

Adoption of Internet Banking: Extending the Role of Technology Acceptance Model (TAM) with E-Customer Service and Customer Satisfaction

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Abstract: The global innovation of information and technology has reshaped the banking technology over the past decade. The high coverage of both internet network and internet finance development has facilitated Pakistan to become the most potential e-commerce region, yet seems to be limited growth in internet banking adoption in Pakistan. Therefore, this study has empirically investigated the technology acceptance model (TAM) with customer service and customer satisfaction and seeks the internet banking adoption issues in Pakistan. The survey was administered towards one of the conventional bank (HBL) in Pakistan. SEM was used to investigate both the hypothesis and path coefficient association among the constructs and their significance. The results of this study revealed that the adoption of internet banking in Pakistan could be motivated by perceived usefulness, perceived ease of use, customer service and customer satisfaction. Furthermore, customer satisfaction played a significant mediating role among proposed variables. The IPMA analysis revealed that in fostering of internet banking adoption, customer service is the most important factor. Finally, managerial implications, limitations and future research directions have been discussed.

Key words: Technology acceptance model (TAM) • Customer service • Customer satisfaction • Internet banking • Structural equation modeling (SEM)

INTRODUCTION

E-commerce with rapid growth of internet technology has reshaped the finance industry over the past decade. Internet technology with its characteristics of convenience, fast transaction and low cost has played an important role in e-banking [1]. The impact of technology on banking industry is protuberant where a bank customer no longer has to visit their bank. Internet banking provides and online transaction platform to support several e-commerce applications such as online shopping, internet stock trading, online auction, online bill payments and so on [2, 3]. Therefore, despite the fact that online banking provides several advantages, for instance faster transaction speed and lower handling fees, there are still large group of customers who refuse to adopt internet banking [4-6]. Thus, understanding the reason for this resistance will be

useful for bank managers in formulating new strategies aimed at increasing internet banking use.

In order to provide a solid theoretical basis for examining the adoption of internet banking, this paper draws on two schools of thought regarding the deductive nomological model (DN model); (1) The technology acceptance model (TAM) and (2) Integration of TAM with customer service. Technology acceptance model has been used in many studies to understand and predict the user perceptions of system use and their probability of adopting the system [7, 8]. This model (TAM) is the most appropriate for understanding of internet banking adoption [9]. The purpose of this study is to integrate service quality factors such as customer service with TAM in order to obtain broad picture of internet banking adoption and evaluation. Thus, the core objectives of this study are as follows:

- To investigate whether TAM model significantly impact on customer's intention to use internet banking
- To clarify whether the integration of TAM model significantly impact on customer's intention to use internet banking
- To evaluate which integrated factor significantly impact on behavioral intention to use internet banking

The study may give practitioners an increased understanding of customer perceptions in order to adopt or evaluate the internet banking services in Pakistan.

Literature Review: Intention to adopt Internet Banking: The behavioral intention is defined as consumer intent to use online system [10]. Intention can be captured by such factors for instance purchase intention, word of mouth, loyalty, price sensitivity and complaining behavior [11]. In information system literature both theoretical and empirical support exists for the strong correlation between intention to engage in a behavior and the actual behavior [10]. Here, researcher have chosen to use behavior intention as a surrogate for actual behavior and defined it as customer's intention towards adoption of internet banking [5, 6]. Thus, behavioral intention has used as endogenous construct in order to get deep understanding of internet banking adoption.

Customer Service: Customer service assumed that service level and return handling policies contribute to perception of superior customer service for online service provider [12, 13]. According to Bauer, Falk and Hammerschmidt [14] customer service relates to online customer support-prior to, during or after the online order has been placed. Santos [15] explains that e-service quality a virtual marketplace where customer can evaluate, judge and compare the excellence of e-service delivery. In online business customer service is very important. Customer service is proposed to contribute overall quality assessment when customers form their judgment about online transaction [12]. Thus the following hypotheses are formulated.

- H1: Customer Service is positively influence on Customer Satisfaction.
- H2: Customer Service is positively influence on Intention to adopt Internet Banking.

Perceived Usefulness: Perceived usefulness is defined as the degree to which an individual believes that using a particular system will enhance his/her job performance [16]. Perceived usefulness in internet banking context has been seen as bringing easiness in transaction, online request for cheque /draft, checking of monthly statements and online payments. These benefits are expected to be improved over a period of time through technological advancement [17]. Several studies evidenced the significant effect of perceived usefulness on system usage intention [18, 19, 9]. Thus, researcher tests the following hypothesis:

- H3: Perceived Usefulness is positively influence on Customer Satisfaction.

Perceived Ease of Use: Perceived ease of use where individuals believes that using a particular system will be free from effort [16]. Perceived ease of use reflects users's perception of how easy it is to use a system. Customers are more likely to adopt internet banking if there is ease of use in operation/process. Internet banking is need to be both easy to learn and easy to use [20]. Extensive research has proved that perceived ease of use significantly effect on perceived usefulness and intention to use the system [16, 17, 19]. Thus, researcher tests the following hypotheses:

- H4: Perceived Ease of Use is positively influence on Customer Satisfaction.

- H5: Perceived Ease of Use is positively influence on Perceived Usefulness.

