Multi-Channel Integration and Its Impact on Service Quality Perception of Bank Customers

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Abstract *Technology embedding in banking service has enabled the banks to channelize their services with rapid disintermediation. The operational aspects of banking services has been further augmented by the convergence of technologies as the bank-customers are now being served on multiple and integrated channel platforms. The shift in operational practice of the banks has influenced the perception of the customers with regard to the service quality as their convenience and aspirations grew. The Indian banking sector has metamorphosed on all possible technological dimensions in recent years. The service-blueprint of the Indian banks has witnessed modification of service delivery channels and vis-à-vis interpretation of service quality assured and experienced. This paper attempts to identify the link between the multi-channel service delivery performance and perceived service quality with an empirical concept of multi-channel service quality index (MCSQI) being introduced. The study was carried out in the context of the largest public sector bank in India – State Bank of India at Bolpur and Santiniketan, West Bengal, India. The researcher used a number of statistical analyses to explore the probable link between multi-channel performance and perceived service quality and possible impacts of MCSQI on customer satisfaction and their subsequent investments in profit inducing products/services offered by their banks. The results displayed a statistical significance between the variables suggesting a behavioural adoption of the customers of new-age banking.*

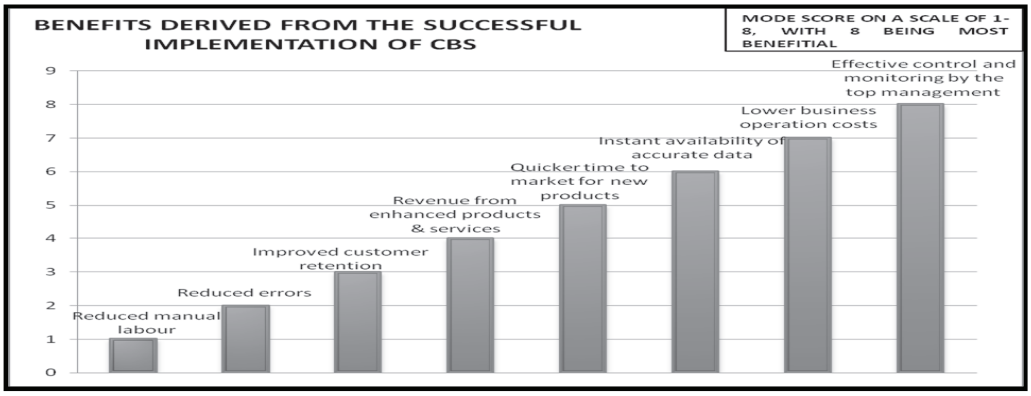
Key words *Multi-channel, service quality, perception, bank, customer satisfaction*

INTRODUCTION

The advancement in technology especially Internet and Information Technology has led to new ways of doing business in banking. The technologies have cut down transactional time and have increased operational efficiency. One of the platforms that is widely used these days with the convergence of communication technology and information technology is the core banking solution where softwares are developed to perform the core operations of banking like archiving transactions chronologically, passbook updation, calculations of interests on transactions, etc. The core-banking software is installed at different branches of the bank with a central server configured as the prime gateway to control data inputs and then is interconnected by means of communication lines like telephones, satellite, internet, etc. Wide proliferation of mobile technology has provided the technology-oriented banking services new service architecture. These changes in banking operations have remodelled the service-delivery channels by rapid disintermediation. The customers have access to regular banking services without visiting a bank branch. At their disposal, they have automated teller machines (ATMs), internet banking (i-banking), mobile-banking etc. One of the biggest advantages of technology-enabled banking is the swapping of services on multiple platforms. The Indian banking sector has gone through rapid changes as technology has emerged as a major facilitator to take up these challenges by adapting to the volatile and changing banking and financial sector environment The brick and mortar branches has given way to virtual branches viz., ATMs, Internet Banking, mobile banking, kiosks etc., which can be manned by a few persons and run on 24×7 basis to harness the real potential of these technological utilities. One of the major challenges faced by the nationalized public sector banks is its large structure and its geographic spread. Even with state-of-the-art technology, full-automation is time-consuming. For example, the State Bank of India and its associate banks have taken almost a decade to convert their operational system into an automated one. Core Banking Solutions (CBS) enabled the banks to

consolidate their technology platforms across functions and geographic spread leveraging cost and at the same time acquiring flexibility and scalability for responding to and adapting changes. The integration of CBS system with inter-bank payment system has benefited banks and financial institutions in terms of realizing facilities such as CRM, customer profiling, segmentation and differentiation, customization of product and services etc. The survey of FICCI (February, 2010) has revealed several benefits of successful implementation of CBS (Graph.1).

