


“Virtual banking and online business”

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Virtual banking and online business

Abstract

Banks play a crucial role in promoting online businesses. Even though e-shoppers have the option of cash-on-delivery, which seems to be secure and trustworthy, still there is an urge for the e-payment schemes, which can only be provided through banks. Banks act as strong and trustworthy intermediaries in the online transactions and they provide a bold opening in the online business. At present, banks have e-payment systems like Internet banking, electronic fund transfers (NEFT/RTGS), plastic money (credit card & debit card) and mobile banking. These systems provide payment to online transactions like online purchases of products, mobile recharges, hotel booking, ticket booking, etc. by considering all types of security measures. For the real working of these e-services, the need of apt infrastructures is an inevitable feature.

This paper examines the efficient utilization of mobile banking by the bank customers who have all the infrastructures for availing the same. The results showed that the majority of the sample customers selected for the study owned a mobile but only few of them use a mobile as their mode of access to banks. They also revealed that the people were comparatively well aware of mobile banking, but its usage level was very low. The mostly used e-settlement with mobile banking was for mobile top-up by urban area customers and rural area customers and there was no significant difference between the urban area and rural area customers regarding the utilization of mobile banking.

Keywords: virtual banking, mobile banking, online business, inter-bank mobile payment system (IMPS).

JEL Classification: L86, L81.

Introduction

Banks play a crucial role in promoting online businesses. Even though e-shoppers have the option of cash-on-delivery, which seems to be secure and trustworthy, still there is an urge for the e-payment schemes, which can only be provided through banks. Banks act as strong and trustworthy intermediaries in the online transactions and they provide a bold opening in the online business. At present, banks have e-payment systems like Internet banking, electronic fund transfers (NEFT/RTGS), plastic money (credit card & debit card) and mobile banking. These systems provide payment to online transactions like online purchases of products, mobile recharges, hotel booking, ticket booking, etc. by considering all types of security measures. For the real working of these e-services, the need of apt infrastructures is an inevitable feature. With the significant and growing penetration of mobile phones, linked to the potential public call office system, and the low cost of mobile telephony in India, one can only hope that M-banking will be allowed to play a significant role in the push for financial inclusion.

1. Theoretical framework

1.1. Virtual banking. Virtual banking also known as online banking is the service provided as like in a bank, but the only difference is that the services are

provided via Internet. This particular service does not need a brick and motor system. The services like account opening, fund transfer, payment services, e-shopping and so on all are being served online. The bank customers having computer and Internet literacy will find it more convenient and accessible. This virtual system has the power to change the system of economies, which were more run by physical cash in contrast to cash less economy. In India particularly, the recent reformations; like demonetization, converting every transactions to online, zero balance account all are with a view to change the economy into a cash less one, which is only possible through virtual banking system.

1.2. Mobile banking. Mobile banking also popularly known as M-Banking is a delivery channel, which opened up after the tremendous success of mobile telephony. Banks started offering M-banking during the late nineties and with the introduction of 3G mobile phones in early 2000, acceptance of M-banking showed good growth rates. M-banking customers could conduct banking transactions using Short Messaging Services (SMS) or mobile Internet. Instruction for a banking operation is sent as SMS to a predefined number given by the bank (Sudeep, 2011).

In the year 2012, Vinayagamoorthy and Sankar have studied about mobile banking and they highlighted the use of mobile banking for transactions like fund transfer, balance check, mini statement, checking of account history, SMS alerts, access to card statement, balance check, mobile recharge, etc. via mobile phones.

The provision of real-time updates of critical banking transactions is the main benefit of M-banking – for example, soon after a transaction like ATM cash withdrawal customer gets a mobile alert about it

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through M-banking. In spite of having good potential to become a medium for electronic payments and mobile cash, M-Banking has not been well accepted by the customers worldwide (Sudeep, 2011).