Customer Satisfaction: Satisfaction is as an affective consumer condition that results from a global evaluation of all the aspects that make up the consumer relationship [21]. The consumer will feel satisfied if he/she perceives the fulfilment of the required level of honesty benevolence and competence in the website [21]. Thus, this study argued that customer satisfaction plays a mediating role between customer service, perceived usefulness, perceived ease of use and intention to adopt internet banking.

- H6: Customer Satisfaction is positively influence on Intention to adopt Internet Banking.
 H7: Customer Satisfaction mediates the relationship between Perceived Usefulness and Intention to adopt internet Banking.

- H8: Customer Satisfaction mediates the relationship between Customer service and Intention to adopt internet Banking.
 H9: Perceived usefulness mediates the relationship between perceived ease of use and Intention to adopt internet Banking.

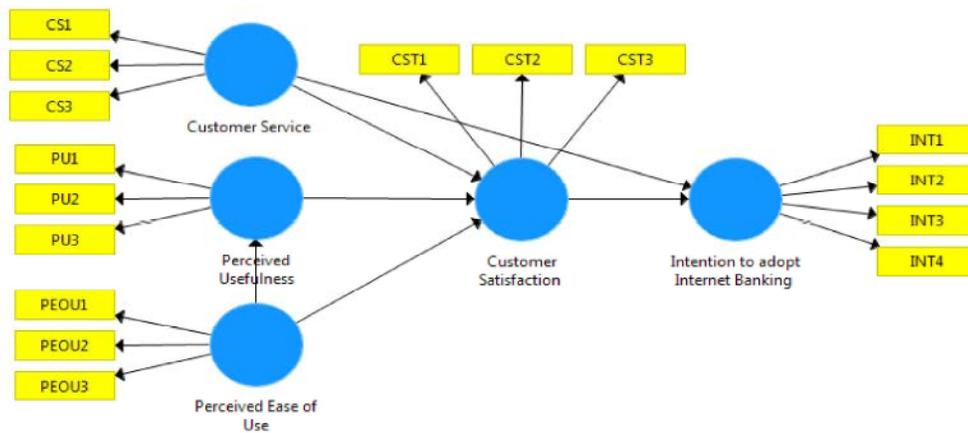


Fig. 1: Theoretical Framework

MATERIALS AND METHODS

Data Collection and Sampling: The survey was administered towards one of the conventional bank (HBL) Pakistan. The screening of the respondents was based on internet banking usage. The respondents were asked a qualifying question; “have you availed the internet banking services?” In particular, internet banking users were targeted respondents. For data collection convenience sampling method was used as supported by J.F. Hair [2]. The data was collected between the months of October 2015 to November 2015 from Lahore city of Punjab, Pakistan. Convenience sampling allows researcher to get responses in a cost effective way [23]. The sample size has been estimated given the guideline provided by [24]. Keeping in view the guideline, a ratio of 1:10 was followed where the researcher expected to reach at a realized sample of 160 customers. However, Bryman [25] argues that with the increase in sample size, sample error will also be decrease in other word increase in sample size will likely precision of the sample. Comrey and Lee [26] stated that sample size of 50 is very poor, while 100 is poor, 200 is reasonable, 300 is good, 500 is very good and 1000 is brilliant for structural equation modeling. Thus, a set of questionnaire was distributed among 450 people. There were 50 people who denied to participate while a few were in hurry and

said they are not interested to help the researcher. With a response rate of 85 per cent, 384 questionnaires were collected and used for analysis.

Instrument Development: The instrument was designed to include a two-part questionnaire. The first part includes demographic characteristics like region, age, gender, qualification. While the second part of the questionnaire was developed based on five latent construct named; customer service, perceived usefulness, perceived ease of use, customer satisfaction and intention to adopt internet banking. All the constructs items were adopted from previous research work. The first part of the questionnaire includes nominal scale while the second part includes seven-point like scales ranging from “strongly disagree” (1) to “agree strongly” (7). The second part of the questionnaire was developed based on the constructs of customer service, perceived usefulness, perceived ease of use, customer satisfaction and intention to adopt internet banking. There were four items of Intention to adopt internet banking adopted from RAHI *et al.* [6], while three items of customer service adopted from Rahi Samar *et al.* [5]. Perceived usefulness and perceived ease of use containing three items each were adapted from the measurement defined by Davis [16]. Finally, customer satisfaction items were adopted from Udo, Bagchi and Kirs [27] and included three items.

Descriptive Profile: The data provided in Table 2 where, males were (53%) slightly more than females (46%). The age of the respondents 32.2% is for less than 25 years old, 34.6% that counts at age between 26 to 35 years, 22.1% for 36 to 45years and above 46 there are 11.2% respondents. Overall good mixture of age was directed in this study of internet banking adoption. Furthermore, Table 2 depicted that 48.4 % respondents that belonged to urban side while, 51.6 respondents participated from country side. Lastly education of the respondents were also measured where only 2.9% respondents were considered below high school education, 6.3 % from those who attended high school, 10.2% respondents who attended college, the maximum share was graduate respondents with 50.8% and while 29.9% respondents were post graduated.

