Chapter- 8

Summary of Findings, Conclusions and Recommendations

This chapter presents a synoptic view of the findings, conclusions and suggestions.

8.1 SUMMARY

Information Technology has revolutionized banking sector globally. The proponent of technology must realize that it is not meant as a mere replacement for people, but as an excellent way to enhance service quality standards. The purpose of modern technology is improvement in customer services. It has been observed that to meet this objective banks have to move from the use of dedicated and stand alone machines towards real time transaction processing environment. Computer technology involves the use of electronically operated machines capable of recording and classifying information and drawing conclusions from such information. When these three components operate simultaneously in integrated fashion, automation is said to be completed.

Development of technology has been nothing less than explosive. Banks have been harnessing such technological innovations on the one hand and adopting themselves to such changes on the other. The most significant event has been the development of semi-conductor technology, which has resulted in spectacular expansion of automation, computing and telecommunication. Processing, storage and transmission of information is the very essence of banking and financial services. Electronic technology has revolutionized in these areas. Elimination of paper as a medium for processing and storage of transaction has been a great event as a large volume of information can be processed, stored and retrieved manually. A broad spectrum of technical opportunities have opened up for banks and they are presently taking advantage of these innovations to provide better services in the midst of competition for providing banking and other financial services.
Technology oriented banking has become possible mainly because of expansion in satellite telecommunication networks coupled with the availability of mini-computers, micro-processors and a wide variety of processing, storage and retrieval equipment and tests at any location.

Banking scenario in the Indian context is changing rapidly. The changing needs of the customers reflect the expectation of value-added servicing for basic banking. This has been made possible in the post-liberalization era where technology has enabled banks to provide anytime, anywhere banking to increasingly demanding customers. The concept of E-banking has broken the barriers of branch banking. Customers, whether individual or corporate, have no longer to go to the bank to do their business. It can be done from home and office 24 hours a day, 365 days a year using a personal computer, telephone or through the system of internet banking.

In response to reforms, Indian banking sector has undergone radical transformation which has altered the organizational structure, ownership pattern, system and procedures of operations, made human resource management more important and infused competition in the banking sector. The competition has forced the institutions to restructure to adopt to the global environment. In India, while the banking sector continues to play a predominant role, the transformation has further increased the importance of financial sector. Therefore, the Government and RBI have taken several initiatives to facilitate the banks to compete in transformative environment. As a regulator and supervisor, the RBI has made considerable progress in facilitating the development of electronic system and upgrading technology with a view to establish an efficient and secure system functioning in a changing environment which has further helped the development of electronic banking. The Government of India enacted the IT Act, 2000 with effect from October 17, 2000, which provides legal recognition to electronic transactions and e-commerce.

Recent transformation is changing the face of banking sector all over the world where IT plays a crucial role to manage all corners of banking business. The customers feel comfortable with e-banking because of convenient, prompt and cost effective services while banks also gain by
superior efficiency, reduced costs and more satisfied customers. Information Technology has also infused the banks with more competitiveness in global market.

The performance of certain selected public and private sector banks in India has been analysed. It was found that the State Bank of India, the country's oldest bank and a premier in terms of balance sheet size, number of branches, market capitalization and profits is today going through a momentous phase of change and transformation. The Bank is forging ahead with cutting edge technology and innovative new banking models to expand its rural banking base, looking at the vast untapped potential in the hinterland and proposes to cover 100,000 villages in the next two years. The Bank of India opened 283 new branches during 2010-11, taking the domestic branch network to 3490. Similarly, 605 new ATMs were installed during 2010-11, taking the total number of ATMs to 1425 from 820 as in March, 2010. The Canara Bank is a Government of India undertaking. During the year, due to slackened business growth and increase in stressed assets at the industry level, the Bank took a conscious decision to consolidate its business position and rebalance assets and liabilities. It added record 342 domestic branches and one overseas branch at Manama, Bahrain, taking the total tally under the branch network to 3600. With over 60 million satisfied customers and more than 5100 offices including 5 overseas branches, PNB has continued to retain its leadership amongst nationalized banks. All branches of the Bank are under Core Banking Solution (CBS) since Dec'08, thus covering 100% of its business and providing 'Anytime Anywhere' banking facility to all customers including the customers of more than 3200 rural & semi urban branches. Starting in 1908 from a small building in Baroda to its new hi-rise and hi-tech Baroda Corporate Centre in Mumbai, Bank of Baroda is a saga of vision, enterprise, financial prudence and corporate governance. The Bank had initiated a major Business Process Re-engineering to give a big boost to sales by enhancing customer satisfaction and by making possible alternate channel migration thus reinventing itself to face the challenges of the 21st century.

The Housing Development Finance Corporation Limited (HDFC) was amongst the first to receive an 'in principle' approval from the Reserve Bank of
India (RBI) to set up a bank in the private sector, as part of the RBI's liberalization of the Indian Banking Industry in 1994. The Bank, at present, has an enviable network of 2,544 branches spread in 1,399 cities across India. All branches are linked on an online real-time basis. Customers, in over 500 locations, are also serviced through Telephone Banking. ICICI Bank is India's second-largest bank with total assets of Rs. 4,736.47 billion (US$ 93 billion) on March 31, 2012 and profit, after tax, of Rs. 64.65 billion (US$ 1,271 million) for the year ended March 31, 2012. The Bank has a network of 2,755 branches and 9,363 ATMs in India and has a presence in 19 countries, including India. ICICI Bank launched first Electronic Toll Collection on NH-1 in association with NHAI. Axis Bank was the first of the new private banks to have begun operations in 1994, after the Government of India allowed new private banks to be established. The Bank has a very wide network of more than 1600 branches (including 169 Service Branches as on 31st March, 2012). The Bank has a network of over 10000 ATMs (as on 31st March, 2012) providing 24 hours a day banking convenience to its customers. IndusInd Bank, inaugurated in April 1994 by Dr. Manmohan Singh, has a robust technology platform supporting multi-channel delivery capabilities. It has 365 branches and 674 ATMs spread across 254 geographic locations of the country as on December 31, 2011. The Bank also has 2 representative offices, one each in London and Dubai. In 2003, Kotak Mahindra Finance Ltd. converted into a commercial bank, becoming the first Indian company to do so. Kotak Mahindra Bank has over 357 branches and 866 ATMs, which are spread all India over, not just in the metros but in Tier II cities and rural India as well.

