

ANALYSIS OF TECHNOLOGY IN THE BANKING INDUSTRY IN REFERENCE TO BHOPAL

Pawan Singh Chauhan¹, Dr. Jitendra Sheetlani²

¹Research Scholar, Department of computer application, SOCA, SSSUTMS, M.P. INDIA

²Proessor, Department of computer application, SOCA, SSSUTMS, M.P. INDIA

ABSTRACT

Liberalization and Information technology has attracted many foreign banks to India, thereby opening up new markets, new products and efficient delivery channels for the banking industry. In the development of Indian Economy, Banking sector plays a very important and crucial role. With the use of technology there had been an increase in penetration, productivity and efficiency. It has not only increased the cost effectiveness but also has helped in making small value transactions viable. It also enhances choices, creates new markets, and improves productivity and efficiency. It has been noticed that financial markets have turned into a buyer's markets in India. Commercial Banks in India are now becoming a one-stop Supermarket. The focus is shifting from mass banking to class banking with the introduction of value added and customized products. Technology allows banks to create what looks like a branch in a business building's lobby without having to hire manpower for manual operations. The branches are running on the concept of 24 X 7 working, made possible by the use of Tele banking, ATMs, Internet banking, Mobile banking and E - banking. These technology driven delivery channels are being used to reach out to maximum number of customers at lower cost and in most efficient manner. The beauty of these banking innovations is that it puts both banker and customer in a win- win situation. Effective use of technology has a multiplier effect on growth and development..

Keyword: Liberalization, Tele banking, ATMs, Internet Banking, Mobile Banking and E -banking

1. INTRODUCTION

The banking industry of India is in the midst of an Information technology revolution. A combination of regulatory and competitive reasons has led to increasing importance of total banking automation in this industry. Information technology has basically been used under two different avenues in banking [1]. One is communication and connectivity and other is business process reengineering. Information technology enables sophisticated product development, better market infrastructure, implementation of reliable techniques for control of risks and helps the financial intermediaries to reach geographically distant and diversified markets. Information technology has changed the contours of three major functions being performed by the banks viz. access to liquidity, transformation of assets and monitoring of risks. Further, information technology and the communication networking systems have a crucial bearing on the efficiency of money, capital and foreign exchange markets. The software packages for banking applications in India had their beginnings in the middle of 80s, when the banks started computerizing the branches in a limited manner. The early 90s saw the plummeting hardware prices and advent of cheap and inexpensive but high-powered PCs and servers. The commercial banks went in for Total Branch Automation Packages for computerisation. The middle and late 90s witnessed the tornado of financial reforms, deregulation, globalization etc. coupled with rapid revolution in communication technologies and evolution of novel concept of convergence of computer and communication technologies, like internet, mobile/cell phones etc.

