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Standardisation of e-banking Operation of Indian PSBs and Customer Satisfaction

Abstract

‘Standardisation’ refers to the process of developing a universal standard that enables organizations to focus their attention on delivering excellence in customer service. A standardized process is meant for delivering measurable benefits when applied within the infrastructure of a company itself. Electronic banking in India is seen to be in its growth stage. With the growing rate of adaptation of electronics tools like Internet, cell phones etc. Indian PSBs are now targeting the rural customers as well as the urban customer to bring into the scope of electronic banking operation. They are committed to provide the ease and comfort of face to face branch banking through electronic mode on an anytime anywhere basis. In this endeavor they have selected delivery channels like ATMs, internet banking, mobile banking etc. Standardization of electronic banking operation is likely to boost up the quality of customer service. This paper has proactively identified the areas where lack of standardised service is creating dissatisfaction among customers of Indian PSBs and causing a major hindrance towards acceptance of e-banking. Customer perception and satisfaction level on the same parameters of standardisation has been collected and analysed and the results shows that a gap exists between what the customers want and what they actually receive from the banks. The parameters responsible for customer dissatisfaction have been identified. Some remedial actions have been suggested based on the parameters where the gap between the perception and satisfaction is wider.

Key words: standardisation, ease-of-use, hardware dimension, software dimension, hardware software interface dimension

Introduction and Objectives

Services of the business process are the building blocks of business process models (BPMs). In the context of business process, ‘standardisation’ refers to the process of developing an international standard that enables organizations to focus their attention on delivering excellence

in customer service. When the standardized components of business process are taken and used differently by applying a specific business flow and business rules, a unique service/product is created which ensures the competitive advantage of the firm.

The purpose of standardisation is to deliver measurable benefits when applied within the infrastructure of a company itself - business costs and risks can be minimised, internal processes streamlined and communication improved. Standardisation promotes interoperability, providing a competitive edge necessary for the effective worldwide trading of products and services. Standardisation improves management focus and reinforces the rise of a new class of function-based companies.

Generally standards are consensus-based, that is, they are developed by experts with the aim of arriving at a common standpoint. In doing so, they consider technological developments, economic viability and international harmonization.

Standards can be de facto standards which means they are followed by informal convention or dominant usage, de jure standards which are part of legally binding contracts, laws or regulations, voluntary standards which are published and available for people to consider for use.

Irving Wladawsky-Berger, technology strategist at IBM, has an interesting webpost on how process standardisation fosters innovation and drives competitive advantage. He suggests that "we need to evolve from today's labor-intensive and one-of-a-kind approach to building business solutions, and embrace methodologies based on science and engineering, using sophisticated tools and disciplined processes, much as happened during the Industrial Revolution. And, as was the case with the Industrial Revolution, we need to standardize those processes where differentiation brings little or no incremental value, so as to avoid the huge inefficiencies involved in re-inventing the same process over and over again. We can then apply our energies to innovating around those processes and business models that bring true differentiation and value to the business."

There are many international standards organizations. For example, the International Organization for Standardisation (ISO), the International Electrotechnical Commission (IEC), and the International Telecommunication Union (ITU) have existed for more than 50 years (founded in 1947, 1906, and 1865, respectively). They have established thousands and thousands of standards covering almost every conceivable topic. Many of these are then adopted worldwide replacing various incompatible 'homegrown' standards. Many of these standards are naturally

evolved from those designed in-house within an industry, or by a particular country, whilst others have been built from scratch by groups of experts who sit on various technical committees (TCs). In addition to these, independent standards organizations such as ASTM International develop and publish technical standards for international use. Others set standards within some more specialized context, such as SAE International, the Internet Engineering Task Force (IETF), TAPPI, World Wide Web Consortium (W3C), IEEE, and the Universal Postal Union (UPU) etc. We can find various standardized process which while implemented in respective organization has made them a success story.

Information technology has been deployed in most of the of back-office and customer-interface activities of banking. Indian Public Sector banks are providing its services through various electronic channels with a hope to replicate the operations of branch banking on anytime anywhere basis. However it has been felt that there should be some standard operational procedures to take the advantages of these e-initiatives by the Indian PSBs for its customers. For example, some the ATM outlets are having access control mechanism through card authentication at the entry level while the others do not; in some locations machines with function keys has been installed while in some other locations touch screen machines are used.

The target customer base for these electronic banks are urban, semi-urban and even rural, and they are from different educational background also. Again the PSBs are targeting customers irrespective of the age group where there are customers who are highly techno-savvy as well as customers who are not at all accustomed with technology. Therefore, variation in the type of product and services offered through electronic mode by different banks causes confusion and create adverse effect on adaptation of e-banking by the customers of Indian PSBs.

This research paper attempts to find out the different opinions the e-banking customers are having regarding the standardisation aspect of the e-banking process as well as the e-banking products offered by the Indian Public sector banks.

By the term e-banking we are considering ATMs and i-banking (Internet banking). m-banking have been kept out of our research focus as adaptation of e-banking is negligible by the Indian PSBs till date and the customerbase is also very small in size to do an in depth study. Therefore we are going to evaluate the characteristics related to standardisation for each of these two delivery channels of electronic banking mentioned above.

As standardisation practices are generally consensus-based so this research work is a proactive attempt to find out whether the satisfaction level of e-banking customers of Indian PSBs can really be affected by the standardized process and products.

Therefore the objectives of the paper can be summarized as follows:

- To study the perception of the customers of Indian PSBs regarding the standardisation of operational procedure for e-banking operations and e-banking products
- To capture the present satisfaction level of the customers of Indian PSBs regarding the standardisation of operational procedure for e-banking operations and e-banking products
- To find the gap between the perception and satisfaction level

Conceptual Framework

Many research papers can be found regarding the standardisation aspect of security of e-banking. But till now no such research has been found in the standardisation aspect of operational features of e-banking. This research paper is related to the standardisation of e-banking operation of Indian PSBs and the effect on customer satisfaction. Delivery channels like ATMs and internet-banking has been taken into account by the term e-banking.

Standards and customer satisfaction

A standard is an agreed, repeatable way of doing an activity. Standards help to increase the reliability and the effectiveness of services provided to the customers. Standards are created by bringing together the experience and expertise of all interested parties specially the service provider and the customer.

