Linking CRM enabled automated service quality and its behavioural consequences using structural equation modeling

Dr. Arup Kumar Baksi

Dr. Bivraj Bhusan Parida

Abstract

The service sector has experienced a tremendous impact as technology-enabled services stimulated a shift in perception of service quality with renewed dimensions and their subsequent effects on the behavioural outcomes of the consumers. Technology integration with service delivery mechanism has been further fine-tuned with the adoption of a business philosophy namely Customer Relationship Management (CRM). This paper attempts to explore the relationship between automated service quality and its behavioural consequences in a relatively novel business-philosophy dominated environment – Customer Relationship Management. State bank of India (SBI) at Bolpur, West Bengal was selected for the study. The study used structural equation modeling (SEM) to justify the proposed model construct. The results revealed a significant relationship between the perceived automated service quality and favourable behavioural intentions namely loyalty, willing to pay more price for enhanced services etc. The study is significant considering the dearth in research focus involving the gradual penetration and subsequent adoption of automated services in rural areas of West Bengal and its behavioural output.

Key words: Customer relationship management, automated service quality, structural equation model, bank, behavioural consequence

1. Introduction

The banking operation in India has undergone a total transformation with the introduction of technology. The conventional unidimensional service market trinity got converted to a three dimensional interactive model with service providers (banks), service employees (bankers) and customers interacting with each other through technology. The knowledge, skill and behaviour of service employees; considered as internal customers, remained critical while perceiving service quality, although automated banking services ensured disintermediation to a large extent (Khan and Mahapatra, 2009). Conventional service quality concept has also metamorphosed with operational efficiency, security and confidentiality of information stored, reliability, accuracy and speed of transactions, virtual interfaces, IVR etc. being considered as major quality dimensions. Customers are demanding new level of convenience and flexibility in addition to powerful and easy-to-use financial management tools, products and services that conventional banking operations could not offer (Hanzaee and Sadeghi, 2010). Studies conducted by Ravi et al (2007) revealed that automated banking transactions in India is still at its nascent stage with private sector banking responding and adapting earlier to these changes (Malhotra and Singh, 2007). It was only in the extreme later half of 1990s that the nationalized public sector banks in

India decided to shade-off its silos-based operational legacy and upgrade themselves to the digital platform. This shift of paradigm was further stimulated by the recommendations of Rangarajan committee to initiate automation in banking operations. The IT Act of 2000 of Govt. of India provided a legal recognition to electronic banking transactions with RBI establishing a work-group to supervise and monitor issues such as security and technology, legal and control and supervision. Uppal (2011) concluded that transformation is taking place almost in all categories of the banks. This transformation will helpful to cope with new economic and financial policies of the banks. Technology is playing a crucial role to create the drastic changes in the banking industry particularly in the new private sector and foreign banks. The private banks take a big share of cake; our public sector banks are still lagging behind regarding the various financial parameters.

Automated banking, for a considerable period of time, was an activity constrained to the metros and big cities in India. Phenomenal penetration of technologies and its convergence paved the path for banking service automation in semi-urban and rural areas of India also. The probable two behavioural consequences of service quality which are factor-prime for service organizations like banks are customer loyalty and propensity to switch because both these phenomenon are linked to profitability. With the competition becoming fierce, customer loyalty and favourable behavioural consequences have emerged as two potential defensive tools for the banks. The recent adoption of Customer Relationship Management (CRM) as a business philosophy saw the banks developing better proactive strategies to ensure better personalization and customization of service delivery.

This paper attempts to explore the probable impacts of automated service quality on behavioural intentions of customers in a CRM dominated environment of a bank. 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 and being the largest nationalized bank in India its geographical penetration and bank branch networking (availability of services). The organisation of this study following the 'Introduction' has been done as: review of literature, research model and formulation of hypotheses, methodology, data analysis and interpretation and conclusion with limitations of the study and future research prospect.

2. Literature review

With the growing significance of service sector towards contributing in a nation's GDP, researchers, over the years, explored and conducted a number of empirical works to understand the nature of service quality, its dimensions and dynamics and probable ways to enhance the perceived service quality (Cronin and Taylor, 1992, 1994; Rust and Zahorick, 1993; Avkiran, 1994, Kearns and Nadler, 1992; Parasuraman et al, 1985, 1988, Julian and Ramaseshan, 1994, Llosa et al, 1998, Crosby and Stephens, 1987). Grönroos (1982) conceptualized service quality as a customer's perception of difference between the expected service and the perceived service. The study of service quality was pioneered by Parasuraman, Zeithaml and Berry (PZB), who developed the gaps framework in 1985 and its related SERVQUAL instrument (Parasuraman, Zeithaml and Berry 1985, 1988, 1991) whereby five dimensions of service quality were proposed namely tangibles, reliability, responsiveness, assurance and empathy**.** Service quality

was one of the most critical issues in maintaining sustainable relationship with the customers (Peng and Wang, 2006).

The transition of service delivery system from employee-customer interaction to employee-technology and technology-customer interactions included a new dimension in service delivery mechanism and vis-à-vis perceived service quality (Alkibsi and Lind, 2011). Technology integration in services has empowered the customers to enjoy a degree of autonomy and has reduced the burden of non-monetary cost, mainly psychological in nature, to a great extent. Al Hawari (2011) found that automated service quality can be an inducer in gaining customers' trust towards long-term sustainable relationship. Henderson et al (2003) was of the opinion that automated service provides organisation to introduce new models for service design and development. Ruyter et al (2001) defined automated service as interactive, content-centered and internet-based customer service driven by the customer and integrated with the related organisation customer support process and technologies with the goal of strengthening the customer-service provider relationship. Parasuraman et al (2005) viewed automated services as web-based services while Buckley (2003) conceptualized automated services as electronic provision of services to a customer. Automated service quality has been identified by Santos (2003) as consumers' evaluation of e-service quality in a virtual market place. Quite a few researchers explored automated service quality dimensions and subsequently developed models to assess service quality such as SITEQUAL (Yoo and Donthu, 2001), WEBQUAL (Loiacono, Watson and Goodhue, 2002), eTailQ (Wolfinbarger and Gilly, 2002), E-SERVQUAL (Zeithaml, Parasuraman and Malhotra, 2005) SSTQUAL (Lin and Hsiech, 2006). Javadi (2011) deduced that e-service quality can have significant effects on sustaining competitive advantage of the firms along with its sub-factors and dimensions. Customers are evaluating the quality of offered e-service with their criteria, consciously or unconsciously and the result of these evaluations will lead them to choose, stay with or change a specific firm among many.