1.3. Inter-bank mobile payment system. The IMPS, on the other hand, is a service operated by NPCI which provides an instant, 24X7, interbank electronic fund transfer service through mobile phones. Publicly launched on November 22, 2010, this system facilitates customers registered with their banks for this service to use mobile instruments as a channel for interbank fund transfers in a secured manner with immediate confirmation features. This service is in consonance with the Mobile Payment Guidelines 2008 issued by RBI, which stress on interoperability both across banks and mobile operators in a safe and secured manner. Currently, 27 member banks participate in this scheme (Khan, 2011).

1.4. Present mobile banking statistics. The top private banks in India expect mobile devices to be the predominant channel through which customers access their accounts. Kotak Mahindra Bank has already seen customers logins' through mobile outstripping those through Internet. Transactions in value terms through mobile channel are already at par with Internet transactions for Axis Bank, and HDFC Bank expects mobile to overtake Internet next year (Shetty, 2015). HDFC Bank is the largest in the mobile banking space in terms of value of transactions with Rs 5686 crores of transactions in April 2015 (Table 1).

Table 1. Transactions through mobile banking

BANKS	Volume (actual)	Value (in Rs.'000)	Volume (actual)	Value (in Rs.'000)
	April 2015		April 2014	
STATE BANK OF INDIA	7848471	17010992	4917285	4645674.00
ICICI BANK	3857085	53429724	4917285	4645674.00
AXIS bank	2671656	18973609	4917285	4645674.00
HDFC Bank	1746757	56865767	295470	6682554.68
Kotak Mahindra	747948	9460259	295470	6682554.68
Yes Bank	747948	9460259	295470	6682554.68
Citi Bank	424091	3974584	295470	6682554.68
Canara Bank	424091	3974584	1530	3326.00
Union Bank	209963	1180625	66317	258465.12
State bank of Hyderabad	191196	70081	66171	25636.19

Source: <https://rbi.org.in/scripts/NEFTUserView.aspx?Id=84>.

1.5. Available mobile banking applications by some banks in India. Kotak Bank has launched **Kotak Bharat**, an app that allows transactions to be done without a data connection. The transaction data are sent to the banks servers through a text string in the SMS. For Kotak Mahindra Bank in May 2015, total login to online banking was 28.2 Lakh and for mobile banking, it was 28.5 Lakh. This does not include balance checks, which can be done without signing in (Shetty, 2015).

Bank of India's **StarConnect Mobile Banking Service** allows doing all banking activities virtually from mobile device. With StarConnect Mobile Banking, one can access all the banking accounts with the bank, 24 hours a day, 365 days a year, from anywhere. Banking transaction details, viewing of account balance, mini statement, statement, self transfers, third party transfer of funds, utility bill payments, ticket booking features make convenient to conduct banking activities, M/s PayMate to extend mobile payments to all retail banking customers.

1.6. State Bank Freedom. State Bank groups' mobile banking app - State Bank Freedom. The service is available on Java enabled/Android mobile phones (with or without GPRS)/i-Phones, where the user is required to download the application on to the mobile handset. The service can also be available via WAP on all phones (Java/non-Java) with GPRS connection.

The following functionalities are available (State Bank of India, 2017):

- ◆ Funds transfer (within and outside the bank).
- ◆ Immediate Payment Services (IMPS): click here for details.
- ◆ Enquiry services (balance enquiry/mini statement).
- ◆ Cheque book request.
- ◆ Demat Enquiry Service.
- ◆ Bill payment (utility bills, credit cards, insurance premium), donations, subscriptions.
- ◆ Mobile/DTH top up.
- ◆ M-commerce (merchant payments, SBI life insurance premium).
- ◆ Business rules.
- ◆ All current/ savings bank account holders in P segment and current account holders in SME segment are eligible.
- ◆ Transaction limit per customer per day is Rs. 50,000/- with a calendar month limit of Rs. 2,50,000/-.

All customers can avail the service irrespective of their telecom service provider.

The service is free of charge. SMS/GPRS cost will be borne by the customer.

