Automated banks' service quality in developing economy: empirical evidences from India

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Abstract: The aim of this study is to examine customers' perceived 'service quality', 'customer satisfaction', 'positive word of mouth' (+WOM) and 'problems encountered' at automated teller machine (ATMs) of Indian retail banks. It also attempts to propose a modified and refined Parasuraman's SERVQUAL scale relevant for the Indian context as also suggests a comprehensive model for measuring automated service quality at bank ATMs. A structured questionnaire, drawn together from literature, was used to collect data from a total of 219 ATM customers. The proposed refined scale has been tested for dimensionality, reliability, and validity and the research model was tested for validation through structural equation model (SEM) using LISREL 8.50. Research results indicate that expectations of ATM patrons in India were not being fully met. The highest gap score was observed for 'convenience' dimension followed by 'tangibles'. Results also show that service quality and customer satisfaction effect WOM positively and significantly while problems encountered had a negative impact on customer expectations.

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1   Introduction

With the advent of technology and globalisation, banks and other service organisations alike, have increasingly been embracing information and communication technology (ICT) solutions to deliver better customer experience. The drivers responsible for such swift transformation are economic environment, including innovations in information technology and financial products; liberalised and consolidated financial markets (Auta, 2010).

Automated teller machines (ATMs), telephone banking, e-banking, mobile banking, swapping e-cards (e.g., credit/debit cards), and e-wallets have evolved as an electronic consumer interface and effective distribution channels for conventional banking and financial products (Chang, 2003). In this context, Internet banking, being the newest in

the series of technological advancements, has transformed the banking industry in every sense (Sathye, 1999; Thulani et al., 2009; Auta, 2010; Mahdi and Mehrdad, 2010). In essence, these electronic distribution channels are collectively referred to as electronic banking or e-banking (Goi, 2005).

However, being a convenient mode of transaction, ATMs are the most popular electronic delivery channel for banking services (Joseph and Stone, 2003; Kumar et al., 2010). ATMs have transformed the banking business by altering the relations between banks and its customers, as also heralded cut-throat competition amongst banks in this domain (Singh et al., 2002). Singh and Komal (2009) in one of their study asserted that banks view ATMs as an efficient substitute to conventional branch functions, for two reasons. First, setting up of branches require heavy infrastructural investment and huge maintenance cost. Secondly, banks project e-banking products/services, e.g., ATMs as point of differentiation from banks that do not offer them.

Needless to emphasise that emerging economies such as India are cash driven; meaning that monetary transactions are basically made through the exchange of legally recognised circulating currencies (Moutinho, 1992). Thus, ATM has given a new option allowing customers cash withdrawal at their own convenience, be it in terms of time or place, rather than only during working hours from conventional branches (Gbadeyan, 2011). Moutinho (1992) established that ATM facility has resulted in speeding up transactions thereby saving time for customers. These potential benefits are multiplied when banks share their ATMs, allowing customers of other banks to access their accounts through a bank's ATM (McAndrews, 2003). In a way, ATMs are modifying the rules of financial transaction (Johnson, 2005; Auta, 2010; Gbadeyan, 2011).

1.1 Rationale for the study

Of late, large number of researches have been carried out on conventional bank service quality (SQ) in India and abroad (Jain and Gupta, 2004; Vanniarajan and Nainamohamed, 2008; Kumar and Gulati, 2010; Adil and Khan, 2011, Khan and Adil, 2011; Adil, 2013, Adil et al., 2013b; Khan and Adil, 2013; Tavakoli et al., 2013; Adil and Sadiq, 2014; Arora and Arora, 2015; Asif et al., 2016) but except for a few recent studies (Uppal, 2008; Sindwani and Goel, 2012; Pandian and Sharma, 2012), the area of ATM SQ has largely remained unexplored. Moreover, the relationship of ATM SQ with various outcomes such as overall customer satisfaction, word of mouth (WOM) and problems encountered at ATMs appears to have been rarely explored. Hence, the present research is justified, as apart from exploring other key dimensions, perhaps as a first step, also incorporated WOM and 'problems encountered at ATM' (PROB) as distinct variables, into the conceptual model with a focus on developing economy like India. The suggested model is expected to enrich the extant ATM SQ models. This will provide valuable insights to bank management to gain a complete understanding of the quality issues related with ATM services, thereby providing them a chance to enhance overall customer satisfaction and help achieve competitive advantage.

The present study is organised as follows: the next section presents theoretical arguments which underline the automated SQ model framework, SQ dimensions, ATM SQ. Subsequent section presents the research methodology including the sampling procedure, the composition of the questionnaire and method of data collection. The

sections on analysis of data and the discussions are followed by those on managerial contributions, limitations and future research directions.