The financial sector, particularly the banking system adopted the automated service delivery process and reinforced it with the introduction of convergence of technologies to provide a customer alternative but synchronized channels to access services of assorted nature. Introduction of automated banking services triggered changes in consumer behaviour, consumer perception towards banking service quality, innovation in service delivery system, channel integration, communication and relationship marketing which received adequate emphasis on behalf of the academic researchers (Laforet and Li, 2005; Gerard and Cunningham, 2003; Hernandez and Mazzon, 2007; Wolfinbarger and Gilly, 2002; Yang et al, 2004, Mukherjee and Nath, 2003). Ganguli and Roy (2011) identified four generic service quality dimensions in the technology-based banking services namely customer service, technology security and information quality, technology convenience, and technology usage easiness and reliability. It was found that customer service and technology usage easiness and reliability have positive and significant impact on customer satisfaction and customer loyalty. It was also found that technology convenience and customer satisfaction have significant and positive impact on customer loyalty. Banking, which was conventionally a high contact service, the disintermediation with the introduction on technology, was considered to be critical towards establishing quality perception in the minds of the customers (Broderick and Vachirapornpuk, 2002). Dhabolkar ((1994) argued that the automated channels made customer participation in service delivery process more intense. A number of researchers considered ATM, internet

banking, telephone/mobile banking as the principal automated service delivery channels (Dabholkar, 1994; Meuter et al, 2000; Szymanski and Hsiech, 2006; Radecki et al, 1997). Dabholkar (1996) concluded that these three major electronic/automated service channels were frequently accessed by the bank customers in combination with each other which was further considered to be a relationship-building platform (Lans and Colgate, 2003; Patricio et al, 2003; Ramsay and Smith, 1999). In a comparatively recent study Lin and Hsiech (2006) investigated factors that affect customers' perception of service quality within the domain of self-service technologies and identified seven dimensions of automated service quality – functionality, enjoyment, security, assurance, design, convenience and customization. Al Hawari, Hartley and Ward (2005) developed the concept of Automated Service Quality Index (ASQI) by highlighting five factors – ATM service quality, telephone banking, internet banking services, core service quality and customer perception of service quality. In a study conducted by Al Hawari and Ward (2006), it was concluded that the three major automated service channels used by the banks to deliver services are significantly related to customer retention thereby providing the researcher cues to conclude a possible behavioural intention link to automated service quality. Huettinger and Cubrinskas (2011) termed the automated services as self service technologies (SST) and observed that the customers prefer these as they were perceived to be much faster, convenient and secured. Hanzaee and Sadeghi (2010), in a study, observed that accuracy, reliability, image, impression of the bank management and website design were significantly correlated to customer satisfaction.

Behavioural consequences of service quality has been a critical component to service providers as superior service quality leads to favorable behavioral intentions, leading to retention and subsequent generation of revenue, increased spending, payment of price premiums, and generation of referred customers (Zeithaml et al., 1996). In a study Al Hawari (2011) found that automated services offered by banks in UAE were instrumental in generating customer commitment by gaining customers' trust and ensuring customers' delight. Excellent service is a profit-oriented strategy because the results include expansion in customer base, increased business with existing customers, lesser degree of customer attrition, enhanced buffer from price competition and fewer mistakes requiring the services to be repeated (Parasuraman et al., 1994). On the other hand inferior service quality leads to unfavorable behavioral intentions which lead to customer defection from the organization which leads to decreased spending, dissatisfied and lost customers, and increasing costs associated with attracting new customers (Zeithaml et al., 1996). Findings by Rasheed and Latif (2011) indicated that technology-enabled service quality had a significant and positive effect on bank's performance in the context of customer satisfaction. Switching of customers due to poor perceived service quality can cost an organization the customer's future revenue stream (Keaveney, 1995). Evidence that customer loyalty makes an organization more profitable makes it imperative that complaints and other unfavorable behavioral intentions are handled effectively to ensure the stability of these relationships (Tax & Brown 1998a). Zeithaml et al. (1996) highlighted the behavioural consequences of service quality and proposed a comprehensive, multi-dimensional framework of customer behavioural intentions, nomenclated as Behavioural Intentions Battery (BIB), to be used in the service industry. The framework consisted of 13-items across five dimensions namely loyalty to organisation, propensity to switch, willingness to pay more, external responses to a problem and internal responses to a problem.

The transition of bank's operational platform from a silos-based legacy to a digitized platform was further enriched by the adoption of a new business philosophy – Customer Relationship Management (CRM). Customer Relationship Management (CRM), defined by Nguyen et al (2007), is an information system that enables organizations to track customers' interactions with their firms and allows employees to extract customer-based information namely history of sales, unresolved problems, payment records, service records etc. Customer Relationship Management (CRM) has been argued to replace the traditional 4Ps of marketing (product, price, place and promotion) concept as a dominant logic in marketing process (Guraˇu, 2003) and refers to all business activities directed towards initiating, establishing, maintaining, and developing successful long-term relational exchanges (Heide, 1994; Reinartz & Kumar, 2003). Gradual polarization of marketing process towards a relationship base was found to be dyadically more effective in establishing mutually profit-benefit transactions between sellers and buyers respectively. CRM was found to be critical in ensuring customer loyalty as identified by Lombard (2011) and was of the opinion that service providers pursuing CRM should concentrate on two-way communication and effective conflict handling. The scholastic debate sprung a number of views about the domain of CRM – some researchers view CRM as a mere software based application, therefore emphasizing on the process part; while others consider CRM as a philosophy which aims to translate customer intimacy into profit (Yueh et al, 2010, Soon, 2007; Nguyen et al, 2007 & Eric et al, 2006). Subsequent research works have highlighted CRM as an integration of people, process and technology, targeted to bring firms closer to customers. Empirical research works pointed out, time and again, towards the mutual and symbiotic benefits both for the sellers and customers (Dekimpe, Steenkamp, Mellens & Abeele, 1997). In a study Gray and Byun (2001) viewed CRM as a continuous flow of corporate changes in culture and processes that combines three focal areas: (i) Customer (ii) Relationship and (iii) Management. With this introduction of hyper-customized products and services, particularly in the cross-selling and up-selling domains of a financial service organization, the customer needs and desires have undergone a sea change. CRM Guru (2006) conducted a study which was subsequently reported by Judith Sandall (2007), with regard to this growing complexity in customer need identification. Grabner-Kraeuter and Moedritscher (2002) point to the lack of an adequate CRM strategic framework from which to define success as being a reason for the disappointing results of many CRM initiatives. One of the results of CRM is the promotion of customer loyalty (Evans & Laskin, 1994), which is considered to be a relational phenomenon (Jacoby & Kyner, 1973; Sheth & Parvatiyar, 1995; cited by Macintosh & Lockshin, 1997). The benefits of customer loyalty to a provider of either services or products are numerous, and thus organizations are eager to secure as significant a loyal customer base as possible (Gefen, 2002; Reinartz & Kumar, 2003; Rowley & Dawes, 2000).

