



ANALYZING THE IMPACT OF SELF-SERVICE TECHNOLOGY ATTRIBUTES ON CUSTOMER SATISFACTION: A STRUCTURAL EQUATION MODELING APPROACH

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ABSTRACT:

Digital banking platforms have completely transformed the traditional banking patterns. Customers are also inclined to these virtual banking systems and adapting themselves to technological innovations. The future seems to be bright for the expansion of self-service technologies. In the light of this, there is a direct need to study the SSTs quality attributes and its impact on Customer Satisfaction. The present study was conducted in Chandigarh region due to its conducive environment for development of SSTs. The present study based on primary data evaluated 686 questionnaires that fit with each parameter. Eight factors like Accessibility, efficiency, responsiveness, reliability, user friendly, Privacy, Tangibility and Assurance and Empathy were included. Applying Structural equation modelling, the study confirms the positive association between SST quality attributes and Customer Satisfaction. Additionally, the results demonstrate that accessibility and efficiency contribute significantly to customer satisfaction, followed by reliability, responsiveness and privacy. Furthermore, factors can be incorporated into the model for future research and the comparative study for different banks such as public, private, and international can be conducted to study the attitudes of customers.

Key- words: *Banking, conducive, inclined, accessibility, Virtual.*

INTRODUCTION

The banking sector has evolved from tradition to self-services through technological improvements in banking. So, SST channels-ATMs, Mobile banking, internet banking and credit cards will serve the latent as well as real financial needs of customers. This has then brought in an intuitive response from the customers to use SSTs not only to save time but also, end up saving a lot of cost incurring at the banks' end in terms of their employees and resources, thus improving the efficiency and quality of banking services across the globe and in India too. SSTs have been able to create a revolution in banking by providing variety of services to their customers so as make their lives more comfortable. Customers can perform their financial



transactions with ease, convenience and obtain account-related information without visiting banks. SST have emerged as a part of the service quality upgrade which has profound impacts on the customers mindset and service outcomes. It is influencing customers satisfaction, loyalty, and behavioral intentions towards the usage of SSTs for their banking activities. The importance of quality service in banking is accelerating with the introduction of advanced technology in banking operations. The different attributes of SSTs contribute to satisfying the customers and converting potential customers into hard-core loyal customers.

REVIEW OF LITERATURE

Sharma and Patterson (2000) examined the factors that were responsible for satisfaction of customers as well as for their long relation with banks (retention). Customer satisfaction and their trust on service was dependent on the factors like level of competition, switching cost, customer traits and the technology factor. Response of customers from Indian public sector banks were analyzed from different classes like salaried class, advocates, peasants etc. The satisfaction of customers was not much related to the occupation of banks.

Maenpaa et al. (2008). Analyzation of customers response towards IB in Finland was examined by the researchers. The comfortable relationship with bank had an influence on personal finances and investment factor. Finances and investments are one of the dimensions on basis of which the familiarity of customers with bank was checked. Similarly, the data of 300 active users was collected and result revealed that the dimensions that influence are- status, auxiliary features, personal finances, and the investment. The other dimensions that were not actually related with IB familiarity factors were convenience, security, and exploration.

Calisir, Fethi & Gumussoy, Cigdem Altin (2008) studied about accessibility by young customers towards internet banking, related to six banking channels i.e., brick and mortar, ATM, phone banking, electronic fund transfer etc. at POS and bank branches in stores established by Turkish banks. The study was conducted in two parts, first with 20 subjects and the other with 200 participants practiced i.e., correspondence analysis and cluster analysis. The corresponding analysis resulted in replacement of IB, ATM and phone banking. It observed IB was more efficient in ease of use and access. Nonetheless, it highlighted IB users' lack of confidence over safety and confidentiality.

Lee, K. and Chung, N. (2009) studied the varied aspects in Korea which significantly affect the customer's satisfaction towards MB adoption and their trust towards MB. In case of factors



study, modified Delon and McLean's model was used, and the quality factors were analyzed. After examining different factors, the respective three factors i.e., interface design quality, information quality and system quality were considered important in case of MB adoption. 276 customers were analyzed by using structural equating modeling approach. The factors i.e., trust and satisfaction influenced the customers' views whereas the factor i.e., interface design quality didn't have any effect on the same.