In the past there have been studies which have focused their attempts on areas like poor infrastructure as a main problem in growth of technology in banking, core banking, security issues in transacting business through e-banking, digital revolution and different types of services provided by banks. Keeping in view the above considerations, there is a need to undertake a study which would examine and evaluate the impact of adoption and diffusion of modern technology in the banking industry.
Adoption and diffusion of modern technologies in banking sector prompts a review of banking system because the banks are operating in the state of global environment. The issue of efficiency and customer satisfaction is always at the centre of discussion in the recent instance of transformation where banking system is the most triggered area. Banking sector is always a centre of attention because it plays a dominant role in economic development. This approach justifies the need of this study which is structured to analyze the efficiency of the banking sector in India. The study comparatively examines efficiency, customer satisfaction, service quality and employees’ state of mind towards IT in partially and fully IT oriented banks. To achieve the set objectives of the study, 10 banks, 5 each from public and private were selected on the basis of their share in business and net profits of Indian banking industry. The total study period of 15 years is divided into 3 parts - pre e-banking period (1996-97 to 2000-01), first phase of post e-banking period (2001-02 to 2005-06) and second phrase of post e-banking period (2006-07 to 2010-11). The study is descriptive and empirical in nature because secondary and primary data is analyzed to test the hypothesis. The study also analyzes the perceptions of bank customers and employees with respect to e-banking. It also embraces service quality analysis to know customers’ satisfaction level.

8.2 MAIN FINDINGS

8.2.1 Impact of Modern Banking Technologies on Efficiency and Productivity of Banks

The main findings of the study are spelled out as follows:

1. Almost all banks groups witnessed 8% average interest income to total assets and this has been observed more in pre-e-banking period where PNB is at the top with 9.74% average. ICICI, in this case, stands at the lowest level with the average of 7.85%. In the first phase of post e-banking period, the average declined considerably to 7%. The stability witnessed is also less. Same is the situation in the second phase of e-banking. It is mainly open competition for interest rates that caused a decline in the average ratio of all the banks. Interest earned as a
percentage of total assets has declined in both post e-banking period where private banks earn more from interest as their average is the highest i.e. 7.66 % whereas Bank of Baroda shows the least average (6.30 %).

2. During pre-e-banking period, IndusInd Bank witnessed the highest average of 7.37 % whereas other banks had lesser burden of around 6 %. But during post-e-banking period, the situation altered altogether with the least average of 3.07 % by Kotak Mahindra Bank. Canara Bank has the highest average of 5.12 %. Interest expenditure as a percentage of total assets has also declined in Indian banks with utmost turn down in public sector banks but overall, average interest paid is the highest in IndusInd Bank (5.86 %). HDFC Bank witnessed the least average i.e. 3.78 %.

3. HDFC Bank enjoys a lead with 3.39 % average whereas other banks exhibit less than 3 % average in pre-e-banking period. During first phase of post-e-banking period, however, private banks witnessed more average decline than public sector banks. Average and profitability gap also depicts a similar picture. The second phase of post-e-banking period portrays a varied picture where private banks show exceptional improvement except IndusInd bank and still take a lead with the highest average of 3.88 % over first phase of pre-e-banking period. Here, ICICI Bank records the least average mainly because of the least interest income. These banks concentrate more on non-banking business rather than solely on earning interest which is a direct result of modern technologies. Consequently, it is concluded that post-e-banking period has utmost effect of modern technologies.

4. Operating expenses were found to be the highest in the public banks in pre e-banking period where PNB shows 2.92 % average still more than that of HDFC with the lesser average of 2.00 %. Similarly, in first phase of post-e-banking period SBI steals a look by 2.20 % average, though it declined by 0.45 %. In the second phase of post e-banking period, Bank of Baroda captured a look by way of the least average of 1.56 %. The profitability gap also depicts the same picture. It is evident from the
data that the average share of operating expenses to total assets throughout both the phases of post e-banking period shows a decline in average the reasons mainly accorded for it are increasing competition and inclusion of modern technologies by the banks.

5. In case of Gross profit as a percentage of total assets, HDFC is at the top with 2.93% average whereas Bank of Baroda is considerably low at half of that average. During the first phase of post e-banking period, Bank of India took a lead by way of 0.69% growth in its average whereas ICICI recorded a decline of 0.75%. In the second phase of post e-banking period, private banks improved their position by a steady rise in growth rate. Contrary to the first phase of post e banking, public banks recorded decline in average profitability gap. Overall, it is concluded that post e-banking period is a testimony of transformation where modern technology is the most productive among other factors.

6. Net Profits as a percentage age of total assets also report decline in all selected Indian banks mainly because of poor spread. During pre-e-banking period, both public and private banks showed an average of above 0.5% and only Canara Bank witnessed the least average of 0.44%. Comparatively, in the first phase of post e-banking period, PNB gained a lead of 0.60% growth in average, from 0.83% in pre-e-banking period to 1.36% in the later period. Bank of India and Canara Bank stood at the second position with the 0.28% growth in average share of net profits to total assets. In the second phase of post e-banking, PNB records almost double the average of what was in pre-e-banking period while other public banks witnessed decline in their average ratio. Average and profitability gap average also depicts a similar picture. From this data, it can be concluded that post e-banking period is an evidence of excellent improvement over pre-e-banking period where fully technology-oriented banks draw more attention which is mainly because of larger business through technologies-an end product of transformation.

