"Banking must be brought out of the 1930's in order to prosper in the financial marketplace of today and to serve the legitimate needs and convenience of the American Banking public in the 1980's and beyond."

John Tower, United States Senator, R. Texas (1979)
CHAPTER VII

Customer Service in Commercial Banks

7.1 INTRODUCTION: Marketing in a bank involves determination of needs and wants of customers and delivering the desired satisfaction more effectively than competitors. The bank should commit itself to the time honoured concept in economics known as "consumer sovereignty". 1 Decision on what to serve should not be controlled by the firm, but by the consumer. It should serve what consumers want and this way earn more profit and at the same time keep consumer welfare in mind. A bank is basically service oriented organisation, therefore, the quality of customer service plays a vital role in bank's marketing. The efficiency with which a bank offers service to its customers, determines its long-run growth and profitability.

In some bank branches the business is good and in others it is not, the reason is that, in the former case marketing strategy is working and in the latter it is not effective. The bank employees should adopt three 'S' viz; Style, Smile and Speech. 2 Style represents the way the new customers are received by the staff. No customer should feel like stranger, when once he enters into the bank premises. Smile should come next making the customers feel homely inside the bank premises. The last thing is speech. Speech is speaking to them for their requirements.


The same process can be covered by three 'P's viz: Politeness, patience and performance. When customers come they should be politely welcomed so that they feel at ease in the bank premises with an air of familiarity. Then bank staff should have patience to hear what the customer says and what he wants. The next stage is performance by the banker to satisfy the customers. Even though these issues look simple, but the long standing continuance of the clients and the continuous growth of business at branches depend on how sincerely these basic principles are being observed by the bankman.

Bank customers always have the ego that bankers should know them by name, however small they are and their business is. In Western countries customers are greeted by their names.

Since it is difficult to remember all the names of the customers, they can at least recognise them and wish them. This strategy will help them in their marketing approach. In case of the customers, they recognise their bankers and wish them when they see them outside. "Know the Customer" should be the slogan for the bankers as an important marketing technique to retain and improve the business.

Daily in the bank counters, numerous accounts are being closed, and perhaps it may not be going to the notice of the branch manager. The counter people take least interest to persuade the customer not to close his account. Hence the strategy should be to send customer to the manager before
a final decision is taken to close the account. Persuasion is an important marketing strategy. There are cases where good accounts are lost by shift to other banks.

Customers who are close to the Manager and who patronize the branch may be properly utilised to get the deposits. Customer committees may be constituted, headed by patronizing customers to get deposits for the branches. To improve the market share of deposits, this strategy can be of great use and help. Marketing strategy involves motivating employees to go to the public and ask for deposits. Special honour may be given to staff members who canvass highest number of accounts in each region. Targets may be given to staff members and they are reviewed periodically. Staff is a powerful infrastructure is a service industry like banking and if properly geared can face marketing challenges to develop banking business effectively. Real marketing takes place only by giving non-banking services to public. A study by Battacharya and NIBM suggested that strategies like, changing working hours, working of certain branches on holidays, training bank employees in sales and marketing, institution of banking services rewards to bank staff for successful and effective marketing activities, launching campaigns for better awareness and usage of banking services would certainly help in improving


the quality of customer service and achieve a profitable growth of the bank.

The SWOT (Strength, Weakness, Opportunity and Threat) analysis has been recognised and used as a tool for planning and deciding strategies at various levels in a bank, viz. Head Office, Regional Office and branch. Each branch manager should review the operation of his branch in terms of his strong and weak points. He should use his judgement in classifying operational features into any one of these groups.

Branch Managers, should build up market information on the needs of their customers. They should find out the opinions of their existing customers about services provided by the bank and also seek their advice for meeting the service.

Review of literature on customer service in commercial banks reveals that attempts have not been made so far to conduct attitude survey of customers on various micro level service parameters. Attempts have also not been made to conduct attitude survey of the bank staff on the above microlevel parameters and marketing parameters. The present research is an endeavour to investigate the above topics. Various microlevel parameters of customer service decisions which play a very important role in banks.

selection and business potential of Bank include waiting
time for various business transactions, paper work and
formalities involved for sanction of loans, general
environment in the bank premises, treatment of the com-
plaints and suggestions given by customers, accuracy of
entries in the bank pass book, quality of currency notes.
Marketing parameters on which assessment of the opinions
and attitudes of the bank staff has been made include
establishment of customer committees in the bank, mainte-
nance of suggestion/complaint boxes, contribution of
staff in enrolling new accounts, convincing customers
not to close accounts in case they are doing so, increa-
sing business through house to house campaigning, expansion
of service, customer information services, awareness on
competitors activities. All the above parameters have
been developed by means of preliminary discussion with the
bank managers and a review of literature. An attempt has
been made to verify the investigation of Anderson, coxill
and Pulte on the selection of criteria used by customers
in the selection of bank. Towards the end, a comparative
study between the opinions expressed by Bank staff and
customers on certain service parameters has been conducted.
The results of the study are shown in the following tables and appendices.

TABLE 7.1: shows the summary of satisfactory levels of various customer service parameters bank-wise. The details are shown in Appendix (1).

TABLE 7.2: shows the reasons for keeping account in a particular bank, i.e., the selection criteria used by the customers in selecting a particular bank.

TABLE 7.3: shows various suggestions offered by the customers to improve the customer service in their bank.

TABLE 7.4: shows the results of Pearson's correlation coefficient for all the banks.

APPENDIX-7(I): presents the satisfactory levels of all the parameters of customer service.

APPENDIX-7(II): shows the necessary steps and calculations of Kolmogorov–Smirnov one sample test, Median test, Mann–Whitney U test, Spearman rank correlation test and Pearson's correlation test.
### TABLE -- 7.1

**BANKS: PERFORMANCE ON CUSTOMER SERVICE PARAMETERS**

<table>
<thead>
<tr>
<th>Service Parameter</th>
<th>Bank X</th>
<th>Bank Y</th>
<th>Bank Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Reception</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>ii. Courtesy and help</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>iii. Waiting time for withdrawals/Deposits</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>iv. Waiting time for outstation cheques</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>v. Paper work/Formalities in the sanction of loans</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>vi. Waiting time for Demand Drafts</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>vii. Environment and facilities</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>viii. Treatment of Suggestions/Complaints</td>
<td>1</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>ix. Quality of Currency Notes</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>x. Accuracy of entries in the Passbook</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>xi. Overall Satisfaction</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Note: 1, 2, and 3 respectively indicate first, second and third ranks.