Masabo Henry O (2013) investigated how the SST affected the Kenyan banking industry's consumers' satisfaction. It adopted and used SERQUAL dimensions for the analysis. The research found ATM machines were the most popular SST in Kenya but Internet banking was not considered important.

Sharma, Jitendra. K (2017) explored how IT affected both public and private sector banks' customer satisfaction in Bhopal city. It conducted 12 survey and observed that private banks better position in implementing Innovative models in comparison to public banks. However, Public sector banks are preferred by the customers based on the reliability aspect.

Barua Z et.al. (2018) The researchers mainly studied the technical reliability of SSTs and its impact on customer satisfaction. The thrust was on the constructs of reliability which significantly affects the perception of customers. Global structure equation model was adopted which indicates that perceived security is the main predictor of reliability followed by apparent control. Perceived reliability was unaffected by perceived simplicity of use.

Hossain, M.S. et al. (2019) investigated customers satisfaction with various self-service technologies (SST).. The four distinct SST types were compared to examine the customer satisfaction. It found that customers are happier using mobile banking than other self-service technologies,

RESEARCH GAP & RATIONALE OF STUDY

It is important to examine SST execution in banking along with its influencing factors impacting customer satisfaction is essential. There are limited studies or research regarding the connection between SST service attributes and customer happiness. It was, thereupon, imperative for the present study to identify these factors and also analyze the association between SST quality features and customer satisfaction. The rationale behind choosing the Chandigarh region is mainly its favorable environment for the application of these self-service technologies. The results of the study will result in valuable input and suggestions to decision-makers in the



banking sector to formulate the practical strategies to attain the higher levels of customer service standards.

OBJECTIVES & HYPOTHESIS OF THE STUDY

Different SST quality attributes like reliability, accessibility, efficiency, tangibility and assurance, security, user friendly and empathy plays a crucial role to satisfy the customers as well as converting the potential customer into core loyal customer. This article examines the analysis of several SST attributes and their effect on consumer satisfaction.

The Hypothesis of the study are mentioned as below:

H0 1: SST attributes are positively and significantly associated with customer satisfaction.

H0 2: Self-Service Technologies (SSTs) attributes are significantly influencing customer satisfaction.

RESEARCH DATA

Researchers have used questionnaires and scale as data collection instruments for collecting the data. Data collection instruments are a tool to collect information for specific topic from the sample or population with the help of questionnaire or schedules. After considering various sample size determination techniques, applying data analysis techniques, studying extensive review of literature, seeking, and overcoming the constraints like time, money and accessibility of green consumers, and finally having consultation with academic and industry experts, the target for sample size was set at 600 for the current research. But during the pilot survey in the area of study. Chandigarh researcher found the response rate of 70 percent, 800 questionnaires were distributed among the bank customers though personal and bank employees, and 740 were returned from the respondents. Based on final screening, 686 questionnaires fit on each parameter were selected for the current study for achieving objectives and final analysis.

RESULTS & DISCUSSION:

KMO measure of reliability of scales, and the bartlett's test for sphericity were used to assess the reliability of scale and appropriateness of factor analysis.

Table 1: Bartlett's Test of Sphericity and Kaiser-Meyer-Olkin Measure of Sampling Adequacy of dimensions of Attributes of Self-Service Technology channels of Banks

KMO and Bartlett's Test		
KMO Measure of Sampling Adequacy.		.785
Bartlett's Test of Sphericity	Approx. Chi-Square	24610.248
	D f	704
	Sig.	0.000**
Reliability Statistics		
Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No. of Items
.895	.895	38

Source: Primary Data (SPSS 21 Version) (**= Significance at 0.001)

The KMO coefficient 0.785 and significance of Bartlett's Test of Sphericity at 0.00 revealed that the sample size was sufficient for the use of factor analysis method of analysis. The impact of SST attributes- responsiveness, accessibility, efficiency, tangibility and assurance, security, user-friendliness, and empathy on customer satisfaction is examined here.