7. Average business per employee improves marginally in the post e-banking period where private banks have more average employee
productivity than selected public sector banks though these also witness boost in their average employee productivity. Among diverse productivity indicators, business per employee enlarges over two folds in all the selected Indian banks but only ICICI, HDFC and IndusInd Bank show decrease in business per employee in the second phase of post e-banking period.

8. Profit per employee also validates the rising pattern during post e-banking period in the selected Indian Banks. Overall, post e-banking period is steadier which shows an outstanding improvement in employee productivity with extreme effect on selected private banks, which is observed due to technological enhancement and proficient management of innovations. Though, post e-banking period substantiates enrichment of employee productivity of all selected banks but banks are at bigger diversity which is mainly because of over employment base and poor IT infrastructure. IT with other facets is a decisive factor of transformation, where e-banks' productivity is the evidence.

8.2.2 A Critical Appraisal of Customer Perceptions towards Modern Banking Technologies

1. Out of the total 300 respondents, 54% were males and 46% were female, thus leading us to the conclusion that contribution of women in national income has started increasing considerably.

2. The majority of the respondents, i.e. 75%, were found to be in the age group of 25-45 years, which is the most productive age when a person struggles to establish himself economically.

3. A majority of respondents have their savings account, 13.7% of respondents have fixed deposits and just 1.7% respondents have other types of accounts like salary.

4. A large number of respondents, i.e. 75%, were found to be from service class generally taking personal, housing and consumer durable loans, 2.7% were NRIs whereas only 3.3% were professionals. Hence,
it can be concluded that the majority of the respondents are servicemen.

5. Income is one of the most important determinants in the profile of the respondents. It is a highly motivating factor. 44.7% of the total respondents, taken as a sample, belonged to the income group of Rs 200000-500000, 20% were found to be in the income group of Rs. 50000 to Rs. 200000. Only 16.7% respondents were having an income of below Rs 50000 whereas 18.7% respondents belonged to the income group above Rs. 500000. Hence, a large chunk of respondents fell in the income group of Rs. 200000- Rs. 500000.

6. More than 60% customers preferred private to public banks mainly because of speedy services, free flow of information and easy way of transactions in e-banks. Hence, majority customers demand e-banks, though a few insist that all type of banks are necessary in the e-age. Only 40 % respondents preferred public banks.

7. 100% respondents are aware of ATMs whereas 68% are aware of internet banking. Only 18 % of the respondents are unfamiliar to mobile commerce. It can be concluded that the awareness level about the ATM is quite high as compared to other banking channels . Mobile commerce has the least awareness. Majority of respondents are of the opinion that they have not been using personal banking, phone banking and mobile commerce.

8. Likewise, an effort has been made to study the awareness of banking channels as a whole, of certain banks under study on the basis of certain selected attributes. Out of the 300 respondents, 204 are aware about internet banking whereas 96 are noted to be unaware. It is further found that out of 204 respondents who are familiar with internet banking, majority of them i.e. 58.82%, are males and the rest of them, i.e. 41.18%, are females. It is observed that out of those who are not aware about internet banking, major chunk i.e. 56.25%, are females. It is also noted that 100% of respondents (males and females) are familiar with ATM services.
32% of the respondents admitted that they are aware about phone banking, while 68% expressed their views adversely. It is also noted that 62.5% males and 37.5% females have knowledge of phone banking, whereas half of the males and females are unaware about the same. The majority among both males and females, i.e. 66.67% and 33.33% respectively, viewed mobile commerce as familiar. 67.74% of males and 32.26% of females are found to be unaware about mobile commerce. But overall majority of the respondents, i.e. 62% is not aware about mobile commerce.

100% respondents of all the age groups are aware about ATM. It is also abstracted that 35.39% respondents below the age of 25 years, 55.88% in the age group of 25-40 years and 8.83% in the age group above 40 years are conversant with internet banking. Out of the respondents who are not aware of internet banking, majority belong to age group below 25 years. Whereas 25% of the respondents in the age group 25-40 years and 31.25% in the age group above 40 years are also not aware of internet banking.

Majority of the respondents i.e. 68% are not familiar with phone banking. Majority of the respondents who have knowledge of phone banking, i.e. 56.25%, belong to the age group of 25-40 years. The table also reveals that 82% of the respondents are not conversant with mobile commerce while 33.33% of respondents in the age group below 25 years, 55.55% in the age group 25-40 years and 18.75% in the age group of above 40 years are aware about mobile commerce. It is also concluded that a very thin majority of people above 40 years are aware of mobile commerce.

With respect to ATM, 100% respondents of various categories i.e. service, professional, business, household and others are well-versed. On the question of internet banking, 64% have the knowledge whereas 36% do not have the knowledge. Majority of the respondents who viewed internet banking as familiar, i.e. 73.35%, are from service class. 64% respondents were of the opinion that they are not aware of phone banking, whereas 36% are found aware. Percentage of respondents of
salaried and corporate business groups, who are aware of phone banking is same i.e. 33.33%. Majority of the respondents who are not familiar with phone banking belong to retired category.

When views about mobile commerce were taken into account from the respondents, 73% perceived that they are not aware of mobile commerce. Major chunk of respondents who denied awareness of mobile commerce belong to NRI category. It is also noted that 22.22% of the respondents belong to business and professional groups. Overall, only 27% of respondents of various categories are familiar with mobile commerce.