2   Literature review

Of all the electronic channels accessible to a bank consumer, ATM is the first well-known means (Gbadeyan, 2011). With the introduction of ATMs, banks have an opportunity to oblige customers' requests throughout the day at every corner of the globe without restrictions of working hour (Pandian and Sharma, 2012). ATMs not only allow cash withdrawal but also cash deposits in one's account, transfer of funds between accounts, payment of utility bills, balance enquiries, and ordering of a cheque book through a plastic, magnetic-strip card provided by the bank.

2.1   Automated SQ

The extant literature on SQ confirms the presence of established and widely accepted definitions within the conventional banking channel but there is a lack of an exhaustive definition and also generally accepted model on automated SQ. How consumers assess SQ of modern self-service technologies is still in its early stages (Santos, 2003; Al-Hawari et al., 2005; Chong et al., 2010; Narteh, 2013). Rolland and Freeman (2010) defined automated SQ as provision of shopping and delivery directly to consumers with the help of technological network of the bank, while, Santos (2003) refer to it as consumer's overall assessment of the quality and merit of the services and products offered directly to consumers over electronic and communication network of the bank. This definition of Santos (2003) can be considered as the most updated definition, as he presents a more exhaustive and generally accepted definition of automated SQ, pushing its scope beyond the internet-based dimensions (Al-Hawari et al., 2005).

2.2   ATM SQ

The extant literature postulates that scholars, through their stream of researches, have not only differing views about the effectiveness and relative importance of ATMs but also have delineated varied dimensions in the domain of ATM SQ. Researchers have identified dimensions such as effective service delivery in ATM system (Lovelock, 2000), secure location (Joseph and Stone, 2003; Al-Hawari and Ward, 2006), convenient location (Moutinho and Brownlie, 1989; Rugimbana and Iversen, 1994; Joseph and Stone, 2003; Shamsuddoha et al., 2005; Al-Hawari and Ward, 2006; Islam et al., 2007), adequate number of ATM and user-friendly system (Joseph and Stone, 2003; Al-Hawari and Ward, 2006), and functionality of ATM (Davies et al., 1996), accessibility of ATMs (Moutinho and Brownlie, 1989; Leblanc, 1990; Patricio et al., 2003), costs involved in the use of ATM (Davies et al., 1996), speed of operation (Leblanc, 1990), waiting time (Leblanc, 1990), freedom of transaction (Leblanc, 1990), maximum speed (Patricio et al., 2003), minimum errors, high uptime, cash backup, quality service at reasonable cost, maximum offering (Islam et al., 2007), procedures (Al-Hawari and Ward, 2006), reliability (Rugimbana and Iversen, 1994; Polatoglu and Ekin, 2001; Liao and Cheung, 2002), ease of use (Rugimbana and Iversen, 1994), usage rate, performance expectation (Moutinho, 1992), personnel response, quality of currency notes, promptness of card

delivery, performance of ATM (Islam et al., 2007), 24 hours service and accuracy (Shamsuddoha et al., 2005). Some of the contemporary dimensions and SQ measures are summarised in Table 1.

Table 1   Select studies on ATM SQ, dimensions and measures

Author(s) and year	Critical dimensions	Scale	Contextual area
Goode and Moutinho (1995)	Confidence, charges and frequency of use	Self-developed	UK
Goode et al. (1996)	Satisfaction, recommendation, full use of services and frequency of use	Items adopted from past studies	UK
Joseph and Stone (2003)	User-friendly, convenient locations, secure positions and number of ATM	Self-developed	USA
Al-Hawari et al. (2005)	Secure places, user friendly system, convenient location and ATM functions	Items adopted from past studies	Australia
Islam et al. (2007)	Location, personnel response, quality of currency notes, promptness of card delivery and performance of ATM	Self-developed	Bangladesh
Shamsdouha et al. (2005)	Accuracy, convenient location, 24 hours service, privacy, safety and complexity of ATM machine	Items adopted from past studies	Bangladesh
Al-Hawari and Ward (2006)	Convenient and secure locations, functions of ATM, adequate number, user-friendliness of systems and procedures	Items adopted from past studies	Australia
Ganguli and Roy (2010)	Customer service, staff competence, reputation, price, tangibles, ease of subscription, technology security and information quality, technology convenience, technology usage easiness and reliability	Items adopted from past studies	India
Kumar et al. (2010)	Tangibility, reliability, competence and convenience	Modified SERVQUAL	Malaysia
Khan (2010)	Convenience, efficient operation, security, privacy, reliability and responsiveness	Self-developed	Pakistan
Kadir et al. (2011)	Reliability, tangible, assurance, empathy and responsiveness	SERVQUAL	Malaysia
Asabere et al. (2012)	Not available	Items adopted from past studies	Ghana
Adil et al. (2013a)	Customer service, web design, assurance, preferential treatment, information provision	Items adopted from past studies	India
Narteh (2013)	Reliability, responsiveness, ease of use, convenience, fulfilment, security and accuracy	ATMqual	Ghana
Narteh (2015)	Reliability, responsiveness, ease of use, convenience, fulfilment, security and privacy	ATMqual	Ghana
Iberahim et al. (2016)	Consistency, dependability, timeliness, technology	Items adopted from past studies	Malaysia