Proposed Model for SST Attributes and Its Impact on Customer Satisfaction

Consumers are more inclined towards SST channels. The satisfaction drawn by the customers from these channels totally depends upon the service quality, service attributes and banking facilities delivered to them. This section deals with the SST attributes and its impact on customer satisfaction. Banks are more focused on attracting the consumers towards their services and SST channels and reinforcing them to adopt their products and SST services. Banks are supporting and facilitating the customers to be part of SST channels. They are offering a variety of SST channels, and consumers are now more excited and taking advantage of the time-saving and convenient channels like ATMs, credit cards, and mobile banking. Banks are further measuring the impact of SST channels and its attributes on consumer retention and enhancement.

The proposed model for SST attributes and its impact on customer satisfaction is depicted by figure 1.

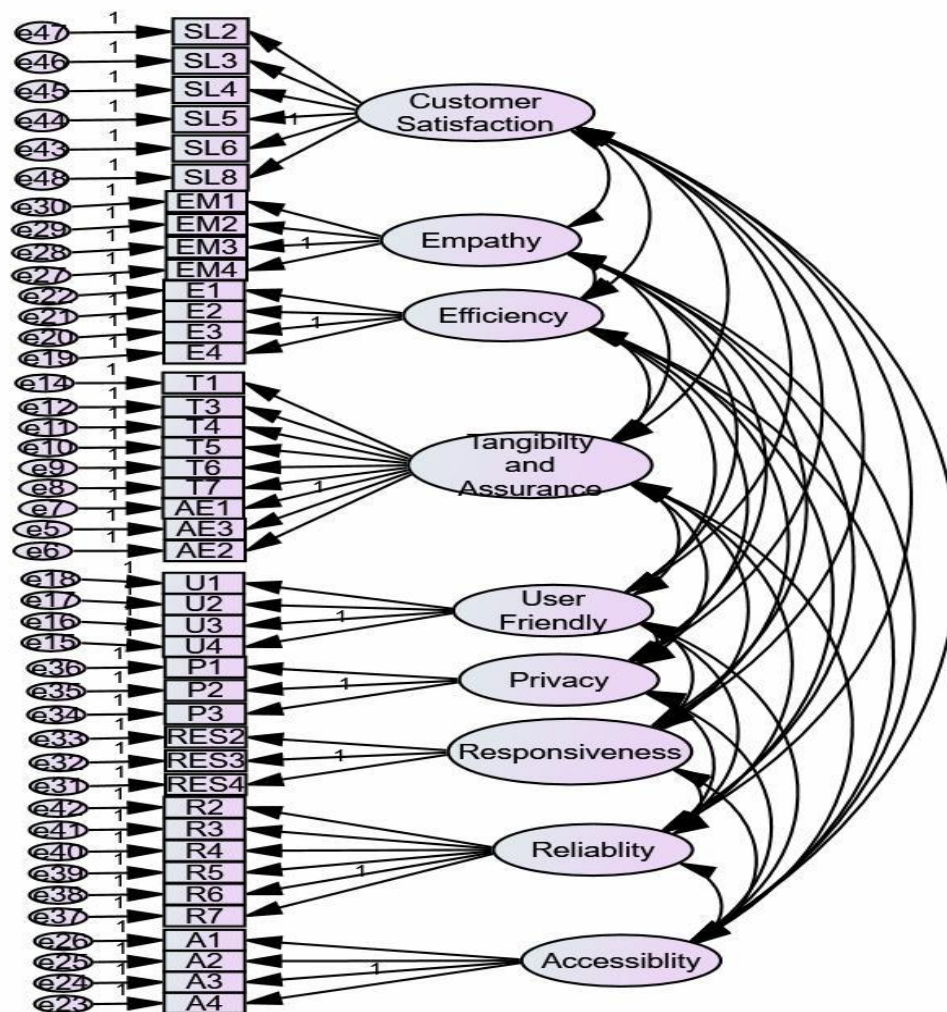


Fig 1: Proposed model - SST Attributes Model and Customer Satisfaction

This model includes 42 observed variables and 9 latent variables. Also there are nine factor covariances, 42 regression weights (factor loadings). The fact that the SST attributes model has 122 sample moments despite having a degree of freedom of 824 (946-122) indicates that the model is over identified.

Description of Default Model

The parameter estimation of proposed and final models is highlighted in the Table 2. The values of absolute fit indices and comparative fit indices of proposed and final model are calculated with the help of CFA results.