Graph 1 Benefits that may be accrued from Core banking Solutions



Source: FICCI Survey, February, 2010

The technology imperative of the Indian banking sector is well beyond just integration of technology with the banking services. Adaptability to technology depends on the availability of human resources who can effectively harness, integrate, implement and run the system.

also noticeable (source KPMG). Processes; like business intelligence is still being planned by the public sector banks. Technology-enabled banking service has been well adopted and delivered by the entire cross-section of banking sector. Financial inclusion has played a big role as observed in terms of rapid expansion and penetration made by the banks across geographical areas. The areas where technology (IT) has played a major role are:

(i) Treasury
(ii) Cards
(iii) Retail banking
(iv) Wholesale (including Merchant Banking)
(v) Payment and settlement (RTGS and NEFT)

Information security and operational efficiency are two major considerations for the modern banking environment. ISO 27001 seems to be the most widely adopted benchmark

Table I Implementation Status of CBS (Source: KPMG, 2010).

Banking Sector	Core Banking	CRM	IAM	Business Intelligence	GRC	Self Service Kiosks	Internet Banking	Mobile Banking	Financial Inclusion
Public Banks	H	L/M	L	L	M	L	H	M	H
Private Banks	H	H	H	M	H	H	H	H	H
MNC Banks	H	H	H	H	H	H	H	H	L

The technology integration with the core banking services will facilitate automation in transaction, reporting and risk management. According to Table-I, it is evident that CBS has been implemented in the Indian banking sector with high priority. Initiatives like GRC (Governance-Risk Compliance) and IAM (Identity and Access Management) are on the verge of being implemented by the public sector banks in India. The implementation of CRM is across the banking sector for information security. MNC and private banks are deploying Six Sigma for achieving operational efficiency. Public sector banks have kept six sigma options open for future adoption and implementation. Public and private sectors are actively planning to adopt the standards such as BS 25999 to enhance their business opportunity capabilities.

This paper attempts to explore the probable links between multi-channel oriented service performance of bank and perceived service quality thereof. The paper, further introduces the concept of multiple-channel service quality index (MCSQI) with its conceptual and mathematical deductions and further tries to investigate its impact on customer satisfaction and investments of customers in profit inducing instruments offered by the banks. State Bank of India (SBI) was chosen for the study. The rationale behind choosing SBI has been the completion of their decade long modernization and up-scaling of their operation from a legacy dominated silos-based customer transaction to a electronic banking format with CBS implementation and being the largest nationalized bank in India its geographical penetration and bank branch networking (availability of services).

REVIEW OF LITERATURE

Marketing channels provide access to a marketer to penetrate the markets and customer base (Cou et al, 2001) and thereby ensure the physical and communicative presence of a marketer's value propositions and service augmentations in the market. Schö (2001) conceptualized multi-channel marketing as the use of more than one channel of distribution of products or services fused in an integrated format. Use of multiple channels or intermediaries was not a new phenomenon in marketing as traditional marketing network witnessed a number of intermediaries being used simultaneously to achieve greater and deeper penetration in the market (Mall, 1977 and Ster, 1988). However, with the proliferation of information technology and with the increasing role of internet and mobile communication as a marketing channel completing conventional marketing channels, the distribution of products and services vis-à-vis customers' accessibility to the same has undergone a revolutionary change (Isarescu, 2001). Pastore (2001) pointed out that with digitization of information flow the money-transaction has also become electronic where money is perceived as information stored transmitted through internetworked channels. Stream of research focused on analysis and classification of multi-channel strategies adopted by the firms. Most of the academic research works concentrated on various multi-channel marketing approaches and typologies of multi-channel strategies and business models. Ranchhod and Gurau (1999) identified two main strategies with regard to internet channel distribution and termed them as direct distribution model and intermediate distribution model. Otto and Chung (2000) were of the opinion that offers through online or automated marketing channels can be shifted to offline marketing channels for the convenience of the customers. Typology that highlights the degree of business transformation caused by the introduction of multichannel strategies has been discussed by Doolin, McQueen and Watton (2003). A number of researchers have provided significant academic inputs in the context of alternative channel strategies with rapid integration of technology with service delivery mechanism and also suggested frameworks to implement the same (Wirtz, 2001; Steinfield et al, 2002; Gulati and Garino, 2000; Bahn and Fischer, 2003; Gribbins and King, 2004). Strebinger and Treiblmeyer (2004) introduced the concept of online and offline brand structure by suggesting a framework of multi-channel IT integrated hypothetical company. Hybrid models of channel distribution were also put forward by Yousept and Li (2004) for online supermarkets.

