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IMPACT OF ALTERNATIVE FACTORS ON USAGE OF TELCO-LED BRANCHLESS BANKING SERVICES: EMPIRICAL EVIDENCE FROM PAKISTAN

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Abstract

This study analyzes the impact of alternative factors on usage of branchless banking services among different mobile users in Pakistan. The sample used in this study is based on 850 questionnaires filled by different mobile subscribers at franchises, retail outlets and shops in most populated city of Pakistan (Karachi) during January, 2015-December, 2015. The dependent variable in the study is the branchless banking adoption, which is a binary variable. We used binomial logistic regression analysis method and included a set of explanatory variables to predict the branchless banking

usage and non-usage. The study found perceived usefulness had a strong positive impact on branchless banking adoption, while having a bank account was found to have a strong negative impact. Salaried persons, low-income groups and less educated population segment are more attractive towards usage of branchless banking products. The study concludes that mobile operator based branchless banking services has huge potential to reach unbanked and untapped segment of the society in Pakistan.

Keywords: Financial Inclusion, Branchless Banking, Binary Logistic Regression, Unbanked Segment

JEL code: **G21, O31**

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INTRODUCTION

Telecommunication rapid growth and advancement attract the financial institutions and change the traditional way of banking services. Telecom payers have a unique value chain activity system, which help them strategic moves in financial sector [1]. Telecom operators have tangible and intangible resources, such as technology, image and brand, which allow them to achieve superior customer benefits.

The banking industry globally has experienced a significant change due to innovation. Innovation in the banking industry increases the alternative delivery channels. Further collaborating with telecom companies, financial institutions are introducing new ways for the consumers beyond the physical branches and boundaries. New services, new technologies and new products have intensely changed the banking industry [2].

Mobile banking has marked itself as an emerging technology adopted by banks all over the world. On the other hand increased competition among the telecom operators and declining profit margins in telecom industry force them to look for optimal use of their resources like infrastructure, advance technology, product innovation, huge clientele and retail network to jump into new domains of banking and financial sector.

Rapid growth of telecommunication technologies in 21th century changed the world from smoke singles to latest 3G and 4G technologies, which are reshaping the telecommunication channels in the present era and give birth to mobile commerce. Banking sector also get advantage of advance technologies and developed alternative delivery channels of banking services. Automated Teller Machines (ATM), phone banking service, point of sale and internet banking facilities, are known as branchless banking channels. Branchless banking services are provided independent of location and time by using mobile phone of an individual as his/her financial identity.

Marshall et al. [3] reported that first branchless banking service was launched in Britain in October 1989 with the brand name of First Direct. Its service was offered over the ordinary telephone. The service consisted of saving accounts, mortgages, credit cards and loans.

BACKGROUND OF THE STUDY

Around 2.5 billion people do not have a formal bank account at a financial institution. The most important reason for not having an account is poverty, but financial costs, travel distance to bank and complex procedures and paper work are also major barriers. Access to affordable financial services is linked to overcoming poverty, reducing income disparities, and increasing economic growth. In the present era of globalization and financial development still half of the world population is unbanked all over the world [4].

In Pakistan 22% population have bank accounts, compare to 60% who have access to mobile phone. Although in 2007, the State Bank of Pakistan (SBP) made it mandatory for all commercial banks to open at least 20% of their new branches in rural areas but still 86% of the rural population is unbanked. As per to SBP's statistics, there are 5.06 branches per 100,000 individuals in Pakistan as opposed to the global median of 8.4 branches for every 100,000 individuals (SBP, 2014).

There are various models of branchless banking followed in the world. Most dominating models are "Telco-Led" and "Bank-Led" branchless banking models. There are significant differences between Telco-Led and Bank-Led branchless banking. Bank-led model permits banks to lead the provision of branchless banking services, while Telco-led model put telecoms operators in the country at the driver's seat. Telco is more successful globally due to proven ability to develop and manage agent networks and understanding of mass-market customer needs.

In Pakistan, more than 133 million people who own a mobile phone in the country, mostly belongs to low-income segment that conducts many transactions (Table 1). Pakistan Telecommunication Authority [5] reported that five mobile operators are operational in Pakistan; M/s Pakistan Mobile Communications Limited (Mobilink), M/s CMPak Limited (Zong), M/s Telenor Pakistan Limited, M/s Warid Telecom Limited and M/s Pakistan Telecom Mobile Limited (Ufone).