9. The frequency of use is the highest in case of ATM as 62% of respondents use it very often. Mean value of views with regard to the use of ATM is 2.54. It is higher than the mean standard score 2 in the three point scale table. The variation in mean score is 0.63 and skewness is -1.072. This shows that the opinion of the respondents over the frequency of use of ATM is ranging between somewhat often to very often. Thus, the above analysis leads to the conclusion that frequency of the use of ATM is very high among the respondents. Further, while analyzing the views of the respondents regarding the use of internet banking, it is evident that the respondents use internet banking. The mean value supports the above analysis. The standard deviation is 0.881 and skewness is -0.318. This shows that opinion is towards the higher side. Thus, it can be concluded that people use internet banking very frequently. It is observed that the respondents use phone banking very rarely. The mean value, 1.76, supports the above opinion. The standard deviation is 0.805 and skewness is 0.456. The calculated value of chi-square is much higher than the table value at 5 % level of significance. It rejects the null hypothesis and reveals that the opinion of the respondents, with respect to the use of phone banking is not equally distributed and the majority of responses are shifting towards lower side. It can be concluded that the respondents do not use phone banking very frequently.
It is observed that the frequency of the use of mobile commerce is on the lower side. Majority of the respondents feel that they do not use mobile commerce. The mean value 1.65 is lower than the mean standard score 2 in the three point scale. Standard deviation is 0.783 and skewness is 0.688. Thus, it is concluded that the majority of the respondents are not using mobile commerce very frequently. The mean score of responses relating to frequency of personal visit to bank is slightly lower than the average standard score. The variation in opinion is recorded 0.594 and skewness is 0.027, which is the lowest among all other banking channels. This shows that their opinion is shifting from somewhat often to rarely. It can be concluded on the basis of the discussion, that they visit the banks rarely. Most of these customers are more aware about ATMs, credit cards and internet banking and the same channels are preferred by them in availing e-banking services due to cost effectiveness and convenient access.

10. The study of male and female respondents in this case clearly indicates that females use ATM quite frequently with the mean of 2.49 and skewness -0.870. Standard deviation is also the least in case of this attribute. The kurtosis, 0.662 supports the study. Females have the least mean of 1.53 for personal banking, indicating that they do not like to visit the bank premises. The figures of skewness and kurtosis support the finding. So far as the male respondents are concerned, they favour internet banking with the mean score of 2.15 and skewness of -0.296. However, standard deviation in case of this attribute is highest to the extent of 0.844. Male respondents, like female respondents, use phone banking, mobile commerce and personal banking very rarely. The mean, skewness and kurtosis support our findings.

11. Majority of the respondents are of the opinion that convenient location, speedy service, long working hours, reputation of the bank, innovative services play an important role while selecting the banks and generated values are more than the average mean at 4.12, 4.00, 3.77, 3.73 and 3.50 respectively.
12. The mean score of respondents' views regarding the fact that Information Technology is quite influential with respect to the attributes of banking service which include reliability, accessibility, accuracy, service speed, responsiveness, security, enquiry facility, timeliness, confidentiality, flexibility and banking channels is much higher than the standard average score at 3 point scale. The variation in their opinion is noted at 1.07, 1.15, 1.16, 1.34, 1.25, 1.38, 1.17, 1.14, 0.97, 1.01 and 1.26 respectively. Further, it is observed that the values of skewness are negative in all cases.

13. It is observed that the mean value of the views with regard to security satisfaction of ATM is 3.93. It is higher than the mean standard score 3 in five point scale. The variation in mean score is 1.06 and skewness is -1.129. Respondents found ATM as the most secure banking channel. Further, while analyzing the views of the respondents regarding the security satisfaction for internet banking, it is evident that a majority of the respondents are not satisfied with the security of internet banking. The mean value supports the above analysis. The standard deviation is 1.39 and skewness is -0.633. The mean score of responses relating to phone banking is slightly lower than the average standard score. The variation in opinion is recorded at 1.22 and skewness is 0.196. It shows that the respondents feel insecure in phone banking. It is observed that the respondents are not satisfied with the security of mobile commerce. The mean value (2.51) supports the above opinion. The standard deviation is 1.31. It is observed that security satisfaction for personal visit to bank is on the higher side. None of the respondents viewed that they feel insecure in personal visit to bank. ATM is the most secure banking channel followed by personal visit to bank whereas internet banking, phone banking and mobile banking are the most insecure channels.

14. Behavior of bank officials has got better score in most of the variables put before the respondents. The mean with regard to friendliness, convenience, suitability, cooperation and prompt service is 3.54, 3.37, 3.33; 3.30 and 3.36 respectively. But the respondents gave negative
response regarding the neatness and dressing sense of the officials and the services that are provided within the standard norms. The skewness is negative in both the cases.

15. 83.7% respondents have not been a victim of online fraud whereas 16.3% have faced the problem of online fraud. According to them, online banking is quite safe.

16. Future of e-banking is also expected to be bright because it will help the banks to improve efficiency. 45.3% respondents gave positive response regarding emerging technologies. 54.7% have admitted that they are not using emerging modern technologies like VoIP and Skype.

17. 139 respondents have found the use of modern technologies in banks safe and secure. Further, it is observed that 92 respondents preferred modern technology because it is very easy to use (2nd in ranking), 69 respondents have found it very useful.

18. 49% of the respondents found modern technologies good. Most of the respondents found e-banking services more than average (2.31) where skewness is -0.586. Banking channels are preferred by them in availing e-banking services due to cost effectiveness and convenient access.

19. The respondents gave positive response in case of majority of attributes of the products and services pertaining to saving account, internet banking, electronic fund transfer, ATM, credit and debit card and tele-banking. The mean for the above mentioned attributes stands at 3.59, 3.47, 3.38, 3.65, 3.47, 3.20 respectively with the skewness figures at -0.743, -0.344, -0.380, 0.484, -0.498, and -0.314 respectively. Maximum negative response is observed in the products and services related to online banking i.e. electronic clearing services, shared payment network system and electronic data interchange whereas positive response is noted for hi-tech products and services. The score for corporate banking is also not very positive.

20. Only 32% people face problems in the use of modern technology. Further, significant difference is noted in the opinion of the respondents
over the problems faced by the users on the adoption and diffusion of modern technology.