When technology opened up multiple channels of delivery of banking services through internet banking, mobile banking, ATMs, call-centres etc., different views were expressed about its future orientation and subsequent adoption at the customer level. Over the last decade, many financial institutions have adopted such kind of technological platforms to deliver services. The research has shown that sustainable profitability in the banking sector depends on mastering the skills of managing and integrating customer relationships across multi-channels, by using advanced data and communication technologies (Kirby, 2001). The argument against technology was its effect in creating 'depersonalization' or increase in gap between the customers and the marketer. A depersonalization, often represented as disintermediation by the bankers, has been gradually emerging in the banking industry and as such its impact on the behavioural pattern of the customers is worthy of evaluation. One of the essential areas of concern is the changing expectation and perception of customers with regard to service quality levels. Conventional service quality gave way to automated service quality by virtue of technology-driven multi-channel oriented service delivery and its corresponding perception of quality. A number of researchers focused on identifying the new dimensions of automated service quality (Dabholkar, 1996; Loiacono, Watson, Hoodhue, 2000; Yoo and Donthu, 2001; Cox and Dale, 2001). In a ground-breaking study Parasuraman, Zeithaml and Malhotra (2005) developed the electronic version of the highly acclaimed SERVQUAL scale (Parasuraman, Zeithaml and Berry, 1985, 1988) – the E-SERVQUAL. While SERVQUAL proved to be an effective instrument for the measurement of traditional or conventional service quality, E-SERVQUAL focused on measuring the electronic service quality. Customers availing multi-channel services expect homogeneous level of service from each and every channel. Moutinho and Curry (1994) suggested that the customers will face the problem of service differentiation while developing preference of one bank to other as technological outputs will be same and techno-based advantages will be short-lived. On the other hand, the necessity to improve customer loyalty through personalized customer relationship management determines the financial institutions to introduce a unique platform

technology, integrating the information flows from all existing channels. According to rational channel planning models (Stern and Sturdivant, 1987; Stern et al, 1996) retail banks should identify profitable customer segment attracted to physical-channel-based branch banking, mobile banking, internet banking, call-centre based banking or a combination thereof.

The review of literature revealed an absolute dearth of research focusing on indexing multi-channel performance and its probable linkages with perceived service quality, customer satisfaction and profitability. In addition to this, literatures did not confirm efforts to identify the performance-linked factors with respect to multi-channel service delivery system. Therefore this study is significant as it attempts to make an empirical contribution towards conceptualization of Multi-Channel Service Quality Index (MCSQI) and enlightening the impact of multi-channel service performance (MCP) and its consequences for a service provider, namely banks.

Constructs Development of Multi-Channel Service Quality Index (MCSQI)

Peffers and Dos Santos (1996) developed a process for measuring the impact of information technology, more specifically ATM services, on market share and overall performance of a bank using an S-shaped logistic model:

$$y = \frac{m}{1 + e^{a+bt}}$$

Where y is the benefit of the technology application at time t, m is the upper bound on the benefits of the application, and a and b are constants that determine the shape of the curve. Similar kind of logic can be used in computing Multi-Channel Service Quality Index (MCSQI) whereby it is assumed that MCSQI will improve if efficiency of multi-channel service performance (MCP) increases. The impact of MCP application at time *'t'* is proportional to the MCSQI gained at time *t-1* ($MCSQI_{t-1}$) relative to maximum possible gains from the MCP application (i.e. 1) and the remaining MCSQI is yet to be gained (i.e 1 - $MCSQI_{t-1}$). It can be represented as (over time t):

$$\frac{dMCSQI}{dt} = -MCP(1 - MCSQIt-1) \quad (1)$$

where MCP is a term denoting efficiency of service delivery through multi-channel integration for a service provider. Solving equation-1 for MCSQI:

$$MCSQI = \frac{1}{1 + e^{a+MCP_t}} \quad (2)$$

Equation-2 represents a S-shaped logistic model where 1 is the upper-bound on the MCSQI from the MCP application. It is assumed that the constant a is zero because each service provider is supposed to initiate MC enabled services with a negligible MCSQI. Therefore equation for MCSQI is developed as:

$$MCSQI = \frac{1}{1 + e^{MCP_t}} \quad (3)$$

The term MCP is a function of the relative weight of the eigenvalue (RWE) of each multichannel factors multiplied by the average factor value (AVF) of the corresponding MC factor.