In 2009, the concept of branchless banking introduced in Pakistan to cater the low-income segment of the society. Mobile Phone operators and financial institutions in Pakistan have introduced m-payment models in 2009, Mobile operators have actively engaged in acquisitions and joint ventures with micro-finance and commercial banks for providing M-Banking services in Pakistan.

In developing countries like Pakistan people mostly prefer traditional methods of financial transactions over conventional banking due to several reasons like travel distance, inconvenient banking hours for most of the people, documentation required by

the banks for account opening and long ques at cash counters in branches [6].

Table 1: Annual Cellular Subscribers (in millions).

	Mobilink	Ufone	Zong	Telenor	Warid	Total
2009-10	32	20	7	24	17	99
2010-11	33	21	11	27	17	109
2011-12	36	24	17	30	13	120
2012-13	37	25	21	32	13	128
2013-14	38	24	27	36	13	139
2014-15	33	17	22	31	9	114
2015-16	39	19	25	38	11	133
Source: Pakistan Telecommunication Authority [5]						

Kumar et al. [7] reported that Tameer Microfinance Bank Limited started negotiations with Telenor in 2007 to develop m-banking services. In 2008, Telenor purchased a 51 percent share in TMFBL (Tameer Micro Finance Bank Limited) and in 2009 first time in Pakistan introduced the branchless banking/m-banking service with the brand name of “easypaisa”.

Orascom Telecom (Mobilink) through Waseela Microfinance Bank which is a Sister concern of Mobilink and the subsidy of Orascom Telecom got the approval for Mobicash from State Bank of Pakistan in 2012. In December 2012, Askari Bank Limited and Zong have launched ‘Timepey’, a technology-based branchless banking service. In 2013, Ufone was granted the license by State Bank of Pakistan to operate branchless banking nationwide with the brand name of Upaisa with the help of U-Microfinance Bank (formerly Rozgar Microfinance Bank Limited), whose 100% shares was acquired by Ufone in August 2012. In December 2013, Warid Telecom and Bank Alfalah Limited have launched their Mobile Financial Service (MFS) by the name of ‘Mobile Paisa’ [8].

Currently, eight branchless banking service providers have developed a network of 125,000 agents to provide Branchless banking services [9]. Among eight branchless banking products, five are Telco-led branchless banking products offered by telecom operators with the help of financial institutions.

The purpose of the current research is to identify the impact of alternative factors on usage of branchless banking products and services in Pakistan to tap the unbanked segment of the society through branchless banking in Pakistan.

This paper comprises of five sections. Following introduction and background of the study. Section 2 discusses the review of theoretical and empirical literature. Section 3 explains the modelling framework and the expected effects of different factors on branchless banking (Table 2). Section 4 discusses the estimation results. Section 5 concludes the study and provides the policy implications.

Table 2: Mobile Operators Based (Telco-led) BB Products.

S.No.	Telecom Operator	Financial Institution/Bank	Branchless Banking Product/Brand
1	Telenor	Tameer Microfinance Bank Limited	Easypaisa
2	Mobilink	Waseela Microfinance Bank Limited	Mobicash
3	Zong	Askari Bank Limited	Timepey
4	Ufone	U Microfinance Bank Limited	Upaisa
5	Warid Telecom	Bank Alfalah Limited	Mobile Paisa

Source: Pakistan Telecommunication Authority [5] and State Bank of Pakistan [9], prepared by authors.

REVIEW OF LITERATURE

This section provides an overview of previous researches on consumers' attitudes towards branchless banking adoption in the world. One of the key issues in dominating literature is the identification of the significant factors which influence the customer's intention to adopt branchless banking services. Understanding the impact of different factors is important to the policy makers. Despite the importance of the issue, little has been done in the existing literature to understand the behaviour of customers and identify those important variables that affect the usage of branchless banking in Pakistan.

Mattila [10] conducted a study on the factors influencing mobile banking service adoption using the sample size of 1253 respondent and examines the innovation attributes and demographic factors. The quantitative data was analyzed using correlation coefficients and regression analysis. The author identified that security and trustworthiness of usage of service are the major concern of the m-banking users in Finland.