### TABLE -- 7.2

**REASONS FOR KEEPING ACCOUNT IN THIS BANK IN PERCENTAGES**

<table>
<thead>
<tr>
<th>Reason</th>
<th>Bank X</th>
<th>Bank Y</th>
<th>Bank Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Nearness to residence, office etc.</td>
<td>55.14</td>
<td>66.12</td>
<td>55.44</td>
</tr>
<tr>
<td>ii. Good customer service</td>
<td>32.31</td>
<td>21.30</td>
<td>30.60</td>
</tr>
<tr>
<td>iii. Knowing the staff well</td>
<td>02.50</td>
<td>04.72</td>
<td>07.77</td>
</tr>
<tr>
<td>iv. Convenient working hours</td>
<td>01.54</td>
<td>26.77</td>
<td>01.53</td>
</tr>
</tbody>
</table>
### Table 7.3

**Suggestions from Customers**

<table>
<thead>
<tr>
<th>Suggestion</th>
<th>Bank X</th>
<th>Bank Y</th>
<th>Bank Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Parking place should be provided</td>
<td>48.38</td>
<td>54.10</td>
<td>27.12</td>
</tr>
<tr>
<td>ii. Drinking water should be made available</td>
<td>38.71</td>
<td>22.40</td>
<td>26.27</td>
</tr>
<tr>
<td>iii. Bank should be shifted to the down stairs</td>
<td>06.45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>iv. No of counters should be increased</td>
<td></td>
<td></td>
<td>16.10</td>
</tr>
<tr>
<td>v. Seating arrangements should be improved</td>
<td></td>
<td></td>
<td>12.71</td>
</tr>
<tr>
<td>vi. Time taken for withdrawals/deposits should be minimised</td>
<td>-</td>
<td>03.10</td>
<td>-</td>
</tr>
<tr>
<td>vii. Staff should be prompt in maintaining time</td>
<td></td>
<td>03.10</td>
<td>-</td>
</tr>
</tbody>
</table>

### Table 7.4

**Pearson's Correlation Coefficient**

<table>
<thead>
<tr>
<th>Bank</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank X</td>
<td>0.1523</td>
</tr>
<tr>
<td>Bank Y</td>
<td>0.4709</td>
</tr>
<tr>
<td>Bank Z</td>
<td>0.5574</td>
</tr>
</tbody>
</table>
APPENDIX-7(III): gives the results of Kolmogorov - Smirnov one sample test.

APPENDIX-7(IV): shows the results of Median test.

APPENDIX - 7(V): depicts the results of the Mann - Whitney U-test.

APPENDIX-(VI.S): shows the results of the Spearman rank correlation test.

APPENDIX-(VI.P): shows the calculations of Pearson's correlation coefficient.

APPENDIX-7(VII): gives the results of analysis of the opinions of bank staff on parameters of customer service and marketing.

APPENDIX-7(VIII): shows the Pilot questionnaire administered to the bank customers.

APPENDIX-7 (IX): shows the main questionnaire administered to the bank customers.

APPENDIX-7 (X): shows the questionnaire administered to the bank staff.
7.3 FINDINGS AND CONCLUSIONS:

7.3.1 STUDY ON THE OPINIONS OF CUSTOMERS:

Bank is basically a service organization. Customer service in a bank plays a vital role in its marketing and business potential. The study conducted on the customer service profiles of three banks revealed that customers have been entirely satisfied with Bank X. This is because of an excellent impression created by the bank in all the service parameters to the customers (Ref. Table-I). Bank Y comes next in satisfying the customers regarding the various service parameters. Bank Z may have to take a lot of efforts in improving the customer service which would eventually increase their market potential.

The study revealed the selection criteria used by the customers in the selection of a particular bank for their business transactions. Nearness to the place of work, residence, etc., seem to be the major factor of the selection criteria. Anderson, Coxlil, and Fulcher also concluded that convenience of location to be the major determining factor in bank selection decisions. The second determining

factor has been found to be good customer service. Convenient working hours seem to be the governing factor for the selection of the Bank Y by its customers (9 AM to 11 AM and 4 PM to 6 PM), in addition to the above factors. Even though some customers have specified another factor i.e., knowing the staff well as their selection criteria in choosing a bank, this has no logical basis because when a person wants to open an account in a particular bank he need not know the bank staff.

With regard to suggestions invited from the customers to improve customer facilities, majority of customers for all the three banks felt that parking place should be provided for their vehicles. A good number of customers of all the three banks have felt that drinking water should be made available in the bank premises. Whereas in Bank Z a fairly good percentage of customers expressed opinion that some more counters should be provided for business transactions and seating arrangements are be improved. Hence it is advisable that all the three banks give immediate attention to the above suggestions and make the necessary arrangements to make a customer happy, which would certainly lead to increased business potential.
Kolmogorov–Smirnov one sample test for the analysis of the differences for all the customer service parameters revealed that there has been a significant preference of opinions on the satisfactory levels for each parameter of customer service i.e., the null hypothesis of no preference on the satisfactory level for each customer service parameter has been rejected. This has been the case for all the customer service parameters. That means customers are really serious about each customer service parameters.

The Median test which has been conducted for testing whether the savings bank account holders and current account holders differ on the basis of median, indicated that there does not appear to be difference in the service satisfaction with regard to change in bank service between the savings bank account holders and current account holders.

The Mann–Whitney U test which is more powerful than median test, has been conducted for testing whether the savings bank account holders and current account holders differ on the basis of median, also indicated that there does not appear to be a difference in the service
satisfaction with regard to change in the bank's service between Savings Bank account holders and current account holders.

Spearman's rank correlation test which has been used to measure the association between the overall satisfaction of the customers and the time consumed for various transactions, indicated that there has been fairly good negative correlation between the above two variables for the two banks, viz., Bank X and Bank Y which is justified. But for Bank Z, the value of correlation coefficient has been found to be small, though negative.

7.3.2 Study on the opinions of the bank staff:

* Majority of the bank staff have felt that customer service improved after nationalization of banks.

* According to the majority of bank staff average time taken for deposits, withdrawals, purchase or encashment of demand drafts has been about fifteen minutes.

* Regarding the formalities involved in the sanction of loans, staff of Bank Z have expressed that the formalities have been cumbersome, whereas staff of Bank X and Bank Y have felt that formalities have been tolerable.
* Only Bank X seem to display the boards informing the customers with regard to maximum time taken for different banking transactions.

* Regarding maintenance of suggestions/complaint boxes, it seems that all the three banks have been maintaining the same.

* In general there seem to be some form of customer committee in every bank eventhough some bank staff might not be aware of it.

* All the bank staff seem to contribute for developing business in their respective banks by enrolling new accounts.

* There does not seem to be any approved incentive system in any bank for the enrollment of a new account by the bank staff.

* All the banks seem to conduct deposit weeks/months for mobilization of deposits.

* With regard to the effort by the bank staff to convince the customer not to close his account, Bank Z and Bank Y seems to move in a positive direction, i.e., convincing the customer to continue his account, whereas Bank X seem to make these efforts only on certain selected customers depending on their business potential.
* Majority of staff of Bank Z and Bank Y have felt that "house to house campaign" would increase business.

* Only Bank Z seem to proceed in the direction of expanding customer services like tax payments, electricity bills payments, etc.

* Regarding the gathering of information from other competing banks on their working schemes etc., only Bank Z seem to rely upon it for the betterment of their services.

* All the banks seem to intimate the customers about the maturity of time deposits in advance. Eventhough there have been certain variations with regard to the quantum of time.

A comparative study between the opinions expressed by the Bank customers and Bank staff on some service parameters revealed some useful conclusions. In the case of average time taken for withdrawals and deposits and waiting time for purchase/encashment of demand draft there seem to be very good agreement between the opinions expressed by the bank staff and customers. But in the case of paper work/formalities involved in the sanction of loans, there seem to be divided opinion between the two groups. Whereas overwhelming
majority of customers have felt that formalities have been either tolerable or not much, majority of the staff of Bank Z have felt that formalities have been too much. About 33% of staff of Bank Y and 37% of staff of Bank X have also felt that formalities have been too much. One of the important reasons for this situation might be due to the wrong concept and lack of awareness among the customers on the formalities involved in the sanction of loans.