$$MCP = RWE_{MCP1}AVF_{MCP1} + RWE_{MCP2}AVF_{MCP2} + RWE_{MCP3}AVF_{MCP3} + RWE_{MCP4}AVF_{MCP4} + RWE_{MCP5}AVF_{MCP5}$$

Where, MCP1 = ATM service performance
MCP2 = i-banking performance
MCP3 = mobile banking performance
MCP4 = physical channel-banking performance
MCP5 = call-centre/BPO-linked banking performance

FORMULATION OF HYPOTHESIS

Based on the literature reviewed, the following hypotheses were formulated for testing:

H_1: Perceived Service Quality (PSQ) is dependent on multi-channel service performance (MCP)

H_{01}: Perceived Service Quality (PSQ) is independent of multi-channel service performance (MCP)

H_2: Customer Satisfaction (CS) is dependent on Multi-Channel Service Quality Index (MCSQI)

H_{02}: Customer Satisfaction (CS) is independent of Multi-Channel Service Quality Index (MCSQI)

H_3: Profitability (PROF) is dependent on Multi-Channel Service Quality Index (MCSQI)

H_{03}: Profitability (PROF) is independent of Multi-Channel Service Quality Index (MCSQI)

RESEARCH METHODOLOGY

For the study two branches of State Bank of India were chosen where Core Banking System has been implemented. The branches are SBI, Bolpur and SBI, Santiniketan. A structured questionnaire was developed to generate response from the respondents and it was finalised after a focus group discussion conducted with 20 multi-channel-banking users and 10 banking personnel representing SBI of Bolpur region. The questionnaire had five sections. Section-I dealt with customers' perception with regard to service quality offered by their bank on the basis of multi-channel accessibility (22 items were finalized after pilot study), section-2 attempted

to estimate customer satisfaction on the basis of 4 items (fianlized after the pilot study) namely 'satisfaction with respect to SBI's multi-channel accessibility', 'satisfaction with regard to SBI's ease of multi-channel navigation', 'satisfaction with regard to security and accuracy of transaction over multiple channels' and 'satisfaction with regard to responsiveness of channel authorities', section-3 targeted to generate response on the performance of multiple channels used by SBI to deliver service namely ATM, internet-banking, mobile-banking, physical channel banking and call-centre/BPO banking, section-4 was designed to obtain data with regard to investments made by the respondents using multiple channels of services offered by the bank in cross-selling/up-selling products tantamounting to profitability and section-5 asked demographic questions. Simple random sampling technique was used by the researchers whereby every tenth customer from the database provided by the banks was considered for the study. A total number of 1200 questionnaires were used for the study out of which 712 number of acceptable response were generated with a response of 71.2%. Exploratory Factor Analysis (EFA) was used using principal axis factoring procedure to validate the measures used for perception of service quality. The analysis was constrained a priori to five factors and each scale was rotated orthogonally through VARIMAX process with an objective to reduce data and to study the factor loadings/cross-loadings in various components. Cronbach's α has been obtained to test the reliability of the data, Kaiser-Meyer-Olkin (KMO) for sample adequacy and Barlett's Sphericity Test have been conducted.

DATA ANALYSIS AND INTERPRETATION

The demographic data obtained were tabulated in Table-II:

Table II Demographic Data of the Respondents

Demographic Variables	Factors	Frequency	%
Gender	Male	497	69.80%
	Female	215	30.20%
Age	≤ 21 years	32	4.49%
	22-32 years	321	45.08%
	33-43 years	216	30.34%
	44-54 years	68	9.55%
	≥ 55 years	75	10.54%
Income	≤ Rs. 14999.00	10	1.40%
	Rs. 15000-Rs. 24999.00	247	34.69%
	Rs. 25000-Rs. 44999.00	367	51.54%
	≥ Rs. 45000.00	88	12.37%
Occupation	Service [govt./prv]	399	56.03%
	Self employed	132	18.54%
	Professionals	65	9.13%
	Student	23	3.23%
	Housewives	57	8.00%
	Others [retd., VRS etc]	36	5.07%
Educational qualification	High school	3	0.43%
	Graduate	472	66.29%
	Postgraduate	205	28.79%
	Doctorate & others (CA, fellow etc)	32	4.49%

