Chapter 4

Data Analysis & Interpretation
1. In which of the following bank do you have an account.

Table: 4.1 : Data Representation:

<table>
<thead>
<tr>
<th>Bank</th>
<th>Number of Customers</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>50</td>
</tr>
<tr>
<td>HDFC</td>
<td>50</td>
</tr>
<tr>
<td>AXIS</td>
<td>50</td>
</tr>
<tr>
<td>SBI</td>
<td>50</td>
</tr>
<tr>
<td>UBI</td>
<td>50</td>
</tr>
<tr>
<td>PNB</td>
<td>50</td>
</tr>
</tbody>
</table>

Chart: 4.1 : Graphical Representation:

Interpretation:

A total of 300 respondents were analyzed. 50 respondents from each bank.

This constituted for 150 customers from Public Sector Banks & 150 customers from private sector bank.
2. Do you know about Customer Relationship Management Services your bank offers to you? (In reference to IT & Non IT tools used by banks for strengthening the relations with its customers)

**Purpose:** In this question the researcher wants to determine whether there is significant difference in the number of Private and Public Sector bank account holders regarding knowledge of CRM services offered by their banks.

**Table: 4.2: Data Representation:**

<table>
<thead>
<tr>
<th>Bank</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>42</td>
<td>8</td>
</tr>
<tr>
<td>HDFC</td>
<td>46</td>
<td>4</td>
</tr>
<tr>
<td>AXIS</td>
<td>41</td>
<td>9</td>
</tr>
<tr>
<td>SBI</td>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>UBI</td>
<td>45</td>
<td>5</td>
</tr>
<tr>
<td>PNB</td>
<td>35</td>
<td>15</td>
</tr>
</tbody>
</table>

**Chart: 4.2: Graphical Representation:**

![Bar chart showing the number of customers aware and unaware of CRM services offered by various banks]
Analysis:

Level of Significance(\(\alpha\)) = 0.05

Z tabulated (\(Z_{\text{tab}}\)) = 1.96

(The value of \(Z_{\text{tab}}\) is determined by looking in the table which defines the areas under the standard normal probability distribution between the mean & positive value of \(Z\))

According to the question if there is a significant difference between Private and Public sector bank then the value of \(Z\) calculated (\(Z_{\text{cal}}\)) will fall in the area of rejection in normal distribution curve. In case there is no significant difference then the value of \(Z_{\text{cal}}\) will fall in the area of acceptance in the normal distribution curve. To find out the value of \(Z_{\text{cal}}\) for 2 population proportions (Private & Public sector banks) we use the formula mentioned below:

\[
Z_{\text{cal}} = \frac{(\bar{P}_1 - \bar{P}_2) - (p_1 - p_2)}{\sigma}\]

Where

\(\bar{P}_1\) = Proportion of people having account in Private sector banks and who know about CRM services offered by their banks.

\(\bar{q}_1\) = Proportion of people having account in Private sector banks but do not know about CRM services offered by their banks.

\(\bar{P}_2\) = Proportion of people having account in Public sector banks and who know about CRM services offered by their banks.

\(\bar{q}_2\) = Proportion of people having account in Public sector banks but do not know about CRM services offered by their banks.

\(\sigma\) = Standard Deviation

For Pvt. \(\bar{P}_1 = 129/150 = 0.86\)
\(\bar{q}_1 = 21/150 = 0.14\)

For Pub \(\bar{P}_2 = 120/150 = 0.8\)
\(\bar{q}_2 = 30/150 = 0.2\)

\(n_1 = 150\)
\[ n_2 = 150 \]

\[ \sigma \tilde{P}_1 - \tilde{P}_2 = \sqrt{\frac{\hat{p}\hat{q} + \hat{p}\hat{q}}{n_1 + n_2}} \]

Where \( \hat{p} = \) Estimated proportion of overall success in Private and Public Sector banks.

\( \hat{q} = \) Estimated proportion of overall failure in Private and Public Sector banks.

\( \sigma \tilde{P}_1 - \tilde{P}_2 = \) Standard error of the difference between two proportions.

\[ \hat{p} = \frac{n_1 \tilde{P}_1 + n_2 \tilde{P}_2}{n_1 + n_2} = \frac{150(0.86)+150(0.8)}{150+150} = 0.83 \]

\[ \sigma \tilde{P}_1 - \tilde{P}_2 = \sqrt{\frac{(0.83)(0.17)}{150} + \frac{(0.83)(0.17)}{150}} = 0.0433 \]

i.e \( Z_{cal} = \frac{(0.86-0.8)-0}{0.0433} = 1.1771 \)

**Interpretation:**

The value of \( Z \) calculated is falling within the area of acceptance so it is interpreted that there is no significant difference between the awareness level of customers about CRM services offered to them by their respective banks.