21. Along with the benefits, e-system also causes some problems. The main problem faced by the respondents while using modern technologies is the lack of proper reception facilities in the banks. Whereas 84 respondents felt that there is no proper training and guidance for customers, 81 respondents perceived that most of the times the ATM remained out of order. It is also observed by some of the respondents that the problem with modern technology is of hacking. 69 respondents mentioned the reason that there are lots of cases of crime and cheating when they tend to use modern technologies. 20% of the respondents found the employees unskilled. It is also noted that 18% of the respondents do not have knowledge of technologies. The table further shows that out of 96 respondents, 45 do not have status tracking system, whereas 39 respondents found that there is no detailed information of services while 30 feel that there is no customized service based on income and status. One more problem specified by 24 respondents is the unavailability of Kiosk facility.

8.2.3 Adoption and Diffusion of Modern Banking Technologies - An Empirical Study of Employees' Perception

It is not enough to conclude e-banking services on the basis of customers' perceptions; employees' perceptions have also been evaluated to better understand the status of e-banking, because employees are directly engaged in serving the customers. Chapter seven justifies employees' contribution towards evaluation of e-banking status. Overall, 100 employees were surveyed through questionnaire. Major findings are summarized as follows:

1. Majority of bank officials (67%) belong to the age group of 30 to 50 years while the lowest proportion i.e. 16% is in the age group under 30 years. This signifies that 70% bank officials are above 30 years of age i.e. they have sufficient experience of life. As many as 87% bank officials are males while only 13% are females. The table further
depicts that the highest proportion, i.e. 31%, bank officials have been working as branch managers followed by 22% as chief managers and 14% as DGMs and senior managers. Therefore, it can be stated that the selected bank officials represent different designations.

2. An overwhelming majority of bank officials either agree or strongly agree to the statement that banks effectively meet customer requirements and endeavours to achieve total customer satisfaction. The standard deviation is 0.79. It supports the above opinion.

3. It is observed that majority of the bank officials are of the opinion that adoption of modern technologies has improved the quality of services. The mean value of the responses support the above view. It is clear as the standard deviation is very low and the calculated value of skewness and mean is -1.390 and 4.01 respectively.

4. Majority of the bank officials agree that their bank has achieved operational efficiency by attaining better productivity and profitability as mean value (3.71) of the opinions is higher than the mean standard score.

5. The mean value of the responses regarding the fact that the bank is pursuing excellence through continuous improvement in all areas is 3.62. It is much higher than the mean standard score. The deviation in the responses is 1.02 and skewness is -0.679. Respondents have given positive response for this.

6. A large chunk of bank officials, i.e. 67 %, either agree or strongly agree with the statement that bank insists on error free transactions. The mean value supports the same opinion. The variation in the opinion is recorded at 1.07, while skewness is -0.562.

7. The mean score of the bank officials' views about the bank possessing modern looking machines and equipments, is more than the standard average score. The standard deviation is 1.239 and the value of skewness is -0.935.

8. The mean score of the views relating to customer complaints being solved promptly in the bank is higher than the standard average score.
The standard deviation and skewness are 1.131 and -0.407 respectively. It reveals that their opinion is distributed towards undecided to agree and strongly agree side. The $\chi^2$ value is significant at 5 % level of significance and null hypothesis is rejected. Thus, the above analysis leads to the conclusion that the bank officials have shown concern in solving customer complaints.

9. The mean value of the opinions regarding present salary is higher than the mean standard score. Standard deviation and skewness are 0.50 and -1.886 respectively. It depicts that the majority opinion is divided between satisfied and strongly satisfied responses.

10. A large chunk of bank officials are of the opinion that they are satisfied with the facilities provided by their bank. The mean value (2.30) is quite high, which supports the above opinion strongly.

11. The mean value of the responses relating to job is 1.97, which is lower than the mean standard score. The deviation in the responses is 0.881 and skewness is 0.059. It can be inferred from the statistical analysis that employees are not satisfied with their present jobs.

12. It is revealed that the mean score of the responses relating to work load and pressure is much more than the average standard score (2). The standard deviation is 0.695, while skewness is -0.054. Majority of bank officials are satisfied with work load and pressure.

13. It is evident that majority of bank officials are satisfied with job opportunity. The mean value of responses supports the above view. It is 2.56 on the three-point scale.

14. Majority of the bank officials are satisfied with bank training programs. The variation in the opinion is recorded 0.888, whereas skewness is -0.343. This exhibits that their opinion is shifting from satisfied to strongly satisfied side.

15. Bank officials are not satisfied with the opportunity of employee’s decision making. The mean score of responses is 1.70 with the value
of skewness being 0.553, which indicates that majority of responses are highly concentrated towards the lower side of the mean score.

16. A large chunk of bank officials i.e., 49%, are not satisfied with bank restructuring. The mean value (1.64) supports the above opinion. The standard deviation is 0.708 and skewness is 0.639.

17. The mean score of the responses relating to the adoption of modern technologies is less than the average standard score on the three-point scale. The standard deviation is 0.559 and skewness is -0.004. It indicates that the majority opinion is divided between satisfied and not satisfied responses.

18. The respondents gave positive response on being asked whether promotion, placement and increment have effect on productivity and performance of the bank. The mean for the above mentioned attributes stands at 2.36, 2.55, 2.04 respectively with the skew figures of -0.726, 1.232, and -0.999 respectively. Maximum negative response is observed in unidentified trainings. A majority of bank officials, i.e. 56%, expressed that performance and productivity is not conversant with restructuring the job responsibility. As far as the selection of executive for special assignment is concerned, 26% of the bank officials express that the they are not satisfied 'up to very high extent', and 53% 'to a moderate extent' and only 21% are 'satisfied'. The mean score of the responses is 1.95 with positive skewness. It indicates a greater concentration of the opinions of bank officials towards the lower side of the mean score.

19. 53% bank officials opine that they are aware of modern technology whereas 47% admit that they are not aware.

20. The majority i.e. 77% of the bank officials have admitted that their bank is partially computerized. Table 7.6 indicates that 16% officials opine that their bank is fully computerized and only 7% admit that their bank is going to be computerized.
21. 27% bank officials admit that they felt difficulty in handling machines. 25% employees are of the opinion that there is great work load on them. Further, it is observed that 23% bank officials are of the view that there is lack of equipment in their bank.