Pearson's correlation coefficient has been computed between the opinion expressed by the bank staff and the opinion expressed by customers regarding average time taken for deposits and withdrawals. There seem to be a good positive correlation between their opinions in Bank Y and Bank Z. The respective correlation coefficients have been 0.4709, 0.5774. But in Bank X there seem to be a poor positive correlation (coefficient of 0.1523) between their opinion.

In order to improve business potential and customer service the following suggestions may be adopted.

* The formalities involved for the sanction of loans may be made reasonable in Bank Z and Bank X.

* Bank Z and Bank Y may display boards showing the maximum time taken for different banking transactions.
* Banks may introduce some sort of incentive system for their staff, when they improve the enrollment of new accounts.

* Bank X and Bank Y may plan for expanding customer services for increasing their business.

* Bank X and Bank Y may gather information from their competitive banks on various aspects of banking transactions in order to improve their productivity and quality of service.
## APPENDIX—7(I)

### 1. SATISFACTORY LEVELS REGARDING RECEIPTION

<table>
<thead>
<tr>
<th>Name of Bank</th>
<th>Extremely satisfied</th>
<th>Satisfied</th>
<th>Undecided</th>
<th>Dissatisfied</th>
<th>Extremely dissatisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank X</td>
<td>29.31</td>
<td>67.25</td>
<td>01.72</td>
<td>01.72</td>
<td>00.00</td>
</tr>
<tr>
<td>Bank Y</td>
<td>28.90</td>
<td>65.70</td>
<td>04.10</td>
<td>00.65</td>
<td>00.65</td>
</tr>
<tr>
<td>Bank Z</td>
<td>09.91</td>
<td>84.50</td>
<td>03.00</td>
<td>04.59</td>
<td>00.00</td>
</tr>
</tbody>
</table>

### 2. COURTESY AND HELPING NATURE OF BANK STAFF

<table>
<thead>
<tr>
<th>Name of Bank</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Undecided</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank X</td>
<td>27.59</td>
<td>70.69</td>
<td>00.00</td>
<td>01.72</td>
<td>00.00</td>
</tr>
<tr>
<td>Bank Y</td>
<td>12.30</td>
<td>82.89</td>
<td>04.61</td>
<td>00.00</td>
<td>00.00</td>
</tr>
<tr>
<td>Bank Z</td>
<td>10.77</td>
<td>83.19</td>
<td>03.02</td>
<td>03.02</td>
<td>00.00</td>
</tr>
</tbody>
</table>

### 3. OPINION ABOUT WAITING TIME FOR WITHDRAWAL/DEPOSITS

<table>
<thead>
<tr>
<th>Name of Bank</th>
<th>Excessive</th>
<th>More</th>
<th>Less</th>
<th>Very less</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank X</td>
<td>00.00</td>
<td>00.00</td>
<td>75.86</td>
<td>24.14</td>
</tr>
<tr>
<td>Bank Y</td>
<td>01.98</td>
<td>08.55</td>
<td>83.55</td>
<td>05.92</td>
</tr>
<tr>
<td>Bank Z</td>
<td>00.42</td>
<td>12.21</td>
<td>82.70</td>
<td>05.60</td>
</tr>
</tbody>
</table>
4. OPINION ABOUT TIME TAKEN FOR REALIZATION OF OUT-STATION CHEQUES

<table>
<thead>
<tr>
<th>Name of Bank</th>
<th>Excessive %</th>
<th>More %</th>
<th>Normal %</th>
<th>Less %</th>
<th>Very less %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank X</td>
<td>00.00</td>
<td>02.56</td>
<td>43.59</td>
<td>41.02</td>
<td>12.83</td>
</tr>
<tr>
<td>Bank Y</td>
<td>02.57</td>
<td>07.69</td>
<td>73.51</td>
<td>15.38</td>
<td>00.85</td>
</tr>
<tr>
<td>Bank Z</td>
<td>02.13</td>
<td>09.57</td>
<td>68.62</td>
<td>17.02</td>
<td>02.66</td>
</tr>
</tbody>
</table>

5. OPINION ABOUT PAPER WORK/FORMALITIES INVOLVED IN THE SANCTION OF LOANS

<table>
<thead>
<tr>
<th>Name of the Bank</th>
<th>Too much %</th>
<th>Tolerable %</th>
<th>Not much %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank X</td>
<td>00.00</td>
<td>57.14</td>
<td>42.86</td>
</tr>
<tr>
<td>Bank Y</td>
<td>11.43</td>
<td>62.86</td>
<td>25.71</td>
</tr>
<tr>
<td>Bank Z</td>
<td>10.98</td>
<td>74.37</td>
<td>14.63</td>
</tr>
</tbody>
</table>

6. OPINION ABOUT WAITING FOR PURCHASE/ENCASHMENT OF DEMAND DRAFTS

<table>
<thead>
<tr>
<th>Name of Bank</th>
<th>Excessive %</th>
<th>More %</th>
<th>Normal %</th>
<th>Less %</th>
<th>Very less %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank X</td>
<td>00.00</td>
<td>00.00</td>
<td>32.65</td>
<td>51.02</td>
<td>16.33</td>
</tr>
<tr>
<td>Bank Y</td>
<td>00.76</td>
<td>06.20</td>
<td>70.50</td>
<td>20.99</td>
<td>01.64</td>
</tr>
<tr>
<td>Bank Z</td>
<td>00.00</td>
<td>09.18</td>
<td>57.97</td>
<td>30.92</td>
<td>01.93</td>
</tr>
</tbody>
</table>

7. SATISFACTORY LEVEL REGARDING THE ENVIRONMENT AND FACILITIES

<table>
<thead>
<tr>
<th>Name of the Bank</th>
<th>Very much satisfied %</th>
<th>Satisfied %</th>
<th>No opinion %</th>
<th>Unsatisfied %</th>
<th>Extremely unsatisfied %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank X</td>
<td>13.79</td>
<td>70.68</td>
<td>15.53</td>
<td>00.00</td>
<td>00.00</td>
</tr>
<tr>
<td>Bank Y</td>
<td>06.58</td>
<td>77.63</td>
<td>10.52</td>
<td>05.27</td>
<td>00.00</td>
</tr>
<tr>
<td>Bank Z</td>
<td>02.16</td>
<td>75.43</td>
<td>15.52</td>
<td>06.47</td>
<td>00.43</td>
</tr>
</tbody>
</table>
### A. SATISFACTORY LEVEL REGARDING TREATMENT OF SUGGESTIONS/COMPLAINTS