**Conclusion:**

The researcher can conclude that the customers of both Public & Private sector banks are aware about the CRM services offered to them by their banks.
3. The new account opening process of my bank is satisfactory.

**Purpose:** In this question the researcher wants to determine whether the account holders of both Private and Public Sector bank consider the opening of an account in their respective banks as an easy process.

**Table: 4.3: Data Representation:**

<table>
<thead>
<tr>
<th>Bank</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>19</td>
<td>9</td>
<td>6</td>
<td>11</td>
<td>5</td>
</tr>
<tr>
<td>HDFC</td>
<td>20</td>
<td>11</td>
<td>7</td>
<td>10</td>
<td>2</td>
</tr>
<tr>
<td>AXIS</td>
<td>16</td>
<td>14</td>
<td>5</td>
<td>9</td>
<td>6</td>
</tr>
<tr>
<td>SBI</td>
<td>15</td>
<td>12</td>
<td>3</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td>UBI</td>
<td>17</td>
<td>10</td>
<td>5</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>PNB</td>
<td>16</td>
<td>13</td>
<td>4</td>
<td>12</td>
<td>5</td>
</tr>
</tbody>
</table>

**Chart: 4.3: Graphical Representation:**

**Analysis**

Collating the responses for Private & Public Sector banks

<table>
<thead>
<tr>
<th></th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>55</td>
<td>34</td>
<td>18</td>
<td>30</td>
<td>13</td>
</tr>
<tr>
<td>Public</td>
<td>48</td>
<td>35</td>
<td>12</td>
<td>37</td>
<td>18</td>
</tr>
</tbody>
</table>
A weight has been assigned to each option and each option with its total response is multiplied with weight assigned to it. The total figure for Private and Public sector banks has been taken separately to determine the outcome.

The responses can be analyzed as follows:

<table>
<thead>
<tr>
<th>Range</th>
<th>Interpretation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Above 600</td>
<td>Strongly Agree</td>
</tr>
<tr>
<td>450-600</td>
<td>Agree</td>
</tr>
<tr>
<td>450(Mean value)</td>
<td>Neither Agree nor Disagree</td>
</tr>
<tr>
<td>450-300</td>
<td>Disagree</td>
</tr>
<tr>
<td>Below 300</td>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

**Interpretation:**

From above calculations the researcher can interpret that values of both Private sector banks and Public sector banks fall in the category of **Agree**.

**Conclusion:**

The researcher can conclude from the calculations that the customers of both Private sector and Public Sector banks agree that the account opening process in their respective bank is satisfactory.
4. I receive regular emails from my bank regarding my account status.

**Purpose:** In this question the researcher wants to determine whether the Private and Public Sector banks send regular e-mails to their account holders regarding their account status or not.

**Table 4.4: Data Representation:**

<table>
<thead>
<tr>
<th>Bank</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>21</td>
<td>10</td>
<td>2</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>HDFC</td>
<td>12</td>
<td>14</td>
<td>0</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>AXIS</td>
<td>15</td>
<td>17</td>
<td>0</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>SBI</td>
<td>5</td>
<td>8</td>
<td>0</td>
<td>2</td>
<td>35</td>
</tr>
<tr>
<td>UBI</td>
<td>2</td>
<td>15</td>
<td>0</td>
<td>10</td>
<td>23</td>
</tr>
<tr>
<td>PNB</td>
<td>7</td>
<td>12</td>
<td>0</td>
<td>10</td>
<td>21</td>
</tr>
</tbody>
</table>

**Chart 4.4: Graphical Representation:**

**Analysis:**

<table>
<thead>
<tr>
<th></th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>48</td>
<td>41</td>
<td>2</td>
<td>29</td>
<td>30</td>
</tr>
<tr>
<td>Public</td>
<td>14</td>
<td>35</td>
<td>0</td>
<td>22</td>
<td>79</td>
</tr>
</tbody>
</table>
For Private