22. 51% bank officials are of opinion that employees feel more comfortable with organizational change and 25% believe that it improves the efficiency of employees. Ranking number 3 is given to the opinion that organizational change increases the productivity of the bank.

23. 37 respondents have found Automatic Teller Machine (1st in ranking) best. Credit and Debit Card and Tele Banking have also been identified as number 2 and 3 respectively by respondents in ranking electronic banking. Last rank i.e. 4 is given to EFT.

24. Out of the total respondents, 45 have kept in mind the ability to do minor repair in case of minor fault in computer set, 32% respondents gave importance to the ability to handle office machines and equipment independently. Only 23% gave preference to development of new ideas, techniques and procedures for improving efficiency and productivity.

25. 71% felt the need of computer & EDP learning. Only 29% refused to accept it.

26. Respondents declared that ‘periodic visit to the computer centre’ are very appropriate for EDP learning. The mean for measuring perception towards ‘periodic lectures’, 'short term course', 'long term course', 'evening course', and 'on the job training' is 1.99, 1.64, 1.44, 1.78, 1.97 and 1.95 respectively. The value of skewness is positive in all cases. Overall conclusion from the study is that all employees have asserted quite negatively for various types of training.

27. A major chunk, i.e. 24%, of the bank officials view that technology will be fruitful for the bank. 53% are not sure about it. While only 23% do not agree that technology infrastructure will offer bank competitive and productive advantage. The overall extent of positive response has been found to be 67%.
28. 32% of the bank officials argue that their bank felt any difficulty in adopting new technology. 46% agreed that their bank has a history of adopting new technology without too much difficulty.

29. The views of the respondents regarding the change in work culture have been analyzed and majority of the employees admitted that bank jobs have not been much affected by the introduction of modern technologies. It is evident that the mean score of employees' views regarding the fact jobs are becoming challenging, satisfying, difficult and interesting is much lower than the standard average score i.e. 2 at three point scale. The variation in their opinion is noted at 0.834, 0.634, 0.82 and 0.750 respectively. The values of skewness are positive in all cases. Thus, the analysis shows that the opinion of the bank officials is distributed more towards the lower side of the standard average score.

30. Majority of the respondents (55%) responded negatively about the effect of modern technologies on personal growth in bank job. The mean of 1.91 and the positive skew of .140 support the study. The standard deviation is 0.668. It cannot be inferred that there is positive effect of modern technologies on personal growth.

31. The mean score of the respondents' views regarding the effect of modern technologies on manpower requirement is much higher than the standard average score at 5 point scale. The variation in their opinion is noted at 1.13, 1.31, 1.27, 1.45, 1.24, 1.45 and 1.28. It can be concluded that there is a need for more computer, marketing, customer, research and result oriented is in the banks.

32. Regarding need of training after adoption of modern technologies in the fields like basic programming and networking, reading and interpreting computer output, preparing computer input, NPA and decision making, in case of majority of questions employees gave absolutely positive answer. The mean score for the above attributes was noted at 3.91, 3.61, 3.88, 3.98, 3.95, 3.35 and 3.73. Thus, it can be inferred that respondents have responded more towards the higher side of mean. It can be concluded that the adoption of modern technology in the
banking sector has made a significant stride in almost every field of the banking sector and it has also brought a visible change in the working operation of banking.

33. That the mean value of the views with regard to the fact that modern technologies have enabled bank officials to respond more quickly to customer needs and requirement is 4.48. It is higher than the mean standard score 3 in five point scale table. The variation in mean score is 1.10 and skewness is -2.146. This shows that the opinion of the respondents is ranging between agree to strongly agree. Thus, the above analysis leads to the conclusion that modern technologies have made bank employees more efficient. Further, while analyzing the views of the employees regarding the availability of processing time on computer, it is evident that the respondents felt that one of the biggest problems in banks with respect to computer is lack of available computer time for processing their work. The mean value supports the above analysis. The standard deviation is 0.881 and -0.318. This shows that opinion is towards higher side. It can be concluded that bank officials find little processing time.

34. It is observed that according to the respondents, replacement of human supervision is possible with computer. The mean value (4.22) supports the above opinion. The standard deviation is 1.087 and skewness is -1.316. It can be concluded that the adoption and diffusion of modern technologies are replacing human supervision.

35. Majority of the respondents are of the opinion that adoption of modern technologies is breaking down previously clear area of functional responsibility. It is observed that views relating to breakdown of functional responsibility are on higher side. The mean value (3.77) is lower than the mean standard score 3 in five point scale. The standard deviation is 1.26 and skewness is -0.784.

36. The mean score of responses relating to promotion of modern technologies in bank is slightly higher than the average standard score. The variation in opinion is recorded 1.20 and skewness is -0.619,
which is low. This shows that their opinion is shifting from agree to strongly agree. Majority of respondents feel that people's knowledge about modern technologies has been promoted in banks at a faster rate than normally expected.

37. It is also noted that mean score of the responses relating to improvement in reports is more than the mean standard score i.e. 3.71. The standard deviation is 1.27 and skewness is -0.603, which shows that variation is more towards higher side from the mean score. It shows that the reports bank employees get from computer represent a vast improvement with regard to the amount and kind of information got before EDP.

38. Respondents agree more strongly with the opinion that computer output is easier to understand than the old ledger and filing system. Mean value of responses relating to easiness of computer output is 3.93 which is higher than the mean standard score 3. The deviation in responses is 1.22 and skewness is -1.009. This shows that their opinion is scattered more towards higher side of the mean standard score. But, respondents observe that in general computer produces only standard reports which are not helpful in making specific decisions. They felt that computer reports are standard and rigid in nature than manual report. The mean value supports the same opinion. The standard deviation is 1.007 and skewness is -1.272 which shows that the variation in their opinion is changing towards higher side of the mean standard score.