Source: Prepared by the researchers

3   Research methodology

3.1   Objective

Develop an exhaustive model of SQ taking into account ATMs unique features and factors. The specific research objectives identified for the study are listed below:

- examine the applicability of SERVQUAL to ATM services within culturally, ethnically and geographically large emerging economy like India

- explore conceptual equivalence of SERVQUAL in the context of measuring SQ at ATMs

- examine effect of customer expectation and perception on overall satisfaction with services at ATM

- examine the relationship between overall satisfaction with services at ATM and overall satisfaction with SQ at bank

- examine effect of problems encountered at ATMs on customer expectation

- examine the relationship between overall satisfaction with SQ at bank and (+WOM)

- suggest a optimal model of measuring SQ at bank ATMs and statistically confirm it in Indian settings.

3.2   Hypotheses formulation

Large number of studies have emphasised on ATM customer's perception and behavioural intentions, e.g., Kadir et al. (2011), Narteh (2013, 2015) and Iberahim et al. (2016), while only a limited number of them have dealt with the problems encountered while operating an ATM machine. Some of the seminal researches (e.g., Moutinho and Brownlie, 1989; Moutinho and Meidan, 1989; Leblanc, 1990; Schram, 1991; El-Haddad and Al-Mahmeed, 1992; Moutinho, 1992) forms the theoretical basis for hypotheses development in this study:

- H_{E1-4}: SQ dimension 'convenience', 'efficient operation', 'tangibility' and 'security' has a positive direct and significant effect on expectation.

- H_{P1-4}: SQ dimension 'convenience', 'efficient operation', 'tangibility' and 'security' has a positive direct and significant effect on perception.

- H_{AVATM}: frequency of visits to ATM has a positive direct and significant effect on expectation.

- H_{PROB}: 'problems' encountered at ATM have positive direct and significant effect on expectation.

- H_{EXP}: 'overall expectation' has a positive direct and significant effect on overall satisfaction vis-à-vis quality of service at ATM.

- H_{PER}: 'overall perception' has a positive direct and significant effect on overall satisfaction vis-à-vis quality of service at ATM.

- H_{OATM}: 'overall satisfaction' from quality of service at ATM has a positive direct and significant effect on overall satisfaction with the bank.

- H_{OBANK}: 'overall satisfaction with bank' has a positive direct and significant effect on +WOM.

3.3 Sampling and data collection

This study characterised mapping of ATM SQ of young student cohort, similar to those employed by Goode and Moutinho (1995), Rahman (2005), Rugimbana (2007), Adil et al. (2013a, 2013b). Though, there has been concerns regarding the use of students as surrogate consumers but college goers were deemed appropriate for this study on account of being actual customers of banks and as they were well informed about the bank offerings (Yoo et al., 2000). Further, young bank patrons in general are more tech savvy and easily adapt themselves to the new technology. Thus, it was expected that college goers shall very likely be active user of ATM services. Therefore, understanding the needs and preferences of these young college graduates is highly desirable.

For any survey research, probability sampling is given due preference over non-probability based sampling techniques (Saunders et al., 2000). However, Trochim (2000) argues that at times there may be situations where it is not reasonably practical to use probability sampling. In this research, absence of a reliable sampling frame necessitated the use of non-probability purposive sampling technique. Data was collected from a sample of students enrolled in a government funded Central University, who possessed ATM cards of different private, foreign and public banks operating in India. The University is located in a B-class city situated around 139 kilometres from national capital of India, i.e., New Delhi. As the medium of instruction in the University was English, researchers did not encounter any problem in administering a research instrument in English to generate the data. The questionnaire was personally administered on 360 students who were undergoing their study in Medical, Engineering and Management programmes. In all, 243 questionnaires were returned; of these 219 were complete in every respect and thus appropriate for further analysis, giving a response rate of 61%.

Table 2 Demographic profile

Demographic variable		N = 219	%
Gender	Male	161	73.5
	Female	58	26.5
Age	19–22	98	44.7
	23–25	106	48.5
	26 <	15	06.8
Current education	Engineering	50	22.8
	Medicine	60	27.4
	Management	109	49.8

Table 2 presents the demographic profile of the respondents. An analysis on gender, age and education indicates that 73.5% of the respondents ($n = 161$) were male while 26.5% ($n = 58$) were females. Only 6.8% of the respondents were above 26 years while 48.5 and 44.7% of the respondents were between 23 to 25 years and between 19 to 22 years, respectively. About half of the respondents (i.e., $n = 109$) were enrolled in management program while 27.4% and 22.8% of the respondents were from medical and engineering streams, respectively.