A report on ISO 9001 standard shows that parameters like on-time delivery, product quality, availability, price, lead time, product range, sales support, technical support are taken into care while deciding upon the ISO standards. ISO (2010) has developed a new technical specification, ISO/TS 10004:2010, which provides guidance to organizations in establishing effective processes for monitoring and measuring customer satisfaction. Customer satisfaction is one of the key elements for the success of an organization, whether it's in public or private sector.

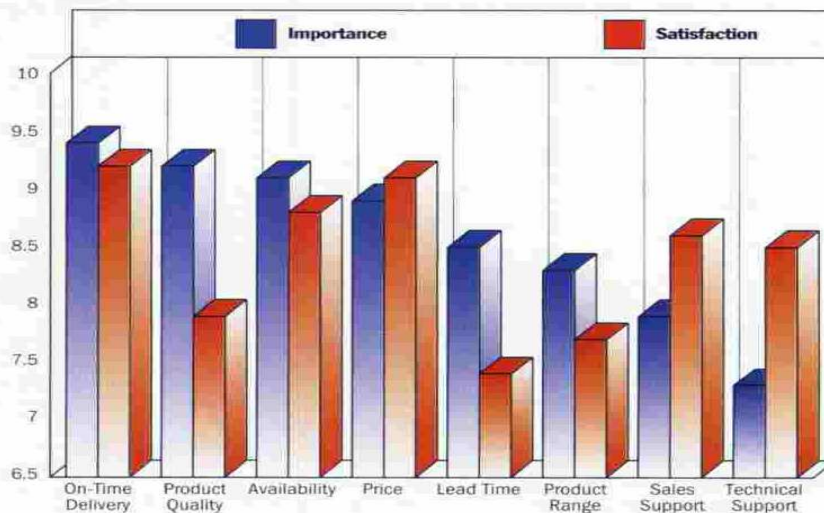


Figure 1. Identifying areas for improvement.

Source: ISO 9001: 2000 and customer satisfaction

The final report of a research project titled “The Economic Benefits of Standardisation” was released by DIN, the German institute for standardisation (2001) which commissioned the study in 1997 along with the German Federal Minister of Economic Affairs and Technology. Thousands of companies in Germany, Austria, and Switzerland were surveyed to determine the value of standardisation to their corporations, as well as to the overall economy of the three countries.

Over 4,000 companies in 10 industry sectors were selected at random and sent a printed questionnaire containing 49 questions. The response rate was over 17%, rendering 707 completed questionnaires.

The information obtained from monitoring and measuring customer satisfaction can help identify opportunities for improvement of the organization’s strategies, products, processes, and characteristics that are valued by customers, and which serve the organization’s objectives. Such improvements can strengthen customer confidence and result in commercial and other benefits.

It deals with concept of customer satisfaction and guiding principles, framework for monitoring and measuring customer satisfaction, planning for monitoring and measuring customer satisfaction, processes for monitoring and measuring customer satisfaction, maintenance and improvement of monitoring and measurement processes.

According to the feature published in the Economic times by Harsimran Julka, ET Bureau, India's Internet community grew by a spectacular 42% in 2009 from a year ago, spurred by a rash of cheaper devices and affordable broadband plans that helped sidestep snags such as buttoned-up PC sales and a shrinking spread of cyber cafes. (The survey has traced users who have used the internet at some point in time, an indication of the number of Indians who have gone online at least once in their lifetime.) According to Internet and Mobile Association of India president Subho Ray "The growth came from reduced prices of cheap access devices like netbooks that are now available at around Rs 20,000," says. The study also says India's active user base - comprising people who access the internet at least once a month - grew by 18% to 51 million from a year earlier. "Proper laws governing cyber cafe industry will promote further adoption of internet in the country," says Amrita Choudhary, Director at Cyber Cafes Association of India.

Indian e-banking scenario

In India introduction of computer based banking industry was introduced in 1970 and in 1980 introduction of computer-linked communication based banking happened. Advent of computer technology has created a major impact on working of banks. A committee on computerization and mechanisation was appointed by RBI in 1983 under chairmanship of Dr. C. Rangrajan recommended that computerization and installation of Advanced Ledger Posting Machines (ALPM) at branch, regional and head offices of banks will bring around a new era in banking. Narsimhan Committee in 1991 paved way for reform phase in banking. Saraf Committee was constituted by RBI in 1994 that recommended the use of Electronic Fund Transfer System (EFT), introduction of electronic clearing services and extension of Magnetic Ink Character Recognition (MICR) beyond metropolitan cities and branches.

The arrival of private and multinational banks with their superior state of the art technology based services pushed the Indian banks to follow the suit by going in for the latest technologies to meet the threat of competitors and retain their customer base. Indian metros are surging ahead in online banking usage. Today the delivery channel of banks include direct dial up connections, private networks, public networks etc. and the devices include telephone, Personal Computers including Automated Teller Machines, etc.

The advantages of online banking can be encapsulated as convenient, unaffected by boundation of operational timings, no geographical barriers, services can be offered at very low cost, cost per transaction through internet banking is very low.

E-banking and standardisation

It has been found that people face difficulties in their day to day operation with these e-banking delivery channels due to lack of standard practices followed. The study has been done proactively so that the banks can come to know the user perception and satisfaction regarding e-banking channels and take remedial action.

Therefore this paper captures the customer perception and satisfaction to see to what extent the e-banking practices are standardized in the Indian PSBS It is assumed that study on the customer perception will bring out what the customers actually want from a e-banking regarding standardized. On the other hand the customer satisfaction will give what problem they are facing in their day to day e-banking operation due to unstandardized ways of operation.