Flavian et al. [11] analyzed online banking adoption using binomial logistic regression process. They used sample size of 633 responses from customers of various banks. Security, ease of use, perceived benefits, consumer trust, sex, education, age and income level were used as independent variables. They found income, age, sex, and consumer trust as significant factors in adoption of online banking.

Gan et al. [12] studied consumers' choices between electronic banking and non-electronic banking in New Zealand. They obtained data through 1,960 households in New Zealand. The decision to use electronic banking was dependent variable in their study and service quality, perceived risk factors, price factors, age, gender, marital status, income, employment, and education were independent variables. They used Logistic regression analysis. They found that service quality, perceived risk factors, employment, and education were the significant variables that influence the electronic banking usage in New Zealand. They also found positive relationship between low-income segment and electronic banking.

In a research study, Laukkanen [13] compared customers' perceptions regarding internet and mobile banking through 20 interviews of banking customers and concluded that efficiency, safety and convinces were important factors for the Scandinavian banking customers in Finland.

Donner et al. [14] conducted the research on mobile banking and economic development in India. They conducted on-site 20 interviews with owners of small enterprises in Bangalore city from manufacturing, retail and services sectors. They found trust and lower fee were significant factors. Ivatury et al. [15] studied branchless banking services in Brazil and Philippines. In Brazil, customers open bank accounts, make deposits, and pay bills at small retail outlets. In the Philippines, customers send money using mobile based branchless banking services. They found branchless banking has pro-poor, pro-growth impacts for households, communities, and national economies.

Yang [16] investigated the difficulties in adoption of mobile banking services in South Taiwan through survey of 178 respondents. Adoption factors included the belief that mobile banking helps fulfil personal banking needs, provides location-free conveniences, and is cost effective. The author identified mobile banking service charges and security issues are primary factors, which are affecting mobile banking adoption in Taiwan.

Tang et al. [17] conducted a study in Taiwan on behavioral intention to use mobile knowledge management using constructs of Technology Acceptance Model (TAM) by obtaining the data through qualitative research methods with the help of 6 in-depth interviews and analyzed the perceived usefulness, perceived ease of use, behavior intention, perceived self-efficacy and perceived convenience. They found that ease of use and perceived usefulness are significant factors.

Polasik et al. [18] used the binomial logistic regression analysis on sample size of 3519 responses in a study on internet banking adoption in Poland. Perceived security, internet experience, marketing exposure, use of others banking products, type of internet connection used and demographic characteristics were chosen as independent variable. They found promotional campaigns, usage of other banking products and fastest internet connection were important predictors.

Sultana [19] examined the m-banking regulations and impact of different m-banking models in some South Asian countries and found regulatory practices of Kenya and Philippines are most successful. The authors witnessed fastest growth of mobile users and argue that more than 40% people use mobile phones as compare to 10% population is banked in South Asia region. These 40% mobile users can be targeted immediately, by providing financial services especially to those who may never have had a bank account. The study also suggested that banks should focus on making money though financial intermediation rather than through transaction fee.

Alam et al. [20] conducted research on corporate customer internet banking adoption behavior with a sample size of 223. They studied this using awareness, ease of use, security, cost, reluctance to change and accessibility as independent variables. The results of this study showed that awareness, security, cost, and accessibility were significant factors. But, perceived ease of use and reluctant to change were found insignificant in determining its adoption.

Koenig et al. [21] using a sample of 155 consumers via online survey in Germany examined the effect of perceived cost, perceived usefulness, perceived ease of use, credibility, trust, compatibility and risk on behavioral intension of young consumers on adoption of mobile banking services. They found strong relationship between compatibility and perceived usefulness.

Riquelme et al. [22] analyzed the moderating effect of gender in the adoption of mobile banking in Singapore, by taking sample size of 681 electronic banking users. They used risk, ease of use, adoption, usefulness, relative advantage and social norm as independent variable and found that social norm and ease of use are more important to females as compare to males in Singapore in adoption of mobile banking.

Puschel et al. [23] using a sample of 666 respondents of an online survey in Brazil, investigated the adoption factors of mobile banking by using an integrated framework of 14 constructs from different theories of adoption of innovations. They examine effects of perceived ease of use, relative advantage, visibility, self-efficiency, technology facilitating conditions, compatibility, perceived behavioral control, resource facilitating condition, subjective norm, attitude, result demonstrability, trial-ability and image. Results indicate that only perceived ease of use and relative advantages have significance importance in adoption of mobile banking usage in Brazil.