3.4   Development of the instrument

The review of the main SQ measurement scales used by previous researchers had led to the identification of an expanded list of 22 items relevant to retail banking. According to the conventional approach of gap model (Parasuraman et al., 1985), respondent is supposed to provide feedback for each attribute twice; once according to expectations and subsequently for perceived performance. Thus, each respondent is expected to go through 44 statements which, on the basis of preliminary survey, was found to be impractical. Thus, it was decided to revisit the item pool in order to refine it based upon feedback from subject experts, potential respondents as also extant studies. After several iterations, this procedure resulted in identification and retention of eight items relevant from the point of view of ATM SQ. It was also observed that Bahia and Nantel (2000), Buttle and Aldlaigan (2002), Jabnoun and Al-Tamimi (2003), Joseph and Stone (2003) and Al-Hawari et al. (2005) had employed similar items in their study on ATM SQ. The retained items were related to following attributes:

- sufficient no. of ATMs
- friendly machine functions
- convenience of ATMs locations
- training to security guard at ATM
- ATM functions smoothly
- one person at a time
- secure locations
- cleanliness of ATMs.

The survey instrument attempted to measure four dimensions, namely convenience, efficient operation, tangibility and security of ATM and its effect on customer satisfaction. For each quality dimensions, the instrument had two items, i.e., convenience (two items), efficient operation (two items), tangibility (two items) and security (two items). The research instrument contained single item measures related to frequency of ATM visits, overall expectation, overall perception, overall SQ at ATM, overall SQ at bank and WOM. There were four items related to measurement of problems encountered at ATMs.

The survey instrument contained two kinds of scales to collect the responses from students. Nominal scale was employed to generate data with respect to demographic profile of the respondents while to assess critical dimensions of ATM SQ, customer satisfaction and problems at ATMs, seven-point Likert scale anchored as

seven = strongly agree and one = strongly disagree was used. Recommendations of previous researchers formed the basis for adoption of a seven-point Likert scale (Shin and Elliott, 2001; Adil, 2013; Adil et al., 2013a; Khan and Adil, 2013; Ullah and Adil, 2016).

3.5 Pilot test

A small group of 60 students was selected to validate the survey instrument during pilot test. The results indicated that the statements were appropriately worded and also the variables were exhaustive and adequate enough to map student's perception towards ATM SQ (Nunnally, 1978). The internal consistency of the scale was satisfactory. The Cronbach's alpha value was between 0.880 to 0.710 and 0.800 to 0.710 for different variables and individual dimensions, respectively.

4 Results and discussion

4.1 Dimensional analysis

Table 3 exhibits mean score, standard deviation and gap score (P-E) for all the items considered in present study. In order to assess the gap between what the customer expects and what the service provider delivers, gap score was calculated from mean values of perception and expectation. The result shows that significant differences emerged between mean scores of expectation and perception of customers. The overall mean score of 'expectation' is significantly higher (6.12) than those of 'perception' (4.50) indicating that the performance of the bank fell short of expectations on each dimension.

The gap score (i.e., perception minus expectation) between overall perception and overall expectation was found to be –1.62 while highest gap score was observed for dimension 'convenience' (–1.82) followed by 'tangibles' (–1.68). It is obvious that negative values of gap scores indicated that the performance fell short of customer expectations.

4.2 Reliability and validity

In consonance with the recommendations of Narteh (2013), Adil (2013) and Khan and Adil (2013) internal reliability of the constructs was analysed using Cronbach's α coefficient (Cronbach, 1951), a measure used to assess the reliability, or internal consistency, of a set of scale or test items (Hair et al., 2006; Goforth, 2015). Factor 1, 'convenience', had α coefficient value = 0.866. Factor 2 and Factor 3, i.e., 'efficient operation' and 'security' had Cronbach's α values of 0.799 and 0.739, respectively. Factor 4 (privacy) loaded with α = 0.753. The cumulative reliability of all the four dimensions of ATM SQ was found to be α = 0.797 while for 'problems at ATM' Cronbach's α value was 0.851.

The validity of a scale may be defined as the extent to which differences in observed scale scores reflect true differences among objects on the characteristic being measured rather than systematic or random error (Malhotra and Dash, 2009). To test the content validity of the survey instrument, feedback from three subject experts was sought. Based on their recommendations, necessary modification, re-wordings and refinement of the survey instrument was done.