- It has been found that some ATM outlets provide access checking before entering while the others are not. If a person is not having an account with that specific bank he cannot access the ATM even at an emergency situation. It will be worth mentioning here according to RBI rules and regulations beyond five transactions; transaction fee of Rs.20 per transaction is levied for using another bank's ATM.
- Some ATM outlets are having touch screen machines and some has function keys. Those who are accustomed with using one type of machines faces difficulties in transacting through the other type. It kills more time and the queue outside the ATM outlet keeps on going long.
- It has been found that card reading mechanisms in ATMs are not also same; some machines are having card insertion facility and some have card swipe facility. In motorized (card insertion) system sometimes cards gets locked and causes harassment to the customer.
- Customers who are familiar with operating on non-voice over machines faces problem with voice over machine (that too all instruction in English) and vice-versa.
- Another major issue is regarding the transaction limit with different ATM cards. Different transaction limits has been assigned to different ATM cards.
- The products offered through different banks' ATM outlets are not also same. Different sets of products are offered through different bank's ATM and also through i-banking sites which makes the customer disappointed who want a standard suite of products to be provided with.

- The instruction sequences are not same throughout the bank which again takes more time to go through the instructions carefully and act accordingly.
- The form formats are different for different banks the field-wise validation checking differs from bank to bank.

All these causes lack of comfort in using e-banking. It may be logically questioned whether these variations are creating any value addition from the service providers' side and if the answer is negative then there is no need in maintaining this differentiation thereby causing more ambiguity among customers. The research paper is intended to find an answer to this question.

Method

This research paper relies totally on the primary data collected from the customers of the Indian Public Sector Banks, those who are using any of the electronic banking channels. Questionnaire has been formed to study the customers' perception as well as the present satisfaction level about standard practices and products of Indian PSBs.

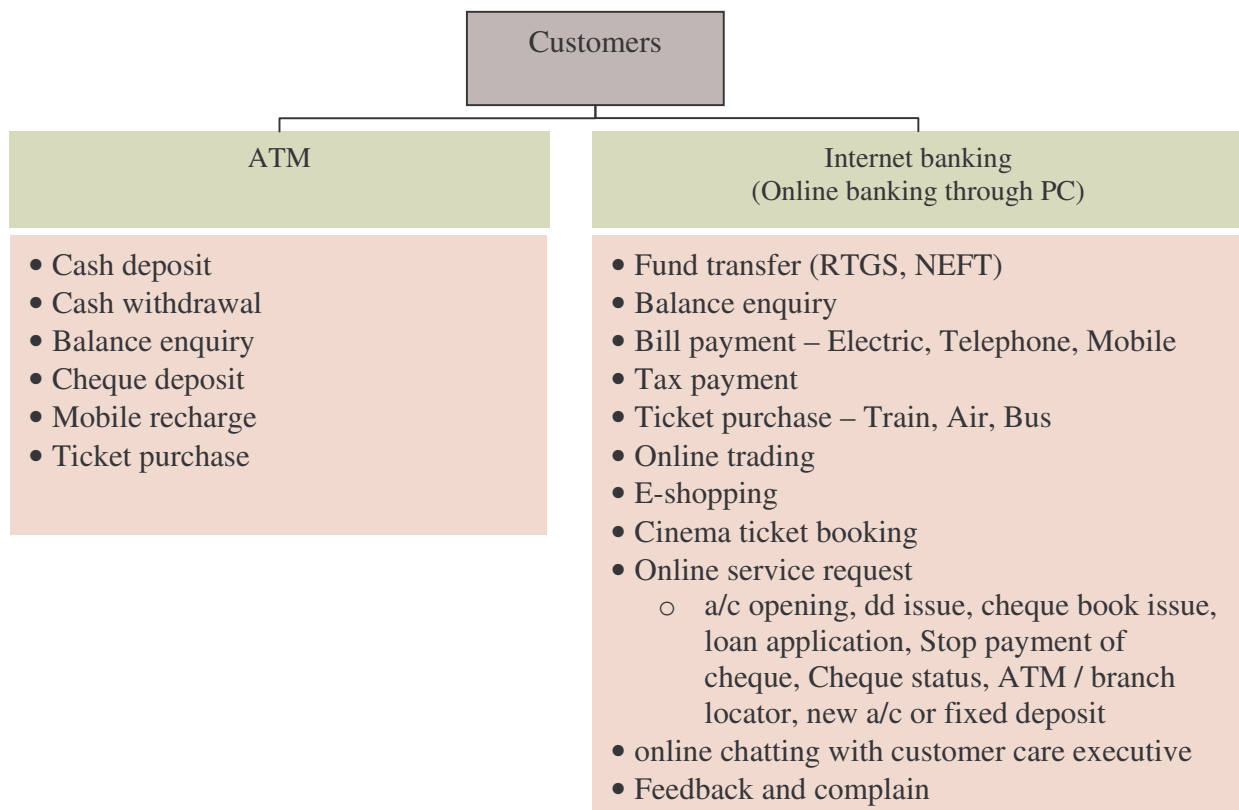


Figure 1: Delivery channels with products and services

The questionnaire was divided into two parts containing all together 25 questions, the first part containing the various questions regarding customers' perception and the second part containing questions regarding customer satisfaction level with the present practices. The questionnaire contains questions regarding the products offered and practices followed in ATMs and i-banking where there are scopes for improvement introducing some standard practices. Figure 1 gives an idea about the full suite of products and services offered by delivery channels.

Five point Likert-type Scales have been used, consisting of a number of statements which express either a favourable or unfavourable attitude towards the given object to which the respondent is asked to react. The respondent indicated his agreement or disagreement with each statement in the instrument. Each response is given a numerical score, indicating its favourableness or unfavourableness, and the scores are totaled to measure the respondent's attitude. In other words, the overall score represents the respondent's position on the continuum of favourableness-unfavourableness towards an issue.

Customers of Indian Public Sector banks who have experience with delivery channels of e-banking form the population here. The banks which have a high rating in the usage of electronic payment systems (volume and value of transaction wise) were chosen for this study. Here again the RBI data has been relied upon which shows the State Bank of India, Bank of Baroda, Union Bank of India are some of the Public sector banks which uses online payment to a large extent as compared to other nationalized banks. So, the customers, using the online banking services of these three selected public banks forms the sample of this study. Responses has been gathered from the metro cities of India like Delhi, Mumbai and Kolkata sample sizes being 134, 107 and 111 respectively. A total of 352 customers were given the questionnaires out of which 291 were usable the average response rate being 82.67%.