<table>
<thead>
<tr>
<th>Name of Bank</th>
<th>Extremely satisfied %</th>
<th>Satisfied %</th>
<th>Did not come across %</th>
<th>Dissatisfied %</th>
<th>Extremely dissatisfied %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank X</td>
<td>01.75</td>
<td>35.66</td>
<td>77.42</td>
<td>00.00</td>
<td>00.00</td>
</tr>
<tr>
<td>Bank Y</td>
<td>01.97</td>
<td>15.13</td>
<td>82.32</td>
<td>00.48</td>
<td>00.00</td>
</tr>
<tr>
<td>Bank Z</td>
<td>00.86</td>
<td>16.81</td>
<td>80.17</td>
<td>02.16</td>
<td>00.00</td>
</tr>
</tbody>
</table>

### 9. OPINION ABOUT THE QUALITY OF CURRENCY NOTES

<table>
<thead>
<tr>
<th>Name of the Bank</th>
<th>Very good %</th>
<th>Good %</th>
<th>Reasonably good %</th>
<th>Bad %</th>
<th>Very bad %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank X</td>
<td>08.80</td>
<td>68.76</td>
<td>22.24</td>
<td>00.00</td>
<td>00.00</td>
</tr>
<tr>
<td>Bank Y</td>
<td>03.94</td>
<td>46.72</td>
<td>48.02</td>
<td>01.32</td>
<td>00.00</td>
</tr>
<tr>
<td>Bank Z</td>
<td>01.29</td>
<td>17.24</td>
<td>68.10</td>
<td>12.50</td>
<td>00.86</td>
</tr>
</tbody>
</table>

### 10. SATISFACTORY LEVEL REGARDING ACCURACY OF ENTRAILS IN THE PASS BOOK

<table>
<thead>
<tr>
<th>Name of the Bank</th>
<th>Satisfied %</th>
<th>Dissatisfied %</th>
<th>Not observed %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank X</td>
<td>94.82</td>
<td>00.00</td>
<td>05.18</td>
</tr>
<tr>
<td>Bank Y</td>
<td>92.76</td>
<td>00.00</td>
<td>07.24</td>
</tr>
<tr>
<td>Bank Z</td>
<td>96.12</td>
<td>02.59</td>
<td>01.29</td>
</tr>
<tr>
<td>Bank</td>
<td>Extremely satisfied %</td>
<td>Satisfied %</td>
<td>Undecided %</td>
</tr>
<tr>
<td>---------</td>
<td>-----------------------</td>
<td>-------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Bank X</td>
<td>18.96</td>
<td>79.32</td>
<td>01.72</td>
</tr>
<tr>
<td>Bank Y</td>
<td>13.16</td>
<td>84.86</td>
<td>01.98</td>
</tr>
<tr>
<td>Bank Z</td>
<td>10.78</td>
<td>82.32</td>
<td>03.02</td>
</tr>
</tbody>
</table>
Kolmogorov - Smirnov one sample test

This test is similar to the chi-square test of goodness of a fit. That is, it is concerned with the degree of agreement between the distribution of observed values and some specified theoretical distribution (expected frequencies). But Kolmogorov - Smirnov test is chosen because the purpose is to compare the distribution on an ordinal scale.

Step 1:

The null hypothesis: The null hypotheses $H_0$ is that there is no choice of opinions among the customers. The alternative hypothesis $H_1$ would indicate that there is a preference among their opinions.

Step 2:

The level of significance; it was decided that $\alpha = 0.05$

Step 3:

The statistical test: The appropriate test is the Kolmogorov - Smirnov because the data measured are ordinal, and we are interested in comparing an observed frequency distribution with a theoretical distribution.

The Kolmogorov-Smirnov D test focuses on the largest value of the deviations among observed and theoretical proportions:

$$D = \text{maximum} \left| F(x) - S(x) \right|$$

Where, $F(x)$ is specified cumulative frequency distribution under $H_0$ for any value of $X$, and is the proportion of cases expected to have scores equal to or less than $x$,

$S_n(x)$ = observed cumulative frequency distribution of a random sample of $N$ observations, where $x$ is any possible score.
Step 4:

The decision rule: If the researcher chooses an $\alpha = 0.05$, the critical value of $D$ for large samples (over 35) is given by the formula $1.36/\sqrt{n}$, where $n$ is the sample size. For our example the critical value is 0.1786 for bank $x$. The decision rule, therefore, states that the null hypothesis will be rejected if the computed value of $D$ is greater than the critical value of $D$ and the alternative hypothesis will be accepted. Otherwise, the null hypothesis will be accepted.

Step 5:

Calculate the test statistic: The theoretical cumulative frequency distribution is calculated by taking each class frequency as if it were under the null hypothesis. In our case, they would be equal and express it as a fraction of the total number in the sample. In our case row 2 would be calculated as $1/5 = .2$, $2/5 = .4$, $3/5 = .6$, $4/5 = .8$ and $5/5 = 1.0$. The observed cumulative frequency of row 3 for the following example, is found by $17/58$, $56/58$, $57/58$, $58/58$ and $58/58$. The calculated $D$ value is that point of greatest divergence between the cumulative observed and theoretical distribution. In our example, that value is 0.5655.

Step 6:

Draw a statistical conclusion: Inspection of the bottom row of table 1 quickly reveals that the calculated $D$ value (0.5655) exceeds the critical value (0.1786), and thus the null hypothesis of no preference among opinions is rejected. The results show significant preferences among the opinions of customers.
<table>
<thead>
<tr>
<th></th>
<th>Extremely satisfied</th>
<th>Satisfied</th>
<th>Undecided</th>
<th>Satisfied</th>
<th>Extremely dissatisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f )</td>
<td>17</td>
<td>39</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>( F(X) )</td>
<td>0.20</td>
<td>0.40</td>
<td>0.60</td>
<td>0.80</td>
<td>1.00</td>
</tr>
<tr>
<td>( S(X) )</td>
<td>0.2931</td>
<td>0.9655</td>
<td>0.9822</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>( F(X)-S(X) )</td>
<td>0.0931</td>
<td>0.5655</td>
<td>0.3628</td>
<td>0.20</td>
<td>0</td>
</tr>
</tbody>
</table>

In a similar manner this test has been conducted on the remaining seven parameters for Bank X and for all the parameters of Bank Y and Bank Z. The results are shown in Appendix -7(III)

**Median**

One of the simplest of the order methods is a procedure for testing whether two independent groups differ on the basis of deviation from the median. This test will determine if two random samples have been drawn from populations with the same median (The null hypothesis).

**Step 1**

The null hypothesis: The null hypothesis \( H \) states that there is no difference in the level of satisfaction between the current and the savings bank account holders as to the services provided by the bank. The alternative hypothesis states that there is a difference.

**Step 2**

The Level of Significance: It was decided that \( \alpha = 0.05 \).
Step 3:
The statistical test: The median test is used because the data measured are ordinal, when we want to determine whether two independent random samples were drawn from the same population with the same medians.

The test statistic is calculated by the following formula:

\[ \chi^2 = n \frac{|ad-bc| - n/2}{(a+b)(c+d)(a+c)(b+d)} \]

Step 4:
The decision rule: The critical value of chi-square at \( (2-1)(2-1) = 1 \) degree of freedom at \( \alpha = 0.05 \) is 3.84. Therefore null hypothesis will be rejected if the calculated chi-square exceeds the critical value.