<table>
<thead>
<tr>
<th>Weight</th>
<th>5X</th>
<th>150=</th>
<th>750</th>
<th>5X</th>
<th>48=</th>
<th>240</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA</td>
<td>4X</td>
<td>150=</td>
<td>600</td>
<td>4X</td>
<td>41=</td>
<td>164</td>
</tr>
<tr>
<td>A</td>
<td>3X</td>
<td>150=</td>
<td>450</td>
<td>3X</td>
<td>2 =</td>
<td>6</td>
</tr>
<tr>
<td>N</td>
<td>2X</td>
<td>150=</td>
<td>300</td>
<td>2X</td>
<td>29=</td>
<td>58</td>
</tr>
<tr>
<td>D</td>
<td>1X</td>
<td>150=</td>
<td>150</td>
<td>1X</td>
<td>30=</td>
<td>30</td>
</tr>
</tbody>
</table>

For Public

<table>
<thead>
<tr>
<th>Weight</th>
<th>5X</th>
<th>150=</th>
<th>750</th>
<th>5X</th>
<th>14=</th>
<th>70</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA</td>
<td>4X</td>
<td>150=</td>
<td>600</td>
<td>4X</td>
<td>35=</td>
<td>140</td>
</tr>
<tr>
<td>A</td>
<td>3X</td>
<td>150=</td>
<td>450</td>
<td>3X</td>
<td>0 =</td>
<td>0</td>
</tr>
<tr>
<td>N</td>
<td>2X</td>
<td>150=</td>
<td>300</td>
<td>2X</td>
<td>22=</td>
<td>44</td>
</tr>
<tr>
<td>D</td>
<td>1X</td>
<td>150=</td>
<td>150</td>
<td>1X</td>
<td>79=</td>
<td>79</td>
</tr>
</tbody>
</table>

A weight has been assigned to each option and each option with its total response is multiplied with weight assigned to it. The total figure for Private and Public sector banks has been taken separately to determine the outcome.

The responses can be analyzed as follows:

- Above 600 : Strongly Agree
- 450-600 : Agree
- 450(Mean value) : Neither Agree nor Disagree
- 450-300 : Disagree
- Below 300 : Strongly Disagree

**Interpretation:**

As the calculated value of Private sector banks falls between 450-600 which is higher than the mean value of 450 so researcher interpret that the customers of Private sector banks agree that they receive regular e-mails while the value of Public sector banks falls between 300-450 which is lower than the mean value of 450 so we interpret that the customers of Public Sector bank disagree that they receive regular e-mails.

**Conclusion:**

As per the objective of the question the researcher can conclude that Private Sector banks send regular e-mails to their customers about their account status while the Public Sector bank do not send regular e-mails to their customers about their account status.
5. I receive regular SMS about my banking transactions.

**Purpose:** In this question the researcher wants to determine whether there is significant difference in the number of Private and Public Sector banks sending regular SMS to their account holders about their banking transactions.

**Table 4.5: Data Representation:**

<table>
<thead>
<tr>
<th>Bank</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>35</td>
<td>15</td>
</tr>
<tr>
<td>HDFC</td>
<td>37</td>
<td>13</td>
</tr>
<tr>
<td>AXIS</td>
<td>39</td>
<td>11</td>
</tr>
<tr>
<td>SBI</td>
<td>14</td>
<td>36</td>
</tr>
<tr>
<td>UBI</td>
<td>29</td>
<td>21</td>
</tr>
<tr>
<td>PNB</td>
<td>28</td>
<td>22</td>
</tr>
</tbody>
</table>

**Chart 4.5 : Graphical Representation:**

Hypothesis 1:

**H₀:** There is no significant difference in the SMS services provided by Private and Public sector banks about banking transactions.

**H₁:** There is significant difference in the SMS services provided by Private and Public sector banks about banking transactions.
Analysis:

Level of Significance(\(\alpha\)) = 0.05

\(Z\) tabulated \((Z_{\text{tab}}) = 1.96\)

(The value of \(Z_{\text{tab}}\) is determined by looking in the table which defines the areas under the standard normal probability distribution between the mean & positive value of \(Z\))

According to the question if there is a significant difference between Private and Public sector bank then the value of \(Z\) calculated \((Z_{\text{cal}})\) will fall in the area of rejection in normal distribution curve. In case there is no significant difference then the value of \(Z_{\text{cal}}\) will fall in the area of acceptance in the normal distribution curve. To find out the value of \(Z_{\text{cal}}\) for 2 population proportions (Private & Public sector banks) we use the formula mentioned below:

\[
Z_{\text{cal}} = \frac{(\bar{P}_1 - \bar{P}_2) - (P_1 - P_2)_{\text{Ho}}}{\sigma}\]