Table 3 Dimensional analysis

Variable	Perception		Expectation		Gap score	
	Mean	S.D.	Mean	S.D.	Gap	S.D.
Overall	4.50	1.18	6.12	0.98	−1.62	1.35
Convenience	4.45	1.44	6.27	1.15	−1.82	2.05
Sufficient number	4.03	1.84	6.30	1.37	−2.27	2.13
Conveniently located	4.87	1.71	6.25	1.26	−1.38	1.88
Efficient operation	4.77	1.43	6.26	1.13	−1.48	1.97
User friendly	4.47	1.70	6.25	1.22	−1.78	2.08
Function smoothly	5.09	1.57	6.27	1.43	−1.18	1.81
Tangible	4.24	1.57	5.93	1.23	−1.68	2.39
Interior of ATM	4.54	1.74	6.16	1.27	−1.62	2.04
One person at a time	3.95	2.20	5.69	1.86	−1.73	2.70
Security	4.55	1.44	6.02	1.26	−1.46	2.18
Secure location	5.00	1.53	6.15	1.40	−1.15	1.86
Security guard	4.10	2.08	5.89	1.67	−1.79	2.41

Note: S.D. – standard deviation.

4.3 The structural model

The structural equation modelling (SEM) was used to estimate the model with the help of LISREL 8.50. A standardised path estimate was used with maximum likelihood estimation. The path coefficients (parameter estimates or standardised loadings) were used to assess the magnitude and direction of relationships and thus test the research hypotheses.

4.4 The research model

An extensive literature review leads the researchers to propose the conceptual ATM SQ model (see Figure 1).

This conceptual model is based on the GAP model (P-E) proposed by Parasuraman et al. (1985, 1988). Latent variables such as E_CON, E_EO, E_TAN and E_SEC helped in measuring expectations (EXP) of young students while P_CON, P_EO, P_TAN and P_SEC accounted for perceptions (PER). Further, common problems which customers often encounter at their bank ATMs were identified and their impact on customer expectations (EXP) was measured. In addition to it, the model incorporates three dependent variables 'overall satisfaction from ATM' (OATM), 'overall satisfaction from BANK' (OBANK) and 'positive word of mouth' (PWOM). Hence, it was imperative to validate this proposition using real life data generated through this study.

Figure 1 Conceptual model
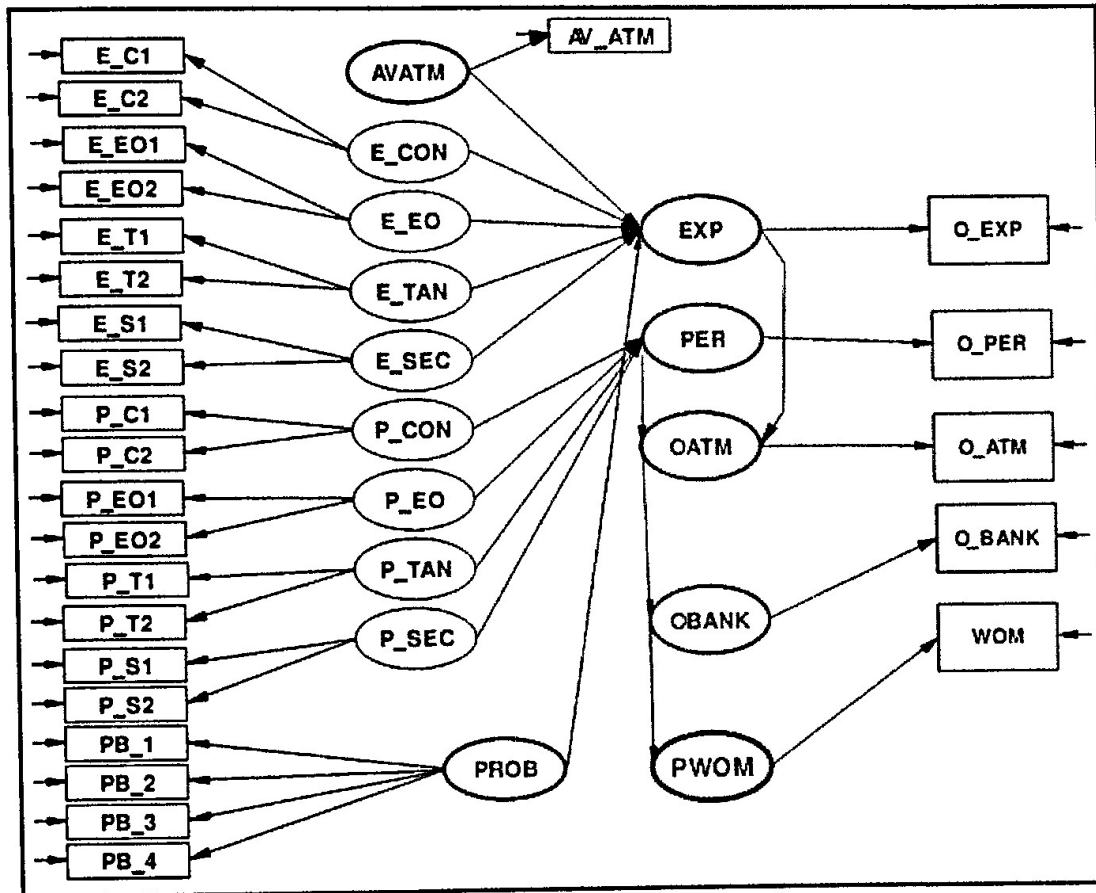
Notes: *AVATM*: average visit to ATM; *E_CON*: expectation convenience;
E_EO: expectation efficient operation; *E_TAN*: expectation tangible;
E_SEC: expectation security; *P_CON*: perception convenience; *P_EO*: perception efficient operation; *E_TAN*: perception tangible; *E_SEC*: perception security;
OATM: overall service quality at ATM; *OBANK*: overall service quality at bank;
PWOM: positive word of mouth; *PROB*: problems encountered at ATM.