It changed the face of Indian banking system completely. Technology has brought a complete paradigm shift in the functioning of banks and delivery of banking services. Gone are the days when every banking transaction required a visit to the bank branch. Today, most of the transactions can be done from the home and customers need not visit the bank branch for anything [2]. Technology is no longer an enabler, but a business driver. The growth of the internet, mobiles and communication technology has added a different dimension to banking. The information technology (IT) available today is being leveraged in customer acquisitions, driving automation and process efficiency, delivering ease and efficiency to customers. The increased penetration and impact on the scale of business can be judged from metrics such as deposit and credit per account, which according to the RBI data was INR 6,412 and INR 20, 757 in 1992 and INR19, 898 and INR84, 618 in 2000 these metrics increased to INR59, 217 and INR258, 751 in 2009, respectively, approximately thrice the levels in 2000 and 10 times the levels in 1992. Many of the IT initiatives of banks started in the late 1990s or early 2000 with an emphasis on the adoption of core banking solutions (CBS), automation of branches and centralization of operations in the CBS. Over the last decade, most of the banks completed the transformation to technology-driven organizations. Moving from a manual, scale-constrained environment to a global presence with automated systems and processes, it is difficult to envisage the adverse scenario, [3] the sector was in the era before the reforms, when a simple deposit or withdrawal of cash would require a day. ATMs, mobile banking and online bill payments facilities to vendors and utility service providers have almost obviated the need for customers to visit a branch. Branches are also transforming from operating as transaction processing points into relationship management hubs. The change has been very productive for banks bringing in an increase in productivity and operational efficiency to be more competitive. Better risk management due to centralization of information and real time availability of critical data for decision making. With most of the banks being technology-enabled, the focus is shifting to computerizing regional rural banks (RRBs). In addition, banks are moving toward decision making and business intelligence software and trying to optimize the IT infrastructure created. II. Growth and Expansion Over the last Decade, the size of the banking industry has grown by 7.5 times. The business per employee has increased from INR27.6 million in 2005–06 to INR62.7million in 2009–10, while the profit per employee increased from INR0.12 million in 2005–06 to INR0.39 million in 2009–10. Indian banks are also no longer constrained by geography as they have worldwide operations. IT has been instrumental in the global expansion of banks. It is a huge challenge for banks to maintain and keep the vast network operational. IT has helped banks put in place alternate delivery channels such as internet and phone. Mobile banking and ATMs are rapidly becoming the prime delivery channels. The consolidation and centralization of information is also providing banks with accelerated decision making and risk management capabilities. Electronic payments through credit and debit cards are also emerging as a fast-growing segment providing ease of use and convenience to customers. The banking sector is projected to grow at a strong pace over the next decade and will need to strongly leverage the IT infrastructure to acquire and service the customer base and risk management[4].

2. BEHAVIOURAL INTENTION CONSTRUCT

The reliability statistics of Behavioural Intention construct, [5] which comprised on three derived from EFA, was significant in all tests i.e. Cronbach alpha 0.963 (above >0.70), Item-to-total correlation >0.5 and Inter-item correlations of all items were above 0.3, as desired for performing multivariate statistical analysis.

Table 1: Reliability Statistics of behavioural intention construct

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	No. of Items
.963	.963	3

Table 2: Item-Total Statistics of behavioural intention construct

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
B11	5.9108	3.432	.924	.876	.942
B12	5.9296	3.310	.947	.902	.925
B13	6.0908	3.653	.892	.803	.966