Table 2: Demographic Profile of the Respondents

Demographic Characteristics	Frequency	Percentage (%) n=384
<i>Gender</i>		
Male	204	53.1
Female	180	46.9
<i>Age</i>		
Less than 25 years	123	32.0
26-35 years	133	34.6
36-45 years	85	22.1
46 years and above	43	11.2
<i>Education</i>		
Below high School	11	2.9
Attended High School	24	6.3
Attended College	39	10.2
Graduate	195	50.8
Post Graduate	115	29.9
<i>Region</i>		
Urban	186	48.4
Country Side	198	51.6

Data Analysis: To analyze the research model the Partial Least Square (PLS) analysis technique was employed by using the SmartPLS3.0 software Ringle, Wende and Becker [28]. Following the recommended two-stage analytical procedures by F. Hair Jr, Sarstedt, Hopkins and G. Kuppelwieser [29], measurement model (validity and reliability of the measures) and structural model (Hypothesis testing) were tested. Furthermore, to test the significance of the path coefficients a bootstrapping method was also used suggested by Hair Jr, Hult, Ringle and Sarstedt [30].

Measurement Model: The measurement model needs to be assessed for construct validity, convergent validity and discriminant validity, composite reliability (CR) and average variance extracted (AVE). As the study is quantitative in nature, usually Cronbach’s (α) is recommended to ensure reliability. Therefore, Composite Reliability (CR) is also preferred Henseler, Ringle and Sinkovics [31]. The composite reliability (CR) which depict the degree to which the construct indicators present the latent constructs, exceeded the recommended value of 0.7 Hair Jr *et al.* [32]. While the average variance extracted (AVE) which reflects the overall amount of variance in the indicators accounted for the latent constructs, exceeded the recommended value of 0.5 Hair Jr *et al.* [32]. To assess the measurement model two types of validity were approached: Convergent and discriminate validity.

Convergent Validity: Convergent validity of measurement model is usually measured by examining the factor loading, average variance extracted and composite reliability [32]. Figure 2depicted result where, factor loading values supported by Chin [33] as recommended threshold level of 0.6. All the values were above than 0.6 that confirmed the convergent validity of the constructs (Table 3).

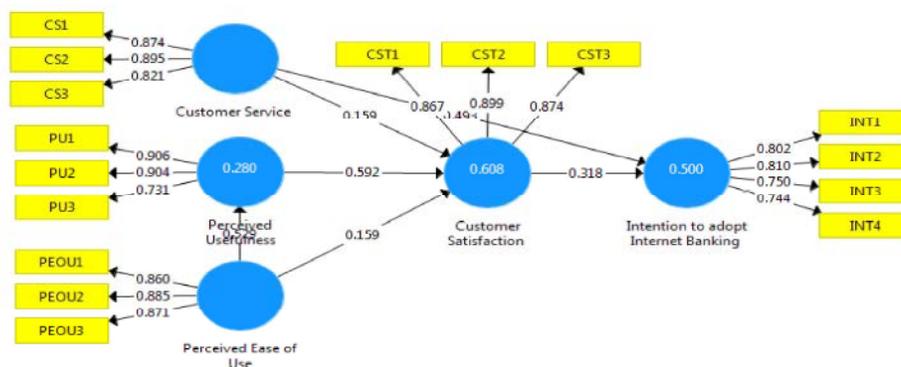


Fig. 2: Measurement Model

Table 3: Results of Measurement Model

Constructs	Loading	(α)	CR	AVE
Perceived Usefulness	PU	0.807	0.886	0.724
Using the system would improve my performance towards Internet Banking.	0.90			
Using the system would improve my productivity towards Internet Banking	0.90			
Using the system would enhance my effectiveness towards Internet Banking.	0.73			
Perceived Ease of Use	PEOU	0.842	0.905	0.76
My interaction with the system is clear and understandable.	0.86			
Interaction with the system does not require a lot of mental effort.	0.88			
It is easy to get the system to do what I want it to do.	0.87			
E-Customer Service	CS	0.829	0.898	0.746
Internet banking portal performs the service correctly at the first time.	0.87			
I received prompt responses to my request by e-mail or service line.	0.89			
When problems occur, the internet banking system guides me to solve them.	0.82			
Customer Satisfaction	SAT	0.855	0.912	0.775
I am satisfied with my previous Internet Banking experience	0.86			
Internet Banking is a pleasant experience	0.89			
Overall, I am satisfied with my Internet Banking experience	0.87			
Intention to adopt Internet Banking	INT	0.783	0.859	0.603
I intend to use Internet Banking.	0.80			
I plan to use the Internet Banking in the next months.	0.81			
I intend to consult the balance of my account on the platform of Internet Banking.	0.75			
In the future, I intend to use Internet Banking whenever I have a need.	0.74			

Table 4: Discriminant validity of Measurement Model

Constructs	CST	ECS	INT	PEOU	PU
Customer Satisfaction (CST)	0.88				
E-Customer Service (ECS)	0.498	0.864			
Intention to adopt Internet Banking (INT)	0.563	0.651	0.777		
Perceived Ease of Use (PEOU)	0.534	0.391	0.488	0.872	
Perceived Usefulness (PU)	0.751	0.467	0.522	0.529	0.851

Note: Bold values indicate the square root of AVE of each construct

The factor loadings were higher than 0.7 that confirmed the convergent validity. The convergent validity was also confirmed through estimation of average variance extracted (AVE) by recommended values of Fornell and Larcker [34] as it must be greater than 0.5. Further to this, measurement model needs to be assessed composite reliability. Table 3 depicted composite reliability (CR) degree where the construct indicator represent the latent construct, values exceeded 0.7 recommended by J. F. Hair, Black, W. C., Babin, B. J. anderson, R. E. & Tatham, R. L. [32].

