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The Electronic Banking Revolution in India

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Abstract

Retail electronic payment system has progressed in the recent years in various countries. We find that India is no exception. Reserve Bank in its Vision statement has set the objective to proactively promote electronic payments with an objective towards less cash society. The formation of National Payments Corporation (NPCI) in the year 2009 has set the stage for development of retail electronic payments which offers enormous opportunity to move towards cashless and less cash society. Using T test, with an objective to assess the contribution of NPCI, we find that significant difference exist in products such as electronic clearing, ECS (Debit), National Electronic Funds Transfer (NEFT), and Card Products when we compare the period after formation of NPCI and before formation of NPCI. Various innovative products, such as Immediate Payment

Services (IMPS), National Automated Clearing House (NACH) and Prepaid Instruments (PPI), were launched after the formation of NPCI. There is enormous opportunity since the ratio of retail electronic clearing to systematically important payments such as Real Time Gross Settlement and CCIL grew from 1 percent in the year 2005-06 to 3 percent in the year 2013-14.

Keywords: Retail electronic payment system; National Payments Corporation of India (NPCI); cashless, less cash; innovative products; t-test

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INTRODUCTION

Various Developments Have Taken Place In Indian Banking. Among The Various Developments, Technology Has Influenced The Way Customer Interacts With Banks. Electronic Channels And Products Such As Atms, Cards, Internet Banking And Mobile Banking Are Offered Along With Traditional Branch Channel. Differences In The Usage Of Channels Exist Between Developed Countries And Developing Countries. Evidence Suggests That There Is A Shift From Traditional Channel To Electronic Channels. For Example, Usage Of Digital Banking In Developed Countries Is More Than 90 Percent And Diffusion Of Digital Channels In Developing Countries Range From 11 Percent To 25 Percent. The Study By Capgemini [1] In His Report "World Payments Report 2014" Indicate That Non-Cash Transactions Have Reached 334 Billion Transactions. There Is Greater Propensity Of Customers To Move Towards Digital Channels. Banks Which Develop Digital Capabilities Are Going To Benefit. Customers Recognize Greater Convenience Through Digital Channels. However, Banks Will Need To Cope Up With Issues Of Customer Service And Frauds Which Are Associated With Digital Channels.

The Paper Offers Important Contributions To The Existing Literature On Electronic Banking. It Is Evident That Significant Developments Are Taking Place On The Front Of Electronic Banking Which We Categorize As Revolution. India Is No Exception To The Revolution In Electronic Banking. Regulators Are Forming Specialized Organization With An Objective To Focus Retail Electronic Payment Products. In This Regard, The Major Milestone Has Been The Formation Of National Payments Corporation Of India. While The Role Of Regulator In Promoting Retail Electronic Payments Has Been Examined, The Role Of Specialized Organizations With An Objective Of Oversight Functions Warrant Investigation. Npci Has Played A Major Role In The Growth Of Electronic Payments. We Assess The Development In India By Tracking The Progress By Comparing The Periods Before And After The Formation Of Npci In India.

ELECTRONIC BANKING AND ITS EVOLUTION

Online banking was first started in 80's. The term online became famous in the late '80s. Online banking during the formative years included usage at terminal, keyboard and TV (or monitor) with an intention to approach the banking system using a phone line. Online services started in New York in 1981 when four of the city's major banks (Citibank, Chase Manhattan, Chemical and Manufacturers Hanover) offered home banking services using the videotext system. Later on, the concept of videotext became popular in France. In UK, first home online banking services were set up by the Nottingham Building Society (NBS) in the year 1983. It was based on the UK's Prestel system and used a computer, such as the BBC Micro, or keyboard (Tandata) connected to the telephone system and television set. It provided customer an option to make bill payment for gas, electricity and telephone companies and accounts with other banks. It was Stanford Federal Credit Union which offered online internet banking services to all of its customers [2]. Major developments in electronic banking can be summarized with the help of following Table 1.

Table 1: Early developments in electronic banking

Year	Major developments
1981	Start of Home banking using videotext system
1983	Launch of Home online banking by Nottingham Building Society
1994	Online bank by Stanford Federal Credit Union

Internet banking refers to the use of Internet as a remote delivery channel for banking services such as opening a deposit account or transferring funds at different accounts etc. Further, it is a desirable opportunity for banks where the key to success is customer adoption [3]. There is evolution in development of internet banking. At the basic level, Internet banking includes the setting up of a web page by a bank to give information about its product and services [4]. At an advance level, it involves provision of facilities such as accessing accounts, funds transfer, enabling integrated sales of additional process and access to other financial services such as investment and insurance [5]. There is advantage for customers as it provides opportunity to handle their banking transactions without visiting bank tellers [6]. The services through Internet banking are e-tax payment; access the account to check balance, online trading of shares, online remittance of money, electronic bill payment system, railway

reservation, transfer of funds from one customer's account to other, application of loan, etc. Internet banking channel is convenient compared to bank branch system because stakeholders can access their account at any time [7]. Banks leveraged the advantage of the Internet by offering online services in recent years [8,9].