1.7. Mobile banking service via SMS. The service is available on all phones.

The following functionalities are available:

- ◆ Enquiry services (balance enquiry/mini statement)
- ◆ Prepaid mobile/MobiCash Wallet top up
- ◆ DTH recharge
- ◆ IMPS fund transfer – (mobile number & MMID and account number & IFS code)

2. Literature survey on virtual banking

Following are the literature reviews on virtual banking like Internet banking, mobile banking ATM/plastic money:

Technology has really revolutionized the banking operation across the globe and definitely enhanced the quality of banking services. The study found out that working environment of banking employees of Tamil Nadu and Kerala has positively improved after computerization. The customers are highly satisfied with all hi-tech products (Vanaraj, 2011). Internet security and customers' privacy were found to be the most important future challenges of banks. Perceived usefulness, perceived web security has a strong and direct effect on acceptance of Internet banking (Aladwani, 2001).

The major barriers faced by banking industry in the adoption of electronic banking are: security risk, lack of trust, lack of legal and regulatory framework, lack of ICT infrastructure and absence of competition between local and foreign banks (Ayana Gemechu Bultum, 2014). E-banking has enhanced the growth of the customer base for the banking institutions through enhancing banking services accessibility to a larger population in the country (Bichanga Walter Okibo, 2014). The awareness level among the customers was a major issue identified and there was a significant difference in the awareness level among the customers of different age group and occupation (Padmasree, K. et al., 2012). The public sector banks continued to play a very prominent role in both deposit mobilization and credit disbursement even during the privatization era. They contribute about 75 per cent of the total deposits mobilized and total loans advanced by the entire schedule commercial banks (CBs) (K. Rangaswamy, D.V. Gopalappa, 2012). Adoption of new technology with attracting human talent will become very necessary in future. New technologies like ATM, Internet, mobile banking, data warehousing with management techniques like Customer Relationship Management (CRM), Human Resource Management (HRM), Management Information System (MIS), Decision Support Systems (DSS) and e-marketing, etc. will enhance the functioning of banking (Satish Tanaji Bhosale, 2012).

India is among the fastest growing online markets. E-commerce has shown a very exciting growth trend among travel and retail sites, models like Cash-on-delivery and other consumer centric payment options and improved service quality will boost overall sales. It is definitely the most exciting phase among online retailers and consumers, as this learning curve will put India on the global map as one of the largest e-commerce markets in the coming months (Camscore, 2012). The online banking was a demand of today's customers, because it saved the cost

and time for the settlement of their financial transactions. The major problem observed was the lack of knowledge among the people about the use of Internet and computer, which alone was not the major problem in growth of e-banking (Sudesh Kumar et al., 2014). Shopping was the most common service used by Internet banking users and the customers were not in favor of using the Internet-banking for the purpose of linking their account, transferring of funds, recharging pre paid mobile and for the purpose of trading of mutual funds (Seyed Mehdi Pourkiaeia et al., 2014).

Following are the latest literature reviews on mobile banking.

Almost 16.5% of wireless mobile phone subscribers are using the Internet over their mobile phones. According to a mobile banking report by Deloitte (Alpesh Patel, 2013), 17 million Indians are using mobile phones for banking transactions.

In 2012-13, Airtel-Axis Bank launched a mobile banking service for financial inclusion and money transfer. According to operative guidelines for banks by RBI, only those banks which are licensed and supervised in India and have a physical presence in India will be permitted to offer mobile banking services (Chugh, 2014). According to RBI report, there are 82 banks that are permitted by RBI to provide mobile banking services throughout India (Reserve bank of India, 2014), as compared to 21 banks in the year 2010.

Cost as an attribute has been studied by Sadi and Noordin (2011), and they found out that perceived cost is also an important factor and has negative relation with the intention to adopt mobile banking services; they suggested that the creative promotional and pricing strategies, including cost reduction should be implemented to attract more price-conscious customers. Singh, Srivastava, and Srivastav (2010) also argued that the financial cost incurred has a negative effect on the intention to use mobile banking. Researchers have come across many different models that help them in determining the important factors that affect the attitude and intention of the mobile banking users. In the next section, those models have been discussed.