Table 3: Inter-Item Correlation Matrix of behavioural intention construct

	B11	B12	B13
B11	1.000	.934	.861
B12	.934	1.000	.893
B13	.861	.893	1.000

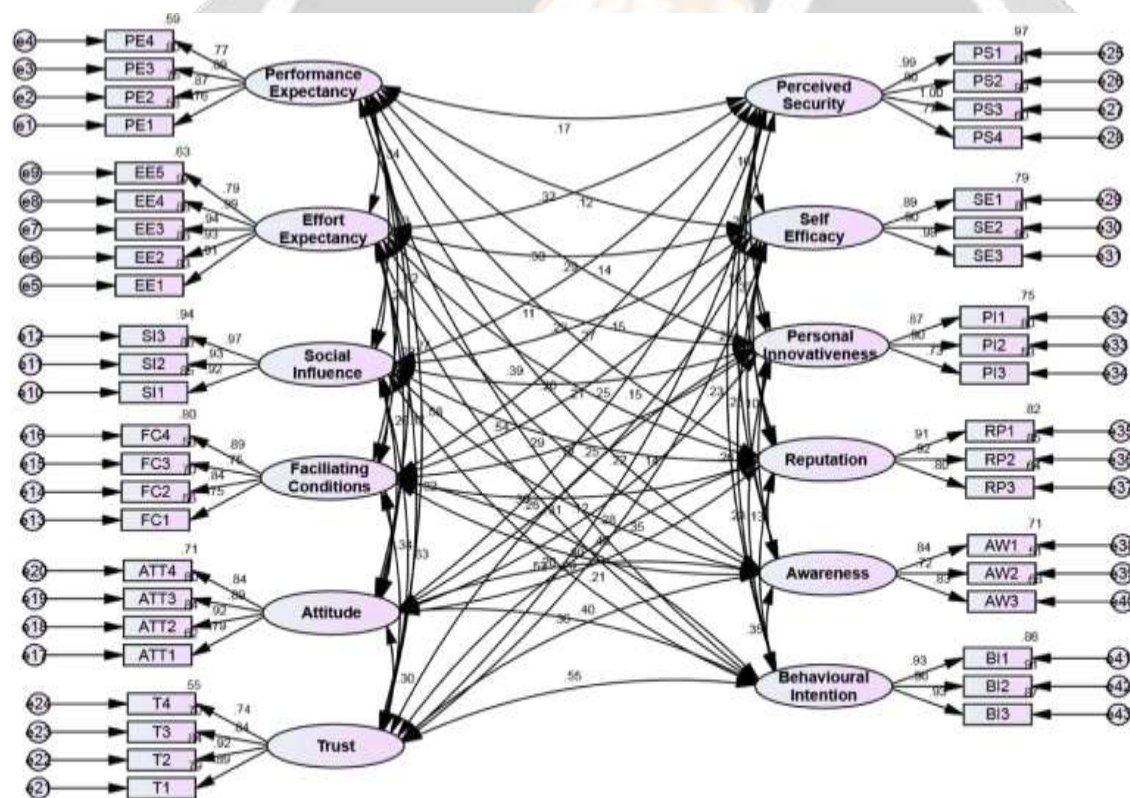
2.1 Confirmatory Factor Analysis

FCFA is used to provide a confirmatory of our measurement theory. [7] A measurement theory specifies how measured variables logically and systematically represent constructs involved in a theoretical model. In this study, CFAs was done in AMOS 17.0, for 12 constructs derived from EFA, using maximum likelihood (MC) estimation procedure. The results of CFA is given in figure 1

The twelve factor measurement model was tested to evaluate and confirm the validity, reliability and uni-dimensionality of all constructs.

Table 4: Goodness of fit statistics for the revised CFA model

Test	χ^2	Df	χ^2/df	GFI	RMSEA	CFI	AGFI
Criteria			<3	>0.90	0.05	>0.95	>0.90
Actual	1539.910	788	1.954	0.900	0.039	0.972	0.881



Goodness of Fit Index
 $\chi^2/df = 1.954$;
GFI = 0.900;
AGFI = 0.881;
CFI = 0.972;
RMSEA = 0.039;
***** p = 0.001**

Figure1: Results of Confirmatory Factor Analysis

All measures of measurement model fit have fulfilled the minimum recommended value.

The CFA model has met all the criterion requirement such as:

- Standard regression weights values are greater than 0.70;
- SMC values of all measured items are higher than the cutoff value of 0.50; and
- Standard residual of all items were well within the threshold value (≤ 2.58).

Hence, the CFA model (Figure 5.1) is having a good fit and the factors identified can be used further for structural model analysis

2.2 Reliability of constructs (derived from CFA)

The reliability of measured items were calculated through the following: All measures of measurement model fit have fulfilled the minimum recommended value.

- Squared Multiple Correlation (SMC) – R² should be greater than 0.50;
- Composite reliability (CR) should be greater than 0.70; and
- Average Variance Extracted (AVE) should be greater than 0.50.

Table 5: Reliability (CFA) results

Constructs	Items	Item Reliability Squared Multiple Correlations>0.50
	PE1	0.577
Performance Expectancy	PE2	0.752
	PE3	0.799
	PE4	0.584
	EE1	0.826
	EE2	0.860
Effort Expectancy	EE3	0.881
	EE4	0.973
	EE5	0.630
	S11	0.845
Social Influence	S12	0.861
	S13	0.944
	FC1	0.559
Facilitating Conditions	FC2	
	FC3	0.697
		0.557
	FC4	0.796
	ATT1	0.622
Attitude	ATT2	
	ATT3	0.840
		0.797
	ATT4	0.709
	TR1	0.775
Trust	TR2	
	TR3	0.826
		0.694
	TR4	0.548
	PS1	0.974
Perceived Security	PS2	