4.5 Path analysis

The research model was examined for goodness-of-fit tests (GOF) with the help of SEM technique. The structural equation model with standardised path estimates derived through SEM is depicted in Figure 2. It followed conventional linkages among the various latent variables of ATM SQ leading to the *overall satisfaction at ATM, overall satisfaction with BANK* and *PWOM*. The model employed maximum likelihood estimation.

The critical point in structural equation modeling technique is the measurement of model fit. A number of specific fit indices – Chi-square, comparative fit index (CFI), normed fit index (NFI), non-normed fit index (NNFI), root mean square error of approximation (RMSEA), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI) – which are relatively unaffected by sample size – have been proposed (Bollen and Long, 1992; Hu and Bentler, 1999, Srinivas and Kumar, 2010), and successfully used by social science scholars (e.g., Alkadry, 2003; Adil, 2012).

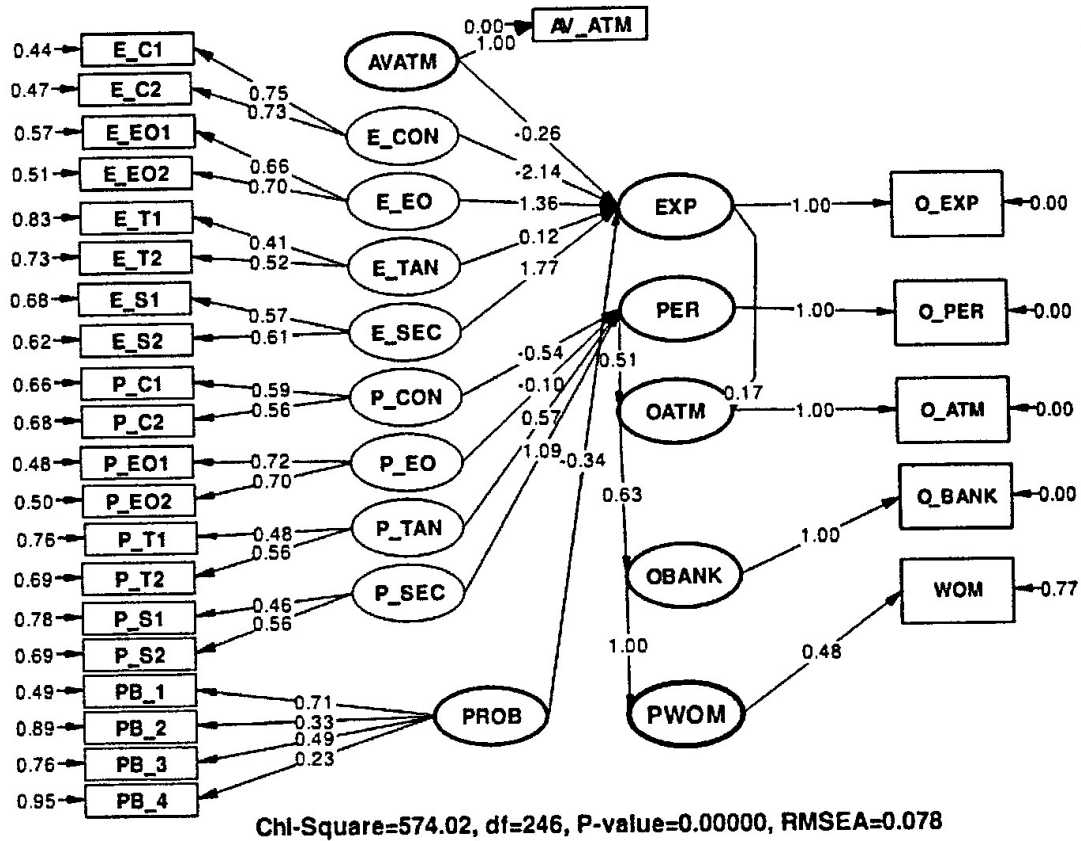**Figure 2**   Standardised path estimates for the model