The results of a study conducted by Hadzagas (2011) demonstrated that, successful implementation of CRM system could enhance customers' satisfaction rate. This is due to personalized, individualized attention given to the customer provided by CRM applications. The idea that one cannot have a profitable relationship with all customers and the practice of targeting customers with a differentiated product or service is already widespread in many financial services, e.g. banking, insurance, credit cards etc. The widespread adoption and application of CRM is not without risk of failure. To ensure minimization of risk associated with CRM implementation Papadopoulos, Ojiako, Chipulu and Lee (2012) proposed a systemic flexibility as business process matures.

Review of literature revealed that while academic research works were carried out substantially to identify the dimensions of automated service quality, not much of emphasis was given to explore the probable linkage between perceived automated service quality and behavioural consequences of customers in a CRM dominated business environment and that too in a rural perspective. Therefore the paper can make significant contribution to understand the gradual penetration and adoption of automated services amongst rural customers and their vis-à-vis response.

3. Objectives of the study

Based on the review of literature and the identified dearth in research focus, this paper attempts empirically to explore possible linkages between perceived automated service quality (PASQ), customer satisfaction (CS) and behavioural intentions (BI) for bank customers in a Customer Relationship Management (CRM) environment. Therefore, the objectives of the study were framed as below:

a. to examine the impact of performance of CRM components on perceived automated service quality.
b. to assess the impact of perceived automated service quality on the behavioural intentions of the customers with particular reference to loyalty and propensity-to-switch.
c. to understand the response pattern of customers with respect to their perceived automated service quality.
d. to check whether the research model holds good for all the constructs.

The proposed research model is depicted in Fig.1 below:

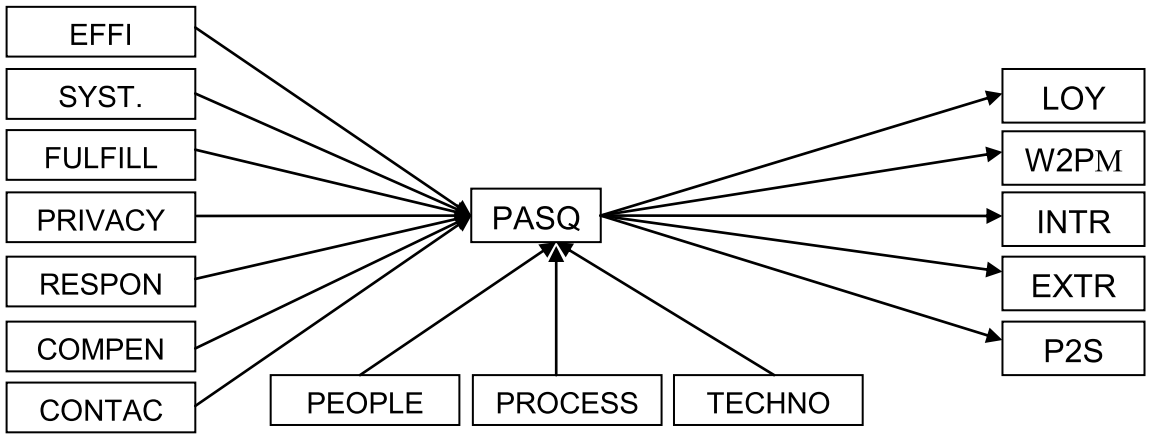

Fig.1: The research model

(legends used: EFFI-efficiency, SYST.- system, FULFILL-fulfilment, PRIVACY-privacy, RESPON-responsiveness, COMPEN-compensation, CONTAC-contact, PASQ-perceived automated service quality, LOY-loyalty, W2PM-will-to-pay-more, INTR-internal response, EXTR-external response, P2S-propensity-to-switch, TECHNO-technology)

Accordingly it is hypothesized that:
H_1 : Loyalty is dependent on perceived automated service quality (PASQ).

H_{01}: Loyalty is independent of perceived automated service quality (PASQ).
H_2: Propensity to switch is dependent on perceived automated service quality (PASQ).
H_{02}: Propensity to switch is independent of perceived automated service quality (PASQ).
H_3: Response pattern of customers is influenced by perceived automated service quality (PASQ).
H_{03}: Response pattern of customers is uninfluenced by perceived automated service quality (PASQ).
H_4: CRM performance is an antecedent to perceived automated service quality (PASQ)
H_{04}: CRM performance is not an antecedent to perceived automated service quality (PASQ)