Table 2: Comparison of Model Fit Statistics of Proposed Model and Final Model of factors influencing SST attributes and consumers' satisfaction

	Proposed Model	Final Model
CMIN	7574.323	2318.621
DF	824 (946-122)	775 (9.3-128)
P	0.000**	0.000**
CMIN/DF	9.192	2.992
RMSEA	.103	.054
SRMR	.072	.034
GFI	.733	.896
AGFI	.694	.877
NFI	.716	.912
RFI	.689	.902
IFI	.739	.939
TLI	.713	.933
CFI	.738	.989
AIC	7818.323	2574.621

Source: - Calculation from AMOS 18.0 VERSION

The results for absolute fit indices and incremental fit indices are produced for the proposed and final model for attributes of SST channels and customer satisfaction derived by using SST channels for their banking transactions. The values are calculated as Chi-Square X^2 (CMIN=7574.323) with degree of freedom (DF=824), Probability value (P = which is significant at $p < 0.000^{**}$), and CMIN/DF = 9.192, which is found to be greater than 3, signifies poor model fit as suggested by Harrington, 2009. The value of RMSEA is 0.103 and SRMR is calculated as 0.072 which is more than or equal to the required 0.08, considered for poor model fit (Hair et al., 2015). The values of GFI (0.733), AGFI (0.694), are below 0.9 and are not up to the satisfactory level for the proposed model. Thus, indicating poor fit model.

Therefore, there require some alterations in the proposed model to improve the value of AGFI and GFI. In addition to this, the remaining incremental fit indicators NFI (0.716), RFI

(0.689) are found less than 0.9 whereas the other values IFI (0.739), TLI (0.713) and CFI (0.738) are less than 0.9 and indicating the poor model fit for the proposed model for the current study (Malhotra & Dash, 2011). Lastly, It can be computed that the overall values of CMIN/DF, GFI, AGFI, NFI and increment fit indices are not found to be satisfactory one so the proposed model is considered as a poor model fit. Therefore, there is need of applying some alterations in the model to make it the good model fit. As already discussed, there requires few modifications and one deletion of one item named SL5.

Table 3: Standardized Factor Loadings for factors influencing SST attributes and consumers’ satisfaction for the same

Standardized Regression Weights			Standardized Regression Weights			Standardized Regression Weights		
Items	Proposed Model	Final Model	Items	Proposed Model	Final Model	Items	Proposed Model	Final Model
AE3	0.813	0.868	E2	0.896	0.910	P2	0.730	0.729
AE1	0.841	0.838	E1	0.784	0.726	P1	0.865	0.866
T7	0.783	0.726	A4	0.856	0.795	R7	0.742	0.713
T6	0.777	0.709	A3	0.876	0.909	R6	0.970	0.978
T5	0.782	0.727	A2	0.841	0.775	R5	0.765	0.740
T4	0.770	0.704	A1	0.838	0.865	R4	0.665	0.650
T3	0.771	0.830	EM4	0.887	0.884	R3	0.721	0.717
T1	0.821	0.756	EM3	0.848	0.850	R2	0.955	0.956
U4	0.708	0.708	EM2	0.884	0.883	AE2	0.764	0.709
U3	0.651	0.651	EM1	0.760	0.762	SL6	0.654	0.650
U2	0.841	0.841	RES4	0.887	0.886	SL4	0.659	0.649
U1	0.830	0.830	RES3	0.695	0.696	SL3	0.674	0.666
E4	0.911	0.935	RES2	0.688	0.688	SL2	0.982	0.988
E3	0.793	0.739	P3	0.722	0.722	SL8	0.975	0.970
						SL5	0.544	

Source: Calculations from AMOS 18.0 VERSION

After examining the criteria of model fit, the reliability (construct reliability) and validity (convergent and discriminant validity) of the measurement instrument were examined (Hair et al., 2015). Table 3 indicates the results of CFA to calculate the values of standardized regression weights for all the items of proposed and final model to confirm the models. This table signifies that calculated values of standardized regression weights for all the items vary between .651 to .911 for proposed model and between .651 to .935 for the final model, which signifies that all the values are higher than .60, and few values are approaching near to .6, can be considered as .6. Hence, this fulfils the assumptions of convergent validity and reliability of the scale.