Step 5:
Calculate the Test statistic: To calculate the appropriate statistic: the first thing that must be done with the raw data of the left hand columns of the table shown in appendix (3) is to calculate the grand median (the median across the two independent samples). With a total sample of 40, the grand median will be the mean of the 20th and 21st respondents. In the two right hand columns of the table shown in appendix (3) the raw scores of the respondents have been arranged from the highest to the lowest. Therefore the 20th respondent had a score of 35 and the 21st had a score of 35. The grand median is therefore 35. Each score is then compared with the grand mean, to determine whether it is larger or smaller than the grand mean. The results of this comparison are shown in appendix 7(IV). Applying the appropriate formula, the calculation of chi-square for the scores is:

\[ \chi^2 = 38 \frac{|10 * 9 - 9 * 10|}{38/2} \frac{2}{19 * 19 * 20 * 18} \]

\[ = 0.1056 \]
Step 6:

Draw a statistical conclusion: Since the calculated chi-square (0.1056) is less than the critical value of chi-square (3.84), the null hypothesis is not rejected. The results indicate that there does not appear to be a difference in service satisfaction with regard to a change in bank's service between the current and the savings bank account holders and the results are shown in appendix XV. The same test is conducted for Bank Y and Bank Z. (APPENDIX - 7 (IV))

Mann - Whitney U Test:

If the data are truly ordinal and can be ranked, the Mann-Whitney U test is a more powerful test than the median test. However, if the underlying analysis is such that it is meaningful to separate the observations as being either above or below the grand median, the median test is the technique that should be employed. The Mann-Whitney U test employs the actual ranks of the observations (scores) as a means for testing hypothesis about the identity of two population distributions.

In the table containing the attitude scores of 40 customers (20 current and 20 S.B account holders), the scores were ranked in terms of their magnitude of the original score. That is the highest score gets the rank 1, the next highest 2, and so on.

Step 1:

The null hypothesis: The null hypothesis H is that there is no difference in attitudes of the two groups of account holders toward the bank services, and the alternative hypothesis H is that there is a significant difference in the attitudes of the two groups.

Step 2:

Level of Significance: It was decided that
Step 3:
The Mann–Whitney test is appropriate because the measurement level is at least ordinal and can be converted into ranks. Also, the samples are independent, a pre-requisite for using this test.

The formula used to derive the Mann-Whitney U value is:

\[ U = n_1 n_2 + n_2 (n_2 + 1)/2 - R \]

Where \( n_1 \) and \( n_2 \) are the sample sizes and \( R \) and \( R' \) are the sums of the ranks for each group. Letting the S.B account holders as sample 1 and the current account holders as sample 2, we find that

\[
\begin{align*}
n_1 &= 20 \\
R &= 396 \\
n_2 &= 20 \\
R' &= 376
\end{align*}
\]

Step 4:
The decision rule: The critical value of the statistic \( U^* \) for \( \alpha = 0.05 \), \( n_1 = 20 \), \( n_2 = 20 \) is 127. For this test, the null hypothesis will be rejected if the computed value, designated as \( U \) is 127 or less. Otherwise, it will not be rejected.

Step 5:
Calculate the statistic: Therefore

\[
\begin{align*}
U &= (20 \times 20) + 20 (20 + 1)/2 - 396 \\
&= 214 \\
U &= 20 \times 20 - 214 \\
&= 186
\end{align*}
\]

The Mann–Whitney U is the smaller of the two U values calculated. In this case Mann–Whitney U is 186. Inspection of formulae for calculating U
ill indicate that the similar the two groups are in their attitudes, the smaller the R values will be, and thus the larger the value of U. It should then follow that we are testing the probability of obtaining a value, size of the smallest of the two groups, if the two groups are indeed similar in their attitudes.

Step 61

Draw a statistical conclusion: Since the computed U is larger than the critical U, it doesn't fall in the critical region and the null hypothesis is not rejected. Once again, the evidence doesn't support a difference in the attitudes between two groups. (Appendix 7 V)

Spearman's rank correlation test - Measure of association between the overall satisfaction and the time consumed for withdrawals and deposits, realisation of outstation cheques and sanction of loans. When the data are ordinably scaled, Spearman rank correlation coefficient is an excellent measure of association. In this case the subject's responses are ranked for each variable and the difference between the two rank ordering is calculated. These measured deviations formed the basis for computing the correlation coefficient. To measure the extent of rank correlation, we use the following statistic

\[ r = 1 - 6 \sum_{i=1}^{n} d_i^2 / N(N-1) \]

where N is the number of pairs of ranks and d is the difference between the wo rankings, Y-X. The correction factor is also taken into account in order to minimise the errors. The correction factor is applicable in case of ranks that are tied. Then the adjusted formula is given by the
correlation coefficient  \( r = \frac{1-6\{ \sum d_i^2 + \text{correction factor} \} / N(N-1)}{\sum (M-1)M/12} \)

Here, the correction factor is given by the relation,

Correction factor = \( \sum (M-1)M/12 \), where \( M \) is the number of times a rank has been repeated.

As an illustration, considering the Bank X, we have,

\[ N = 58; \]
\[ \sum d_i^2 = 39,674; \]
\[ \text{Correction factor} = 8,625 \]
\[ r = \frac{1-6\{39,674+8,625\}/58(58-1)}{s} \]
\[ s = -0.4857 \]

The negative correlation is justified in this case, because, the lesser the time consumed for withdrawal or depositing, the better will be the overall satisfaction. (Appendix - 7 (V1 5))

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Pearson's correlation coefficients have been calculated to check up the correlation between the opinions of bank staff and the opinions of the customers and are shown in table 74 and Appendix - 7 (VIP)

1, 2, 3 David J. Luck, Ronald S. Rubin, "Marketing Research" Frentice-Hall, New Delhi, 1987, PP 440 - 446.

4, 5 S.P. Gupta, "Statistical Methods", S. Chand & Sons New Delhi, 1989, PP 10.31 - 10.34, 10.11 - 10.12
### Appendix 7(III)

**Kolmogorov - Smirnov One Sample Test**

**The Choice of Opinion Among Customers About the Overall Satisfaction**

#### I. Bank X

<table>
<thead>
<tr>
<th></th>
<th>Extremely satisfied</th>
<th>Satisfied</th>
<th>Undecided</th>
<th>Unsatisfied</th>
<th>Extremely unsatisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>f</td>
<td>11</td>
<td>48</td>
<td>01</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>( F(X) )</td>
<td>00.20</td>
<td>00.40</td>
<td>00.60</td>
<td>00.80</td>
<td>01.00</td>
</tr>
<tr>
<td>( S(X) )</td>
<td>00.1877</td>
<td>00.7828</td>
<td>01.00</td>
<td>01.00</td>
<td>01.00</td>
</tr>
<tr>
<td>( F(X) - S(X) )</td>
<td>00.0103</td>
<td>00.5828</td>
<td>00.40</td>
<td>00.70</td>
<td>00.00</td>
</tr>
</tbody>
</table>

\[
D = \text{Maximum of } \left\{ \frac{F(X) - S(X)}{n} \right\}
\]

\[
D \text{ critical at } 0.5 = 0.05
\]

\[
= 1.36/ n \quad \text{(where } n > 35 \text{)}
\]

Here \( n = 58 \)

\[
D \text{ calculated} = 0.5828
\]

\[
D \text{ critical} = 1.36/58 = 0.01876
\]