4. Methodology

The objective of this study was to investigate the impact of service delivery through automated service delivery channels and vis-à-vis perceived automated service quality on behavioural intentions (BI) of customers, particularly their loyalty behaviours, propensity to switch and response patterns. Further to this, the researcher is keen to identify the impact of CRM performance on perceived automated service quality. The study desire to suggest a model to fit the relationship between the variables using structural equation modeling (SEM) approach. The study was conducted in two phases. To carry out this study, State Bank of India (SBI), the largest nationalized public sector bank in India was selected primarily because of its intensive branch network (availability of services), its automation towards service delivery and its integration of CRM philosophy with basic business and management operation. A structured questionnaire was developed to obtain the primary data. The questionnaire had four sections. Section-I asked questions about customers' perception of automated service quality delivered by their bank, section-II placed questions with regard to behavioural intentions of the customers, section-III targeted customer to respond about their perception of CRM elements and their performance with regard to boosting service quality and section-IV attempted to collect the demographic profile of the customers. The E-SERVQUAL scale developed by Zeithaml, Parasuraman and Malhotra (2005) was used to generate response about customers' perception of automated service quality offered by their bank across both the core and recovery dimensions. To obtain response with regard to behavioural intentions of customers, the Behavioural Intention Battery (BIB) developed by Zeithaml et al (1996) was used. Successful implementation of CRM requires the proper implementation of people, process and technology mix. The CRM Score is taken on the three touch-points, the CRM-components: People, Process & Technology. The respondents were asked to rate the statements related to automated banking service channels (E-SERVQUAL – 22 items), BIB (13 items) and CRM performance (12-items) over a 7 point Likert scale (Alkibisi and Lind, 2011). The study was carried out in two phases. Phase-I involved a pilot study by inducing focus group discussion was used to refine the test instrument with rectification of question ambiguity, refinement of research protocol and confirmation of scale reliability was given special emphasis (Teijlingen and Hundley, 2001). 25 respondents representing bank customers, bank employees and academicians were included to conduct the pilot study. Cronbach's α coefficient (>0.7) established scale reliability (Nunnally and Bernstein, 1994). The second phase of the study was conducted by using the refined questionnaire which was distributed amongst 1000 SBI bank-customers for two separate branches namely SBI,

Bolpur and SBI, Santiniketan, West Bengal. Simple random sampling was used as every 15th customer of the bank was selected as respondent. 'Usage-of-automated-banking-service' was used as critical-fit criteria while selecting samples. A total number of 679 usable responses were generated with a response rate of 67.90%. Exploratory factor analysis (EFA) was employed using principal axis factoring procedure with orthogonal rotation through VARIMAX process with an objective to understand the factor loadings/cross loadings across components. Cronbach's α was obtained to test the reliability of the data, Kaiser-Meyer-Olkin (KMO) was done for sample adequacy and Barlett's sphericity test was conducted. Structural equation modeling approach using Lisrel 8.80 was used to test the research model.

5. Findings and discussions

The demographic data obtained were tabulated in Table-1:

Table-1: Demographic profile of the respondents

Demographic variables	Demographic characteristics	Frequency	%
Gender	Male	578	85.12%
	Female	101	14.88%
Age	≤ 21 years	23	3.40%
	> 21 ≤ 35	241	35.49%
	> 35 ≤ 50	387	56.99%
	> 50	28	4.12%
Income	≤ Rs 15,000	14	2.08%
	> 15000 ≤ 25000	154	22.68%
	> 25000 ≤ 40000	396	58.32%
	> 40000 ≤ 50000	96	14.13%
	> 50000	19	2.79%
Occupation	Service holder	379	55.81%
	Self employed	221	32.54%
	Housewives	27	4.10%
	Students	52	7.55%
Educational qualification	High school	23	3.40%
	Graduation	589	86.74%
	Post graduation & others	67	9.86%
Frequency of use	High (> 15times/month)	151	22.24%
	Moderate (≥5<15 times/month)	253	37.26%
	Low (< 5 times/month)	275	40.50%

Table-2 represents the rotated component matrix following the exploratory factor analysis. The Cronbach's α value for all the measures (except three items of core E-SQUAL namely 'the site enables me to get on to it quickly', 'the site makes items available for delivery within a suitable time frame, 'it has in-stock the items the company claims to have' and for the five items of recovery E-SQUAL namely 'the site compensates me for problems it creates', 'it compensates

me when what I ordered does not arrive on time', 'it picks up items I want to return from my home or business', 'the site offers a meaningful guarantee' and 'it offers the ability to speak to alive person if there is a problem') exceeded the minimum standard of .7 (Nunnally and Bernstein, 1994) suggesting and confirming about the reliability of the measures. The items which were loaded with a lesser value to .7 were subsequently deleted.

Table 2: Rotated component matrix and Reliability statistics

Variable	Variable statement	Factors					
		F1	F2	F3	F4	F5	F6
V1	SBI's websites makes it easy to search what is required	.791					
V2	Navigation is smooth in the SBI's websites	.816					
V3	Page download is fast	.771					
V4	Transaction takes place in real-time and does not freeze before completion	.741					
V5	Information are well displayed in Banks' websites	.873					
V6	SBI's web-services are simple to use	.797					
V7	SBI's websites are always available for transaction		0.801				
V8	SBI's websites launch and run right away		0.833				
V9	SBI's website does not crash		0.759				
V10	Pages in SBI's websites do not freeze while transaction is on		0.842				
V11	SBI's website deliver services when promised			0.729			
V12	SBI's websites promptly delivers services			0.801			
V13	SBI's websites are truthful about their offerings			0.822			
V14	SBI website's make accurate promises about transactions			0.759			
V15	SBI's provides financial security and confidentiality				.821		
V16	Web-interface is secured with virtual keyboard set-up for logging in				.801		
V17	SBI's websites can be trusted against misuse of information of transaction details				.781		
V18	SBI's websites can be trusted against mishandling of personal information stored				.720		
V19	SBI's websites provide convenient options for cancelling transactions					.701	

V20	SBI's websites deals well with cancelation of transactions					.739	
V21 V21	SBI's websites guide me in case of transactions not being processed					.816	
V22	SBI's web-service takes care of problems promptly					.732	
V23	SBI's web-service has customer representative who shows willingness to support/help						.818
V24	SBI's websites provide a valid telephone number to contact the bank when required						.714
V25	SBI's website offers the facility to speak live to an authorized service if there is a problem						.792
Cronbach's α		0.935	0.918	0.873	0.970	0.859	0.937
KMO measure for sampling adequacy		0.892					
Initial eigen values		4.311	3.816	2.588	2.618	1.934	1.406
% of variance		16.581	13.367	10.091	9.891	8.162	7.002
Cumulative %		16.581	29.948	40.039	49.930	58.092	65.094

The initial 33 variables (including both core and recovery items of E-SERVQUAL) were reduced to 25 variables with variables having factor loading scores of <0.7 were discarded. The variables were grouped into six dimensions according to the factor loading scores and were nomenclated as in Table-3.