One of the prime objectives of this research study was to take direct feedback from the customers through these questionnaires. The customers were selected at random by the interviewer on the basis of judgmental method because the researcher (who is also the interviewer in this study) felt they have more useful information related to the study. This sort of practice is well accepted in accounts and auditing process and as per the Auditing Practices Board "judgmental sampling is an accepted method of selection provided the auditors are satisfied that the sample is not unrepresentative of the entire population" (APB, 1993).

The survey has been conducted in the four metro cities of India on the assumption that residents of the metro cities are the primary user of e-banking especially for i-banking.

Analysis

SPSS ver 17.0 has been used to do the analysis on the data. The variables are identified from the questionnaire and the values against each answer of the questions are recorded against each variable.

The table 1 given below shows the variables obtained from the questionnaire and their description on which data has been collected and analyzed.

Variable name	Description
P_standneeded	Do you think standardization of e-banking products and practices are needed
P_acclock	ATM outlets becomes easy to access if there is no access lock at the entry point
P_mchntype	ATM operation becomes easier if all the machines are of any single type (either with touch screen or with function keys)
P_swipe	ATM operation becomes easier if the transaction is through swiping the card only (no. card insertion, motorized)
P_voiceover	ATM operation becomes easier if all the machines are with voice over along with the instructions appearing on the screen langue
P_instrctn	Instruction appearing on the ATM screen for any particular banking transaction (e.g cash deposit / withdrawal) should be same irrespective of the bank
P_prdsuite	Same suite of products should be offered through the all ATMs irrespective of the bank
P_translimit	Transaction limit should be same for all the debit cards operating at the point of sale
P_prdsuiteibank	Same suite of products should be offered through the all i-banking website irrespective of the bank
P_instrctnseq	Sequence of instruction should be same for any banking operation through i-banking website irrespective of the bank
P_terminology	Banks should use same sort of terminology to indicate same type of operations
P_frmformat	Format of the forms should be same for any banking operation through i-banking website irrespective of the bank
P_validatncheck	Same sort of validation checking should be applied while transacting through i-banking website irrespective of the bank
S_acclock	Satisfaction level with accessing ATM outlets sometimes with card authentication and sometimes without no card authentication at the entry point
S_mchntype	Satisfaction level with ATM operation through different kind of machines (sometimes with touch screen and sometimes with function keys)

Variable name	Description
S_swipe	Satisfaction level with ATM operation through different methods for card reading
S_voiceover	Satisfaction level with ATM operation through machines sometimes with voiceover machines and sometimes without voiceover
S_instrctn	Satisfaction level with different set of instructions appearing on the ATM screen for any particular banking transaction (e.g cash deposit / withdrawal)
S_prdsuite	Satisfaction level with different suite of products offered through the ATMs
S_translimit	Satisfaction level with different transaction limit for debit cards of different banks
S_prdsuiteibank	Satisfaction level with different suite of products offered through different banks' i-banking website
S_instrctnseq	Satisfaction level with different sequence of i-banking instruction through the website of the bank different banks
S_terminology	Satisfaction level with different terminologies used different banks to indicate same type of operations
S_frmformat	Satisfaction level with different format of the forms for banking operation through i-banking website for different banks
S_validatncheck	Satisfaction level with different set of instructions appearing on the ATM screen for any particular banking transaction (e.g cash deposit / withdrawal)

Table 1: Name and description of the variables used in SPSS ver 17.0

Hypothesis testing

To support the proactive attempt of selecting the subject of standardization of operational aspect of e-banking in Indian PSBs, the approach taken here is to find out whether the customers really perceive that there exists a need for standardised e-banking operations. To serve the purpose hypothesis testing has been done on the customer perception regarding the standardisation of e-banking practices and products.

Null hypothesis: H₀: according to the people's perception there is no need for standardized e-banking products and procedures

Alternative hypothesis: H₁: according to the people's perception there is need for standardized e-banking products and procedures

Perception about standardisation needed

	Observed N	Expected N	Residual
3	22	97.0	-75.0
4	143	97.0	46.0
5	126	97.0	29.0
Total	291		

Test Statistics

			perception about standardisation needed
Chi-Square			88.474 ^a
df			2
Asymp. Sig.			.000
Monte Carlo Sig.	Sig.		.000 ^b
	95% Confidence Interval	Lower Bound	.000
		Upper Bound	.010

a. 0 cells (.0%) have expected frequencies less than 5. The minimum expected cell frequency is 97.0.

b. Based on 291 sampled tables with starting seed 299883525.

The table value for chi-square of 2 degree of freedom and P=0.05 level of significance is 5.99. The calculated chi-square value for the set of data under analysis is 88.474 which is greater than the table value. Therefore the null hypothesis is rejected and the alternative hypothesis is accepted. Therefore it can be said that there is a significant difference between expected and actual data sets that cannot be due to chance alone.

The research data has been collected on the customer perception and satisfaction regarding standardized products and processes followed in ATMs and in i-banking. They are the two specialized concept under the generalized concepts of electronic banking. Both ATM and i-banking has some unique attributes that make them distinguished channels of delivery. Therefore here separate analysis has been done on these two delivery channel

Analysis of customer perception

Mean value analysis :

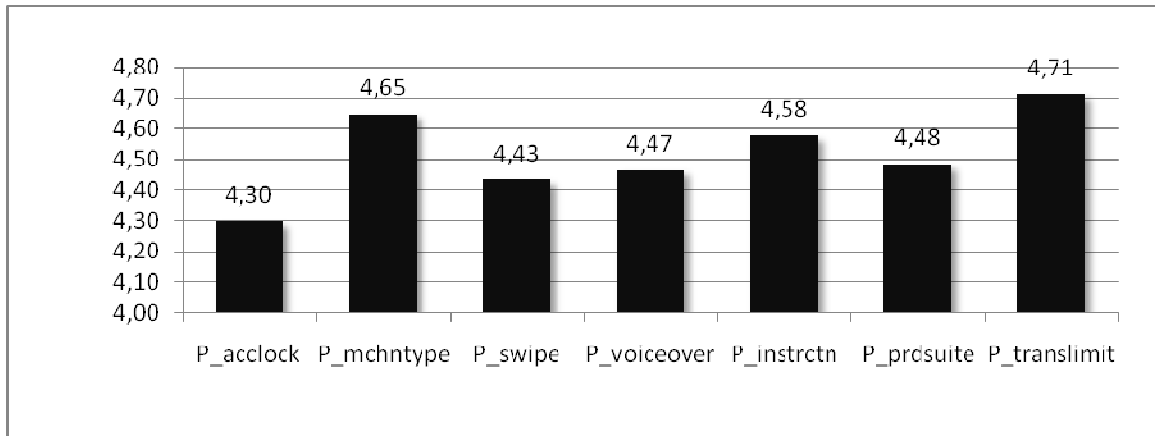


Figure 1: Mean values analysis of customer perception regarding different parameters of standardisation for ATM