Exploratory factor analysis (EFA) was used to reduce the number of variables by removing the highly correlated variables and nomenclate the grouped-variables on the basis of their factor loading scores into specific dimensions. The Cronbach's α exhibited a consistently high value (0>.80) suggesting the scale reliability (Nunnally and Bernstein, 1994). The KMO measure for sample adequacy was also found to be acceptable (.838). The items which were loaded with a lesser value to .700 were subsequently deleted. The initial 22 items were reduced to 15 variables with variables having factor loading scores of <0.7 were discarded. The

variables were grouped into five dimensions according to the factor loading scores and were nomenclated as in Table-III.

Table III Identified Dimensions of Perceived Service Quality on the Basis of Multi-channel Performance

Variables	Dimension
My banking channels are easy to access on the ground of location and technology support (.829) There is navigational ease with the channels (.866) The channels are not blocked or freezed while a transaction is on (.764)	Ease of use
The channel-interfaces are user friendly (.809) The information are well displayed on the channel interface (.874) The channel interface allows me smooth transaction (.771)	Interface
My banking channels deliver what is promised (.814) My banking channels maintain accurate and updated information about my transactions (.717) My banking channels maintain real time transactions as promised (.707)	Accuracy
The channels of my bank offer adequate security & confidentiality of personal information and transactions (.812) The channels can be trusted against possible mishandling of personal information stored (.821) The channels are configured properly and authenticated (.789)	Security
Customer representatives are available with the channels of transactions (.791) Customer representatives are courteous and helpful whenever assistance is sought (.863) The channels of transactions adequately guide me in case there is a problem with transaction (.766)	Responsiveness

The perceived service quality (PSQ) on the basis of multi-channel performance was calculated for each respondent as the mean across all the items (15) across which response was generated with the help of a 7 point Likert scale. The respondents were also asked to rank the multi-channel service performance and the mean was calculated across all the items to obtain the multi-channel service perception score (MCP).

To test hypothesis-1 bivariate correlation and simple regression analysis were used to assess the nature and strength of relationships between the variables and the predictability of the dependent variable (PSQ) on the basis of independent variable (MCP). The results of correlation (Table-IV) exhibited a strong and positive relationship between PSQ and MCP ($r = .429^{**}$, $p < .001$).

Table IV Correlation between Perceived Service Quality (PSQ) and Multi-channel Performance (MCP)

		MCP	PSQ
MCP	Pearson Correlation	1.000	.429**
	Sig. (2-tailed)		.000
	N	712	712
PSQ	Pearson Correlation	.429**	1.000
	Sig. (2-tailed)	.000	
	N	712	712

** Correlation is significant at 0.01 level (2-tailed)

The regression results were tabulated in Table-V. The model summary exhibited R^2 and adjusted R^2 to be as .824 and .822 indicating that perceived automated service quality (independent variable) measures 82.40% of the variation in customer satisfaction (dependent variable) which is considered to be significant enough for predictability of the model. ANOVA established that the variation showed by the perceived automated service quality was significant at 1% level ($f = 2587.631$, $p < .001$). Regression coefficients confirmed a strong associationship between PSQ and MCP ($\beta = .871$, $t = 46.511$, $p < .001$) and that MCP could be an effective predictor to PSQ thereby suggesting dependency of PSQ on MCP. Hypothesis 1 was accepted.

Table V Summary of Regression Results

Model Summary			ANOVA		Regression Coefficients		
R	R^2	adjusted R^2	F	sig	β	t	sig.
.817	.824	.822	2587.631	.000	.871	46.511	.000

a. Dependent variable: Perceived service quality (PSQ)

b. Predictor: Multi-channel perception (MCP)

Factor analysis validated the measures used for Multi Channel Service Quality Index (MCSQI) namely ATM service performance, internet-banking (*i*-banking) performance, mobile banking performance, physical channel performance and call-centre/BPO channel performance. Exploratory factor analysis was deployed using orthogonal rotation. The reliability index was obtained as >0.70. The convergent validity was found to be >0.60 for all the items. Factor loading <.500 were discarded. Table-VI displayed the results of factor analysis

Table-VII and Table-VIII displayed the relative weight of eigenvalue (RWE) and average factor value (AFV) respectively, which were considered for calculating the MCSQI.