Table 3: Dimensions

Variables	Dimension
V1-V6	Efficiency
V7-V10	Web-System
V11-V14	Commitment
V15-V18	Security
V19-V22	Responsiveness
V23-V25	Contact

Bivariate correlation was applied to understand the relationship between perceived automated service quality (PASQ) and the core & recovery dimensions of modified E-SERVQUAL. The results of correlation analysis have been displayed in Table-4. The PASQ score was obtained by calculating the mean of response for an individual respondent over a 7 point Likert scale across all the items of E-SERVQUAL scale. The results of correlation analysis (Table-4) exhibited a strong and positive correlation between perceived automated service quality (PASQ) and the core E-SERVQUAL dimensions namely efficiency (r=.465**, p<.001), commitment (r=.431**, p<.001), security (r=.379**, p<.005) and web-system (r=.342**, p<.001) suggesting significance

of the dimensions in perceiving the automated service quality. It was further established that a strong and positive relationship between the recovery dimensions of automated service quality and responsiveness (r=.261**, p<.001) and contact (r=.156**, p<.001) exist which is indicative of significance of recovery dimensions towards perceiving automated service quality.

Table-4: Bivariate correlation between perceived automated service quality and dimensions of E-SERVQUAL

		PASQ	Efficiency	Commitment	Security	Responsiveness	Contact	Websystem
PASQ	Pearson	1.000	**.465****	**.431****	**.379****	**.261****	**.156****	**.342****
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
	N	679	679	679	679	679	679	679
Efficiency	Pearson	.465**	1.000	.237**	.132*	.367**	.461**	.166**
	Sig. (2-tailed)	.000		.000	.005	.000	.000	.000
	N	679	679	679	679	679	679	679
Commitment	Pearson	.431**	.237**	1.000	.088*	.195**	.190**	.513**
	Sig. (2-tailed)	.000	.000		.043	.000	.000	.000
	N	679	679	679	679	679	679	679
Security	Pearson	.379**	.132*	.088*	1.000	.162**	-.055	.433**
	Sig. (2-tailed)	.004	.005	.043		.000	.209	.000
	N	679	679	679	679	679	679	679
Responsiveness	Pearson	.261**	.367**	.195**	.162**	1.000	.353**	.247**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
	N	679	679	679	679	679	679	679
Contact	Pearson	.156**	.461**	.190**	-.055	.353**	1.000	.209**
	Sig. (2-tailed)	.000	.000	.000	.209	.000		.000
	N	679	679	679	679	679	679	679
Websystem	Pearson	.342**	.166**	.513**	.433**	.247**	.209**	1.000
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	679	679	679	679	679	679	679

**Correlation is significant at 0.01 level (2-tailed), *Correlation is significant at 0.05 level (2-tailed)

The Behavioural Intention Battery developed by Zeithaml et al (1996) was used to obtain the behavioural intention scores of the respondents across five dimensions (13 items) of the same namely loyalty, will-to-pay-more, internal response (positive behavioural intention indicators) and propensity-to-switch and external response (negative behavioural intention indicators). Correlation matrix (Table-5) revealed that perceived automated service quality (PASQ) had a strong and positive relationship with loyalty (r=.539**, p<.001), will-to-pay-more (r=.378**, p<.001) and internal response (r=.381**, p<.001) while PASQ revealed a negative relationship with propensity-to-switch (r=-.277*, p<.005) indicating that customers with higher and better perceived automated service quality with regard to their bank (SBI) tend to exhibit positive behavioural intentions. Perceived automated service quality did not exhibit a significant relationship with external response. The results suggested that customer attrition is negatively

correlated with perceived automated service quality. Therefore for a higher perception of automated service quality the propensity to switch service provider will decrease.

Table-5: Correlation matrix between perceived automated service quality (PASQ) and behavioural intention (BI) dimensions

		PASQ	Loyalty	Will2paymore	Propensity2switch	Externalresponse	Internalresponse
PASQ	Pearson	1.000	**.539****	**.378****	**-.277***	**.082**	**.381****
	Sig. (2-tailed)		.000	.000	.003	.431	.000
	N	679	679	679	679	679	679
Loyalty	Pearson	.539**	1.000	.045	.079	.020	.691**
	Sig. (2-tailed)	.000		.304	.069	.653	.000
	N	679	679	679	679	679	679
Will2paymore	Pearson	.378**	.045	1.000	-.189*	.062	.010
	Sig. (2-tailed)	.000	.304		.001	.158	.812
	N	679	679	679	679	679	679
Propensity2switch	Pearson	-	.079	-.189*	1.000	.165*	-.118*
	Sig. (2-tailed)	.003	.069	.001		.005	.011
	N	679	679	679	679	679	679
Externalresponse	Pearson	.082	.020	.062	.165*	1.000	.057
	Sig. (2-tailed)	.431	.653	.158	.005		.188
	N	679	679	679	679	679	679
Internalresponse	Pearson	.381**	.691**	.010	-.118*	.057	1.000
	Sig. (2-tailed)	.000	.000	.812	.011	.188	
	N	679	679	679	679	679	679