Cruz et al. [24] investigated the perceived barriers in adoption of mobile banking services in Brazil using a sample of 3585 respondent of online survey in Brazil. They studied the effect of barriers on rejection of mobile banking services. They analyzed the effects of costs, lack of relative advantages, perceived risk, unsuitable device, complexity, lack of information and lack of observability as innovation resistance factors and found that cost and perceived risks are two significant barrier in adoption of mobile banking in emerging markets with evidence from Brazil.

Grabner et al. [25] studied factors influencing online banking adoption in Austrian market. They gathered 372 bank customers' responses from Austria. Logistic regression was used for data analysis. Perceived relative advantage, age, gender, education and perceived security risk were influencing factors in adoption of online banking.

Nasri [26] studied the factors influencing the adoption of internet banking in Tunisia. The author concluded on the bases of 253 respondents of survey that perceived convenience, security, prior knowledge and risk all are those factors that are more

influential than others in Internet banking adoption in the Tunisia banking market.

Khraim, et al. [27] conducted a study on factors affecting Jordanian consumers' adoption of mobile banking services with 301 questionnaires and examine trail-ability, complexity, self-efficacy, relative advantage, complexity and compatibility factors on adoption of mobile banking services in Jordan. They concluded that self-efficacy, trail-ability, compatibility, complexity, risk and relative advantage were statistically significant factors in influencing mobile banking adoption.

Amin et al. [28] investigated the factors that influence the local people to adopt mobile banking by applying Technology Acceptance Model (TAM) by studying impact of perceived usefulness, perceived ease of use, perceived credibility, perceived enjoyment and perceived self-efficacy on adoption of mobile banking in Malaysia. A sample of 160 respondents were taken from different ethnic groups and results indicated that perceived credibility, perceived enjoyment and perceived self-efficacy are significant factors for mobile banking use in Malaysia.

Yu [29] conducted a research on factors affecting individuals to adopt mobile banking in Taiwan through sample of 441 respondents and examine perceived credibility, performance expectancy, perceived financial cost and social influence, and found that social influence is the most dominating factor in affecting people in Taiwan to use mobile banking.

Oluoch [30] in his research on factor affecting adoption of mobile banking technology in Kenya analyzed the impact of three factors of Technology Acceptance Model (TAM); perceived usefulness, perceived ease of use, perceived risk on adoption of mobile banking technology. The study uses descriptive statistics and probity regression model on a sample of 300 responses. Study found that perceived usefulness had a positive impact and perceived risk had a negative impact on intention to adopt mobile banking in Kenya.

Anand et al. [31] studied branchless banking in India with the help of secondary data and suggested that branchless banking is helpful for tapping the untapped banking segment with the help of awareness programs and securing the branchless banking transactions.

Kazi [32] studied the factors affecting adoption of mobile banking in Pakistan using Technology Acceptance Model with supplementary determinants of social influence and perceived risk by survey research method using 372 responses, and found social influence is the most significant factor in adoption of mobile banking in Pakistan.

Annin et al. [33] empirically examined the e-banking usage in the most urbanized metropolis in Ghana by using a sample of 241 customers from Kumasi Metropolis. Authors used logistic regression analysis and found that occupational status and monthly income were the most dominating factors among the customers who were

using e-Banking in Ghana.

AlSouf conducted the research on customer's perception of m-banking adoption in the Kingdom of Bahrain using Extended Technology Acceptance Model (ETAM) with a sample size of 372 responses. In this study independent variables were perceived usefulness, perceived ease of use, perceived risk, perceived cost, self-efficacy and quality of services. Hypothesis testing was performed on the basis of linear regression analyses. They found perceived usefulness and ease of use as significant predictors.

Domeher et al. [2] in their research examined the adoption of financial innovation in the Ghanaian banking industry. They used sample size of 405 responses from 6 major banks in Ghana. The logistic regression model was used with perceived ease of use, perceived financial risk, perceived compatibility, perceived usefulness, level of education, level of income and age. They found perceived usefulness, perceived risk and customers' level of education are significant factors that influence the adoption of e-banking in Ghana.

Based on the empirical studies, various factors are identified that can influence the usage of branchless banking. Most of the factors are related to demographic characteristics. Mostly previous studies analyzed the usage of mobile banking and online banking in different regions. But our research study is the first attempt to explore the factors affecting the adoption of telco-led branchless banking in Pakistan.