D calculated > D critical

So null hypothesis \( H \) is rejected.
### II. BANK Y

<table>
<thead>
<tr>
<th></th>
<th>Extremely satisfied</th>
<th>Satisfied</th>
<th>Undecided</th>
<th>Unsatisfied</th>
<th>Extremely unsatisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f )</td>
<td>20</td>
<td>129</td>
<td>02</td>
<td>00</td>
<td>00</td>
</tr>
<tr>
<td>( F(X) )</td>
<td>00.20</td>
<td>00.40</td>
<td>00.60</td>
<td>00.80</td>
<td>01.00</td>
</tr>
<tr>
<td>( S(X) )</td>
<td>00.1316</td>
<td>00.9802</td>
<td>01.00</td>
<td>01.00</td>
<td>01.00</td>
</tr>
<tr>
<td>( F(X) - S(X) )</td>
<td>00.0684</td>
<td>00.5807</td>
<td>00.40</td>
<td>00.20</td>
<td>00.00</td>
</tr>
</tbody>
</table>

\[
D_{critical} = 1.53 / 15.9^* \\
= 0.11
\]

\[
D_{calculated} = 00.530
\]

\( D_{calculated} > D_{critical} \)

So null hypothesis H is rejected.

### III. BANK Z

<table>
<thead>
<tr>
<th></th>
<th>Extremely satisfied</th>
<th>Satisfied</th>
<th>Undecided</th>
<th>Unsatisfied</th>
<th>Extremely unsatisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>( f )</td>
<td>25</td>
<td>191</td>
<td>07</td>
<td>07</td>
<td>00</td>
</tr>
<tr>
<td>( F(X) )</td>
<td>00.20</td>
<td>00.40</td>
<td>00.60</td>
<td>00.80</td>
<td>01.00</td>
</tr>
<tr>
<td>( S(X) )</td>
<td>00.1078</td>
<td>00.9310</td>
<td>00.9612</td>
<td>01.00</td>
<td>01.00</td>
</tr>
<tr>
<td>( F(X) - S(X) )</td>
<td>00.0922</td>
<td>00.5310</td>
<td>00.3612</td>
<td>00.20</td>
<td>00.00</td>
</tr>
</tbody>
</table>

\[
D_{critical} = 01.36 / 22.8^* \\
\]

\[
D_{calculated} = 00.5310
\]

\( D_{calculated} > D_{critical} \)

So null hypothesis H is rejected.
APPENDIX - 7(IV)

I. Bank X

List of scores

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>46</td>
<td>44</td>
<td>41</td>
<td>41</td>
<td>40</td>
<td>39</td>
<td>39</td>
<td>39</td>
<td>38</td>
<td>38</td>
<td>37</td>
<td>37</td>
<td>37</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>35</td>
<td>34</td>
<td>33</td>
<td>29</td>
</tr>
</tbody>
</table>

|   | 21| 22| 23| 24| 25| 26| 27| 28| 29| 30  | 31 | 32 | 32 | 31 | 30 | 29 | 27 | 36 | 35 | 34 |

\[
\text{Median} = \frac{ (20\text{th} + 21\text{st})}{2} \\
\quad = \frac{ (25 + 35) }{2} \\
\quad = 35
\]

Scores of customers compared to the grand

<table>
<thead>
<tr>
<th></th>
<th>Savings Account</th>
<th>Current Account</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above grand median</td>
<td>10 (a)</td>
<td>07 (b)</td>
<td>17 (a + b)</td>
</tr>
<tr>
<td>Below grand median</td>
<td>10 (c)</td>
<td>09 (d)</td>
<td>19 (c + d)</td>
</tr>
<tr>
<td>Total</td>
<td>20 (a + c)</td>
<td>18 (b + d)</td>
<td>38 (a + b + c + d)</td>
</tr>
</tbody>
</table>

\[
\chi^2 = n\left|\begin{array}{c}
|ad-bc| - n/2 \\
\end{array}\right|^2 / (a+b)(c+d)(a+c)(b+d) \\
\chi^2 = 38 \left|\begin{array}{c}
|90-90| - 38/2 \\
\end{array}\right|^2 / 19 \times 19 \times 20 \times 18 \\
\chi^2 = 0.1056
\]
The critical value of \[ \chi^2 \] at \((2 - 1)(1 - 1) = 1\) degree of freedom at \(= 0.05\) is 3.84.

\[ \text{calculated} < \text{critical} \]

So null hypothesis is not rejected.

II. Bank Y

List of Scores

|    | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
|----|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|
|    | 41| 41| 41| 30| 39| 38| 38| 37| 37| 36 | 36 | 35 | 35 | 34 | 34 | 34 | 34 | 34 | 34 |

<table>
<thead>
<tr>
<th></th>
<th>21</th>
<th>22</th>
<th>23</th>
<th>24</th>
<th>25</th>
<th>26</th>
<th>27</th>
<th>28</th>
<th>29</th>
<th>30</th>
<th>31</th>
<th>32</th>
<th>33</th>
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<th>35</th>
<th>36</th>
<th>37</th>
<th>38</th>
<th>39</th>
<th>40</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>34</td>
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<td>33</td>
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<td>31</td>
<td>28</td>
<td>28</td>
<td>28</td>
<td>26</td>
<td></td>
</tr>
</tbody>
</table>

\[ \text{Median} = \frac{(20\text{th} + 21\text{st})}{2} \]

\[ = \frac{(34 + 34)}{2} \]

\[ = 34 \]

Scores of customers compared to the Grand Median:

<table>
<thead>
<tr>
<th>Savings Account</th>
<th>Current Account</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above grand median</td>
<td>07</td>
<td>09</td>
</tr>
<tr>
<td>Below grand median</td>
<td>10</td>
<td>04</td>
</tr>
<tr>
<td>Total</td>
<td>17</td>
<td>13</td>
</tr>
</tbody>
</table>

\[ = 30 \left\{ \frac{|28 - 90|}{30/23} \right\} / 17 * 13 * 16 * 14 \]

\[ = 1.338 \]

\[ \text{calculated} < \text{critical} \]

So the null hypothesis is not rejected.
### III. Bank Z

**List of Scores**

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>16</th>
<th>17</th>
<th>18</th>
<th>19</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>40</td>
<td>38</td>
<td>38</td>
<td>37</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>35</td>
<td>35</td>
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<td>35</td>
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<td>34</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td>34</td>
<td></td>
</tr>
</tbody>
</table>

| 21| 22| 23| 24| 25| 26| 27| 28| 29| 30 | 31| 32 | 32 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |

| 34| 33| 33| 33| 33| 33| 33| 33| 32| 32 | 32 | 30 | 30 | 30 | 28 | 28 | 27 | 26 | 21 |

\[
\text{Median} = \frac{(20\text{th} + 21\text{st})}{2} \\
= \frac{(34 + 34)}{2} \\
= 34
\]

**Scores of customers compared to the Grand Median:**

<table>
<thead>
<tr>
<th></th>
<th>Savings Account</th>
<th>Current Account</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above grand median</td>
<td>06</td>
<td>07</td>
<td>15</td>
</tr>
<tr>
<td>Below grand median</td>
<td>10</td>
<td>08</td>
<td>18</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>17</td>
<td>33</td>
</tr>
</tbody>
</table>

\[
\chi^2 = \frac{33 \left( |48 - 90| - 33/23 \right)^2}{15 \times 18 \times 16 \times 17} = 0.292
\]