39. Majority of bank employees are of the opinion that they require more computer knowledge. The mean value of opinion is higher than the average standard score 3 in five point scale. The standard deviation is noted to the tune of 0.983 and skewness is -0.939. It can be further concluded that the respondents require more computer know-how even though, at present, they may have no direct working relationship with computers. The mean value of the opinion relating to better decision making through information technology is higher than the mean standard score. The standard deviation is 1.116 and skewness is -
0.735 which reveals that the opinion is scattered towards strongly agree to the fact. The respondents agree more strongly that the introduction of modern technologies has helped to better define the actual lines of authority and decision making inside banks.

Further, the mean value of opinion relating to compulsion of computer knowledge for promotion is also studied and found higher than the mean standard score. The standard deviation is noted to be 1.16 and skewness is -1.161. It shows that their opinion is scattered more towards agree to strongly agree. It shows that the respondents agree more strongly with the opinion that some minimum knowledge of computer and EDP will be an absolute requirement for promotion into management ranks in the bank. The mean score of the responses relating to adjustment of younger people with modern technologies is more than the mean standard score i.e. 3.81. The standard deviation is 1.08 and skewness is -1.24, which shows that the variation is more towards higher side from mean score. It shows that younger people adjust more quickly to changes caused by modern technologies.

The respondents have realized that preparing input for computer is becoming a time consuming job, almost equivalent in terms of time for accounting work done prior the introduction of modern technologies. The respondents feel that preparing input for computer is becoming time consuming. The mean value supports the same opinion. The standard deviation is 1.27 which shows that variation in their opinion is changing towards higher side of the mean standard score.

8.3 RECOMMENDATIONS AND SUGGESTIONS

The following suggestions are put forth for the banks for improving their banking services:

1. As it is analyzed from the study that in comparison to males, females are less aware about the modern technologies, so some mechanism should be developed to educate the female respondents in the adoption of modern technologies. The technology should be such that
it is simple to understand and also easy to use, even by the less educated people.

2. Banking channels should be available at reasonable distance and also be in accordance to the requirements of the people belonging to various occupations, income groups etc. The awareness level of people regarding all banking channels except ATM is not encouraging. It is suggested that these channels need to be made more popular even by advertisements and publicity. Proper training should be given to the customers for operating all banking channels. Awareness should be spread among customers through different approachable channels. Mobile and telephone banking should be introduced with new schemes and services as these are very cost effective for the banks.

3. Security should be enhanced in all the banking channels so that people can use them anywhere and at any time with full security. Insecurity is a key concern as the customers ignore electronic system due to the fear of hacking of accounts, wrong transfers of funds and fraudulent entries in case of theft or otherwise. The banks must employ latest technological systems for providing security and privacy to the customers. Technology is progressing at a fast pace, timely upgradation by the bank can check these crimes to a great extent.

4. It is the need of the hour that the banks undertake strategic alliance, which includes sharing of infrastructure and standardization of services because the customers have to pay high charges. Even banks have to pay high infrastructure price for opening new branches in every town. So, banking should be brought under a single authority and other small banks should be merged with a single big bank. In this way, they can provide better banking facilities and more sound and secure future to banking products without incurring much cost.

5. In today’s scenario mobile tariff has drastically reduced. Thus, each and every person prefers to have a mobile handset with him. It indicates a high potential for mobile commerce. But the analysis of the survey shows that most of the respondents had unavailability and
inadequate knowledge of mobile commerce. Thus, it is necessary to create awareness and to advertise this potential service.

6. It was found from the respondents that ATM counters face the problem of network failures during peak hours of transactions or transactions are withheld for feeding cash in the ATM. So, it is advised to feed lump sum amount of cash in the midnight or other non-peak hours. There is, sometimes, a possibility that ATM cardholders forget their passwords. So, ATMs can be facilitated with a fingerprint sensor, which, if pressed by the ATM user, sends the electronic image of his impression to the main server where electronic image of his thumb impression will be already stored as soon as he does his first transaction at the ATM. Thus, this solution only facilitates, provided the ATM cardholder has done at least one transaction. It is also a necessity that he uses that sensor at least once. ATM problem of card blockage and machine out of cash is quoted by a number of customers. Hence, the banks should always take care of these concerns because these problems facilitate loss of the confidence of the customers. New technology like warning bells should be with ATMs and one at branch so that banks can get early alarm for the problem.

7. Flexibility should be introduced in banking procedures by avoiding paper work and utilizing the information system to the best extent possible. For example, if a person wants to avail a loan, his personal detail should be recorded immediately in the information system so that he can be freed from the hassles of doing a lot of paper work in near future. In order to provide personalized services, banks can adopt the concept of relationship banking, wherein a customer goes to a particular bank employee for all types of transactions. The only requirement for implementing this is that the bank employees should be well trained in all aspects of banking. Regarding his one-to-many relationships with various customers, he can try familiarizing himself with the customers through personal talk and information system, which stores the details of the customer. Customers find it difficult to rush through different counters for different types of transactions. Thus,
it is better to introduce flexibility in this regard i.e. all types of transactions can be done at one counter. To eliminate long queues at a single counter during peak hours, additional existing counters should be operating irrespective of whether these counters were meant for doing such transactions or not. Efforts should be made to avoid long queues in the banks since these convey an impression of general inefficiency. The task can be accomplished by adopting modern technologies the bank services.

8. It is necessary to educate and inform the employees whenever a new hitech service or information technology is introduced by the banks, so that when the customers make any enquiry regarding the new products and services, the staff is able to satisfy them. Regular refresher courses, seminars and demonstrations should be made compulsory for bank staff at different levels from time to time.

9. Liberalization unleashes competitive forces and enables the banks to take new decisions or alter their product mix along with technological advancements, which help to increase productivity and profitability as private banks' efficiency is adequate evidence otherwise government must take immediate decisions before the opportunity has elapsed. The study validates the facts that our banks are not sound in technological innovations. Public sector banks have just 56.28% computerized branches and old private banks have 34.70%, not even a single ATM is established for a single branch and mobile and tele banking are also not much favored by the customers though these are much cost effective. The e-banks with better technology confirm enhanced productivity while partially IT-oriented banks have worst effect due to poor base and inappropriate management. So, all the banks must fully computerize their branches within a limited period.