Table 4: Inter item construct correlation matrix for factors influencing SST Attributes and consumers’ satisfaction for the same

	EF	TA	UF	A	RS	P	RL	CS	EM
Efficiency (EF)	0.833								
Tangibility & Assurance (TA)	0.079	0.765							
User Friendly (UF)	0.072	0.045	0.762						
Accessibility (A)	0.574	0.109	0.154	0.838					
Responsiveness (RS)	0.387	0.078	0.093	0.261	0.762				
Privacy (P)	0.324	0.072	0.008	0.252	0.198	0.775			
Reliability (RL)	0.304	0.074	0.221	0.272	0.196	0.471	0.802		
Customer Satisfaction (CS)	0.014*	0.009**	0.032*	0.017*	0.04*	0.011*	0.005**	0.754	
Empathy (EM)	0.201	0.1	0.024	0.457	0.072	0.086	0.086	0.021	0.846

Source: - Author’s calculation from AMOS 18.0 VERSION

Analysis of table 4 depicts that all the SST attributes Efficiency (EF), Tangibility & Assurance (TA), User Friendly (UF), Accessibility (A), Responsiveness (RS), Privacy (P) Reliability (RL), And Empathy. (EM) are positively and significantly correlated with Customer Satisfaction (CS).

SST Attributes and its impact on Customer Satisfaction (Modified Final Model)

Figure 2 highlights that CFA is run again after doing some alterations in the proposed model. Eight covariances are established between error terms e45 and e46, e20 and e22, e6 and e14, e10 and e11, e7 and e12, e37 and e39 and lastly between e23 and e25 error terms. Due to higher value of standardized residual variances, SL5 item is deleted and then CFA is applied. CFA is applied nine times after every alteration and results are examined and compared with the previous results. Thereafter, the model become good fit model and no further CFA was applied.

