appropriate to apply for current management of broadband diffusion in Pakistan. For example, lack of content may play role of barrier when majority of consumers have adopted the broadband and do not feel satisfied only with speed and wants something more than return. But currently only a very small number of consumers have access to it so its inappropriate to think that content is an important barrier to adoption.

As findings suggest, none of attitudinal factors are significant towards explaining behavioral intention to adopt broadband. This clearly suggests that efforts require from both the policy makers and ISPs to develop positive attitude towards broadband amongst consumers by making them aware about benefits of broadband.

Both cost of subscribing broadband and facilitating conditions resources construct is emerged as an important and significant factor in terms of influencing BI to adopt broadband. This has implications for both ISPs and policy makers. For instance, ISPs have to think about more consumer centric services and alternative price plans so that all consumers who want to subscribe broadband would be able to do so. Policy makers have to provide alternative places for broadband access where lower income groups or those who cannot afford it can use it. It may help to develop positive attitude towards broadband and may increase behavioral intentions to adopt broadband and therefore encourage overall adoption of broadband in Pakistan.

The primary influence construct was also found to be significant in explaining BI to adopt broadband. This has important implications for policy makers. For instance, all schools/college should be equipped with broadband and children should be encouraged to use computer and internet for educational purposes. In such situations, children may exert positive influence on parents to subscribe to broadband. Such a strategy was successfully utilized in South Korea (Choudrie and Lee, 2004). Since primary influence is an important factor, ISPs should encourage existing consumers to influence their family and relatives who still do not have broadband subscription. For this, ISPs should motivate existing consumers by offering cash back or gift vouchers on successful referral of new customers. As illustrated in Table 7, perceived ease of use is also an important factor that influences behavioral intentions to adopt broadband, which brings mainly policy-related issues. This suggests that there is a need to equip citizens with the skills to use computers and the Internet. When it comes to the government's role in equipping citizens, it is important to take a segmental approach to identify and provide relevant skill-oriented courses to those citizens who do not have normal opportunities to learn and use the computer, Internet and other related emerging technologies and applications such as e-government and e-commerce. Such strategies are not yet applied in Pakistan and require fast implementation if Pakistan wish to join the list of countries leading broadband deployment and adoption.

Conclusion

This study examined empirically the factors affecting adoption and usage of the broadband Internet in a developing country in this instance Pakistan. The following main conclusions are drawn from this research and are based on underlying research assumption made in Section 2. A total of 15 constructs (See Tables 2 & 7) were expected to be correlated to the BI of consumers when adopting Internet in Pakistan. Of the aforementioned 15 constructs, four including primary influence, facilitating conditions resources, cost and perceived ease of use significantly correlated to the BI of consumers. In terms of the size of the effect of the four aforementioned constructs that contributed significantly to the behavioural intentions, FCR construct has the largest impact in the explanation of variations of BI. This is followed by the primary influence and perceived ease of use constructs and then cost.

As broadband technologies enable a range of communication and Internet services, studying individuals from Pakistan provides a useful starting point for understanding the adoption of broadband in developing countries. This research presents one of the initial efforts towards understanding the adoption behaviour of Internet consumer in developing country perspective for this instance Pakistan. The findings are specifically useful for ISPs and policy makers of Pakistan. Factors that are reported significant are utmost important and need attention in order to encourage further adoption and usage of Internet in the country. Additionally the cost of using the traditional telephone network is very high so broadband Internet can be used as a replacement for offering communication services such as instant messaging or IP telephony.

The first limitation of this research is the generalization of findings, which is highlighted below. Snowball sampling method may have introduced the bias in findings. Therefore, the generalization of this study required collecting the random data from across the Pakistan. Furthermore, this research had to supplement the questionnaire data with interviews, which was not possible due to the shortage of time and resources. The data for this research has been collected within a short period of time and provides a snapshot. This can, however, be expanded over a longer period of time in order to provide longitudinal data. This will then eliminate any variables that may have produced anomalies in the subsequent result.

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