Facilitating condition is also an important attribute of consumer behavioral control towards intention to use, therefore, it is necessary to improve the facilitating conditions of mobile application services like connection speed, secure systems and easy transaction method (Sadi & Noordin, 2011).

Bhatti (2007) used all the three models TAM, TPB and IDT and found out that the perceived ease of use, perceived usefulness, subjective norm, personal innovativeness and perceived behavioral control are strong determinants of the intention to adopt M-commerce.

According to Nayak, Nath and Goel, to fulfil the expectations of the consumers and to increase the mobile banking users, mobile banking service provider needs to increase the awareness about the mobile banking services. Banks and the mobile service providers need to come together to bring a revolution in the field of mobile banking.

3. Objectives of the study

1. To examine the efficient utilization of mobile banking by the bank customers.
2. To analyze the potentialities of mobile banking in India.

4. Methodology of the study

4.1. Research design. The data used for analysis were from primary data. The area of study was confined to Trivandrum district. The bank customers of urban area and rural area were equally taken.

a. Sampling design: judgement sampling method has been used.

b. Sample size: it is 360 customers out of which customers of urban area were 180 and customers of rural area were 180.

c. Sampling element: customers of “public sector banks”.

d. Sampling unit: service users of “public sector banks”.

e. Extent: the sample of bank customers was from State Bank of Travancore (SBT) alone, as it has the highest branches in the state of Kerala in India.

f. Choice of survey method: here, questionnaire method is used.

4.2. Data collection method. *4.2.1. Primary data sources.* Primary data were collected by using of survey method of data collection. They were collected to know the customers’ preferences and beliefs.

4.2.2. Types of questions. In the questionnaire, both close-ended questions and open-ended questions were included. There was 1 ordinal question, 29 interval scale questions, 1 open-ended question, and 3 close-ended questions & 5 questions for demographics.

4.2.3. Research instrument. Questionnaire was used for the purpose of the data collection as the research instrument. This Questionnaire consisted of close-ended questions and opened ended questions including rating scales.

5. Findings of the study

The customers were asked about the electronic devices that they own, the place at which they access their bank site and through which device they avail the banking services. Table 2 shows the distribution of sample customers by their technological utilization.

Table 2. Distribution of the sample customers by their technological utilization

		N	%
Owner-ship status	Personal computer	184	51.11
	Laptop	214	59.44
	Mobile	311	86.38
	None	32	8.89
Point of access to bank site	Home	244	67.78
	Café	16	4.44
	Office	93	25.83
	All of the above	68	18.89
Mode of availing banking services	Computer/Laptop	222	61.67
	Mobile phone	86	23.88
	Both	128	35.56

Source: primary data.

It is very clear from the above table that from 360 customers, 311 have a mobile, but only 86 use it for their banking services apart from receiving SMS or OTP (One Time Password) from their banks.

5.1. Awareness status of mobile banking. Effort was made to examine the awareness level of the mobile banking services among the sample customers. A three point scale was used, giving a score of three to fully aware, two to partially aware and one to unaware. The figures in the Table 3 shows that the awareness level of customers was above average with 2.52 and 2.48 for urban area and rural area, respectively. The significance value between urban area and rural was below 0.05, which showed a significant difference in opinion about mobile banking awareness.

Table 3. Awareness status of mobile banking

		Mean	SD
AREA	Urban	2.52	0.68
	Rural	2.48	0.66
	F	3.574	
	Sig.	.059	

Source: primary data.

Table 3 showed a significant difference between the opinion of urban area and rural area customers and also an above average awareness level among them.

5.2. Usage status of mobile banking. The usage level of mobile banking among the bank customers was evaluated using a seven-point scale. The levels were as follows:

- ◆ once a day with six points;
- ◆ more than once a day with seven points;
- ◆ once a week with four points;
- ◆ more than once a week with five points;
- ◆ once in a month with two points;
- ◆ more than once a month with three points;
- ◆ never used with one point.

Table 4 showed that urban area and rural area customers used a mobile between once month and more than once a month, as the values are between three and two.