It can be seen from the mean value analysis that in customer perception uniformity in the transaction limit with ATM cards is of utmost importance (having a mean value of 4.71). Customers perceive that single type of ATM machine (function key / touch screen) should be installed across all the ATM outlets. The parameter is having a mean value of 4.65. Standardized set of instruction through ATM for same banking operation irrespective of the bank is the third need of customers (mean value 4.58). Product suite offered by ATMs scores next in user perception (mean value 4.48). Standardisation in ATM machines either with voice over facility or without voice over facility comes next in user perception (mean value 4.47). Customer perception shows that some standard practice should be followed in ATM machines regarding card reading mechanism i.e, machines will either have card swipe option or motorized option by (mean value 4.43). Similarly, some standard practice is also required regarding access control at ATM outlets as some of them are having access lock at the entry point and some are not (mean value 4.30).

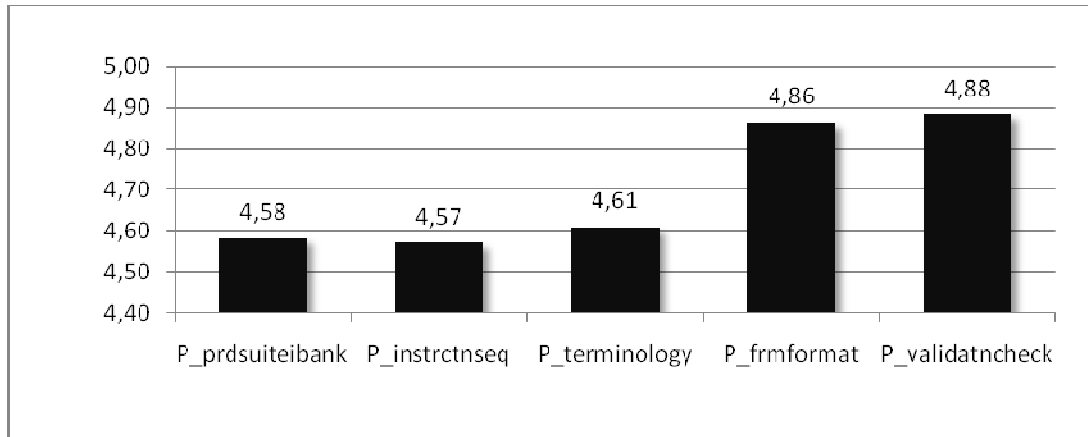


Figure 2: Mean values analysis of customer perception regarding different parameters of standardisation for i-banking

Standard formats of validation checking and standard form format are the two parameters with highest scores in the mean values analysis of customer perception regarding standardisation for i-banking operations (mean values 4.88 and 4.86 respectively). Implementation of same terminology for same banking operation throughout all the PSBs is the third most importance parameter according to customer perception, mean value being 4.61. Usage of same type of instruction sequence throughout the PSBs for same Internet banking operation comes next in the mean value analysis of customer perception (mean value being 4.57). Same suite of products offered through Internet banking by the Indian PSBs shows a mean value of 4.58.

However, as the mean values of all the parameters related to customer's perception in ATMs and i-banking are above 4.00 it can be said customers of Indian PSBs perceive that they should receive standardized products and services through standardized process.

Correlation analysis:

	P_acclock	P_mchntype	P_swipe	P_voiceover	P_instrctn	P_prdsuite	P_translimit
P_acclock	1.000	.569	.456	.429	.414	.056	.235
P_mchntype	.569	1.000	.538	.446	.461	.354	.485
P_swipe	.456	.538	1.000	.917	.183	.116	.284
P_voiceover	.429	.446	.917	1.000	.226	.149	.304
P_instrctn	.414	.461	.183	.226	1.000	.406	.449
P_prdsuite	.056	.354	.116	.149	.406	1.000	.299
P_translimit	.235	.485	.284	.304	.449	.299	1.000

Figure 3: Correlation among the different parameters of perception about standardisation for ATM

Highest correlation (.917) has been found between the parameters like ATM machines with voice over and card swipe facilities. The process of accessing ATM outlets (either with a access lock at the entry point or without it) and the type of ATM machines used (either a touch screen machine or a function key machine) are showing a positive correlation between them (value .569)

Again high correlation (.538) has been found between card reading mechanism of ATMs (either with swipe facility or with motorized facilities) and the type of ATM (either a touch screen machine or a function key machine)

	P_prdsuitei bank	P_instrctns eq	P_terminol ogy	P_frmform at	P_validatnc heck
P_prdsuiteibank	1.000	.468	.473	.484	.382
P_instrctnseq	.468	1.000	.731	.415	.171
P_terminology	.473	.731	1.000	.437	.184
P_frmformat	.484	.415	.437	1.000	.596
P_validatncheck	.382	.171	.184	.596	1.000

Figure 3: correlation among the different parameters of perception about standardisation for i-banking

An impressively high correlation (.731) has been observed between the perception regarding terminology used for same type of banking operations and the instruction sequence for that banking operation. It shows that standardisation in terminologies used for same type of i-banking operation and standardisation in the sequence of instructions in i-banking operations influenced by each other quite significantly.

It has been found that parameters like standard form formats of i-banking and standard formats of validation checking with the i-banking forms are also positively correlated the correlation value being .596

Factor analysis:

Factor analysis on the perception parameters of ATMs reveals two dimensions namely the “hardware dimension” and the “software dimension”.

In the “hardware dimension” parameters like ATM outlets with access lock and without access lock, ATM machines with swipe facility or motorized facilities and ATM machines with voice over and without voice over have been clubbed together.