Discriminant Validity: Discriminate validity is the degree where items differentiate among constructs and measures distinct concepts Fornell and Larcker [34]. The discriminate validity was tested by following guideline of Fornell and Larcker [34]. It is measured by examining the correlation between the measures of the potential

overlapping constructs [34]. Discriminant validity depicted in Table 4.

According to Compeau, Higgins and Huff [35] the average variance shared between each construct and its measure should be greater than the variance shared between the constructs and other constructs. Refereeing to Table 4 square root of the AVE (as showed in bold values on the diagonals) were greater than the corresponding row and column values that indicates the measures were discriminate. To sum up, both convergent and discriminant validity of the measure were developed. Hair Jr *et al.* [30] stated that discriminant validity can be measured by examining the cross loading of the indicators. It can be examined by comparing an indicator's outer loadings on the associated constructs and it should be greater than all of its loading on the other constructs [36]. Following, Table 5 described constructs cross loading.

Table 5: Loading and Cross Loadings

Constructs	Customer Service (CS)	Customer Satisfaction (CST)	Intention to adopt internet banking (INT)	Perceived Ease of Usefulness (PEOU)	Perceived Usefulness (PU)
CS1	0.874	0.454	0.526	0.304	0.431
CS2	0.895	0.442	0.558	0.355	0.421
CS3	0.821	0.394	0.6	0.352	0.358
CST1	0.375	0.867	0.494	0.493	0.632
CST2	0.466	0.899	0.534	0.444	0.674
CST3	0.47	0.874	0.458	0.477	0.676
INT1	0.617	0.419	0.802	0.313	0.388
INT2	0.581	0.436	0.81	0.421	0.37
INT3	0.386	0.437	0.75	0.368	0.428
INT4	0.396	0.471	0.744	0.427	0.459
PEOU1	0.354	0.446	0.395	0.86	0.456
PEOU2	0.32	0.454	0.435	0.885	0.47
PEOU3	0.348	0.496	0.444	0.871	0.458
PU1	0.426	0.713	0.462	0.48	0.906
PU2	0.379	0.708	0.465	0.449	0.904
PU3	0.396	0.465	0.408	0.425	0.731

Table 6: Heterotrait-Monotrait Ratio (HTMT)

	CST	CS	INT	PEOU	PU
Customer Satisfaction (CST)	-----				
Customer Service (CS)	0.59 CI.90 (0.498, 0.666)				
Intention to adopt Internet Banking (INT)	0.691 CI.90 (0.62, 0.757)	0.788 CI.90 (0.704,0.841)			
Perceived Ease of Use (PEOU)	0.63 CI.90 (0.546, 0.694)	0.467 CI.90 (0.356, 0.56)	0.604 CI.90 (0.52, 0.687)		
Perceived Usefulness (PU)	0.891 CI.90 (0.842, 0.934)	0.577 CI.90 (0.481,0.65)	0.665 CI.90 (0.576, 0.729)	0.645 CI.90 (0.564, 0.707)	-----

Note: Heterotrait-Monotrait Ratio (HTMT) discriminate at (HTMT <0.9/ HTMT <0.85)

As it can be seen in Table 5 all the items measuring a particular constructs loaded higher on that construct and loaded lower on the other constructs that confirms the discriminant validity of the constructs. There is another alternative approach to assess the discriminant validity suggested by Henseler, Ringle and Sarstedt [37] through multitrait and multimethod matrix, namely the Heterotrait-Monotrait Ratio (HTMT). There are two ways of using the Heterotrait-Monotrait Ratio (HTMT) approach to assess the discriminant validity. At first, when using it as a criterion, value greater than HTMT 0.85 value of 0.85

Kline [38] or HTMT.90 value of 0.90 Gold and Arvind Malhotra [39] indicates then there is a problem with discriminant validity. Secondly, by using statistical test for HTMT inference when the confidence interval of HTMT values for the structural paths contains the value if 1, it indicates a lack of discriminant validity. If the value of 1 falls outside the interval's range, it suggests that the constructs are empirically distinct. To precise discriminate validity is developed when the 90% bootstrap confidence interval of HTMT does not include the value of 1. HTMT results can be seen in following Table 6.

Refereeing to Table 6, results of HTMT where all values are lower than the required threshold value of HTMT.85 by Kline [38] and HTMT.90 by Gold and Arvind Malhotra [39], indicating that discriminant validity is valid for this study. Furthermore, the result shows that neither lower nor upper confidence interval (CI) includes a value of 1. To sum up, both convergent and discriminant validity of the measure were developed.