Where

- \(\bar{P}_1\) = Proportion of people having account in Private sector banks and who receive regular SMS about their banking transactions.
- \(\bar{q}_1\) = Proportion of people having account in Private sector banks but do not receive regular SMS about their banking transactions
- \(\bar{P}_2\) = Proportion of people having account in Public sector banks and who receive regular SMS about their banking transactions
- \(\bar{q}_2\) = Proportion of people having account in Public sector banks but do not receive regular SMS about their banking transactions
- \(\sigma\) = Standard Deviation

For Pvt. \(\bar{P}_1 = 111/150 = 0.74\)
- \(\bar{q}_1 = 39/150 = 0.26\)

For Pub \(\bar{P}_2 = 71/150 = 0.4733\)
- \(\bar{q}_2 = 79/150 = 0.5266\)
- \(n_1 = 150\)
\[ n_2 = 150 \]

\[ \sigma P_1 - P_2 = \sqrt{\frac{\hat{P}q + \hat{Q}q}{n_1 + n_2}} \]

Where \( \hat{P} = \) Estimated proportion of overall success in Private and Public Sector banks.

\( \hat{Q} = \) Estimated proportion of overall failure in Private and Public Sector banks.

\( \sigma P_1 - P_2 = \) Standard error of the difference between two proportions.

\[ \hat{P} = \frac{n_1\bar{P}_1 + n_2\bar{P}_2}{n_1+n_2} = \frac{150(0.74)+150(0.4733)}{150+150} = 0.60665 \]

\[ \sigma P_1 - P_2 = \sqrt{\frac{(0.60665)(0.39335) + (0.60665)(0.39335)}{150} + \frac{(0.60665)(0.39335)}{150}} = 0.0564 \]

i.e \( Z_{cal} = (0.74-0.4733)- (0)/ 0.0564 = 4.72 \)

**Interpretation:**

Based on the objective of the question there is a significant difference between the account holders of Private and Public Sector bank customers regarding the receiving of SMS about the banking transactions.

From the above calculation it can be observed that the Z calculated value is in area of rejection.

**Based on the calculations above researcher has sufficient evidence to reject the null hypothesis and accept the alternate Hypothesis.**

**Conclusion:**

The Private sector banks send regular SMS to their account holders about their banking transactions. Public sector banks are providing the SMS to their account holders about their banking transactions but they are not regular as Private players. Specially SBI is one of the major Public Sector bank lagging behind.
6. How interactive are the ATM services of your bank?

**Purpose:** In this question the researcher wants to determine whether the ATM services provided by the banks to the bank account holders are interactive or not.

**Table 4.6: Data Representation:**

<table>
<thead>
<tr>
<th>Bank</th>
<th>Highly Interactive</th>
<th>Medium Interactive</th>
<th>Average</th>
<th>Less Interactive</th>
<th>Non Interactive</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>18</td>
<td>14</td>
<td>8</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>HDFC</td>
<td>19</td>
<td>17</td>
<td>8</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>AXIS</td>
<td>20</td>
<td>15</td>
<td>7</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>SBI</td>
<td>13</td>
<td>12</td>
<td>10</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>UBI</td>
<td>14</td>
<td>10</td>
<td>6</td>
<td>12</td>
<td>8</td>
</tr>
<tr>
<td>PNB</td>
<td>16</td>
<td>8</td>
<td>17</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

**Chart 4.6: Graphical Representation:**

**Analysis:**

<table>
<thead>
<tr>
<th></th>
<th>HI</th>
<th>MI</th>
<th>A</th>
<th>LI</th>
<th>NI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>57</td>
<td>46</td>
<td>23</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>Public</td>
<td>43</td>
<td>30</td>
<td>33</td>
<td>26</td>
<td>18</td>
</tr>
</tbody>
</table>
A weight has been assigned to each option and each option with its total response is multiplied with weight assigned to it. The total figure for Private and Public sector banks has been taken separately to determine the outcome.

The responses can be analyzed as follows:

<table>
<thead>
<tr>
<th>Above 600</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>450-600</td>
<td>Agree</td>
</tr>
<tr>
<td>450(Mean value)</td>
<td>Neither Agree nor Disagree</td>
</tr>
<tr>
<td>450-300</td>
<td>Disagree</td>
</tr>
<tr>
<td>Below 300</td>
<td>Strongly Disagree</td>
</tr>
</tbody>
</table>

**Interpretation:**

From the calculations it is evident that the values for both Private and Public sector banks fall under the agree category.

* Analyzing the result through Z-test, we can find that the value of Z-calculated comes out to 1.57 which is falling in the area of acceptance on the normal distribution curve.