MODELING FRAMEWORK

Based on the review of theoretical and empirical literature following model is proposed for estimation purpose

$$BB = \beta_0 + \beta_1 UB + \beta_2 LEd + \beta_3 EA + \beta_4 AG + \beta_5 GEN + \beta_6 ARF + \beta_7 PFC + \mu_i \quad (1)$$

Where BB is Branchless Banking Adoption in Pakistan, UB is unbanked segment in Pakistan (Not having Bank Account), LEd is Level of Education, EA is Easy Access (Convenience), AG is Age of BB User, GEN is Gender, ARF is Awareness about Risk Factors and confident on safety measures (BB Secure), PFC is Perceived Financial Cost (BB save money). The β are the parameters and μ_i is the error term. Among parameters β_1 , β_3 and β_6 are expected to be positive and β_7 is expected to be negative. The sign of β_2 , β_4 and β_5 are to be determined.

Sources of Variables

Based on the empirical studies various factors are identified that can influence the branchless banking usage. Table 3 shows a summary of the various factors that the literature has stated regarding mobile, internet and branchless banking adoption and usage.

Table 3: Literature Sources for the Variables of the Model.

Factors	Literature Sources
Branchless Banking (BB)	Ivatury et al. [15], Diniz et al. [34]
Unbanked (UB)	Lyons et al. [35], Hughes et al. [36], Anand et al. [31]
Level of Education (LEd)	Flavian et al. [11], Domeher et al. [2]
Perceived Convenience (EA)	Luarn et al. [37], Flavian et al. [11], Laukkanen [13], Alam et al. [20], Tang et al. [17], Koenig et al. [21], Riquelme et al. [22], Puschel et al. [23], Nasri [26], Amin et al. [28], Domeher et al. [2]
Age (AG)	Flavian et al. [11], Yu [29], Domeher et al. [2]
Gender (GEN)	Flavian et al. [11], Riquelme et al. [22], Yu [29]
Perceived Safety (ARF)	Mattila [10], Luarn et al. [37], Flavian et al. [11], Laukkanen [13], Alam et al. [20], Yang [16], Koenig et al. [21], Nasri [26], Amin et al. [28], Yu [29], Kazi [32]
Perceived Financial Cost (PFC)	Luarn et al. [37], Alam et al. [20], Yang [16], Koenig et al. [21], Cruz et al. [24], Yu [29]
Source: Authors' construction	

ESTIMATION RESULTS

Respondent Profile

The respondent profile in Table 4 shows that there are 24% non-users of Branchless Banking (BB) products and 76% branchless banking users out of total 850 respondents. There are 67% respondents who don't have any bank account, 33% respondents have bank accounts. Among respondents, there are 80% males and 20% females. The 5% respondents belong to age group below 21 years, 17% respondents belongs to age group of 21-28 years, 46% respondents belongs to age group of 29-35years, 26% belongs to ages group of 35-45 years, and only 6% respondents belongs to age group of 45+ years. The 11% respondents are below matric/primary, 41% are matric/O-Level, 38% are inter/A Level, 4% are bachelor degree holders, and 6% had masters and above degree. The 37% respondents are self-employed, 55% are salaried persons, 5% are households and only 3% are students. The 27% respondents earn below Pakistani Rupee (PKR) 10,000 per month, 37% respondents belong to average salary group of PKR 10,000 to PKR 20,000 per month, 27.17% belongs to salary range of PKR 21,000 to PKR 30,000 per month income and only 9% respondents are earning more than PKR 30,000 per month.

Table 4: The Profile of Respondent.