**Correlation is significant at 0.01 level (2-tailed), *Correlation is significant at 0.05 level (2-tailed)

To have a better understanding of the strength of associationship between loyalty, propensity to switch and response behaviour (both external and internal) of customers with perceived automated service quality, regression analysis was applied. The results of the same were represented in Table-6, Table-7 and Table-8. The model summary of regression between PASQ and loyalty, between PASQ and propensity to switch, between PASQ and internal response and between PASQ and external response exhibited R^2 and adjusted R^2 (Table-6, Table-7 and Table-8) values to be as .450 and .448, 358 and 356, 190 and 188 and 158 and 156 respectively indicating that perceived automated service quality (PASQ-independent variable) measures 45.00% of the variation in loyalty (dependent variable), 35.80% of the variation in propensity to switch, 19.00% of the variation in internal response and 15.80% of the variation in external response which is considered to be significant enough for predictability of the model. ANOVA (Table-6, Table-7 & table-8) established that the variation showed by the perceived automated service quality was significant for regression conducted with loyalty at 1% level (f=48.761, p<.001) with propensity-to-switch (f=37.412, p<.001) and with internal response (f=19.611,

p<.001). The result of ANOVA for external response at 5% level was significant with PASQ (f=12.918, p<.005). Regression coefficients (Table-6, Table-7 and Table-8) confirmed a strong and positive associationship between perceived automated service quality and loyalty (β=.891, t=19.098, p<.001), with propensity-to-switch (β=.531, t=13.029, p<.001), with internal response (β=.143, t=3.616, p<.001) and with external response (β=.139, t=3.101, p<.005),

Table-6: Regression results between PASQ and Loyalty

Model Summary			ANOVA		Regression coefficients		
R	R^2	adjusted R^2	F	Sig	B	t	sig.
.671	.450	.448	48.761	.000	.891	19.098	.000

a. Predictor: Perceived automated service quality (PASQ), b. Dependent variable: Loyalty

Table-7: Regression results between PASQ and Propensity-to-switch

Model Summary			ANOVA		Regression coefficients		
R	R^2	adjusted R^2	F	Sig	B	t	sig.
.599	.358	.356	37.412	.000	.531	13.029	.000

a. Predictor: Perceived automated service quality (PASQ), b. Dependent variable: Propensity-to-switch

Table-8: Regression results between PASQ and response pattern

Response pattern	Model Summary			ANOVA		Regression coefficients		
Internal response	R	R^2	adjusted R^2	F	Sig	β	t	sig.
	.436	.190	.188	19.611	.000	.143	3.616	.000
	R	R^2	adjusted R^2	F	Sig	β	t	sig.
External response	.318	.158	.156	12.918	.002	.139	3.101	.002

a. Predictor: Perceived automated service quality (PASQ), b. Dependent variable: Internal and External response

On the basis of the above stated results H_1, H_2 and H_3 are accepted.

The success of CRM as a business philosophy requires the proper synchronization of people, process and technology mix. These are the three key areas that touch the customer. The CRM performance Score is taken on the three touch-points, the critical dimensions of CRM: People, Process & Technology (Table-9). A 7 point Likert scale was used to obtain the response from the respondents about the performance of the three CRM dimensions. The perceived CRM performance (PCRMP) score was obtained by summating the means across all the dimensions of CRM:

$$\sum_{i=1}^{7}(P_E + P_R) + (PR_S + PR_K + PR_M) + (T_C + T_M + T_I + T_A + T_D)$$

where:

P_E : Performance score on 'People' dimension over 'Empathy' factor

P_R : Performance score on 'People' dimension over 'Responsiveness' factor
PR_S : Performance score on 'Process' dimension over 'Single Window Service' factor
PR_K : Performance score on 'Process' dimension over 'Know Your Customer' factor
PR_M : Performance score on 'Process' dimension over 'Multi-channel-integration' factor
T_C : Performance score on 'Technology' dimension over 'Core Banking System' factor
T_M : Performance score on 'Technology' dimension over 'Mobile Banking' factor
T_I : Performance score on 'Technology' dimension over 'Internet Banking' factor
T_A : Performance score on 'Technology' dimension over 'Auto Vending Machines' factor
T_D : Performance score on 'Technology' dimension over 'Digital vigilance System' factor

Table-9: Critical dimensions of CRM

People	Empathy	1. Individual attention to customers 2. Understands specific need of customers 3. Employees have customers' best interest at heart
	Responsiveness	1. Employees instill confidence in customers 2. Employees deals with public situation carefully
Process	SWO [Single Window]	1. Ease of in-premise transaction 2. Assorted service range
	KYC [Know Your Customer]	1. Comprehensive information about customers 2. Better segmentation of customers 3. Better understanding of customers' demand
	MCI Multi-Channel Integration]	1. Seamless delivery process 2. More than one channel to enter into transaction
Technology		1. CBS
		2. Mobile technology/Mobile Commerce
		3. Internet
		4. Auto Vending Machine [in-premise and ex-premise]
		5. Digital vigilance system [in-premise]

Multiple regression analysis was performed to assess the strength of associationship between perceived automated service quality (PASQ) and critical dimensions of CRM and predictability of CRM dimensions to predict and determine PASQ. ANOVA (Table-9) result was significant for the model ($f=56.890$, $p<.001$). Regression coefficient (Table-10) exhibited a strong and positive relationship between PASQ and the CRM critical dimensions namely people ($\beta=.398$, $t=9.789$, $p<.001$), process ($\beta=.471$, $t=12.614$, $p<.001$) and technology ($\beta=.451$, $t=11.567$, $p<.001$). To determine the degree of multi-collinearity, the variance inflation factor (VIF) was computed for each independent variable in regression equation. The results (Table-10) suggested that the 'Structural Model for Path Analysis' is worth pursuing as the 'tolerance' value is over 0.200 for each of the independent variable suggesting absence of correlation. The VIF values also did not reveal a considerably high value to 1 confirming non-collinearity as VIF values considerably greater than 1 are indicative of multi-collinearity (Netter et al, 1996) and greater than 2.5 are cause of concern (Allison, 1999) (VIF=1/tolerance).