PS3	0.635	
0.994		
	PS4	0.595
	SE1	0.786
Self Efficacy	SE2	0.808
	SE3	0.956
	PI1	0.755
Personal Innovativeness	PI2	0.804
	PI3	0.528
Reputation	RP1	0.820
	RP2	0.850
Awareness	AW1	0.708
	AW2	0.515
	AW3	0.686
Behavioural Intention	BI1	0.841

As discussed in earlier section, the SMC values of all measured items were more than 0.50. The results shown in Table 6 clearly shows both CR and AVE of all measured variables were greater than cut-off values, confirming the reliability of all latent constructs.

Table 6: Composite Reliability (CR) and Average Variance Extracted (AVE) of all latent constructs

Constructs	CR	AVE
	Criteria: ≥ 0.70	Criteria: > 0.50
Performance Expectancy	0.894	0.680
Effort Expectancy	0.950	0.792
Social Influence	0.947	0.857
Facilitating Conditions	0.898	0.691
Attitude	0.957	0.848
Trust	0.890	0.674
Perceived Security	0.933	0.779
Self Efficacy	0.922	0.799
Personal Innovativeness	0.897	0.744
Reputation	0.859	0.673
Awareness	0.757	0.512
Behavioural Intention	0.964	0.898

Validity of the constructs (derived from CFA)

Constructs' validity have been by assessing the following two measures:

- Convergent validity, and
- Discriminant validity.

Convergent validity has been assessed by inspecting the factor loadings (standard regression weights), their significance levels (t-value should be greater than ± 1.98 at 0.05 significance level or ± 2.37 at 0.01 level). The convergent validity are given in Table 7. Standard factor loadings of all items were the minimum cutoff value of 0.70 and the all items had t-values greater than 1.96 at 0.01 significant level.

Table 7: Results of Convergent Validity

Constructs	Items	Convergent validity		
		Standard Regression Weights	Std. error	Critical ratio (t- value)

		≥0.70	(low)	> (±1.96 or ±2.57)
Performance	PE1	0.759	-	-
Expectancy	PE2	0.867	0.051	22.741
	PE3	0.893	0.052	23.424
	PE4	0.768	0.047	19.859
	Effort Expectancy	EE1	0.909	-
	EE2	0.927	0.024	40.920
	EE3	0.939	0.024	42.489
	EE4	0.987	0.021	50.603
	EE5	0.794	0.031	28.012
Social Influence	SI1	0.921	-	-
	SI2	0.928	0.025	42.056
	SI3	0.970	0.023	48.012
Facilitating	FC1	0.748	0.052	21.048
Conditions	FC2	0.835	0.051	18.677
	FC3	0.746	0.048	22.243
	FC4	0.892		
Attitude	ATT1	0.788	-	-
	ATT2	0.917	0.051	24.446
	ATT3	0.893	0.052	23.576
	ATT4	0.843	0.043	23.314
Trust	TR1	0.886	-	-
	TR2	0.918	0.027	33.303
	TR3	0.839	0.031	28.396
	TR4	0.741	0.042	15.270
Perceived Security	PS1	0.987	-	-
	PS2	0.797	0.022	32.494
	PS3	0.997	0.009	113.324

Discriminant validity criterion is fulfilled by comparing the square root of AVE for each latent variable and inter-construct correlations. If a square root of AVE for each latent variable is larger than each inter-construct correlations associated with the factor, giving the proof of discriminant validity. The result shown in Table 8 shows that all values of square root AVE were greater than those of inter-correlations in their corresponding row and column, thus providing substantial proof of discriminant validity of the scales.