Category		No. Of Respondent	Percentage
Using BB Product?	No	202	24%
	Yes	648	76%
Have Bank Account?	No	569	67%
	Yes	281	33%
Gender	Male	679	80%
	Female	171	20%
Age (Years)	Below 21	45	5%
	21-28	143	17%
	29-35	393	46%
	35-45	222	26%
	45+	47	6%
Education	Below Matric	95	11%
	Matric/O Level	349	41%
	Inter/A Level	322	38%
	Bachelors	36	4%
	Masters +	48	6%
Occupation	Self Employed	311	37%
	Salaried	470	55%
	Household	46	5%
	Student	23	3%
Average Monthly Income (PKR)	Below Rs.10, 000	228	27%
	Rs.10, 000 – 20,000	312	37%
	Rs.21, 000 – 30,000	231	27%
	Above Rs.30,000	79	9%
Source: Tabulated by the Authors			

Figure 1 shows the respondent by mobile operator service users in this study. Currently in Pakistan five telecom operators are providing mobile as well as branchless less banking services. As Telenor is dominating the telco-based branchless banking in Pakistan and started BB services in 2009, therefore in this study 58% respondents are Telenor subscribers, 24% respondent are Ufone subscribers, 13% respondents are Mobilink users and only 5% are Warid users as Warid telecom launched their Mobile Financial service in December 2013.

Figure 2 represents the most important factor inhibiting the adoption of branchless banking in Pakistan. The 25% respondent believes that perceived usefulness is the most dominating factor in adoption of branchless banking in Pakistan, 21% respondent consider perceived ease of use as an important factor in adoption of BB services. There

are 10.35% respondents who believe that low cost, 9.4% consider reliability, 5.5% consider social influence, 3.2% security and safety and only 1.7% assume privacy as an important factor in adoption of branchless banking products and services in Pakistan.

Figure 1: Respondent by Mobile Operator Service Users. Source: Authors' estimation.

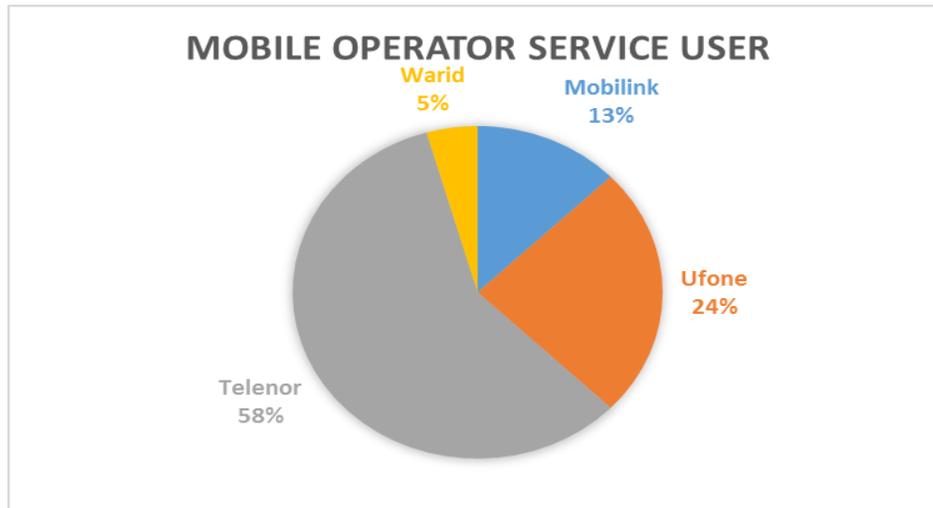
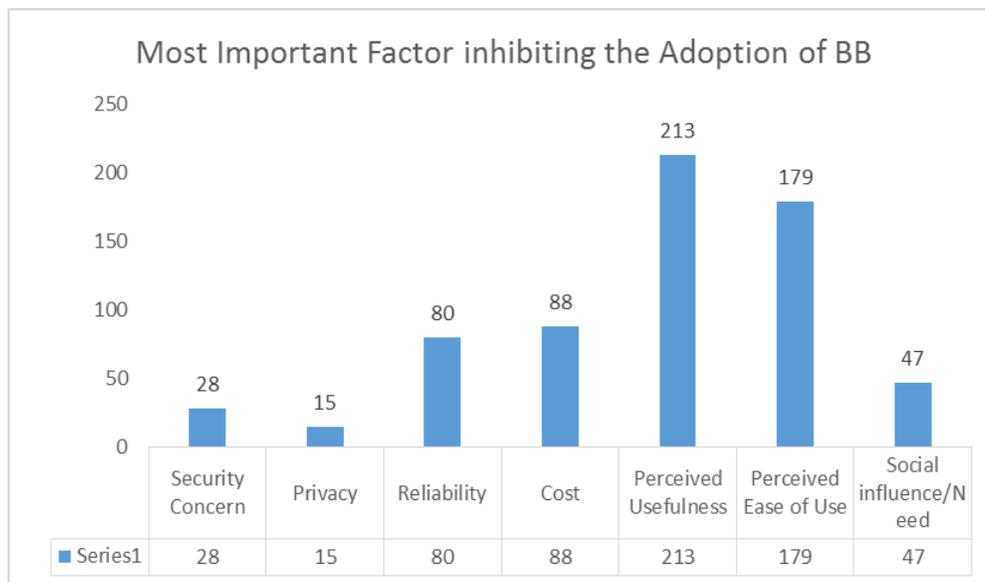