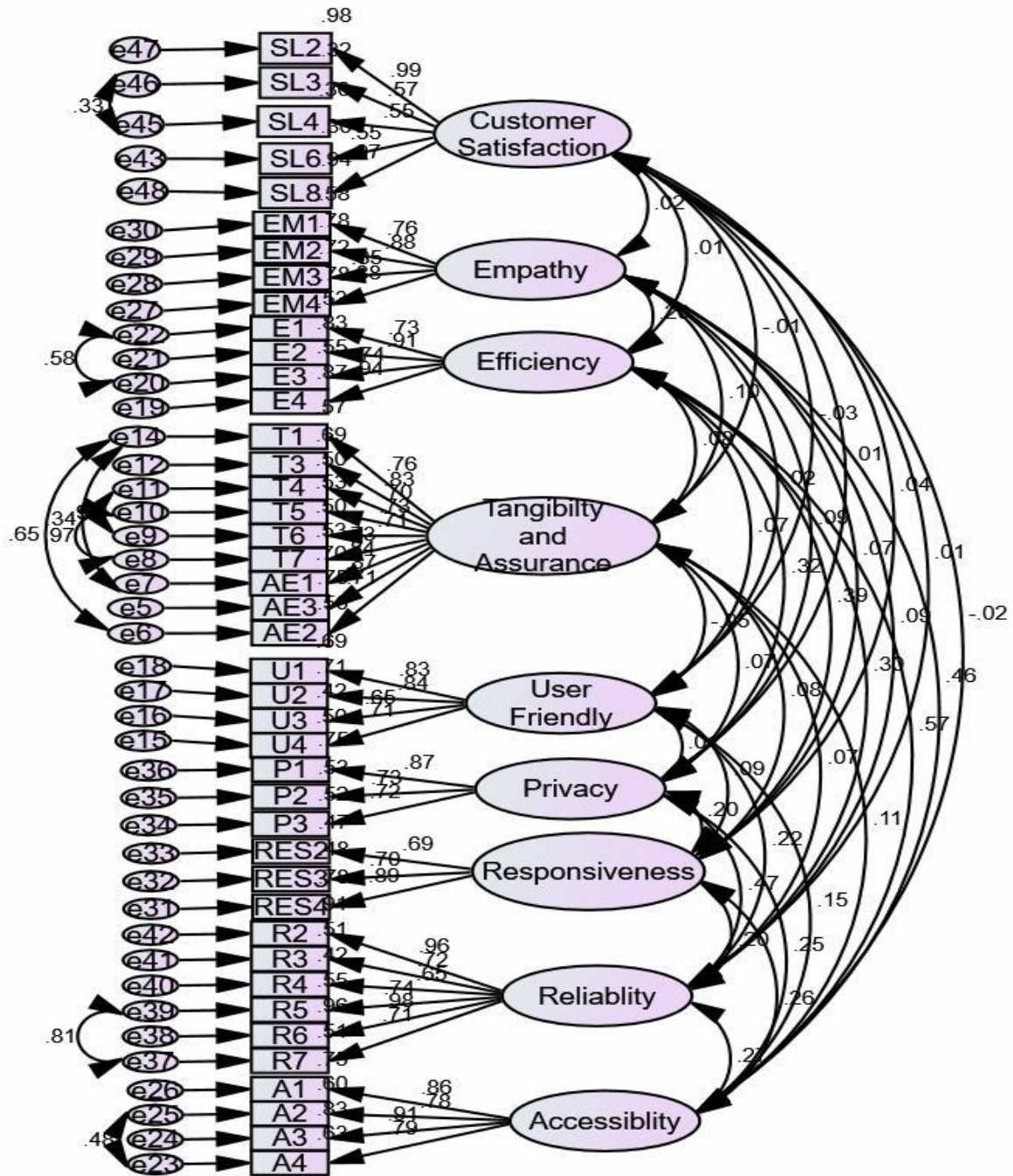


Figure 2: Final model of SST Attributes Model and Customer Satisfaction

The results of final model of SST attribute and its influence on customer satisfaction are found to be significant as it accomplishes all the established standardized benchmarks. The output of the confirmed model are as CMIN/DF= 2.992, values of RMSEA are 0.054, SRMS=0.034, GFI=0.896, AGFI=0.877, NFI= 0.912, RFI=0.902, IFI=0.939, TLI=0.933, CFI=0.939 and AIC=2574.621. This shows that all the values are more than 0.9 or are approximately approaching to 0.9, hence found satisfactory to make the model as a good model fit. The value of CMIN/DF is 2.992, which again confirms the

model. The value of AIC is lower than the previous model, indicating the acceptance of the confirmed model.

Second Order Measurement Model of Impact of SST Attributes on Customer Satisfaction

Figure 3 represents the result of second order confirmatory factor analysis for attributes of SST channels and customer satisfaction derived from the usage of SSTs.