In the “hardware dimension” highest factor loading (.947) is on perception regarding ATM with swipe facility or motorized facilities. People perceive any one of them should be there.

Second highest factor loading (.916) is on the issue of voice over machines. According to customer perception a standard process should be followed regarding voice over facility in ATMs.

Third highest factor loading (.636) is on the parameter of access lock at the entry point of the ATMs. Some ATMs have bar to use ATM outlet if you are not a customer of that particular bank itself. Customer perception says that this is an important issue of standardisation regarding ATM usage.

Rotated Component Matrix^a

	Component	
	1	2
perception access lock	.636	
perception machine type		.594
perception swipe/ motorized	.947	
perception voice over machines	.916	
perception instruction		.799
perception product suite		.740
perception transaction limit		.672

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

In “software dimension” the parameters identified are ATM machines with function keys or touch screen, different set of instructions for same type of banking operation, difference in the suite of products and services offered through ATMs and transaction limits associated with ATM cards. According to customer perception standardisation in instruction set is of prime importance (factor loading .799). Product suite options available in the ATMs come to next in importance in the software dimension (factor loading .740). transaction limit of the ATM cards has a factor loading of .672 and these factors are associated with the ATM machine type (function key / touch screen) which has a factor loading of .594

Rotated Component Matrix^a

	Component	
	1	2
perception i-banking product suite	.559	
perception instruction sequence in i-banking transaction	.904	
perception terminology of operation	.899	
perception format of online form		.792
perception validation checking		.922

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

For i-banking two components has been reduced. The first dimension “ease-of-understanding” holds the parameter like instruction sequence in i-transactions, i-banking terminology and i-banking product suite where the factor loadings are .904, .899 and .559 respectively

The second dimension “ease-of-use” holds the parameters like format of the online form and validation checking associated with form entry. It has been found the that it increases the ease of operation if the i-forms are standardized regarding validation checking and regarding the formats (factor loadings .922 and .792 respectively)

Analysis of customer satisfaction

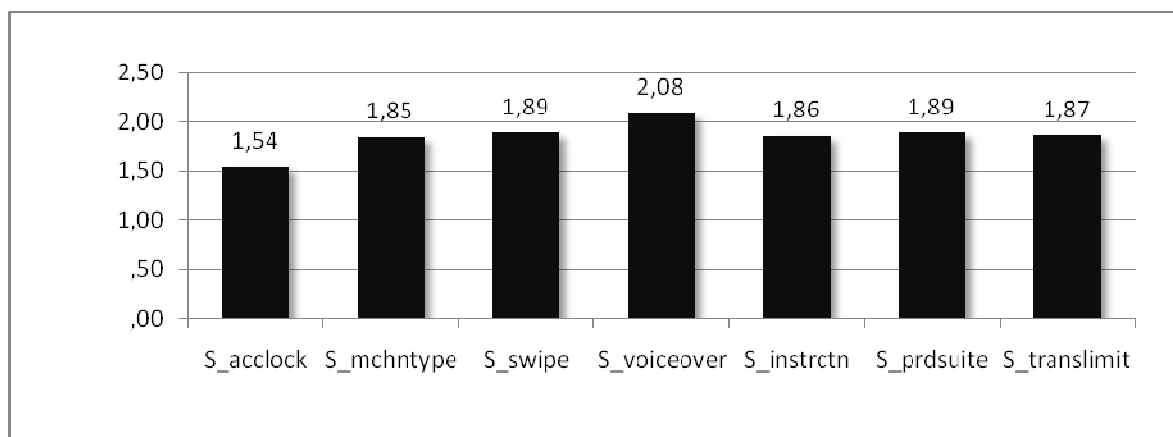


Figure 7: Mean values analysis of customer satisfaction regarding different parameters of standardisation for ATM

It can be seen from the mean value analysis that in customer satisfaction is lowest in regard to the access lock issue at the entry point of the ATM outlets (mean value 1.54). The ATM machine type (function key / touch screen machine), instruction sequence associated with the machine, transaction limits of the ATM cards, card reading mechanism (swipe / motorized) and product suite range are some of the areas where the customer satisfaction level is quite low (mean values 1.85, 1.86, 1.87, 1.89. 1.89). A better yet low mean value (2.08) is being shown by the voice-over parameter. All these clearly call for standardization of the ATM operations.

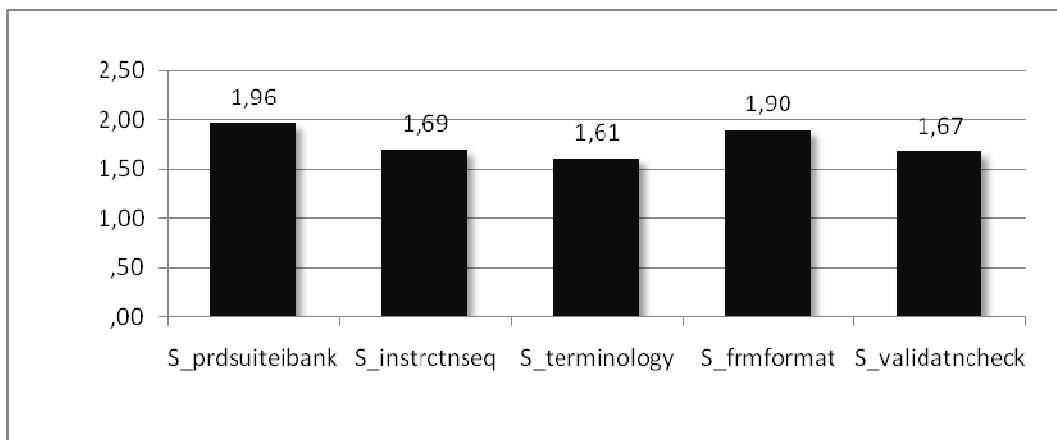


Figure 8: Mean values analysis of customer satisfaction regarding different parameters of standardisation for i-banking

It can be seen that customer satisfaction is lowest in regard to the different terminologies used by different banks for same banking operation (mean value 1.61). Different formats of validation checking has scored second lowest in customer satisfaction (1.67). Customer satisfaction score regarding instruction sequence of i-banking operation is also very low (1.69). The mean scores of customer satisfaction shows that they are not at all satisfied by the different form formats that the different banks are using. Standardisation in the suite of products offered through Internet banking has scored highest (1.96).