Figure 2: Most Important Factors Inhibiting the Adoption of Branchless Banking. Source: Authors' estimation.



Descriptive Statistics

Table 5 provides a summary of the descriptive statistics of selected independent variables used in model. A five point Likert scale (Likert, 1932) was used, where 1=Strongly Disagree (SD), 2=Disagree (D), 3=Neutral (N), 4=Agree (A) and 5=Strongly

Agree (SA) were used to measure the respondents' views concerning statements on perceived safety, perceived convenience (easy access) and perceived financial cost (saving money) and the means were 3.74, 4.13 and 3.55 respectively. Since mean is near to 4, this represents that respondents mostly agreed on the question that branchless banking is secured, convenient and cost effective.

Table 5: Descriptive Statistics.

	N	Minimum	Maximum	Mean	Std. Deviation
BB Secured	850	1	5	3.74	1.058
BB are more Convenient	850	2	5	4.13	.701
BB Save Money	850	1	5	3.55	.947

Source: Authors' estimation

Table 6: Correlation Matrix.

		BB Product used?	Have Bank Account?	BB Secured	BB are more Convenient	BB Save Money	Age	Education Level
BB Product used?	Pearson Correlation Sig. (2-tailed)	1						
Have Bank Account?	Pearson Correlation Sig. (2-tailed)	-.783** .000	1					
BB are Secured	Pearson Correlation Sig. (2-tailed)	.794** .000	-.612** .000	1				
BB are more Convenient	Pearson Correlation Sig. (2-tailed)	.381** .000	-.325** .000	.340** .000	1			
BB Save Money	Pearson Correlation Sig. (2-tailed)	.346** .000	-.255** .000	.284** .000	.154** .000	1		
Age	Pearson Correlation Sig. (2-tailed)	.224** .000	-.139** .000	.170** .000	.062 .071	-.042 .226	1	
Education Level	Pearson Correlation Sig. (2-tailed)	-.192** .000	.139** .000	-.119** .001	-.173** .000	-.067 .051	-.030 .383	1

Note: ** shows significant at 1 percent level.
Source: Authors' estimation

Correlation Matrix

Correlation matrix examined the relationship between the variables under the study. The variable having bank account ($r = -0.78$) had a strong negative correlation with the usage of branchless banking, perceived security ($r = 0.794$) had very strong positive correlation with dependent variable of BB usage. Convenient ($r = 0.38$) and perceived financial cost (save money) had moderate positive correlation. Age ($r = 0.224$) had weak positive correlation and level of education had weak negative correlation with usage of BB (Table 6). Since all p values (probabilities) are less than 0.01, therefore, these correlations between the dependent variable (BB) and independent variable(s) are highly statistically significant.

Results of logistic Regression

The dependent variable BB usage is a binary variable. A Binomial Logistic regression has been selected for the purpose of analysis. The predictive power of the model was tested using Cox and Snell R square and Nagelkerke R square tests. The results from Cox and Snell R square test indicates that 64% variation in the dependent variable (branchless banking usage) are explained by the model. The Nagelkerke R square test shows that 96.1% of the variations in the likelihood of usage are explained by the combined effects of the independent variables (Tables 7 and 8). Hence, the model predicts variations in the usage of branchless banking by about 64 to 96.1%. Since R2 exceeds 0.3 in both instances, it is evident that model's performance is good for prediction [2,38]. The model high significance of model shows that independent variables predict the dependent variable well. Negelkerke's R2 of 0.961 indicated a very strong explanatory power of the model (Table 9).

Table 7: Model Summary.

Step	-2 Log likelihood	Cox and Snell R square	Nagelkerke R square
1	63.114 ^a	.640	.961
Note: Estimation terminated at iteration number 10 because parameter estimates changed by less than 0.001. Source: Authors' estimation			

Table 8: Hosmer and Lemeshow Test.