Structural Equation Model: Moving further with SmartPLS3.0 software Ringle *et al.* [28] structural equation model (SEM) was performed to assess the strength of the of proposed model for this study. In order to assess the structural model lateral collinearity test (VIF), R^2 values and corresponding t-values were evaluated as suggested by Hair Jr *et al.* [30]. The proposed hypothesis weretested by running a bootstrapping procedure with a resample of 5000, as suggested by F. Hair Jr *et al.* [29].

Lateral Collinearity Assessment: At first stage of structural equation model, lateral collinearity was assessed with collinearity satatistics VIF. According to Kock and Lynn [40] although vertical collinearity are met, lateral collinearity (predictor- criterion collinearity) may sometimes misled the findings. This type of collinearity is occurred when two variables that are hypothesized to be causally related measure the same construct. This type of collinearity is assessed with VIF values, where the values of VIF 3.3 or higher, indicate a potential collinearity Diamantopoulos and Siguaw [41]. The results of VIF values can be seen in Table 7.

Table 7: Results of Lateral Collinearity Assessment

	CST	CS	INT	PEOU	PU
Customer Satisfaction (CST)			1		
Customer Service (CS)	1.325				
Intention to adopt Internet Banking (INT)					
Perceived Ease of Use (PEOU)	1.437				
Perceived Usefulness (PU)	1.559				

As showed in Table 8 the inner VIF values of the independent variables (Customer Service, Perceived Ease of Use, Perceived Usefulness) that needs to be examined for multicollinearity are less than 5 and 3.3, indicating lateral multicollinearity is not a concern in this study F. Hair Jr *et al.* [29].

Hypothesis Testing: In order to assess the significance and relevance of the structural model relationship

bootstrapping procedure was used. The bootstrapping results approximate the normality of the data [42]. Additionally, t-values for the loading and path coefficient were also produced with bootstrapping. The results in Table 8 depicts path coefficient of respective constructs with its level of significance.

Table 8: Results of Hypothesis Testing

Hypothesis	Relationship	B	S.E	t-value	Decision
H1	CS ->SAT	0.159	0.041	3.895***	Supported
H2	CS ->INT	0.493	0.05	9.854***	Supported
H3	PU->SAT	0.592	0.04	14.836***	Supported
H4	PEOU->SAT	0.159	0.041	3.889***	Supported
H5	PEOU->PU	0.529	0.042	12.576***	Supported
H6	SAT->INT	0.318	0.048	6.564***	Supported
H7	PU->SAT->INT	0.188	0.031	6.11***	Supported
H8	CS->SAT->INT	0.051	0.016	3.163***	Supported
H9	PEOU ->PU -> SAT	0.313	0.032	9.802***	Supported

Note: Significance level where, *p < 0.05, **p < 0.01, ***p < 0.001.

The relationship between customer service to customer satisfaction is supported by H1: ($\beta = 0.159$, $p < 0.01$).Following, the relationship between customer serviceand intention to adopt Internet Baking is supported by H2: ($\beta = 0.493$, $p < 0.001$). Thus, H3 showed that perceived usefulness is positively related with customer satisfaction by ($\beta = 0.592$, $p < 0.01$). Hereafter, the relationship between perceived ease of use and customer satisfaction is supported by H4: ($\beta = 0.159$, $p < 0.001$). The relationship between perceived ease of use and perceived usefulness is supported by H5: ($\beta = 0.529$, $p < 0.01$). Meanwhile, the relationship between customer satisfaction and intention to adopt internet banking is supported by H6: ($\beta = 0.318$, $p < 0.01$).

Mediation Effect: In order to find the mediation effect of customer satisfaction the indirect effect was examined by following Preacher and Hayes [43] bootstrapping method. Where, the indirect relationship between perceived usefulness and intention to adopt internet banking is significant by H7: ($\beta = 0.188$, $p < 0.01$) with a t-value of 6.11.Researcher confirms that there is mediation given that the indirect effect 0.188, 95% Boot while CI: [LL=0.0140, UL=0.238] that does not straddle a 0 in between. Based on these results we can conclude that meditation effect of customer satisfaction between perceived usefulness and intention to adopt internet banking is statistically significant. The indirect relationship between customer service and intention to adopt internet banking is

significant by H8: (β 0.159*0.318=0.051, $p < 0.01$) with a t-value of 3.163. Given values confirms that there is mediation given that the indirect effect 0.051, 95% Boot while CI: [LL=0.026, UL=0.078] that does not straddle a 0 in between. Hence, the indirect relationship between perceived ease of use and customer satisfaction is significant by H9: (β 0.529*0.592=0.313, $p < 0.01$) with a t-value of 9.802. Researcher confirms that there is mediation given that the indirect effect 0.313, 95% Boot while CI: [LL=0.263, UL=0.366] that does not straddle a 0 in between. Thus the results of proposed hypothesis revealed that, all nine hypotheses have significance relationship with their respective endogenous variables.