Calculated < critical

So null hypothesis is not rejected.
### Appendix 7(V)

#### Mann-Whitney U Test for Rank X

<table>
<thead>
<tr>
<th>Scores</th>
<th>Savings A/c</th>
<th>Current A/c</th>
<th>Ranks</th>
<th>Savings A/c</th>
<th>Current A/c</th>
</tr>
</thead>
<tbody>
<tr>
<td>41</td>
<td>31</td>
<td></td>
<td>3</td>
<td>36</td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>34</td>
<td></td>
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</tbody>
</table>

\[ n = 20 \quad R = 396 \quad n = 20 \quad R = 376 \quad U_{\text{critical}} = 127 \]

\[ U = n_1 n_2 + n_1 (n_1 + 1)/2 - R = 20 * 20 + 20(20 + 1)/2 - 396 = 214 \]

The Mann-Whitney U = 186

\[ U_{\text{calculated}} > U_{\text{critical}} \]

The null hypothesis is accepted.
### Mann-Whitney U Test for Rank Y

<table>
<thead>
<tr>
<th>Savings A/c</th>
<th>Scores</th>
<th>Current A/c</th>
<th>Ranks</th>
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<tbody>
<tr>
<td>36</td>
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</tbody>
</table>

\[ n = 20 \quad R = 435 \quad n = 20 \quad R = 298 \quad U_{\text{critical}} = 127 \]

\[ U = \frac{n_1 \cdot n_2}{2} \quad U = 20 \times 20 + 20 \times (20 + 1) / 2 - 435 = 175 \]

\[ U = 20 \times 20 - 175 = 225 \]

Mann-Whitney U = 175

\[ U \text{ computed} > U \text{ critical} \]

Therefore, the null hypothesis is accepted.
<table>
<thead>
<tr>
<th>Scores</th>
<th>Savings A/c</th>
<th>Current A/c</th>
<th>Ranks</th>
<th>Savings A/c</th>
<th>Current A/c</th>
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</tbody>
</table>

\[ n = 20 \quad R = 450 \quad n = 20 \quad R = 304 \quad U \text{ critical} = 127 \]

1 \quad 1 \quad 2 \quad 2 \quad U = 20 \times 20 + 20 \times (20 + 1) \div 2 - 450 = 160

1 \quad U = 20 \times 20 - 160 = 240

2 \quad Mann - Whitney U = 160

So the null hypothesis is accepted.
APPENDIX --7(ViS)

SPEARMAN'S RANK CORRELATION TEST

I. Bank X

\[ \sum \text{of the squares of the deviations } = \sum d_i^2 = 39674 \]

\[ \text{correction factor } = \frac{\sum (M - 1)M}{12} \]

where \( M = \) Nr. of times a rank is repeated

\[ \text{correction factor } = \frac{C^2(2-1) + 5(5-1) + 15(13-1) + 12(12-1) + 5(5-1)}{2} \]

\[ = \frac{8625}{2} \]

\[ \text{correlation factor } r = 1 - 6\sum d_i^2 + \frac{c.f.}{N(N-1)} \]

\[ = 1 - 6(39674) + \frac{8625}{58(58-1)} \]

\[ = -0.4857 \]

correlation coefficient is negative.

II. Bank Y

\[ \sum d_i^2 = 674639 \]

\[ c.f. = C^4(4-1) + 11(11-1) + 3(3-1) + 20(20-1) + 14(14-1) + 11(11-1) + 59(59-1) + \]

\[ 16(16-1) + 10(10-1) + 2(2-1) + 3(3-1) + 127(127-1) + 22(22-1) \] / 12

\[ = 190228.5 \]

\[ r = 1 - 6(39674) + 190228.5j \] / 152 (152 - 1)

\[ = -0.4772 \]

III. Bank Z

\[ \sum d_i^2 = 1821565 \]

\[ c.f. = 636600 \]

\[ r = 1 - 6(1821565) + 636600j \] / 232 (232 - 1)

\[ = -0.18115 \]
**APPENDIX -- 7(VI b)**

**PEARSON'S CORRELATION COEFFICIENTS**

**BANK Z**

<table>
<thead>
<tr>
<th>Staff x</th>
<th>Deviations from average u</th>
<th>Customers y</th>
<th>Deviations from average v</th>
<th>2 uv</th>
<th>2 v</th>
<th>2 u</th>
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<tr>
<td>20</td>
<td>+2.5</td>
<td>6.25</td>
<td>3</td>
<td>0</td>
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<td>0</td>
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<tr>
<td>15</td>
<td>-2.5</td>
<td>6.25</td>
<td>2</td>
<td>-1</td>
<td>1</td>
<td>2.5</td>
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<td>6.25</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>20</td>
<td>+2.5</td>
<td>6.25</td>
<td>4</td>
<td>1</td>
<td>1</td>
<td>2.5</td>
</tr>
<tr>
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<td>6.25</td>
<td>3</td>
<td>0</td>
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<tr>
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<td>12.5</td>
<td>6.25</td>
<td>3</td>
<td>0</td>
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\[ n = 6 \quad \Sigma u = 0 \quad \Sigma u^2 = 37.5 \quad n = 6 \quad \Sigma v = 0 \quad \Sigma v^2 = 2 \quad \Sigma uv = 5 \]

Staff average \( = 17.5 \)

Customer average \( = 3 \)

Correlation coefficient, \( r = \frac{\Sigma uv - (\Sigma u \cdot \Sigma v)/n}{\sqrt{(\Sigma u^2 - (\Sigma u)^2/n)(\Sigma v^2 - (\Sigma v)^2/n)}} \)

\[ = \frac{(5 - 0)}{\sqrt{(37.5 - 0)(2 - 0)}} \]

\[ = 0.5774 \]

The fairly good positive correlation indicates the association between the opinions of Bank staff and the opinions of the customers.
### APPENDIX -- 7(VII)