Step	Chi-square	Df	Sig.
1	47.297	8	.000
Source: Authors' estimation			

Hosmer and Lemeshow test [39] used to discover the degree of absolute effectiveness of model. The value of chi-square (47.297) shows that predictions made by model fit perfectly with observed group membership. Cases are arranged in order by their

predicted probability on the criterion variable. Omnibus Tests of Model Coefficients also confirmed the significance of the model.

Table 9: Omnibus Tests of Model Coefficients.

		Chi-square	df	Sig.
Step 1	Step	869.085	7	.000
	Block	869.085	7	.000
	Model	869.085	7	.000
Source: Authors' estimation				

Table 10 shows the most important outcome. The β column indicates the regression coefficients for each predictor variable. Meanwhile, the Wald statistic and the respective significance indicate, which of the predictor variable successfully predict usage of branchless banking adoption. The Wald criterion confirmed that unbanked ($p=0.000$), awareness about risk factors ($p=0.000$), gender ($p=0.000$), age ($p=0.002$) and perceived financial cost ($p=0.019$) are significant factors that affects branchless banking. The results of the model show that easy access ($p=0.194$) is not significant in BB. The Exp (β) column shows the odds ratios for each predictor. Values greater than 1 indicate a greater likelihood of branchless banking adoption; values less than 1 signify reducing likelihood. The Exp (β) values associated with unbanked (1838.843), awareness about risk factors (14.912), perceived financial cost (2.5), gender (229.2) and age (5.553) confirmed their significance contribution in adoption of branchless banking adoption.

Table 10: Variables in the Equation.

	β	S.E.	Wald	df	Sig.	Exp(β)	95% C.I. for EXP(β)	
							Lower	Upper
UB	7.517	1.313	32.783	1	.000	1838.843	140.297	24101.247
ARF	2.702	.456	35.044	1	.000	14.912	6.095	36.482
EA	-.733	.565	1.684	1	.194	.480	.159	1.454
PFC	.926	.395	5.487	1	.019	2.523	1.163	5.474
GEN	5.435	1.294	17.636	1	.000	229.277	18.145	2897.077
AGE	1.714	.566	9.165	1	.002	5.553	1.830	16.848
Led	-1.075	.382	7.936	1	.005	.341	.162	.721
Source: Authors' estimation								

The estimation results show that all the null hypotheses except the perceived convenience hypothesis have been rejected confirming the significant relationship between six variables (Unbanked segment, Perceived Safety, Perceived Financial Cost, Gender, Age and Level of Education). The null hypothesis for perceived convenience been accepted indicating no relationship between perceived convenience and usages of branchless banking. This particular finding differs from the results obtained by Luarn et al. [37] and Tang [17]. The finding does, however, confirm the observation by Amin et

al. [28] that relationship between BB usage and perceived convenience is insignificant [40].

CONCLUSION AND POLICY IMPLICATIONS

The aim of the study was to identify the impact of alternative factors on usage of branchless banking products and services in Pakistan using the logistic regression analysis. The model and the results contribute to a better understanding of the factors that influence branchless banking adoption. The study identified unbanked segment is more attractive towards usage of branchless banking services and products in Pakistan. The study found security/reliability, perceived low service charges, age, gender had a positive impact on branchless banking adoption, while level of education was found to have negative impact. This is the important contribution of this study in the existing literature on usage of branchless banking products and services in Pakistan. Based on the finding of this study, we recommend that regulators, telecom operators and financial institutions should take more initiatives to promote branchless banking for the benefit of the unbanked and underserved people of the country because Branchless Banking has huge potential to reach unbanked and untapped segment of the society. This study will also be helpful to the banking industry as more commercial and a microfinance bank enters into the branchless banking sector. It will also serve as a future reference for researchers as access to affordable financial services are linked to overcoming poverty, reducing income disparities, and increasing economic growth.

Mostly branchless banking users are reluctant to provide feedback due to several known and unknown reasons. Unavailability of any time series data about numbers of unbanked segment, pre and post introduction of teleco-based financial services is the most important constraint in measuring the impact of telecom operators' collaboration with financial institution on growth of branchless banking in Pakistan. Further this research is restricted to telecom based financial services (Telco- Led Model), bank-Led branchless banking model could be investigated in future research.

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