Thulani et al. [10] identified three functional levels of Internet banking which are informational, communicative and transactional. Under informational level, it has been identified that banks have the marketing information about the bank's products and services on a standalone server. The risk is very low as informational systems have no path between the server and the bank's internal network. Communicative level of Internet banking allows some interaction between the bank's systems and the customer. This level of interaction is limited to e-mail, account inquiry, loan application, static file updates and it permits no fund transfer. Transactional level Internet banking allows bank customers to electronically transfer funds to/from their accounts, pay bills and conduct other banking transactions online. There are higher risk levels in transaction levels as compared to that of other two levels.

LITERATURE REVIEW

Electronic banking has attracted interest from policy makers, researchers and bankers. Retail payments have assumed importance in the backdrop of rapid technological changes, influence of market forces and regulatory developments. Efforts are being made to make retail payments affordable and integrated. Both individual country and banks cope up with growing challenges and opportunities in the area of regulatory changes, increased competition, enhanced role of non-banks and technological advances. Retail payments contribute in improving relationship between bank and retail customers and remains anchor for banking services, which includes savings, credit and other services [11,12]. Various advantages associate with development of efficient retail payments, such as geographical expansion [13] reduction of labour cost for banks, curtailing in cost of handling cash [14]. DeYoung [15] argued in favor of internet-only banking model as high-volume, low-cost strategy for delivering basic banking services. Blount and Swatman [16], based on case studies of two Australian banks, examined the relationship among e-commerce strategies, overall business and Human Resource Management (HRM). Acharya et al. [17] concluded that even though national banks are leaders in many segments, the community banks were lately responding to the challenge by offering Internet based products and services which are transactional, informational and strategic to enhance the relationship building competitive advantage for community banks.

Based on customer studies, researchers have placed considerable advantages for electronic banking in terms of convenience [18], convenient and cost effective channel [19], and service quality [20]. Joseph et al. [18], based on a survey on

300 electronic bank customers, found that e-banking services did not match with the importance rating specified by the customers except of convenience/accuracy and efficiency. Customers experience some problems with electronic banking and want that some conditions should be met by the banks to make them satisfied.

Freed [19] offered the major key findings that (a) Online banking was beginning to fulfill its promise as a convenient and cost effective channel to serve customers along with improvement in customer satisfaction, (b) Use of more online features leads to satisfaction, (c) Highly satisfied online bankers were nearly 39% more likely to purchase additional products and services from their banks than very dissatisfied online banking customers, and (d) Customers who pay bills online showed higher level of satisfaction and loyalty. It was concluded that online banking is both a challenge and an opportunity. It was suggested that if banks continue to satisfy customers with the online experience while increasing usage, the end result should be a larger number of satisfied and loyal customers. It was also recommended that it will help banks to attract a higher share of wallet from existing customers. Besides, higher adoption of the online banking channel will reduce the cost required to service customers. The challenge remained with changing customer behavior to embrace the online channel.

Lichtenstein and Williamson [21] reported that

- α. Convenience was the main factor for consumer adoption of internet banking,
- β. Australian Internet banking consumers continued to be affected by security concerns, and
- χ. Some banking consumers remain unaware with existence, features, and relative advantage and benefits of Internet banking.

Wong et al. [20], based on a survey on 706, examined the role of traditional service quality in e-banking era in Australia and found that electronic delivery of services continuously increased the customers' expectations of service quality and performance of traditional banking services was misaligned to their current expectations and caused dissatisfaction. Gupta [22] found internet banking to be very easier and speedier than the conventional banking. The factor 'trust' was found as most important factor followed by 'accuracy' and 'confidentiality'. Singhal and Padhmanabhan [23] explored the major factors responsible for Internet banking based on respondent's perception on various Internet applications. Using factors analysis, the major five independent set of factors were utility request, security, utility, ticket booking and fund transfer. ANOVA results for assessing perception about internet banking with age and gender showed no difference.

Various researchers have examined the service quality in the context of electronic banking. Ankrah [24] assessed the level of satisfaction of bank

customers using electronic products and services provided by the banks and found that males transact more than that of females and most of the customers had been transacting with the banks for a mean of 8 years. It was also found that most of the bank's customers spend 10 and 20 minutes for their bank transactions. Research shows that most of the bank customers were satisfied with the operation of the bank. Aghaei et al. explored the degree of customer satisfaction of e-banking services as well as factors influencing their satisfaction. Khan et al. [25] identified six quality dimensions viz. reliability, accessibility, user-friendliness, privacy/security, responsiveness and fulfillment. The study showed that customers were satisfied with quality of service on five dimensions such as reliability, accessibility, privacy/security, responsiveness and fulfillment. They were least satisfied with userfriendly dimension. The study also aimed at determining the service quality of banks operative in India with regards to internet banking. Sharma [26] found that rural customers were very satisfied with the provision of updating, accuracy of the transactions and convenience. It was observed that most of the surveyed persons were not aware of multi-language provision in e-banking. It was suggested to promote and publicize the use of regional languages during transactions.