Evaluating Effect Size: The R^2 measures the model predictive accuracy and it can also be viewed as the combine effect of exogenous variables on endogenous variables. Thus R^2 for perceived usefulness was 0.28, for customer satisfaction 0.60 and for intention to adopt internet banking 0.50, which was acceptable based on the cut-off (0.26, 0.13, 0.02; substantial, moderate, weak) suggested by Cohen [44]. The effect size f^2 used to assess the relative impact of a predictor construct on an endogenous construct. Thus, researcher also assessed the effect size of f^2 . As recommended by Cohen [42] P value can show you that effect exist however, it does not reveal the size of the effect. In table 9 effect size of f^2 can

be seen where hypothesis H1 indicated small and H6 has medium effect size while H2,H3,H4 showed large effect size as suggested by Cohen [44]. In order to assess the predictive relevance of the model researcher used the blindfolding procedure. Blindfolding procedure should only be applied to endogenous constructs that have a reflective measurement [30]. If the Q^2 values are greater than 0 it revealed that model has predictive relevance for a certain endogenous construct [44, 30]. Table 9 presented that the values of Q^2 is greater than 0 that depicts the proposed model has significant predictive relevance.

Importance Performance Matrix Analysis (IPMA): A post-hoc importance performance matrix analysis (IPMA) was performed by using intention to adopt internet banking as target construct. The IPMA builds on the PLS estimates of the structural equation model relationship and includes an additional dimension to the analysis of that latent constructs [30]. The importance scores were carried from the total effects of outcome variable in structural equation model. While performance score or index were derived by rescaling the latent variables score range 0 for lowest to 100 for highest [30]. Table 10 presents the total effects (importance) and index values (performance) used for the Importance performance matrix analysis.

Table 9: Evaluating Effect Size

Path	Constructs	R^2	Q^2	f^2	Decision
	Perceived Usefulness	0.280	0.191		
	Customer Satisfaction	0.608	0.445		Supported
	Intention to adopt internet Banking	0.500	0.278		Supported
H1	Customer Service ->Customer Satisfaction			0.049	Small
H2	Customer Service ->Intention to adopt Internet Banking			0.365	Large
H3	Perceived Usefulness ->Customer Satisfaction			0.573	Large
H4	Perceived Ease of Use -> Customer Satisfaction			0.045	Large
H5	Perceived Ease of Use -> Perceived Usefulness			0.389	Large
H6	Customer Satisfaction -> Intention to adopt Internet Banking			0.152	Medium

Note: r^2 : 0.02, small; 0.15, medium; 0.35, large

Table 10: Index Values and Total Effects

Latent Variables	Total effect of the latent variable Intention to adopt Internet Banking (Importance)	Index values (Performance)
Customer Satisfaction	0.297	63.27
Customer Service	0.558	66.814
Perceived Ease of Use	0.149	62.454
Perceived Usefulness	0.182	67.252

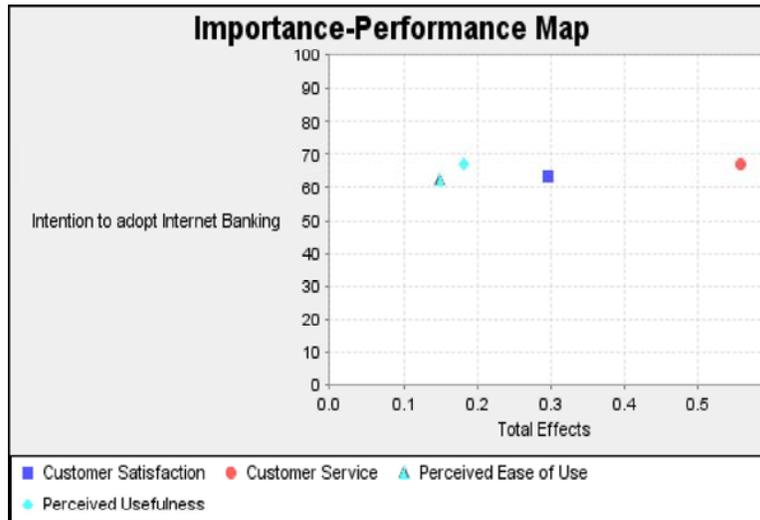


Fig. 3 : Importance performance matrix analyses (IPMA)

Table 10 showed the index values and total effect scores. It can be seen that customer service is the most important factor in order to determine the intention to adopt internet banking due to their higher importance values compared to other latent variables. Customer satisfaction is at intermediate level, while perceived ease of use has the lowest importance level after perceived usefulness. The level of importance and performance can be seen in figure 3.

Importance performance matrix map showed that, customer service has the highest importance level to influence on customers to adopt internet banking. With respect to predecessor of customer service, the constructs customer satisfaction and perceived usefulness exhibited intermediate importance and performance compared with other constructs. In sum, managerial activities to achieve customer intention towards adoption of internet banking should focus on improving the performance of customer service and customer satisfaction.