Table-9: ANOVA results

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	18.892	6	7.551	56.890	.000[a]
	Residual	98.790	676	.179		
	Total	121.416	678			

a. Predictor: People, Process and Technology
b. Dependent variable: PASQ

Table-10: Regression coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	95% Confidence Interval		Collinearity statistics	
		B	Std. Error	Beta			Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	4.884	.172		27.870	.000	4.066	4.606		
	PEOPLE	.271	.022	.398	9.789	.000	.007	.063	.870	1.150
	PROCESS	.376	.024	.471	12.614	.000	.074	.759	.967	1.035
	TECHNOLOG	.355	.022	.451	11.567	.000	.013	.197	.924	1.082

a. Dependent variable: PASQ

Bivariate correlation analysis was performed to understand the relationship between perceived automated service quality (PASQ) and perceived CRM performance (PCRMP). Further to this, simple regression analysis was performed using the variables to assess the nature of interdependency between the variables and predictability if any. The correlation results (Table-11) revealed a strong and positive relationship between PASQ and PCRMP (r=.257**, p<.001)

Table-11: Correlation between PSQ and PCRMP

		PSQ	PCRMP
PSQ	Pearson Correlation	1.000	.257**
	Sig. (2-tailed)		.000
	N	679	679
PCRMP	Pearson Correlation	.257**	1.000
	Sig. (2-tailed)	.000	
	N	679	679

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

The results of simple regression (Table-12) displayed a strong associationship between PASQ and PCRMP as per ANOVA (f=47.979, p<.001). The R square value (.629) explained a 62.9% variation being measured by PCRMP (independent variable) in PASQ (dependent variable). The standardised regression coefficient results showed that the perceived automated service quality (PASQ) score have statistical significance and is positively correlated to perceived CRM performance (PCRMP) (β=.257, t=6.927, p<.001).

Table-12: Regression results

R square	Adjusted R square	ANOVA		Regression coefficients		
		F	Sig.	β	t	Sig.
.629	.628	47.979	.000	.257	6.927	.000

a. Independent variable: PCRMP, b. Dependent variable: PASQ

The Structural equation modeling (SEM) was used to test the nomological validity of the proposed model. Computation of the scores for the individual dimensions E-SERVQUAL, Behavioural Intentions Battery and CRM critical dimensions were done by summating the ratings on their individual scale items which were used as indicators of the latent E-SERVQUAL, BIB and CRM items. Confirmatory factor analysis was used to understand the dimensionality, convergence and discriminant validity for each construct to determine whether all the 42 indicators (including E-SERVQUAL, BIB and CRM component performance) measure the construct adequately as they had been assigned for. LISREL 8.80 programme was used to conduct the Structural Equation Modeling (SEM) and Maximum Likelihood Estimation (MLE) was applied to estimate the CFA models. A number of fit-statistics (Table-13) were obtained. The GFI, AGFI and NFI scores for all the constructs were found to be consistently >.900 indicating that a significant proportion of the variance in the sample variance-covariance matrix is accounted for by the model and a good fit has been achieved (Baumgartner and Homburg, 1996; Hair et al, 1998; Hulland, Chow and Lam, 1996; Kline, 1998; Holmes-Smith, 2002, Byrne, 2001). The CFI value for all the constructs were obtained as > .900 which indicated an acceptable fit to the data (Bentler, 1992). The RMSEA values obtained are < 0.08 for an adequate model fit (Hu and Bentler, 1999). The probability value of Chi-square is more than the conventional 0.05 level (P=0.20) indicating an absolute fit of the models to the data. The Cronbach's α values were consistently >.7 and hence the scale is reliable (Nunnally and Bernstein, 1994). The factor loadings for the items were also significant (>.500).

Table-13: Summary representation of Confirmatory Factor Analysis (CFA)

Factor indicators	χ^2	df	P-value	GFI	AGFI	CFI	NFI	RMSEA	Factor loading	α – value
Efficiency	7.92	4	0.079	0.952	0.969	0.971	0.951	0.071		0.961
EF1									0.834	
EF2									0.826	
EF3									0.791	
EF4									0.844	
EF5									0.792	
EF6									0.871	
EF7									0.887	
Web-System	8.61	3	0.031	0.901	0.905	0.916	0.941	0.041		0.912
WS1									0.809	
WS2									0.714	
WS3									0.777	
WS4									0.781	
Commitment	8.58	4	0.097	0.931	0.938	0.961	0.952	0.090		0.901

COM1									0.881	
COM2									0.717	
COM3									0.851	
COM4									0.766	
COM5									0.823	
Security	4.82	2	0.061	0.919	0.901	0.926	0.933	0.076		0.802
SEC1									0.877	
SEC2									0.725	
SEC3									0.729	
Responsiveness	8.41	3	0.099	0.919	0.927	0.951	0.916	0.024		0.871
RES1									0.800	
RES2									0.802	
RES3									0.723	
RES4									0.718	
Contact	6.21	2	0.071	0.966	0.905	0.979	0.959	0.080		0.901
CON1									0.771	
CON2									0.779	
Loyalty	9.21	4	0.031	0.919	0.917	0.921	0.923	0.073		0.929
LOY1									0.881	
LOY2									0.781	
LOY3									0.709	
LOY4									0.817	
LOY4									0.811	
Will-to-pay-	7.89	2	0.041	0.946	0.941	0.978	0.938	0.049		0.911
WPM1									0.791	
WPM2									0.715	
Internal	4.12	1	0.027	0.918	0.916	0.954	0.931	0.071		0.891
INTR1									0.708	
Propensity to	6.87	2	0.045	0.971	0.963	0.970	0.961	0.064		0.917
PTS1									0.866	
PTS2									0.837	
External	8.75	3	0.069	0.955	0.943	0.959	0.967	0.049		0.978
EXTR1									0.792	
EXTR2									0.811	
EXTR3									0.781	
CRM	9.69	4	0.091	0.967	0.981	0.991	0.987	0.051		0.997
CRM1									0.873	
CRM2									0.859	
CRM3									0.786	

Structural Equation Modeling (SEM) was used to test the relationship among the constructs. A number of fit-indices namely Chi-square/df = 1219/167, GFI = 0.981, AGFI = 0.975, CFI = 0.970, NFI=0.973, RMSEA=0.042, expected cross validation index (ECVI)=0.918 were found to be significant. All the 24 paths drawn were found to be significant at $p<0.05$. The research model holds well (Fig.2) as the fit-indices supported adequately the model fit to the data. The double-curved arrows indicate co-variability of the latent variables. The residual variables (error

variances) are indicated by $\epsilon_1, \epsilon_2, \epsilon_3$, etc. The regression weights are represented by λ. The co-variances are represented by β. To provide the latent factors an interpretable scale; one factor loading is fixed to 1 (Hox & Bechger).