Table 4. Usage status of mobile banking

AREA		Mean	SD
	Urban	2.80	1.69
	Rural	2.77	1.69
	F	.024	
	Sig.	.876	

Source: primary data.

The significant value is above 0.05, which indicated that there is no significant difference in usage of mobile banking between urban area and rural area customers.

5.3. Efficiency status of mobile banking. To calculate the efficiency level of the mobile banking among the customers, a score was computed using a five point scale, which contained the comments: very efficient, somewhat efficient, no opinion, not so efficient and inefficient. A score of five was given to 'very efficient', four to 'somewhat efficient', three to 'no opinion', two to 'not so efficient' and one to 'inefficient'.

The score in Table 5 indicated an above average opinion on the efficiency of mobile banking services, as the scores are 3.88 and 3.85 for urban area customers and rural area customers, respectively.

Table 5. Efficiency status of mobile banking

AREA		Mean	SD
	Urban	3.88	0.92
	Rural	3.85	0.98
	F	.077	
	Sig.	.781	

Source: primary data.

The significant value is above 0.05, which indicated that there is no significant difference in opinion

about the efficiency of mobile banking between urban area and rural area customers.

5.4. Extent of utilization of mobile banking on customers of urban area and rural area. An attempt was made to ascertain the mobile banking utilization by bank customers. For it to be done, some major e-settlements were identified to collect the customers' opinion over the utilization of the mobile banking services on the selected e-settlements. A five point scale was used here by marking five for the highest usage of e-settlement and one for the least usage of e-settlement.

Table 6. Extent of utilization of mobile banking on customers of urban area and rural area

E-settlements	Urban			Rural			t	Sig.
	Mean	SD	N	Mean	SD	N		
Purchase of books	1.93	1.29	70	1.85	1.23	53	0.343	>.5
Purchase of consumer durables	1.74	1.25	58	1.61	1.11	46	0.560	>.5
Purchase of textiles	1.70	1.03	60	1.76	1.28	45	0.244	>.5
Purchase of jewelry	1.57	1.22	58	1.65	1.26	51	0.326	>.5
E-ticketing	2.06	1.48	69	2.35	1.56	62	1.108	0.320
Hotel booking	1.74	1.00	61	1.93	1.35	43	0.827	0.437
Mobile top-up	3.09	1.86	150	3.30	1.83	104	0.796	0.449
Bill payment	2.36	1.61	76	2.62	1.53	55	0.932	0.393
Fund transfer	2.82	1.77	83	2.89	1.80	56	0.237	>.5
Tax payment	1.62	1.02	61	1.79	1.20	48	0.785	0.454
Demat account	1.93	1.29	25	2.18	1.53	33	0.766	0.462

Source: primary data.

The mostly used e-settlement with mobile banking was for mobile top-up by urban area customers and rural area customers. There was no significant difference in opinion between the urban area customers and rural area customers regarding the utilization of mobile banking in identified e-settlements, as the significance value between all the e-settlements listed was above 0.05. This implied that utilization of mobile banking in all e-settlements was irrespective of area.

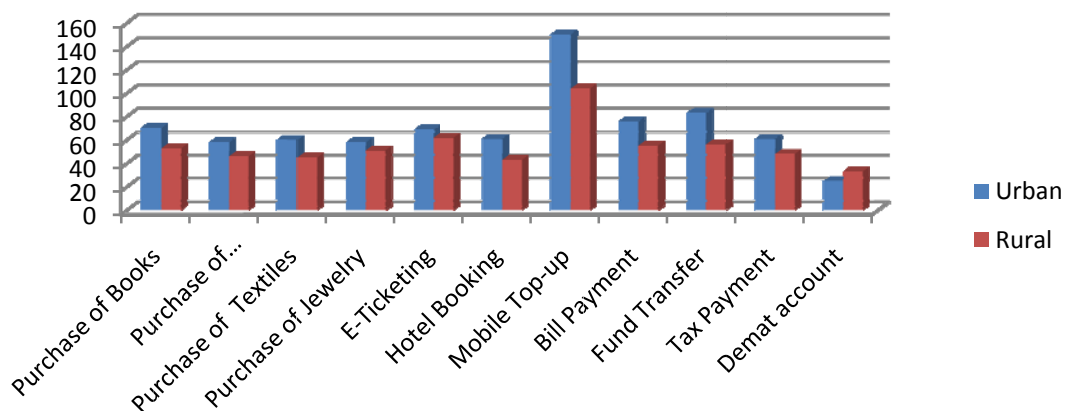


Fig. 1. Number of sample customers of urban area and rural area on utilization of mobile banking

Source: primary data.