Correlation analysis :

	S_acclock	S_mchntype	S_swipe	S_voiceover	S_instrctn	S_prdsuite	S_translimit
S_acclock	1.000	.477	.122	.337	.043	.136	-.085
S_mchntype	.477	1.000	.279	.458	-.007	-.025	-.122
S_swipe	.122	.279	1.000	.041	.609	-.137	-.164
S_voiceover	.337	.458	.041	1.000	-.119	.289	-.273
S_instrctn	.043	-.007	.609	-.119	1.000	-.159	-.133

	S_acclock	S_mchntype	S_swipe	S_voiceover	S_instruction	S_prdsuite	S_translimit
S_prdsuite	.136	-.025	-.137	.289	-.159	1.000	.349
S_translimit	-.085	-.122	-.164	-.273	-.133	.349	1.000

Figure 9: correlation among the different parameters of satisfaction about standardisation for ATM

Highest positive correlation has been found between the variables instruction set of ATMs and card reading technique (.609). Moderately positive correlation (.477) has been found between the variables access-lock mechanism in ATM outlets and machine type (function keys/ touch screen). Again moderate correlation (positive) has been found among the variables voice over machines and ATM machines types (function keys/ touch screen).

	S_prdsuitei bank	S_instrctns eq	S_terminology	S_frmformat	S_validatncheck
S_prdsuitei bank	1.000	.240	.440	.255	.119
S_instrctnseq	.240	1.000	.034	.266	.088
S_terminology	.440	.034	1.000	.130	.041
S_frmformat	.255	.266	.130	1.000	.432
S_validatncheck	.119	.088	.041	.432	1.000

Figure 10: Correlation among the different parameters of satisfaction about standardisation for i-banking

Moderately positive correlation (.440) has been found between the variables terminologies used in i-banking and the range of product suite. Again moderate correlation (positive) has been found among the variables i-banking form formats and practices followed in validation checking.

Factor analysis:

Rotated Component Matrix^a

	Component		
	1	2	3
satisfaction access lock	.728		
Satisfaction machine type	.786		
Satisfaction swipe/ motorized		.873	
Satisfaction voice over machines	.807		
Satisfaction instruction sequence		.888	
Satisfaction product suite			.798
Satisfaction transaction limit			.828

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.
 a. Rotation converged in 4 iterations.

Factor analysis of the satisfaction levels of the customers regarding the standard practices followed in ATM brings out 3 components or dimension. The first dimension can be identified as the “hardware dimension” where the factors are access lock in ATM, machine type (function keys / touch screen) and ATMs with voice over facility. Each has a factor loading of .728, .786 and .807 respectively. Therefore according to customer satisfaction standardized usage of voice over machine in the ATMs is the most important issue which needs to be addressed by the banking service providers. However, the other two factors are also found to be very important as the factor loadings are quite high.

The second component can be named as “synchronization of hardware-software communication interface” which comprises of the parameters called card reading mechanism in ATM and the instruction sequence for any banking transaction with factor loadings .873 and .888 respectively. As both the factor loads are quite high it can be said that both the parameters are to be dealt with high importance.

The third component has been named as “range dimension” which is made up of the parameters like product range offered through ATMs and transaction limit associated with the ATM card each having factor loadings of .798 and .828 respectively.

Rotated Component Matrix^a

	Component	
	1	2
Satisfaction i-banking product suite	.	.813
Satisfaction instruction sequence in i-banking transaction	.472	
Satisfaction terminology of operation		.848
Satisfaction format of online form	.823	
Satisfaction validation checking	.787	

Extraction Method: Principal Component Analysis.
 Rotation Method: Varimax with Kaiser Normalization.
 a. Rotation converged in 3 iterations.

Factor analysis of the satisfaction levels of the customers regarding the standard practices followed in i-banking brings out two components or dimension.

The first dimension “ease of use” has the parameters like instruction sequence of i-banking, online form format and online validation checking formats with factor loadings .472, .823 and .787. These parameters tell how easily the i-banking customers can move on from one field to the other while filling up the forms online.

The next dimension clubs the i-banking product suite range and the terminologies used for banking operation (with factor loadings .813 and .848 respectively)

Findings

Data has been captured for customer perception as well as satisfaction of the Indian PSBs regarding the parameters of standardisation of the operations of e-banking. ATMs and i-banking data has been gathered from the four metro cities. Separate analysis has been done on perception and satisfaction on ATM and i-banking.

- The descriptive statistics shows that on an average customer of Indian PSBs perceive that some standards should be maintained in the ATMs regarding the transaction limit imposed on the ATM cards, ATM machine types and the instruction sequence for any ATM transaction throughout all the ATMs across India irrespective of the PSB. Similarly standardized online form formats should be there and the procedure to fill up the online form should not vary from bank to bank in order to give ease of operation to the customers of PSBs. Terminologies used by the banks for same kind of banking operation should be uniform so that the customers can easily understand which option to choose. This also saves time for the customer and reduces the network burden.
- While going through the same descriptive statistics for the customer satisfaction it can be seen that customer satisfaction are showing quite poor scores. On an average the mean scores are below 2 on a 5 point scale. Customers are dissatisfied with the different practices followed in the ATMs of different banks. customers are not satisfied with fact that some ATM outlets are having access lock at entry point while some are not, some ATMs are equipped with function keys while others are with touch screen, some ATMs have voice over facility some do not have, some ATMs allows swiping the card while others have motorized system where the card gets inserted into the machine and comes out after completion of transaction. Similarly customers are dissatisfied with the different

practices followed in i-banking websites also. Here the mean values have also been found to be quite low.