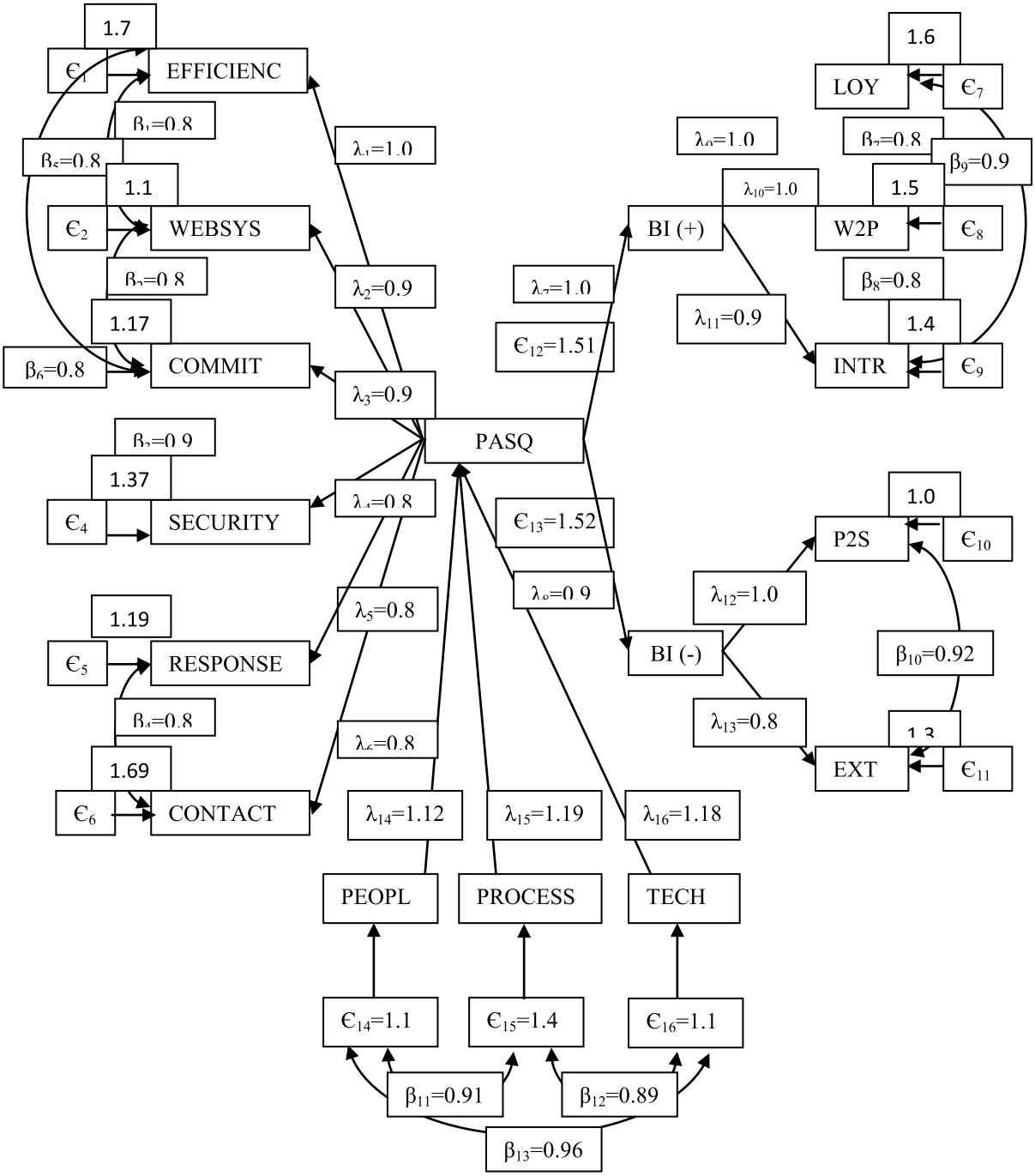

Fig.2: Structural model showing the path analysis using SEM

6. Conclusion

Being the largest nationalized public sector bank of India, the modernization and automation of State Bank of India (SBI) had been a significant event. SBI has become the face of Indian electronic banking. The geographic reach and penetration of SBI has been astounding and at present due to rapid proliferation of information communication technologies (ICTs), particularly the internet services across the length and breadth of the country, the automated (electronic) banking services penetrated the rural geo-demographic domain of India. The core-bank-system of SBI has changed the perception of banking and vis-à-vis quality perception. The study revealed that the automated service quality dimensions which proved to be significant in perceiving quality are efficiency, web-system, commitment, security, responsiveness and contact. The study also revealed that the rural customers of SBI had adopted the automated banking services and the perceived quality of the same is acceptable enough to depict favourable behavioural intentions as it reflected attitudinal loyalty, willing to pay more for services and addressing problems to internal customers i.e. the SBI bankers only. Behavioural intentions of surveyed SBI customers reflected negative attitude towards propensity to switch and lodging external responses namely spreading negative connotations about the organisation which further substantiated customer satisfaction with the automated service quality actually delivered by their bank. The Customer Relationship Management (CRM) practice initiated by SBI seemed to have properly integrated with their automated operational procedures as the CRM components namely people (bankers), process (service delivery mechanism) and technology (service delivery drivers) were found to influence the perceived automated service quality of customers in a positive way. The perceived CRM performance was found to establish a significant relationship with the perceived automated service quality which has future managerial implication towards strategic imperatives with regard to design, personalization, communication and delivery of new services. The proposed research model also came through as the model constructs fit the data thereby establishing a cause and effect relationship between the variables. The study was indicative of the gradual shift and subsequent adoption of automated banking services in a semi-urban/rural set up.

The study had geographical limitations as it has been restricted to two specific semi-urban/rural places in West Bengal, which in future, can be widened to obtain a more generalized conclusion. In future the study can introduce intermediary variables like customer satisfaction or terminal variables like value perception; brand image etc. as there is a strong requirement of service differentiation and customization on the basis of these variables

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