10. The most important aspect is management of IT. Banks should make efforts to properly manage IT with the support of successors. Better and enhanced IT usage helps to improve efficiency and enables the banks to compete around the globe. RBI & government should provide
easy finance either at concessional rates or provide subsidies to enrich IT infrastructure.

11. Employees resist changing because of illiteracy about technology. Therefore, special drives of training should be started to upgrade their technical skills. Secondly, senior employees should be made to train the staff so that they can easily solve their queries. Even retired personnel can be appointed to train from their experiences. There should be appointment of young and creative staff that is well versed in technological innovations and knows about new non-banking business requirement of the market.

12. Banks with strong knowledge based employees always gain momentum in customer market while the others lose. The banks must develop knowledge management system to update the employees' knowledge. The banks should give the required information to the employees at first instant and train them through role plays to gain creative and research oriented thinking. There are some tricks of training for the banks to apply like versatile training, role play, group discussions and conversation between same level employees. The banks can enhance employee knowledge through video and other channels also, which will definitely help to gain loyal customers.

13. It is a major problem for the banks to get all the employees active but they can make them active through some effective strategies. The banks can introduce performance evaluation system, either a written test or discussion, to judge their innovative creativity and reward the employees with better knowledge base. The banks should create learning work culture like e-banks by concentrating more on group cohesiveness through target distribution in teams independently. A learning work culture can be created by introducing innovative technologies for operations and developing the knowledge base of employees through interest creation.

14. Banks, especially public sector banks and old private sector banks, should be active to explore new opportunities otherwise they will be out
of gear. Partially IT-oriented banks can only gain loyal customers by providing all e-banking services because it is the best differentiating strategy to meet the competition. They should introduce all innovative products/services with improved quality and quick response to the customers. Customers always prefer a bank with prompt, cost effective and convenient services and one that serves as per their requirements. Time is opportune for the banks to accept the changes and compete in global market.

15. It is very difficult to satisfy customer needs because these are of continuously increasing nature. But, banks have to know their needs through market survey. Though, it is a costly and time consuming process, but internet has made it very easy and fast. We just need to have a strong technology base.

16. The banks must make every customer aware about each and every aspect of banking services especially electronic system. They must approach the customers for providing information about innovations. Without customer awareness, banks can never add to profits because maximum services will remain unutilized or under-utilized. The demo at the counter is the best channel for spreading knowledge. Though seminars, exhibitions, pamphlets also serve the purpose. Among 70% rural population not more than 10% are aware of e-channels. Hence, the banks must approach them through a channel that is most favorable in those areas.

17. The material provided by the banks is not of universal indulgence. Therefore, it should be in regional languages of the regions the banks cover to serve the customers. The banks must take continuous customer feedback by conducting transaction based surveys.

18. Confusion and stress is mainly because of poor knowledge about job work and complexity of number of e-channels. But, appropriate training during job and timely discussions with experts can easily solve these problems. Employees should be trained through role play or case studies to solve customer problems. They must prepare to serve the
customer at first instant in a polite manner. There should be check on employee behavior towards customers because once a customer is lost, it is difficult to win the confidence again. All the employees must be empowered for participative, cooperative and creative manner which will help to extract better performance from employees.

19. Customer focus groups should be developed to make strong relationships with the customers. It will help to maintain and gain loyal customers. Special credit cards must be introduced for low income groups at lesser interest rate. Mobile and tele banking services should be in new, fast and easy form. These e-channels are not very popular in spite of least cost and maximum usage of mobiles and telephones. Hence, modified form will be welcomed by the customers.

20. Increasing competition has become a challenge for Indian banks, but it also provides thoughtful opportunities to develop the banking business as per international standards. Though IT leads improvement in all banks, e-banks are gaining momentum. It is important to recognize that banks in India are not large enough to function efficiently under the emerging environment, to undertake sufficient investment in skill formation and to come up and experiment with innovative ways of exploiting the opportunities and meeting the challenges thrown up under a rapidly changing economic scenario. If e-banking serves with better efficiency and reduced costs with more satisfied customers and employees, then why don't all the banks exploit this opportunity as differentiating strategy to gain more competitiveness. Technology holds the key to future success of Indian banks as India can leap-frog into internet banking quicker than the United States provided Indian banks grab the opportunity. Therefore, e-banking is the need of the hour, which can't be lost sight of except at the cost of elimination from the competition. The lack of penetration of computers in the country is not a stumbling block in this case but it can happen without wiring up the entire country. The real bottleneck is mind set, unawareness and security concerns. If we overcome these factors, we can enjoy the much superior cost structure e-banking provides.
8.4 AREAS FOR FURTHER RESEARCH

The present study has been undertaken with specific objectives. It has covered at least some vital aspects concerning technologies in the Indian banking industry. All the aspects deserve critical treatment by the researchers. On the basis of the present study, some suggested areas for further research can be:

1. For better results, a study with a similar focus but with larger sample representing the respondents from different states, apart from public and private banks may be attempted to generate results with broader applicability.

2. The banking services may be attempted to be analysed with more quantitative methodological instruments to validate the distinction between various categories of respondents.

3. Historical and geographical positions of the banking service providers may be considered for future researches.

4. Modern technologies in the banking sector are still open for research purposes.

5. For making the findings of research utilization, a specific stress is needed on the nature of data, which has to be more qualitative. The quality of data can be further improved by emphasizing on participative or non-participative observation method of the data collection.

6. Each variable representing service effectiveness may be studied independently for making the study more extensive.

7. An attempt may be made to understand the vibrant relationships among several dimensions of service quality, price, product quality and availability and promotion to have a handful of ideas on the consumers' perception. However, it is still a prediction that further research efforts are needed to examine these factors with additional samples before generalization can be made.