The usage of mobile banking in rural area was comparatively lesser than that of Kerala for all the e-settlements. This may be caused by the absence of usage of smart phones, which supports mobile banking software among rural area customers.

5.5. Potentialities of mobile banking. The study revealed that the majority (86.38 per cent) of the sample customers selected for the study owned a mobile, but only 23.88 per cent of them use a mobile as their mode of access to banks. This gives an opening to the bank marketing sections on diverting their attention to this opportunity of attracting mobile owners towards mobile banking. Nowadays, the customers availing Internet banking facility use their tablets or smart phones to access their banks but they are not using their devices to access mobile banking applications provided by the bank.

People were comparatively well aware of mobile banking, but its usage level was very low. Regarding the opinion on efficiency of mobile banking by its users reveals an above average score. This indicated that the mobile banking applications provided by banks were accepted by the customers. It rooted the idea of giving more attention to the potentialities of mobile banking.

Conclusion

The fast advancing global information infrastructure (including information technology and computer networks such as the Internet and telecom-

munications systems) enable the development of electronic commerce at a global level. The nearly universal connectivity, which the Internet offers, has made it an invaluable business tool. These developments have created a new type of economy, which we may call the 'digital economy'. This fast emerging economy is bringing rapidly changing technologies with it, increasing knowledge intensity in all areas of business, and creating virtual supply chains, new forms of business and service delivery channels such as e-banking. As a direct consequence of the emergence of the 'digital economy', the balance of power seems to be shifting to the customers. The change of economy from a traditional way to the recently demanded form needs a huge technological support and effort, better planning and efficiency in implementation.

The phase of banking business is drastically changing, especially in their transactions that are from conventional to smart. To support the working of online business, all the banks are designing various products. One of the medium through which the customers can be accessible is through mobile. As the device mobile is emerging in its importance in a wide range among the people around the world, it will be better to tap that opportunity and use that as a medium in banking and online business. There is still a huge gap to be filled in by the banks in India to use a mobile as one of the modes to get online access.