Chi-Square=574.02, df=246, P-value=0.00000, RMSEA=0.078

Table 4   Summary of measures of fit

Fit indices	Optimum value and source	Default model	Fit
CMIN/df	<=3.0 (Kline, 1998)	2.333	✓
GFI	>=0.90 (Hair et al., 2006)	0.832	X
AGFI	>0.90 (Byrne, 2001)	0.760	X
NFI	>=0.90 (Hair et al., 2006)	0.926	✓
CFI	>0.90 (Byrne, 2001)	0.934	✓
IFI	>0.90	0.935	✓
RMSEA	<0.08 (Schumacker and Lomax, 2004)	0.078	✓

Table 4 exhibits summary measures of fit indices for the research model. As indicated, all indices were found within the recommended threshold values except GFI (0.832) and AGFI (0.760), which are somewhat tolerable. The CFI and NFI value were in upper level of acceptable range of 0.9, RMSEA < 0.078, CMIN/df value was 2.33 and significant at p < 0.001. Thus, taken together, the fit indices indicated that the measurement model was fitting the data well.

4.6 Hypotheses testing

Based on the above findings, the contribution of different dimensions of SQ on three dependent variables was conceptualised through the standardised β values.

Table 5 Summary results of hypotheses testing

Hypothesis	β value	Interpretation	Status
H_{E1}	−2.14	Significant, direct and negative impact on 'expectation'	R
H_{E2}	+1.36	Significant, direct and positive impact on 'expectation'	NR
H_{E3}	+0.12	Significant, direct and positive impact on 'expectation'	NR
H_{E4}	+1.77	Significant, direct and positive impact on 'perception'	NR
H_{P1}	−0.54	Significant, direct and negative impact on 'perception'	R
H_{P2}	−0.10	Significant, direct and negative impact on 'perception'	R
H_{P3}	+0.57	Significant, direct and positive impact on 'perception'	NR
H_{P4}	+1.09	Significant, direct and positive impact on 'perception'	NR
H_{AVATM}	−0.26	Significant, direct and negative impact on 'expectation'	R
H_{PROB}	−0.34	Significant, direct and positive impact of ATM problem 'expectation'	R
H_{EXP}	+0.17	Significant, direct and positive impact on 'overall satisfaction from ATM service'	NR
H_{PER}	+0.51	Significant, direct and positive impact on 'overall satisfaction from ATM service'	NR
H_{OATM}	+0.63	Significant, direct and positive impact on 'overall satisfaction from bank service'	NR
H_{OBANK}	+1.00	Significant, direct and positive impact on '+WOM'	NR

Note: R: rejected; NR: not rejected; β: beta path estimate.

The structural equation model based results of SQ at ATM are given in Table 5. As the magnitude of β is indicative of the proportional strength of the impact, it can be seen from the table that hypotheses related to various dimensions of SQ, i.e., convenience, efficient operation, tangibles and security were not rejected as they were found having direct significant and positive impact on expectations (EXP) and perceptions (PER) of the customers except in case of H_{AVATM}, H_{E1}, H_{P1} and H_{P2} where the impact, although direct and significant, was negative. However, the variable 'problems at ATM' (H_{PROB}) was not found to be having significant impact on expectation and thus, was rejected. The remaining hypotheses were found to be having significant, direct and positive impact on the dependent variable and thus, were not rejected.

4.7 Comparison with existing studies

Table 6 depicts the findings of the present study in the light of observations made by researchers in earlier studies. SQ dimension, i.e., 'convenience' has a direct positive and significant effect on SQ at ATM, thereby; the result is in line with the findings of prior studies (Rugimbana and Iversen, 1994; Lovelock, 2000; Joseph and Stone, 2003; Islam et al., 2007; Shamsdouha et al., 2005; Al-Hawari and Ward, 2006; Dilijonas et al., 2009).

Similarly, other dimensions of SQ at ATM like 'efficient operation', 'tangibles' and 'security' have a direct positive and significant effect on 'overall satisfaction from bank' (OBANK). This association concurs with that of prior studies carried out in the context of ATM SQ. Thus, the findings for various dimensions of SQ were found to be in agreement with those of extant studies. However, contrary to the general belief, problems

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encountered at ATM showed negative impact (–0.34) on expectations of the customers thereby contradicting the observations of earlier researchers (Lovelock, 2000; Islam et al., 2007; Dilijonas et al., 2009). Similar to the findings of Islam et al. (2007), the study results reflect a positive and statistically strong relationship between 'Overall satisfaction from ATM' and '+WOM'.