**Conclusion:**

On basis of the objective of the question the researcher can conclude that the ATM services provided by both Private sector banks and Public sector banks are interactive.
7. What other services are offered by your banks ATM apart from disbursing cash.

**Services offered by ICICI ATM:**

- Facility for Fixed deposits
- Utility bill payments
- Life insurance premium for ICICI Prudential
- Mobile recharge
- Credit card bill payment.

**Services offered by HDFC ATM:**

- Order a cheque book or account
- HDFC Bank Credit Card Payment
- Deposit cash or cheques
- Transfer funds between accounts
- Refill your Prepaid mobile
- Pay your utility bills
- Cheque Status Enquiry
- NetBanking password request
- Registration for Mobile Banking

**Services offered by AXIS ATM:**

- Transfer funds between accounts
- Pay your utility bills (registration at branch necessary)
- Mutual funds payment
- Insurance premium payment

**Services offered by SBI ATM:**

- Recharge pre-paid mobile phones of Vodafone, IDEA, Reliance, Airtel and BPL without any charges at any State Bank ATM as well as by sending SMS (after registration at State Bank ATM).
- Pay MTNL, Mumbai bills through State Bank ATMs
- Payment of Electricity Bills (Bescom), Bengaluru
- Payment of SBI Credit Card bills
- Payment of SBI Life insurance premium
- Pay fees of select colleges
- Registration of SBI Mobile Banking and SMS Alerts
- Donate to Temple Trusts.
- Donate to Relief Funds: (a) CM Relief Fund, Orissa (b) CM Relief Fund, Bihar (c) Rajiv Gandhi Aarogyasri Fund.
Services offered by PNB ATM:

- Payment of Income Tax
- Utility bill payments (Limited to registration at branch)
- PNB credit card bills
- Passbook printing (limited to Pragati branch)
- Draft requisition and collection (limited to Pragati branch)

Services offered by UBI ATM:

- Income Tax payment
- Utility bills payment (registration at branch necessary)
- Mutual Fund transactions
- Mobile bill payments
- Prepaid mobile top up.
8. My bank provides mobile ATM facility.

**Purpose:** In this question the researcher wants to determine whether there is significant difference in the Mobile ATM facility provided by Private and Public Sector bank.

**Table 4.7: Data Representation:**

<table>
<thead>
<tr>
<th>Bank</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>HDFC</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>AXIS</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>SBI</td>
<td>48</td>
<td>2</td>
</tr>
<tr>
<td>UBI</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>PNB</td>
<td>10</td>
<td>40</td>
</tr>
</tbody>
</table>

**Chart 4.7: Graphical Representation:**

**Analysis:**
Level of Significance(α) = 0.05

$Z$ tabulated ($Z_{tab}$) = 1.96

(The value of $Z_{tab}$ is determined by looking in the table which defines the areas under the standard normal probability distribution between the mean & positive value of $Z$)

According to the question if there is a significant difference between Private and Public sector bank then the value of $Z$ calculated ($Z_{cal}$) will fall in the area of rejection in normal distribution curve. In case there is no significant difference then the value of $Z_{cal}$ will fall in the area of acceptance in the normal distribution curve. To find out the value of $Z_{cal}$ for 2 population proportions (Private & Public sector banks) we use the formula mentioned below:

$$Z_{cal} = \frac{(\overline{P}_1 - \overline{P}_2) - (P_1 - P_2)_{Ho}}{\sigma\overline{P}_1 - \overline{P}_2}$$

Where

- $\overline{P}_1$ = Proportion of people having account in Private sector banks and who agree that their bank provide Mobile ATM facility.
- $\overline{q}_1$ = Proportion of people having account in Private sector banks but do not agree that their bank provide Mobile ATM facility.
- $\overline{P}_2$ = Proportion of people having account in Public sector banks and who agree that their bank provide Mobile ATM facility.
- $\overline{q}_2$ = Proportion of people having account in Public sector banks but do not agree that their bank provide Mobile ATM facility.
- $\sigma$ = Standard Deviation

For Pvt. $\overline{P}_1 = 0/150 = 0$

$\overline{q}_1 = 150/150 = 1$

For Pub $\overline{P}_2 = 68/150 = 0.4533$

$\overline{q}_2 = 82/150 = 0.5466$

$n_1 = 150$

$n_2 = 150$

$$\sigma\overline{P}_1 - \overline{P}_2 = \sqrt{\frac{\hat{P}\hat{q} + \hat{p}\hat{q}}{n_1 + n_2}}$$