Table VI Factor Structure of Variables (N = 712)

Factor	Eigenvalues	Cronbach's α	Items	Factor Loadings	Convergent Validity
ATM service performance	4.19	0.91	1. ATMs are safe & secured	0.823	0.841
			2. Information are well displayed	0.798	0.801
			3. Consistent availability of link	0.771	0.779
			4. Multipurpose transactions possible	0.718	0.716
			5. Ambience of ATM counter is pleasant	0.817	0.824
			6. Accuracy of transaction & receipt	0.877	0.881
i-banking performance	3.98	0.87	1. *i*-banking is well enabled	0.818	0.821
			2. Confidentiality of information is maintained	0.829	0.837
			3. Security of transaction assured	0.849	0.851
			4. Interface displays information well	0.820	0.832
			5. Multipurpose transactions possible	0.799	0.810
			6. Transactions are accurate	0.854	0.857
			7. Third-party transactions are smooth	0.778	0.781
Mobile-banking performance	4.41	0.78	1. Mobile-banking services are available	0.712	0.717
			2. Mobile-banking, once activated runs well	0.866	0.871
			3. Information reaches via SMS about transactions	0.817	0.822
			4. IVR facility available	0.619	0.639
			5. Transactions are enabled through mobile internet	0.678	0.681
			6. Information about newly introduced products/services are available	0.719	0.734
Physical-channel performance	3.21	0.71	1. Bank's servicescape is pleasant	0.881	0.891
			2. Green-channels are available & well displayed	0.767	0.778
			3. Waiting-time for transactions is less	0.671	0.682
			4. Single-window servicing is available	0.891	0.897
			5. The counter-persons (bankers) are knowledgeable and skilled	0.798	0.809
Call-centre/BPO	3.54	0.81	1. IVR service is good	0.652	0.658
			2. The centres take care of the queries	0.602	0.618
			3. Transaction through call centres are smooth	0.611	0.617
			4. Product/service information are prompt	0.669	0.671

Table VII Relative Weight of Eigenvalue (RWE)

Factor	Eigenvalue	RWE
ATM service performance [ATMP]	4.19	0.21
i-banking performance [*i*bp]	3.98	0.20
Mobile-banking performance [MBP]	4.41	0.24
Physical-channel performance [PCP]	3.21	0.16
Call-centre/BPO [C&BPOP]	3.54	0.19
Total	19.33	1

Table VIII Average Factor Value (AVF)

Organization	ATMP (MCP1)	*I*bp (MCP2)	MBP (MCP3)	PCP (MCP4)	C&BPOP (MCP5)
SBI	0.37	0.81	0.43	0.31	0.33

Calculating for Multi-channel performance (MCP) as per the following equation, we get

$$MCP = RWE_{MCP1}AVF_{MCP1} + RWE_{MCP2}AVF_{MCP2} + RWE_{MCP3}AVF_{MCP3} + RWE_{MCP4}AVF_{MCP4} + RWE_{MCP5}AVF_{MCP5}$$

$$MCP = (0.21 * 0.37) + (0.20 * 0.81) + (0.24 * 0.43) + (0.16 * 0.31) + (0.19*0.33)$$
$$= 0.0777 + 0.162 + 0.1032 + 0.0496 + 0.0627$$
$$= 0.4552$$

Therefore, calculating for MCSQI as per equation-3:

$$MCSQI = \frac{1}{1 + e^{0.4552}}$$

$$MCSQI = 0.388$$

The customer satisfaction (CS) score was obtained for an individual by calculating the mean of response over the items (4) namely 'satisfaction with respect to SBI's multi-channel integration to provide banking services', 'satisfaction with regard to ease of navigation of SBI's multiple channel of service delivery', 'satisfaction with regard to ease of use of SBI's multiple channel of service delivery' and 'satisfaction with regard to privacy and accuracy of transaction through SBI's multiple channels of service delivery'. The degree of satisfaction was generated over a 7 point Likert scale.

To test hypothesis-2, bivariate correlation was applied to understand the relationship between MCQSI and CS and the results were displayed in Table-IX. The results of correlation analysis reflected a strong and positive correlation between CS and MCSQI (r = 202**, p < .001).