- The correlation analysis on customer perception shows that parameters like ATM machines with voice over and card swipe facilities are positively related to each other. It brings out that if the ATM machines are equipped with card swipe facilities then according to the perception of the customers they will prefer voice over facility also to be added to further increase their ease of operation through ATM. Similarly it has come out from the correlation analysis of the customer perception that the process of accessing ATM, the type ATM machines used within the outlet and the card reading mechanism in the ATM machines has close association among them. Similarly perception regarding terminology used for same type of banking operations and the instruction sequence for that banking operation are the two parameters that are highly correlated in case of i-banking. Positive association have also been found between the parameters like standard form formats of i-banking and standard formats of validation checking with the i-banking forms. Therefore the overall correlation analysis shows that in user perception these standardisation parameters are associated with each another and influence each other in turn.
- On the contrary while analyzing the customer satisfaction positive correlation has been observed between the variables instruction set of ATMs and card reading technique access-lock mechanism in ATM outlets, machine type (function keys/ touch screen) and voice over parameter has also shown a positive association among them. In i-banking front it has been observed that there is a positive association between the satisfaction level of form format and validation checking associated with the form. Positive correlation has also been found with different product range offered by different i-banking site and different terminologies used by different websites for same banking operation.
- Factor analysis on the perception parameters of ATMs has revealed two dimensions - “hardware dimension” and “software dimension”. The hardware dimensions shows issues totally related with the hardware aspect of the ATM machines i.e, how the machines and their access mechanism should be and their perception has shown that all ATM outlets should install any one type of standard ATM machine in reference to voice over facility, card reading mechanism and access lock at ATM outlets. The software dimension shows what type of standardized software they prefer with the ATM hardware. The dimension

has shown issues like instruction set associated with a particular banking operation, product range offered through ATM machines etc. should be standardized across all the Indian PSBs.

- For i-banking two components has been reduced – “ease-of-understanding” and “ease-of-use”. The first dimension “ease-of-understanding” specifies the aspects which need to be standardized for greater ease of understanding of i-banking operation. Parameter like instruction sequence in i-transactions, i-banking terminology and i-banking product suite are the parameters here. The second dimension “ease-of-use” specifies about the aspects where standards can bring ease of operation.
- Factor analysis of the satisfaction levels of the customers regarding the standard practices followed in ATM brings out three dimension - “hardware dimension”, “synchronization of hardware-software communication interface”, “range dimension”. The hardware dimension shows the ATM machines’ hardware traits. This dimension has brought out that factors like access lock in ATM, machine type (with function keys / touch screen) and voice over machines in ATM are needed to be standardized. “synchronization of hardware-software communication interface” brings out association between the card reading mechanism and the instruction sequence. “range dimension” which is made up of the parameters like product range offered through ATMs and transaction limit associated with the ATM card.

Discussion

e-banking in Indian PSBs is trying to emerge as an alternative channel of delivery replacing branch banking and it is focusing its target to rural as well as urban segments of India irrespective of the age group. Banks have transformed themselves and are offering services through Internet. From computerization to networking to ATMs and now e-Banking, banks have moved up the value chain. The number of visits to the bank can be minimized effectively by operating from the internet account. Thus the number of contacts required to perform a transaction and solve a problem has been reduced through online banking. The usual branches of banks have culminated into PC networks, whereby the consumer can draw all the benefits and services of the bank at a single click of the mouse. Once the branch offices of bank are interconnected through terrestrial or satellite links, there would be no physical identity for any branch. It would a borderless entity permitting anytime, anywhere and anyhow banking. A customer can log on banks website and

access his account. The initiative will not become successful until it takes into account the customer perception and also customer satisfaction.

It can be very evidently seen from the analysis of literatures that standardized practice injects efficiency and effectiveness to the existing system by improving the cycle time, ease of operation etc. A controlled processes process has become the need of the day to absorb the rapid pace of growth. To go hand in hand with evolving market dynamics the focus needs to be shifted from to quality. Customers' now demand for globally acceptable frameworks and standards. They want the customer –service provider interfaces to be a transparent processes.

As can be found out from the analysis and findings that a gap exists between the customer perception and customer satisfaction regarding standardization of e-banking operation in Indian PSBs. in this light therefore it becomes necessary for the public sector banks to give a deep thought into this matter to make the e-banking initiative successful.

Limitations

m-banking is considered to be one of the powerful delivery channels of e-banking. It is believed to become successful more quickly than i-banking because of high level of penetration of mobile phones than personal computers especially in rural India¹. However till date few Indian PSBs are providing m-banking facilities and the customer base for this channel is also very small. Therefore m-banking has been kept outside the focus of this research work.

Moreover though Indian PSBs are targeting the rural and semi urban-parts of India to brought under the scope of e-banking data has not been collected from rural and semi urban areas. It has been found.

No demographic analysis has been provided in this research paper which can open up separate dimension related to this research area.

¹ The feature published in the Economic times by Harsimran Julka, ET Bureau, offers salient data that the number of users who possess an internet connection remains strikingly low at 14.6 million. Also, internet penetration is still measly compared to that of countries such as the US. China has over 360 million internet users followed by US at 227 million and Japan at 95 million

Further Research

This research work leaves a tremendous scope for further research. Its findings of this study can be used for developing a separate model for standardization in banking industry especially for the Public Sector banks.

Research work can further be done on the operational perspective of e-banking in Indian PSBs taking on some separate parameters of measurement. Perception and satisfaction of the rural customers of PSBs can be captured to get more insight into the subject. Customers coming from different education level can be questioned to give the study another dimension.

Watts Humphrey and his colleagues at IBM developed the concept for the Capability Maturity Model (CMM) in the early 1980s which is now adopted by almost every renowned software development organizations. The model suggests the five levels of maturity which the software organizations should strive for following with the mentioned key process areas in each step as guideline for that particular step.

Like the CMM model, a model can be developed specific for the banks to ensure standard mode of operation.

Managerial Implications

This research paper will have useful implications on the managerial decisions of the Indian PSBs. India being the second largest populous country in the world and financial services being basic need for any individual nowadays Indian PSBs are having a huge potential customer base to explore. Technology innovation has made banking services within each of every citizen irrespective of the geographical presence. It shows that e-banking has a good prospect in India.

For any business, customer satisfaction is one of the prime determinants of the health of the industry.

The research paper bears that if more standard services are offered through the e-banking delivery channels keeping in mind perception level of the customers then this will not only attract new customers but will help the PSBs to retain its existing customer.

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