Table 8:Discriminant validity

	PE	EE	SI	FC	ATT	TR	PS	SE	PI	RP	AW	BI
PE	0.825											
EE	0.496	0.890										
SI	0.548	0.316	0.926									
FC	0.347	0.275	0.213	0.831								
ATT	0.427	0.299	0.338	0.298	0.921							
TR	0.626	0.354	0.611	0.271	0.451	0.821						
PS	0.154	0.154	0.185	0.164	0.141	0.158	0.882					
SE	0.487	0.359	0.357	0.264	0.444	0.501	0.222	0.894				
PI	0.487	0.481	0.309	0.273	0.452	0.414	0.276	0.580	0.862			

RP	0.138	0.190	0.181	0.174	0.320	0.237	0.326	0.284	0.289	0.820		
AW	0.643	0.451	0.483	0.334	0.501	0.539	0.340	0.525	0.638	0.267	0.715	
BI	0.559	0.435	0.500	0.479	0.672	0.561	0.294	0.416	0.469	0.343	0.539	0.948

3.CONCLUSION

Banks should clearly communicate the ease of using the Internet banking services, their benefits and advantages over other bank channels. Banks should improve the security features of Internet banking website, as this will increase the bank customers' trust on the system, thus increasing their adoption. Many banks in India should tune their marketing communication strategies to new technological platforms such as social media websites, for communicating the benefits of the Internet banking system and also for increasing its usage rate among the diverse customer segments. This research helps practitioners in understanding the significant predictors of customers' intentions to adopt Internet banking services in India through understanding the varying preferences and perceptions of various customer segments. The proposed Internet banking acceptance model asserts the need for incorporating factors such as awareness, reputation, self-efficacy, trust, perceived security etc. which are specifically suitable for the technology under study. The comprehensive model developed in this study makes an important contribution to the emerging literature on online consumer behaviour through extension of UTAUT model. In conclusion, this study makes a significant contribution to the literature on the Internet banking in the context of developing economies in general and for India in particular.

4. REFERENCES

- [1] From Service to Product, Strategic Insights into Quality, No. 4, 1994, pp. 24.
- [2] Making Service Look Easy, Training, February 1992, pp. 32
- [3] Reed's Revamp of Citicorp Stresses Factory Model, Asian Wall Street Journal, June 28, 1993, pp. 8.
- [4] Customer Focus: the True Measure of Success, Banker's Journal Malaysia, Feb/Mar 1995.
- [5] ASB Bank Limited, Journal of Development Finance, June 1995, pp. 19.
- [6] Enhancing Competitiveness and Customer Service Through Innovative Banking Technology: Bank Pertanian Malaysia's Experience," Journal of Development Finance, June 1995, pp. 41.
- [7] Competitiveness in Service Excellence: Best Practices in Korea", Journal of Development Finance, June 1995, pp. 37
- [8] Computerization in Development Financial Institutions (DFIs) IDBI Experience", Journal of Development Finance, June 1995, pp. 26.
- [9] China's Flirtation with Customer Courtesy", Asian Business, Nov. 1995, pp. 90
- [10] Mittal R.K, Dhingra Sanjay,"Technology in Banking Sector: Issues and Challenges", Vinimaya, Vol. XXVII, No. 4, JanMarch, 2007, pp 14-22, 2007.
- [11] Mariappan V,Changing the Way of Banking in India : Technology as a Driver – What is the Trigger?, Vinimaya, Vol.XXVI, No. 2, July-September, pp. 26-34, 2005.
- [12] Narayan Tarun,"Banking on Technology, Indian Management, Vol. 43, Issue 8, August, 2004, pp.18-28, 2004.
- [13] Mohan Chandran.K,Electronic Cheque - The Emerging Payment System", IBA Bulletin, Vol XXV, No.7, July 2003, pp. 6-18, 2003.
- [14] Arvind Sharma,IT in Banking – Promise of More Benefits, The Hindu Survey of Indian Industry-2007, pp.54-58.
- [15] Sathish.D, Bala Bharathi. Y,Indian Banking Industry: Challenging Times Ahead, Chartered Financial Analyst, February 2007, pp. 68-70.