Table IX Correlation between CS and MCSQI

		CS	MCSQI
CS	Pearson Correlation	1.000	.202**
	Sig. (2-tailed)		.000
	N	712	712
MCSQI	Pearson Correlation	.202**	1.000
	Sig. (2-tailed)	.000	
	N	712	712

The strength of association between the variables and the predictability of the dependent variable was assessed as a part of hypothesis testing by applying regression analysis (Table-X). The model summary showed R^2 and adjusted R^2 to be as .438 and .436 indicating that multi-channel service quality index (MCSQI) measures 43.80% of the variation in customer satisfaction (CS) (dependent variable) which is considered to be significant enough for predictability of the model. ANOVA established that the variation showed by the perceived automated service quality was significant at 1% level (f = 327.457, p < .001). Regression coefficients confirmed a strong associationship between MCSQI and CS (β = .562, t = 18.096, p < .001) and that MCSQI could be an effective predictor to CS thereby suggesting dependency of CS on MCSQI. Hypothesis 2 was accepted.

Table X Summary of Regression EResults

Model Summary			ANOVA		Regression Coefficients		
R	R^2	adjusted R^2	F	sig	β	t	sig.
.662	.438	.436	327.457	.000	.562	18.096	.000

a. Dependent variable: Customer satisfaction (CS)

b. Predictor: Multi-channel service quality index (MCSQI)

Profitability has been defined as the investments made by the respondents (customers) in the cross-selling/up-selling products/services offered by their bank (State Bank of India) and has been estimated on the basis of number of such investments made over a specific period of time (between March-August, 2011). Correlation test was used to identify whether MCSQI had relationship with the of the respondents (SBI customers) to invest in cross-selling/up-selling products offered by their bank leading to profitability. The cross-selling and up-selling products/services considered for the study were loans, cards, bancassurance, mutual-fund, FDs & other term deposits, recurring deposits, and gold investments. The mean of all the investments (on individual basis) were obtained in cross-selling/up-selling products/ services and was considered to be the profitability indicator. The correlation matrix displayed (Table-XI) a positive and significant relationship between MCSQI and profitability indicators namely loans (r = .278**, p < .001), cards (r = .244**, p < .001), bancassurance (r = .105**, p < .001), mutual fund (r = .151**, p < .001), FDs and other TDRs (r = .160**, p < .001), recurring deposits (r = .079**, p < .005), confirming acceptance of Hypothesis 3. The MCSQI did not show any significant relationship with 'investments in gold (GI)'

Table XI Correlation between MCSQI and Profitability Indicators

Variables	Loans	Cards	Bancassurance	Mutual Fund	FDs & Other TDRs	Rec.dep	GIs
MCSQI	0.278**	0.244**	0.105**	0.151**	0.160**	0.079*	0.008

*Correlation is significant at 0.01 level (2-tailed)

**Correlation is significant at 0.05 level (2-tailed)

CONCLUSION

The study revealed that majority of the customers of State Bank of India (Bolpur and Santiniketan, West Bengal branches) are very comfortable and willing to use the electronic and mobile banking channels that have been

introduced through the implementation of CBS. The service-delivery transition has been smooth as it is reflected in positive perception about service quality delivered, the subsequent level of customer satisfaction, their investments and transactions in profit-generating products and services offered by their bank (SBI) using multiple channels of bank-related transactions particularly internet banking, ATMs and mobile-banking. The result of analysis also brought forward that the customers are also inclined towards physical-channel oriented banking. It suggests that the customers felt "human contact is necessary", which opens up a new area to engage researchers to prepare a behavioural construct for multi-channel banking, in near future, and banking transactions, will be more transparent and interactive. The concept of multi-channel service quality index (MCSQI), with more research inputs, can evolve as a significant indicator for the bankers to predict and understand the satisfaction level of the customers and their probable behavioural intentions.

The study has geographical limitations as it has been restricted to Bolpur and Santiniketan, two semi-urban regions of West Bengal which in future can be widened to obtain a more generalized conclusion.

In future comparative studies can be initiated as competition tends to increase and there is strong requirement of service differentiation and customization on the basis of automated service delivery mechanism, whereby service quality between more than one service providers can be made. In addition to these more specific behavioural consequences of multi-channel and perceived automated service quality may be considered like loyalty, propensity to switch etc. New multi-channel service performance indicators and enhancers may be identified and there is enough scope to modify the multi-channel service quality index (MCSQI).

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