Where

- $\hat{P}$ = Estimated proportion of overall success in Private and Public Sector banks.
- $\hat{q}$ = Estimated proportion of overall failure in Private and Public Sector banks.
- $\sigma\overline{P}_1 - \overline{P}_2$ = Standard error of the difference between two proportions.

$$\hat{P} = \frac{n_1\overline{P}_1 + n_2\overline{P}_2}{n_1 + n_2} = \frac{150(0) + 150(0.4533)}{150 + 150} = 0.2266$$
\[ \sigma \sqrt{\frac{1}{n_1} + \frac{1}{n_2}} = \sqrt{\frac{(0.2266)(0.7734)}{150} + \frac{(0.2266)(0.7734)}{150}} = 0.0483 \]

i.e \( Z_{cal} = \frac{(0-0.4533)- (0)/ 0.0483 = -9.38 }{ \}

**Interpretation:**

As evident from the value of Z calculated, which falls in the area of rejection, that there is significant difference in Mobile ATM facility provided by Private and Public sector bank.

**Conclusion:**

From the above calculations the researcher can conclude that the few Public sector banks provide mobile ATM facility while the Private sector banks do not provide mobile ATM facility.
9. Does your bank provide Internet banking facility?

**Purpose:** In this question the researcher wants to determine whether there is significant difference in the awareness level of Internet Banking services provided by Private and Public Sector banks to their account holders.

**Table 4.8: Data Representation:**

<table>
<thead>
<tr>
<th>Bank</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>46</td>
<td>4</td>
</tr>
<tr>
<td>HDFC</td>
<td>47</td>
<td>3</td>
</tr>
<tr>
<td>AXIS</td>
<td>42</td>
<td>8</td>
</tr>
<tr>
<td>SBI</td>
<td>36</td>
<td>14</td>
</tr>
<tr>
<td>UBI</td>
<td>41</td>
<td>9</td>
</tr>
<tr>
<td>PNB</td>
<td>39</td>
<td>11</td>
</tr>
</tbody>
</table>

**Chart 4.8: Graphical Representation:**

![Graphical Representation](image)

**Analysis:**

[Graph showing distribution and acceptance areas]
Level of Significance ($\alpha$) = 0.05

$Z$ tabulated ($Z_{tab}$) = 1.96

(The value of $Z_{tab}$ is determined by looking in the table which defines the areas under the standard normal probability distribution between the mean & positive value of $Z$)

According to the question if there is a significant difference between Private and Public sector bank then the value of $Z$ calculated ($Z_{cal}$) will fall in the area of rejection in normal distribution curve. In case there is no significant difference then the value of $Z_{cal}$ will fall in the area of acceptance in the normal distribution curve. To find out the value of $Z_{cal}$ for 2 population proportions (Private & Public sector banks) we use the formula mentioned below:

$$Z_{cal} = \frac{(\overline{P}_1 - \overline{P}_2) - (P_1 - P_2)_{Ho}}{\sigma_{\overline{P}_1 - \overline{P}_2}}$$

Where

- $\overline{P}_1$ = Proportion of people having account in Private sector banks and who agree that their bank provide Internet Banking facility.
- $q_1$ = Proportion of people having account in Private sector banks but do not agree that their bank provide Internet Banking facility.
- $\overline{P}_2$ = Proportion of people having account in Public sector banks and who agree that their bank provide Internet Banking facility.
- $q_2$ = Proportion of people having account in Public sector banks but do not agree that their bank provide Internet Banking facility.
- $\sigma = \text{Standard Deviation}$

**For Pvt.**

\[\overline{P}_1 = \frac{135}{150} = 0.9\]
\[q_1 = \frac{15}{150} = 0.1\]

**For Pub**

\[\overline{P}_2 = \frac{116}{150} = 0.7733\]
\[q_2 = \frac{34}{150} = 0.2266\]
\[n_1 = 150\]
\[n_2 = 150\]

$$\sigma_{\overline{P}_1 - \overline{P}_2} = \sqrt{\frac{\hat{P}\hat{q} + \hat{P}\hat{q}}{n_1 + n_2}}$$