According to Global Consumer Banking Survey by Ernst and Young customers are becoming less loyal and increasing the number of banks they use. The survey has identified a significant increase in the overall proportion of customers planning to change their bank. The high competitiveness in the online retail environment has resulted in enhancing e-loyalty, which has become a key for the survival of online retailers, as competition is just 'a mouse click away' [27].

Various issues such as security problems have been identified [21]. While comparing 'Internet only' banks and 'Click and mortar' banks between 1997-2001, Koskosas [28], investigated the information security aspects of internet banking. This study also presents socioorganizational issues and discusses the significance of trust, risk communication, setting efficiently internet banking goals within the broader context of information security management.

PROGRESS OF ELECTRONIC BANKING IN INDIA

In India, Reserve Bank of India outlined the mission to ensure that payment and settlement systems are safe, efficient, interoperable, authorized, accessible, inclusive and compliant with international standards. The Vision is to proactively encourage electronic payment system for ushering in a less cash society in India [29]. Regulation is keen to promote innovation and competition with an intention to help payment system achieve international standards. Various initiatives by Reserve Bank of India, in mid-eighties and early-nineties, resulted in offering technology based solutions. The need evolved to provide costeffective alternative system.

Electronic Clearing Service (ECS) was launched in 1990s to cater to bulk and repetitive payments. By September 2008, a new avatar in the form of National Electronic Clearing cell was launched to handle multiple credits to beneficiary accounts. National Electronic Clearing Service (NECS) rides on core banking solution of member banks. The retail funds transfer system was introduced in 1990s to allow electronic transfer of fund for people to people payment. In November 2005, a robust system was launched to allow one to one funds transfer requirement of individuals and corporates. Prepaid instruments allow transaction for goods and services against the value stored on payment instrument. It may be in the form of smart cards, magnetic stripe cards, internet wallets, mobile accounts, mobile wallets and paper vouchers. Consequent to the guidelines in mobile banking, selected banks were permitted to offer the service after receipt of necessary permission from Reserve Bank of India. Indian Retail payments pose significant challenges and opportunities. Based on Payment system vision document released by Reserve Bank of India, the number of non-cash transactions, at 6 per person, is low in India. It is estimated that Government subsidies alone constitute more than Rs.2.93 trillion and electronification has a potential to translate 4.13 billion electronic transactions in a year. Based on the report of Internet and Mobile Association of India (IAMAI), internet commerce is expected to reach Rs.465 billion by the year 2012.

To facilitate electronification, Reserve Bank of India established the umbrella organization, National Payment Corporation of India [30]. Many researches in the past have laid importance on the significant developments that are taking place in the banking industry due to the surge in information technology. Sahai and Machiraju [31] discussed how new technologies addressed different requirements and how these technologies fit together to provide a ubiquitous e-market place and e-service vision. While many new products are offered in the area of electronic payment products, banks need to track the usage of these products [32]. Concerns have been raised over the great 'digital divide' between the rich and the poor on the demand side and different operational environments in the private and public sector banks at the supply side. Dutta and Roy [33] studied internet growth from a developing country's perspective and developed a causal model using System Dynamics (SD) method that will help a developing country like India to identify the pattern of Internet diffusion as a result of various policy alternatives taken up to nurture internet diffusion in the country.

HYPOTHESIS

NPCI was formed as an umbrella organization with the support of member banks which includes public sector banks, private sector banks and foreign banks in India. The formation of NPCI can be considered as an important milestone. We captured the data for trends in various products. The source of data was Reserve Bank of India Annual Report from the year 2006-07 to the year 2013-14.

Null hypothesis

There is no significant improvement in retail electronic payment products after the formation of NPCI as compared to earlier period.

Alternate hypothesis

There is significant improvement in retail electronic payment products after the formation of NPCI as compared to earlier period.

RESULTS

T test was performed to find the difference between the years before formation of NPCI and after formation of NPCI. Before years include 2006-07, 2007-08, 2008-09, 2009-10 and after years include 2010-11, 2011-12, 2012-13, 2013-14. The following Table 2 shows the descriptive statistics comparing the mean before and after the formation of NPCI and Table 3 shows the result of T-test.