**OPINIONS OF BANK STAFF ON VARIOUS ASPECTS OF CUSTOMER SERVICE**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Bank X (%)</th>
<th>Bank Y (%)</th>
<th>Bank Z (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Customer service after nationalization</td>
<td>Improved: 74, Reduced: 72</td>
<td>66.67</td>
<td>66.67</td>
</tr>
<tr>
<td>2. Average time taken for deposits/withdrawals</td>
<td>15 Mints: 78, 20-25 Mints: 93</td>
<td>60.67</td>
<td>50</td>
</tr>
<tr>
<td>3. Average time taken for purchase of Demand Drafts</td>
<td>15 Mints: 56, 20-25 Mints: 50</td>
<td>66.67</td>
<td>33.33</td>
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<tr>
<td>4. The formalities involved in the sanction of loans</td>
<td>Too much: 37.50, Tolerable: 62.50</td>
<td>33.33</td>
<td>83.33</td>
</tr>
<tr>
<td>5. Display boards for max. time taken in each transaction</td>
<td>Yes: 67.50, No: 12.50</td>
<td>-</td>
<td>100</td>
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<tr>
<td>6. Maintainence of suggestions/complaints boxes</td>
<td>Yes: 100, No: -</td>
<td>-</td>
<td>-</td>
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<tr>
<td>7. Customer committee with advisory role for better service</td>
<td>Yes: 87.50, No: 12.50</td>
<td>33.33</td>
<td>66.67</td>
</tr>
<tr>
<td>8. Conducting Deposit weeks/months for deposit mobilization</td>
<td>Yes: 100, No: -</td>
<td>-</td>
<td>-</td>
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<tr>
<td>9. Do you contribute to the unrolling of new accounts</td>
<td>Yes: 100, No: -</td>
<td>-</td>
<td>-</td>
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<tr>
<td>10. Any incentive to you for enrolling new A/c</td>
<td>Yes: 27.50, No: 62.50</td>
<td>-</td>
<td>33.33</td>
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<tr>
<td>11. Take any efforts to convince the customer not to close his A/c</td>
<td>Yes: 12.50, Depends on customer: 87.50</td>
<td>100</td>
<td>-</td>
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<td>12. House to house campaign will increase business</td>
<td>Agree: 33.33, Disagree 66.67</td>
<td>83.33</td>
<td>16.67</td>
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<tr>
<td>13. Plans to improve customer service</td>
<td>Yes: 12.50, No: 87.50</td>
<td>33.33</td>
<td>83.33</td>
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</table>


<table>
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<th>1</th>
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<th>4</th>
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<tbody>
<tr>
<td>xiv. Gather information from other Banks</td>
<td>usually</td>
<td>16.67</td>
<td>33.33</td>
</tr>
<tr>
<td></td>
<td>occasionally</td>
<td>66.67</td>
<td>66.67</td>
</tr>
<tr>
<td>xv. Intimations to customers on maturity of time deposits</td>
<td>in advance</td>
<td>87.50</td>
<td>50.00</td>
</tr>
<tr>
<td></td>
<td>no intimation</td>
<td>12.50</td>
<td>50.00</td>
</tr>
</tbody>
</table>
APPENDIX 7 (VIII)

CUSTOMER SERVICE IN COMMERCIAL BANKS

Pilot-Study Questionnaire.

1. What type of account are you having in this bank?

2. To which occupation do you belong?

3. Do you think that a lot of time is consumed in withdrawing/depositing the money?
   Yes - 0  No - 0

4. Are you impressed by the facilities available in this Bank?
   Yes - 0  No - 0

5. Are you satisfied with the reception and cooperation you get in this bank?
   Satisfied - 0  Not satisfied - 0
Customer Service in Commercial Banks

Questionnaire to Bank Customer.

Kindly read the questions and give your valued responses according to the format of each question.

1. To which occupation do you belong?
2. When did you start your account with this Bank?
3. Will you please indicate the reasons for keeping account in this Bank?
4. What type of account do you maintain with your Bank?
5. Are you satisfied with the reception you get in this bank.
   Extremely satisfied - 0, satisfied - 0, undecided - 0,
   Dissatisfied - 0, Extremely dissatisfied - 0.
6. Bank staff are courteous and helpful to the customer usually.
   Strongly agree - 0, Agree - 0, Undecided - 0,
   Disagree - 0, Strongly disagree - 0.
7. Considering the formalities involved, what is your opinion about waiting time for withdrawal/deposit.
   Excessive - 0, More - 0, Less - 0, Very less - 0.
8. What is your opinion about the time taken for realization of outstation cheques.
   Excessive - 0, More - 0, Normal - 0, Less - 0,
   Very less - 0.
9. Considering the formalities, what is your opinion about waiting for purchase/encashment of demand drafts.
   Excessive - 0, More - 0, Normal - 0, Less - 0,
   Very less - 0.
10. Your opinion about the paper work/formalities involved for sanction of loans.
   Too much - 0, Tolerable - 0, Not much - 0.

11. Are you satisfied with the environment and facilities in the Bank.
   Very much satisfied - 0, Satisfied - 0, No opinion-0, 
dissatisfied-0, Very much dissatisfied - 0.

12. Are you satisfied with the treatment of your suggestions/complaints by the Bank staff.
   Extremely satisfied - 0, Satisfied - 0, Did not come 
   across - 0, Dissatisfied - 0, Extremely dissatisfied-0.

13. Please indicate your opinion about the quality of the currency notes issued in your Bank.
   Very good - 0, Good - 0, Reasonably good-0, Bad - 0, 
   Very bad - 0.

   Satisfied-0, Dissatisfied-0, Not observed-0.

15. On the overall are you satisfied with the customer service provided in your Bank.
   Extremely satisfied - 0, Satisfied - 0, Undecided - 0, 
dissatisfied - 0, Extremely dissatisfied - 0.

16. Do you have any suggestions to your Bank to improve the service to customers.
   i. ........................................
   ii. ........................................
   iii. ........................................
Appendix 7 (a)

Customer service in Commercial Banks

Questionnaire to bank staff

Kindly read the questions and give your valued responses according to the format of each question.

1. What is your opinion about customer service in Banks after nationalization.
   (a) Improved (b) Reduced (c) No effect

2. What do you think is the average time taken for deposit/withdrawal under normal circumstances.
   (a) 15 Mts (b) 20 Mts (c) 25 Mts. (d) 30 Mts (e) more than 35 Mts.

3. Will you please indicate the average time taken for the purchase/encashment of demand draft under normal circumstances.
   (a) 15 Mts. (b) 20 Mts. (c) 25 Mts. (d) 30 Mts. (e) more than 35 Mts.

4. What is your opinion about the paper work/formalities involed in the sanction of loans.
   (a) too much = 0 (b) tolerable = 0 (c) Not much = 0

5. Are you displaying any boards for the maximum time taken in each transaction.
   Yes - 0 No - 0 Planning to introduce - 0

6. Do you maintain suggestion/complaints boxes in your Bank.
   Yes - 0 No - 0 Any other method ....................

7. Is there any customer committee in your Bank with advisory role for better consumer service.
   Yes - 0 No - 0 Any other system ....................

8. Do you conduct deposit weeks/months for mobilization of deposits.
   Yes - 0 No - 0 Any other system ....................

9. Do you contribute to increase the Bank's business by enrolling new accounts.
   Yes - 0 No - 0

10. Is there any incentive to you for enrolling new accounts for increasing the business.
    Yes - 0 No - 0
1. In case a customer is closing his account, do you make any efforts to find the reason and convince him to continue his account in your bank.
Yes - 0  No - 0  Depends on customer and his business with Bank - 0

2. Do you agree that "House to house campaign" will increase your bank business (more no. of new accounts).
   Strongly agree-0, Agree-0, No opinion-0, Disagree-0, strongly disagree-0

3. Do you have any plans to expand customer services like tax payment, electricity bills payment etc.,
   Yes-0, No-0  Feasible - 0,  Not feasible - 0.

4. Do you depend on the information like working hours, schemes etc., from other banks to improve the productivity in your bank.
   Usually - 0  Occasionally - 0  Rarely-0  Do not depend-0

5. Do you send the information to your customers about the maturity of their time deposits.
   Well in advance - 0, in advance - 0, Just in time - 0, no intimation - 0.