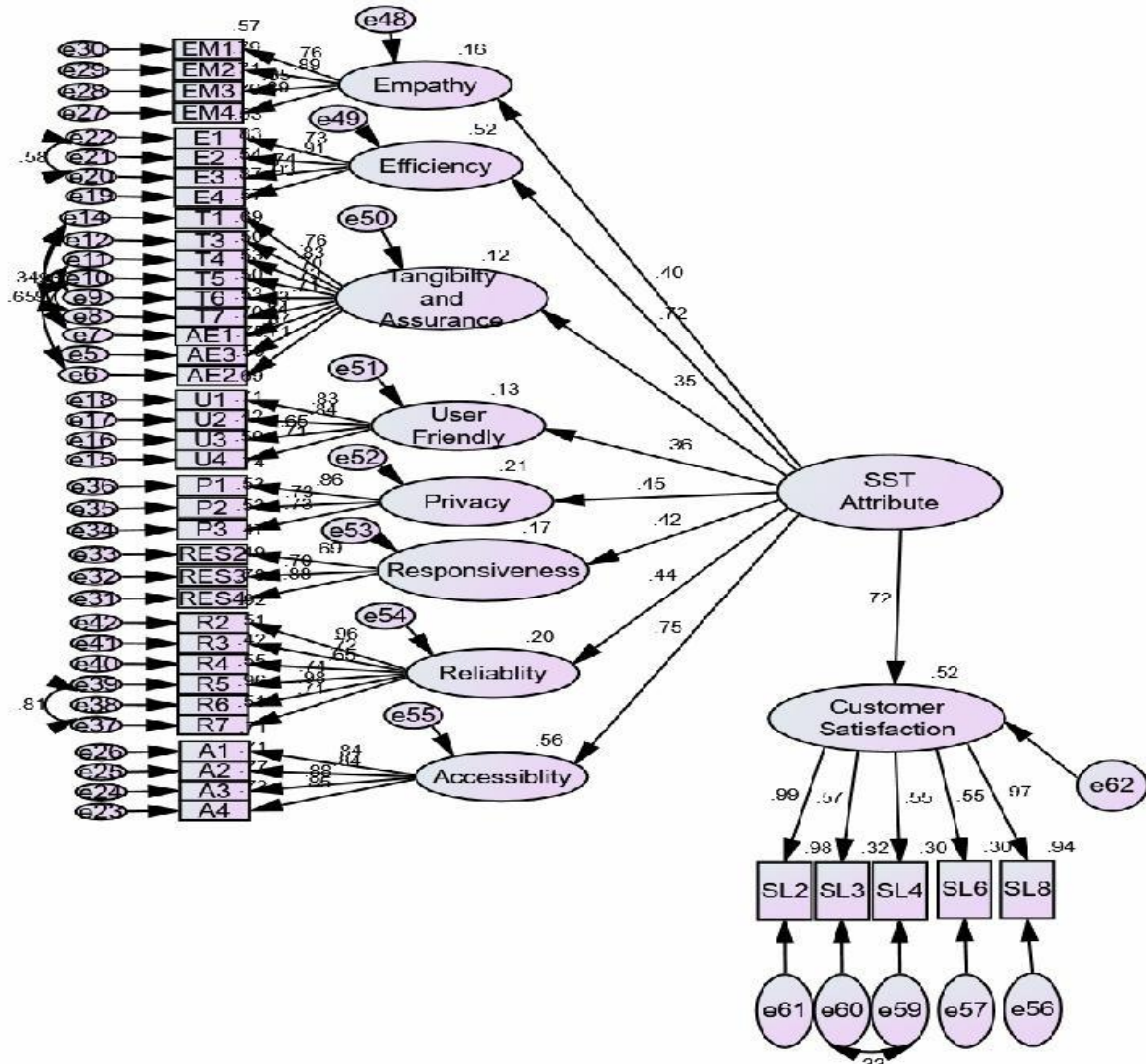


Figure 3 : Second order measurement model of impact of SST Attributes Model and Customer Satisfaction

CMIN/DF (2.570), RMSEA (0.048), SRMR (0.042), GFI (.931), AGFI (.915), NFI (.944), RFI (.937), IFI (0.965), TLI (0.960) and CFI (0.965)



The results show that all the factors are significantly loaded to the construct SST attribute. Figure 3 highlights that people who find SST channels more efficient and accessible than they are highly satisfied with the SST attributes. In totality, accessibility (0.75) has the highest influence on the SST attributes and customer satisfaction followed by efficiency (0.72), privacy (0.45) and reliability (0.44). Furthermore, responsiveness (0.42) and empathy (0.40) significantly influence the SST attributes and customer satisfaction. It is observed that user-friendly (0.36) and tangibility (0.35) have the least influence on the final customer satisfaction derived from SST attributes. The value of variances explained by all the constructs varies between 0.12 to 0.56. The values of fit indices and regression weights are found to be up to the mark and match already established benchmarks. This further signifies that this model is a good model fit and is considered as a valid tool for measurement of the influence of factors affecting SST attributes and customer satisfaction ability of banks are acceptable.

CONCLUSION & RECOMMENDATIONS

Consumers prefer SST channels and deriving satisfaction from those channels. The paper observed that SST attributes have a significant impact on the customer's satisfaction. The measurement model is highly influenced by accessibility and efficiency followed by reliability, responsiveness and privacy and are least influenced by user-friendly, tangibility and assurance factors. Customers are much influenced by the SST attributes and when they find the SST channels are more efficient and accessible, which will not only save their time and money but can make quick financial transactions and they can keep an eye on their account information. In addition to this, the reliability of SST channels and confidentiality of customer's identity make it more beneficial for the customers and motivate them to adopt and use SST channels. Thus, SST attributes are significantly influencing the customers satisfaction towards SST channels and banking services. Future research might focus on the construction of a fuller and more updated model that incorporates more factors that will be necessary for the adoption of SSTs in the near future. In this area, more research into the attitudes of customers of private, public, and international banks may also be considered, as well as other related research

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