References

1. Aladwani, M.A. (2001). Online banking: a field study of drivers, development challenges, and expectations, *International Journal of Information Management*, pp. 213-225.
2. Alfandika, N. and Bendick, M. (2015). A SWOT analysis of mobile electronic banking: The Zimbabwe case, *International Journal of Electronic Finance*, 8, No.2/3/4, pp. 218-238.
3. Alpesh, P. (2013). *M-Banking and M-Payments: The Next Frontier*, Delhi: Deloitte.
4. Bankwise volumes in ECS/NEFT/RTGS/Mobile transactions. (2014). *Reserve Bank of India*. Available at: <https://rbi.org.in/scripts/NEFTUserView.aspx?Id=72>.
5. Bankwise Volumes in ECS/NEFT/RTGS/Mobile Transactions. (2015). *Reserve Bank of India*. Available at: <https://rbi.org.in/scripts/NEFTUserView.aspx?Id=84>.
6. Bichanga, W.O. and Ali, Y.W. (2014). Effects of E-Banking on Growth of Customer Base in Kenyan Banks, *International Journal of Research in Management & Business Studies, IJRMBS* 2014, 1, pp. 78-85.
7. Chugh, V. (2014). Reserve bank of India. Available at: <https://www.rbi.org.in/home.aspx>.
8. Durkin, M., Jennings, D., Mulholland G. and Worthington, S. (2008). Key influencers and inhibitors on adoption of the Internet for banking, *Journal of Retailing and Consumer Services*, 15, pp. 348-357.
9. Geethal, K.T. and Malarvizhi, V. (2010). Acceptance Of E-Banking Among Customers - An Empirical Investigation In India, *Journal of Management and Science*, 2 (11), pp.01-09.
10. Khan, Shri H. R. (2011). Banking, electronic payments and road ahead, Reserve Bank of India at the FICCI-IBA conference on Global Banking. Retrieved from: https://www.rbi.org.in/scripts/bs_speechesview.aspx?id=594.
11. Laxman, R., Deena, S. and Badiger, S. (2008). *Changing Dimensions Of Banking Sector In India*, Paradigm Shift In Indian Banking, pp. 70-80.
12. Mobile Banking. (2008). *Bank of India*. Available at: www.bankofindia.co.in/english/mobilebank.aspx.
13. Nair, K.N.C. (2006). Banking on Technology to Meet 21st Century Challenges, Contributions, *Banknet India*, 2, pp. 6-11.
14. Nayak, Nath and Goel. (2014). A Study of Adoption Behaviour of Mobile Banking Services by Indian Consumers, *International Journal of Research in Engineering & Technology*, 2, pp. 209-222.
15. Padmasree, K. and Bharathi, D.A. (2012). Analytical Study on Awareness Level of Electronic Banking in Kadapa Town, *International Journal of Research in Commerce, Economics & Management*, 2, p. 12.
16. Rangaswamy, K. and Gopalappa, D.V. (2012). Performance of Various Banking Agencies in India Over A Period

- of Time, *International Journal of Research in Commerce, Economics & Management*, 2, pp. 94-98.
17. Sadi, A. & Noordin, M.F. (2011). Factors influencing the adoption of M-commerce: An exploratory Analysis, *International Conference on Industrial Engineering and Operations Management*, pp. 492-498
 18. Satish, T.A. (2012). Trends and Challenges before Banking Sector: A Study, *International Journal of Research in Commerce, Economics & Management*, 2, pp. 140-142.
 19. Shetty, M. (2015). Mobile banking comes of age. Retrieved from: <http://www.gadgetsnow.com/tech-news/Mobile-banking-comes-of-age/articleshow/47918016.cms>.
 20. Singh, S., Srivastava, V. and Srivastav, R. (2010). Customer Acceptance of Mobile Banking: A Conceptual Framework, *SIES Journal of Management*, pp. 55-64.
 21. State Bank of India. (2017). Available at: <https://www.sbi.co.in/>.
 22. Subbarao, P.S. (2007). Changing Paradigm in Indian Banking, *Gyan management*, 2, pp. 151-160.
 23. Sudeep S. (2011). Internet banking and customer acceptance: the Indian scenario. Retrieved from: <https://dyuthi.cusat.ac.in/xmlui/bitstream/handle/purl/2011/Dyuthi-T0419.pdf?sequence=6>.
 24. Sudesh, K. and Bimal, A. (2014). Electronic Banking: An Emerging Way of Customer Services, *Research Journal of Management Sciences*, 3 (4), April 2014, pp. 1-4
 25. Sultan, S. and Sahila, C. (2011). E-Banking Scenario And Its Impact On Customers' Satisfaction In India, *International Journal Of Research In Commerce & Management*, 2 (4), pp. 29-34 .
 26. Uppal, R.K. and Kaur, R. (2007). Indian Banking: Moving Towards IT, *Journal of Commerce and Trade*, 2 (1), pp. 26-32.
 27. Uppal, R.K. and Kumari, R. (2009), *Indian Banking Vision – 2020*, Sarup Book publishers pvt. Ltd, New Delhi.
 28. Vanaraj, V. (2011). Impact of Information Technology on Indian Commercial banks – A comparative study of Kerala and Tamil Nadu, PhD Thesis (IMK – Kerala University).
 29. Vinayagamoorthy, A. and Sankar, C. (2012). Mobile Banking – An Overview, *Advances In Management*, 5 (10), pp. 24-29.