DISCUSSION

This study examined two components of technology acceptance model; perceived usefulness and perceived ease of usefulness. Results revealed that customer who perceived higher level of usefulness in internet banking tends to be more satisfied. Similarly, customer who perceived ease of usefulness in system they tends more towards usefulness. Additionally, customer service has also significant influence on customer satisfaction. Thus, H1 is supported to customer satisfaction where researcher

can imply that by giving adequate customer services Pakistanibanks can get more customer satisfaction. The findings is also supported with RAHI *et al.* [5]. Furthermore, H2 is also significant where customer service is significantly influencing on intention to adopt internet banking and supported by Rahi Samar *et al.* [6]. Hypothesized relationship of H3 is supported where perceived usefulness is significantly influence on customer satisfaction. Thus, we can infer that by improving perceived usefulness banks can get customers satisfaction towards internet banking. H4 is supported where the relationship between perceived ease of use and customer satisfaction is significant. Moreover, perceived ease of use is also significantly related with perceived usefulness and thus H5 is supported. Sun, Shen and Wang [45] stated that when users feel satisfied they intend to adopt respective online service. Thus, H6 is supported where the hypothesised relationship between customer satisfactions to intention to adopt internet banking is significantly established. Proposed mediation relationships are also supported where customer satisfaction played a mediating role between perceived usefulness, customer service and intention to adopt internet banking. The hypothesised relationships of H7 showed that customer satisfaction significantly mediate the relationship between perceived usefulness and intention to adopt internet banking. Furthermore, the hypothesised relationships H8 showed that customer satisfaction significantly mediate the relationship between customer service and intention to adopt internet banking. Finally, H9 is supported where perceived usefulness mediate the relationship between perceived ease of use

and customer satisfaction. Overall the finding suggests that the integration of technology acceptance model was good fit for the new proposed model. Researcher can imply that for Pakistani internet banking customers, factors such as customer service, perceived usefulness, perceived ease of use and customer satisfaction will enhance internet banking adoption.

CONCLUSION

This paper aims to integrate technology acceptance model with customer service and customer satisfaction to predict behavioral intention of customers towards adoption of internet banking. Finding revealed that the new integrated model has 50% impact on adoption of internet banking. While, the IPMA results revealed that customer service is the most important factor towards user's intention to adopt internet banking in Pakistani banking sectors. The effective measurement of customer service can be very useful when the allocation of resources and the segmentation of customer is well documented [46, 35]. To sum up, this research concluded that customer service, perceived usefulness, perceived ease of use, customer satisfaction are the core determinants that influence on behavioral intentions of user towards adoption of internet banking.

Limitations and Recommendations: In order to get deeper insight of internet banking adoption issue researcher should apply this model in other developing countries. The variables selected in this study may not include all the variables that affect internet banking adoption, thus in future TAM model may integrate with perceived benefits of perceived risk factors.

REFERENCES

1. Bauer, H.H., T. Falk and M. Hammerschmidt, 2006. eTransQual: A transaction process-based approach for capturing service quality in online shopping. *Journal of business research*, 59(7): 866-875.
2. Blut, M., 2016. E-Service Quality: Development of a Hierarchical Model. *Journal of retailing*, 92(4): 500-517.
3. Bryman, A.B., 2007. *E.(2007) Business research methods*: Oxford University Press.
4. Chin, W.W., 1998. Commentary: Issues and opinion on structural equation modeling: JSTOR.
5. Cohen, J., 1988. *Statistical power analysis for the behavioural sciences*. Hillsdale, NJ: Lawrence Erlbaum Associates.
6. Compeau, D., C.A. Higgins and S. Huff, 1999. Social cognitive theory and individual reactions to computing technology: A longitudinal study. *MIS quarterly*, pp: 145-158.
7. Comrey, A. and H. Lee, 1992. *First course in factor analysis*. Hillsdale, NJ: Erlbaum.
8. Davis, F.D., 1989. Perceived usefulness, perceived ease of use and user acceptance of information technology. *MIS quarterly*, pp: 319-340.
9. Davis Jr, F.D., 1986. A technology acceptance model for empirically testing new end-user information systems: Theory and results. Massachusetts Institute of Technology.
10. Diamantopoulos, A. and J.A. Siguaw, 2006. Formative versus reflective indicators in organizational measure development: A comparison and empirical illustration. *British Journal of Management*, 17(4): 263-282.
11. Hair Jr, F.J., M. Sarstedt, L. Hopkins and G.V. Kuppelwieser, 2014. Partial least squares structural equation modeling (PLS-SEM) An emerging tool in business research. *European Business Review*, 26(2): 106-121.
12. Flavián, C., M. Guinaliú and R. Gurrea, 2006. The role played by perceived usability, satisfaction and consumer trust on website loyalty. *Information & Management*, 43(1): 1-14.
13. Fornell, C. and D.F. Larcker, 1981. Structural equation models with unobservable variables and measurement error: Algebra and statistics. *Journal of Marketing Research*, pp: 382-388.
14. Gold, A.H. and A.H.S. Arvind Malhotra, 2001. Knowledge management: An organizational capabilities perspective. *Journal of Management Information Systems*, 18(1): 185-214.
15. Hair, J.F., 2003. *Essentials of Business Research Methods*: Wiley.
16. Hair, J.F., W.C. Black, B.J. Babin, R.E. Anderson and R.L. Tatham, 2010. *Multivariate Data Analysis* 7.
17. Hair Jr, J.F., G.T.M. Hult, C. Ringle and M. Sarstedt, 2016. *A primer on partial least squares structural equation modeling (PLS-SEM)*: Sage Publications.
18. Henseler, J., C.M. Ringle and M. Sarstedt, 2015. A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Academy of Marketing Science. Journal*, 43(1): 115.