Table 2: Group Statistics

		N	Mean	Std. Deviation	Std. Error Mean
Paper_Clearing	Before NPCI	4	74500.2500	9687.57683	4843.78842
	Aftter NPCI	4	98193.2500	3219.48292	1609.74146
Retail_Electronic_Clearing	Before NPCI	4	4651.5000	4000.27870	2000.13935
	Aftter NPCI	4	28064.0000	15515.93024	7757.96512
ECS_Debit	Before NPCI	4	391.7500	251.28387	125.64194
	Aftter NPCI	4	979.7500	240.91683	120.45841
ECS_Credit	Before NPCI	4	2538.2500	3539.88516	1769.94258
	Aftter NPCI	4	1979.0000	343.10640	171.55320
NEFT	Before NPCI	4	1721.0000	1619.02131	809.51065
	Aftter NPCI	4	25025.2500	14866.72401	7433.36201

CARD	Before NPCI	4	619.7500	216.96601	108.48301
	Aftter NPCI	4	1832.7500	619.27236	309.63618
Credit_Card	Before NPCI	4	487.0000	133.29416	66.64708
	Aftter NPCI	4	1133.0000	345.41666	172.70833
Debit_Card_POS	Before NPCI	4	132.0000	92.28579	46.14289
	Aftter NPCI	4	647.0000	258.41440	129.20720

CONCLUSIONS

While using p value at 0.05, we find significant difference for paper clearing, retail electronic clearing, ECS (Debit), NEFT, Card, Credit Cards and Debit Cards at POS were observed and significant difference for ECS (Credit) was not found. Various new products such as Immediate Payment Services (IMPS), Prepaid Instruments (PPI) and National Automated Clearing House (NACH) have been added after formation of NPCI. This is the reason that we could not compare the products, such as IMPS, NACH, Prepaid and CTS, which were available after formation of NPCI.

MANAGERIAL IMPLICATIONS

It is evident that there is significant development in electronic banking. We find that National Payments Corporation of India has given a fillip to development of electronic banking. After the formation of NPCI, there is a significant growth in electronic banking such as electronic clearing products such as National Electronic Funds Transfer, ECS (Debit), and Card Products. We observe significant difference when we compare the figures pertaining to electronic products for before the formation of NPCI and after the formation of NPCI.

There is enormous opportunity since the ratio of retail electronic clearing to systematically important payments has grown from 1 percent in the year 2005-06 to 3% in the year 2013-14. Since the enabling environment is created with the setting up of NPCI, Banks need to focus on the availability of the e-services, prompting customers to use them. Banks need to create higher awareness by greater involvement of bank employees. Working out cost-effective ways of delivering the e-services will matter a great deal in the current banking scenario. Banks need to work on the security issues in order to win the trust of the

customers and conquer them psychologically. It has been made mandatory by the Reserve Bank of India to develop internal cells security issues and risk management but proper implementation of the same in letter and spirit is required.

Table 3: Independent Sample Test

		Levene's Test for Equality of Variances		t-test for Equality Means		
		F	Sig.	t	Df	Sig.(2- tailed)
Paper_Clearing	Equal variances assumed	6.641		-4.642	6	0.004
	Equal variances not assumed		0.042	-4.642	3.655	0.012
Retail_Electronic_Clearing	Equal variances assumed	5.174		-2.922	6	0.027
	Equal variances not assumed		0.063	-2.922	3.397	0.05
ECS_Debit	Equal variances assumed	0.006		-3.378	6	0.015
	Equal variances not assumed		0.941	-3.378	5.989	0.015
ECS_Credit	Equal variances assumed	6.993		0.314	6	0.764
	Equal variances not assumed		0.038	0.314	3.056	0.773
NEFT	Equal variances assumed	8.454	0.027	-3.117	6	0.021

	Equal variances not assumed			-3.117	3.071	0.05
CARD	Equal variances assumed	4.589		-3.697	6	0.01
	Equal variances not assumed		0.076	-3.697	3.726	0.024
Credit_Card	Equal variances assumed	3.724		-3.49	6	0.013
	Equal variances not assumed		0.102	-3.49	3.874	0.026
Debit_Card_POS	Equal variances assumed	4.784	0.071	-3.754	6	0.009
	Equal variances not assumed			-3.754	3.753	0.022

Superior systems and infrastructure for the e-delivery of services is quintessential for the banks. Mere developing infrastructure will not help attract the customers but they need to be approved by some authority to be of international standards. Banks should get their systems certified by such authorities of good repute in order to win the confidence of their customers. Banks certainly need to get e-ready by creating proper facilities for being accessible; developing capacities to cater to the customers and seek as well as design more opportunities to use technology enabled services. This will determine the success of the Indian banks operating in such a competitive environment.

There are still a plethora of studies when it is in the context of customer acceptance for e-banking but from the bankers' perspective and particularly in the Indian environment there are very few studies. This calls for many quantitative as well as qualitative studies in future in this area.

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