Where

- $\hat{P} = \text{Estimated proportion of overall success in Private and Public Sector banks.}$
- $\hat{q} = \text{Estimated proportion of overall failure in Private and Public Sector banks.}$
- $\sigma_{\overline{P}_1 - \overline{P}_2} = \text{Standard error of the difference between two proportions.}$
\[ \hat{P} = \frac{n_1\bar{P}_1 + n_2\bar{P}_2}{n_1 + n_2} \]

\[ = \frac{150(0.9)+150(0.7733)}{150+150} = 0.8366 \]

\[ \sigma_{\bar{P}_1 - \bar{P}_2} = \sqrt{\left(\frac{0.8366(0.1634)}{150}\right) + \left(\frac{0.8366(0.1634)}{150}\right)} = 0.04269 \]

\[ i.e \ Z_{cal} = \frac{(0.9-0.7733)- (0)/0.04269 = 2.96 }{ } \]

**Interpretation:**

As evident from the calculations the value of \( Z_{cal} \) is falling in the area of rejection. There is significant difference in the awareness level of customers regarding Internet banking services provided by Private and Public sector banks to their account holders.

**Conclusion:**

On the basis of the objective of the question and the outcome of calculations, the researcher can conclude that the customers of Private sector banks are more aware about the Internet banking facilities provided to them as compared to public sector bank customers.
10. The Internet Banking facility provided by your bank is user friendly.

**Purpose:** In this question the researcher wants to determine whether the Internet banking facility provided by Private sector bank is more user friendly or Internet banking facility provided by Public sector bank is more user friendly.

**Table 4.9: Data Representation:**

<table>
<thead>
<tr>
<th>Bank</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>30</td>
<td>9</td>
<td>0</td>
<td>10</td>
<td>1</td>
</tr>
<tr>
<td>HDFC</td>
<td>30</td>
<td>11</td>
<td>0</td>
<td>9</td>
<td>0</td>
</tr>
<tr>
<td>AXIS</td>
<td>32</td>
<td>12</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>SBI</td>
<td>18</td>
<td>10</td>
<td>6</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>UBI</td>
<td>20</td>
<td>12</td>
<td>2</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>PNB</td>
<td>25</td>
<td>7</td>
<td>1</td>
<td>9</td>
<td>8</td>
</tr>
</tbody>
</table>

**Chart 4.9: Graphical Representation:**

**Analysis:**

<table>
<thead>
<tr>
<th></th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>92</td>
<td>32</td>
<td>4</td>
<td>21</td>
<td>1</td>
</tr>
<tr>
<td>Public</td>
<td>63</td>
<td>29</td>
<td>9</td>
<td>27</td>
<td>22</td>
</tr>
</tbody>
</table>
A weight has been assigned to each option and each option with its total response is multiplied with weight assigned to it. The total figure for Private and Public sector banks has been taken separately to determine the outcome.

The responses can be analyzed as follows:
- Above 600: Strongly Agree
- 450-600: Agree
- 450 (Mean value): Neither Agree nor Disagree
- 450-300: Disagree
- Below 300: Strongly Disagree

**Interpretation:**

The calculated value of Private sector bank falls in the category of Strongly agree while that of Public Sector bank falls in the category of Agree.

**Conclusion:**

On basis of the objective of the question the researcher can conclude that there is significant difference in the Internet banking facility provided by Private sector bank and Public sector bank.

The Internet banking service provided by Private sector bank is more user friendly than Public sector banks.
11. Your bank provides Mobile Banking facility.

**Purpose:** In this question the researcher wants to determine whether there is significant difference in the Mobile banking facility provided by Private and Public sector banks.

**Table 4.10: Data Representation:**

<table>
<thead>
<tr>
<th>Bank</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>38</td>
<td>12</td>
</tr>
<tr>
<td>HDFC</td>
<td>36</td>
<td>14</td>
</tr>
<tr>
<td>AXIS</td>
<td>37</td>
<td>13</td>
</tr>
<tr>
<td>SBI</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>UBI</td>
<td>32</td>
<td>18</td>
</tr>
<tr>
<td>PNB</td>
<td>35</td>
<td>15</td>
</tr>
</tbody>
</table>

**Chart 4.10: Graphical Representation:**

**Analysis:**
Level of Significance(α) = 0.05

$Z \text{ tabulated (} Z_{\text{tab}} \text{)} = 1.96$

(The value of $Z_{\text{tab}}$ is determined by looking in the table which defines the areas under the standard normal probability distribution between the mean & positive value of $Z$)

According to the question if there is a significant difference between Private and Public sector bank then the value of $Z$ calculated ($Z_{\text{cal}}$) will fall in the area of rejection in normal distribution curve. In case there is no significant difference then the value of $Z_{\text{cal}}$ will fall in the area of acceptance in the normal distribution curve. To find out the value of $Z_{\text{cal}}$ for 2 population proportions (Private & Public sector banks) we use the formula mentioned below:

$$Z_{\text{cal}} = \frac{(\bar{P}_1 - \bar{P}_2) - (P_1 - P_2)_{\text{H0}}}{\sigma_{\bar{P}_1 - \bar{P}_2}}$$