Table 6   Comparison of present findings with past studies

SQ dimension	Previous research	Status
Convience → SQ at ATM	Rugimbana and Iversen (1994), Lovelock (2000), Joseph and Stone (2003), Islam et al. (2007), Shamsdouha et al. (2005), Al-Hawari and Ward (2006) and Dilijonas et al. (2009).	✓
Efficient operation → OBANK	Davies et al. (1996), Lovelock (2000), Joseph and Stone (2003), Shamsdouha et al. (2005), Al-Hawari and Ward (2006) and Dilijonas et al. (2009).	✓
Tangible → OBANK	Moutinho and Brownlie (1989), Lovelock (2000), Joseph and Stone (2003), Al-Hawari and Ward (2006) and Dilijonas et al. (2009).	✓
Security → OBANK	Moutinho and Brownlie (1989), Lovelock (2000), Joseph and Stone (2003), Islam et al. (2007), Shamsdouha et al. (2005), Al-Hawari and Ward (2006) and Dilijonas et al. (2009).	✓
PBATM → EXP	Lovelock (2000), Islam et al. (2007) and Dilijonas et al. (2009)	X
OATM → PWOM	Islam et al. (2007)	✓

Notes: ✓: findings in agreement with those of previous researchers; X: finding not in agreement with those of previous researchers.

5   Conclusions and managerial implications

This study attempts to bridge the gap in extant literature on customer perceptions of SQ at bank ATMs in India and also provides valuable insights on measures and critical dimensions of ATM SQ. Findings can be of immense use not only to academic researchers but also to marketing and bank professionals in re-structuring and prioritising SQ dimensions for ATMs. The proposed model provides a deeper understanding of the relationships between key factors and overall SQ at ATM.

In the context of SQ at ATMs, four factors that were found to be having a bearing on overall SQ, in decreasing order of importance, are *security, efficient operations, tangibles* and *convenience*. Banks can utilise this information when formulating marketing policies and promotional strategies and highlight relevant aspects of SQ at ATMs. As the dimensions 'efficient operation' and 'security' emerged high on expectation, the banking industry needs to revisit them and take appropriate steps to address the consumer concerns in the context of ATMs. Banks interested in generating positive buzz need to deploy knowledgeable security guards as also take steps to prevent overcrowding within ATM premises to in still feeling of security and privacy among users. As overall satisfaction from SQ at ATM has significant and direct bearing on overall satisfaction from SQ at bank, management needs to pay special attention to SQ at ATMs especially in the context of dimensions identified in the study.

Problem (deficiency in services) is an expression of pain or an articulation of dissatisfaction (Strauss and Seidel, 2004; Goetzinger, 2006). Taking into account suggestions of previous researchers like Goetzinger et al. (2006) and Uppal (2010), the present research has enriched the ATM SQ literature by incorporating an additional variable viz. problems encountered at ATMs, especially in the Indian context. Goetzinger et al. (2006) asserted that in the consumer behaviour context, it is typically accepted that customers complain when they have exceeded their zone of tolerance for problems. Thus, in line with the observations of previous researchers (Goetzinger et al., 2006) results show that problem is negatively related to customer expectations.

Further, the study suggests that the four dimensions considered in this study contribute to overall perception (PER) in varied ways. The strongest influence on overall perception was of *security* and then in decreasing order of *tangibility, convenience* and *efficient operations*. Similarly, the strongest influence on overall expectation (EXP) was of *convenience* followed by *security* and *efficient operations*. Overall satisfaction at ATM and bank was found to be having direct significant and positive relationship with PWOM.

6   Limitations and directions for future research

In designing the study, the researchers have attempted to be methodical and scientific, yet it suffers from limitations. Future studies may be conceptualised in a manner that they address these limitations. Non-probability convenience sampling and limited sample size may have affected the generalisability of the results necessitating the need for a more scientific sampling methodology and expanded sample size. Future researchers can attempt to diversify the sample across different regions, ethnic groups, income, and education. Another limitation is that study is based on university student cohort and thus results may not necessarily be generalisable. Therefore, future researchers should attempt to achieve larger and more representative sample to achieve more robust convergent reliability. Further, future researchers need to explore relationships between performance of banks in terms of customer satisfaction with SQ dimensions at ATM and between customer satisfaction and retention in the context of ATMs which has largely been ignored in the present study. The model hypothesised in the present study contains selected variables. Researchers can attempt to incorporate variables such as service charges, customer loyalty, and customer trust, etc., in future study models. Additional replicative research also needs to be carried out to validate the suggested model in other countries before generalisations can be made.

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