19. Henseler, J., C.M. Ringle and R.R. Sinkovics, 2009. The use of partial least squares path modeling in international marketing. *Advances in international marketing*, 20(1): 277-319.
20. Kline, R., 2011. *Principles and Practice of Structural Equation Modeling*, 3rd edn Guilford Press. New York.
21. Kock, N. and G. Lynn, 2012. Lateral collinearity and misleading results in variance-based SEM: An illustration and recommendations.
22. Lee, M.C., 2009. Factors influencing the adoption of internet banking: An integration of TAM and TPB with perceived risk and perceived benefit. *Electronic Commerce Research and Applications*, 8(3): 130-141.
23. Martins, C., T. Oliveira and A. Popović, 2014. Understanding the Internet banking adoption: A unified theory of acceptance and use of technology and perceived risk application. *International Journal of Information Management*, 34(1): 1-13.
24. Ngah, A.H., Y. Zainuddin and R. Thurasamy, 2015. Barriers and enablers in adopting of Halal warehousing. *Journal of Islamic Marketing*, 6(3): 354-376.
25. Nunnally, J., 1978. *Psychometric methods*: New York: McGraw-Hill.
26. Parasuraman, A., V.A. Zeithaml and L.L. Berry, 1988. Servqual: A multiple-item scale for measuring consumer perc. *Journal of Retailing*, 64(1): 12.
27. Preacher, K.J. and A.F. Hayes, 2008. Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods*, 40(3): 879-891.
28. Rahi, S., 2015. Moderating Role of Brand Image With Relation to Internet Banking and Customer Loyalty: A Case of Branchless Banking. *The Journal of Internet Banking and Commerce*, 2015.
29. Rahi, S., 2016. Impact of Customer Perceived Value and Customer's Perception of Public Relation on Customer Loyalty with Moderating Role of Brand Image. *Journal of Internet Banking and Commerce*, 21(2).
30. Rahi, S., 2016. Impact of Customer Value, Public Relations Perception and Brand Image on Customer Loyalty in Services Sector of Pakistan. *Arabian J. Bus. Manag Review*, S, 2, 2.
31. Rahi, S., 2017. Research Design and Methods: A Systematic Review of Research Paradigms, Sampling Issues and Instruments Development. *International Journal of Economics and Management Sciences*, 6(2).
32. Rahi, S. and M. Ghani, 2016. Internet Banking, Customer Perceived Value and Loyalty: The Role of Switching Costs. *J Account Mark*, 5(188), 2.
33. Rahi, S. and M.A. Ghani, 2016. Customer's Perception of Public Relation in E-commerce and its Impact on E-loyalty with Brand Image and Switching Cost. *Journal of Internet Banking and Commerce*, 21(3).
34. Rahi, S., N.M. Yasin and F.M. Alnaser, 2017. Measuring the role of website design, assurance, customer service and brand image towards customer loyalty and intention to adopt internet banking. *The Journal of Internet Banking and Commerce*, 22(S8).
35. Rahi Samar, Mazuri Abd Ghani, and F.M.I. Alnaser, 2017. The Influence of E-customer Services and Perceived Value on Brand Loyalty of Banks and Internet Banking Adoption: a Structural Equation Model (SEM). *Journal of Internet Banking and Commerce*, 22(1).
36. Ringle, C.M., S. Wende and J.M. Becker, 2015. *SmartPLS 3*. Boenningstedt: SmartPLS GmbH.
37. Roca, J.C., C.M. Chiu and F.J. Martínez, 2006. Understanding e-learning continuance intention: An extension of the Technology Acceptance Model. *International Journal of Human-Computer Studies*, 64(8): 683-696.
38. Santos, J., 2003. E-service quality: a model of virtual service quality dimensions. *Managing Service Quality: An International Journal*, 13(3): 233-246.
39. Sun, Y., X.L. Shen and N. Wang, 2016. Standardization or Adaptation during the Web-Mobile Service Transition: Understanding the Moderating Role of Gender. *Journal of Electronic Commerce Research*, 17(3): 266.
40. Udo, G.J., K.K. Bagchi and P.J. Kirs, 2010. An assessment of customers' e-service quality perception, satisfaction and intention. *International Journal of Information Management*, 30(6): 481-492.
41. Venkatesh, V. and F.D. Davis, 2000. A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, 46(2): 186-204.
42. Vijayasathy, L.R., 2004. Predicting consumer intentions to use on-line shopping: the case for an augmented technology acceptance model. *Information and Management*, 41(6): 747-762.
43. Wang, Y.S., Y.M. Wang, H.H. Lin and T.I. Tang, 2003. Determinants of user acceptance of Internet banking: an empirical study. *International Journal of Service Industry Management*, 14(5): 501-519.

44. Wong, K.K.K., 2013. Partial least squares structural equation modeling (PLS-SEM) techniques using SmartPLS. *Marketing Bulletin*, 24(1): 1-32.
45. Wu, L. and J.L. Chen, 2005. An extension of trust and TAM model with TPB in the initial adoption of on-line tax: an empirical study. *International Journal of Human-Computer Studies*, 62(6): 784-808.
46. Zeithaml, V.A., L.L. Berry and A. Parasuraman, 1996. The behavioral consequences of service quality. *The Journal of Marketing*, pp: 31-46.