Where

- $\bar{P}_1$ = Proportion of people having account in Private sector banks and who agree that their bank provide Mobile Banking facility.
- $\bar{q}_1$ = Proportion of people having account in Private sector banks but do not agree that their bank provide Mobile Banking facility.
- $\bar{P}_2$ = Proportion of people having account in Public sector banks and who agree that their bank provide Mobile Banking facility.
- $\bar{q}_2$ = Proportion of people having account in Public sector banks but do not agree that their bank provide Mobile Banking facility.

$\sigma = \text{Standard Deviation}$

For Pvt. $\bar{P}_1 = 111/150 = 0.74$
$\bar{q}_1 = 39/150 = 0.26$

For Pub $\bar{P}_2 = 97/150 = 0.6466$
$\bar{q}_2 = 53/150 = 0.3533$

$n_1 = 150$

$n_2 = 150$

$$\sigma_{\bar{P}_1 - \bar{P}_2} = \sqrt{\frac{\hat{P} \hat{q} + \hat{P} \hat{q}}{n_1 + n_2}}$$

Where

- $\hat{P}$ = Estimated proportion of overall success in Private and Public Sector banks.
- $\hat{q}$ = Estimated proportion of overall failure in Private and Public Sector banks.

$\sigma_{\bar{P}_1 - \bar{P}_2}$ = Standard error of the difference between two proportions.
\[
\hat{P} = \frac{n_1\overline{P}_1 + n_2\overline{P}_2}{n_1 + n_2} = \frac{150(0.74) + 150(0.6466)}{150 + 150} = 0.6933
\]

\[
\sigma\sqrt{\overline{P}_1 - \overline{P}_2} = \sqrt{\frac{(0.6933)(0.3067)}{150} + \frac{(0.6933)(0.3067)}{150}} = 0.0532
\]

i.e \[Z_{cal} = \frac{(0.74-0.6466)-0}{0.0532} = 1.755\]

**Interpretation:**

The calculations show that the Z calculated is falling in the area of acceptance.

**Conclusion:**

On basis of the objective of the question and calculations that follow the researcher can conclude that the customers of both Public and Private sector banks are well aware of the Mobile Banking facility offered by their banks.
12. The Mobile banking facility provided by your bank is interactive.

**Purpose:** In this question the researcher wants to determine whether the mobile banking facility provided by Private sector bank is more interactive or Public Sector bank is more interactive.

**Table 4.11: Data Representation:**

<table>
<thead>
<tr>
<th>Bank</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>16</td>
<td>12</td>
<td>13</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>HDFC</td>
<td>14</td>
<td>13</td>
<td>17</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>AXIS</td>
<td>12</td>
<td>14</td>
<td>16</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>SBI</td>
<td>8</td>
<td>9</td>
<td>22</td>
<td>11</td>
<td>0</td>
</tr>
<tr>
<td>UBI</td>
<td>6</td>
<td>12</td>
<td>17</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td>PNB</td>
<td>11</td>
<td>7</td>
<td>29</td>
<td>3</td>
<td>0</td>
</tr>
</tbody>
</table>

**Chart 4.11: Graphical Representation:**

**Analysis:**

<table>
<thead>
<tr>
<th></th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>42</td>
<td>39</td>
<td>46</td>
<td>11</td>
<td>12</td>
</tr>
<tr>
<td>Public</td>
<td>25</td>
<td>28</td>
<td>68</td>
<td>22</td>
<td>7</td>
</tr>
</tbody>
</table>
For Private

<table>
<thead>
<tr>
<th>Option</th>
<th>Weight</th>
<th>Total Response</th>
<th>Weight</th>
<th>Total Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA</td>
<td>5X</td>
<td>150= 750</td>
<td>5X</td>
<td>42= 210</td>
</tr>
<tr>
<td>A</td>
<td>4X</td>
<td>150= 600</td>
<td>4X</td>
<td>39= 156</td>
</tr>
<tr>
<td>N</td>
<td>3X</td>
<td>150= 450</td>
<td>3X</td>
<td>46= 138</td>
</tr>
<tr>
<td>D</td>
<td>2X</td>
<td>150= 300</td>
<td>2X</td>
<td>11= 22</td>
</tr>
<tr>
<td>SD</td>
<td>1X</td>
<td>150= 150</td>
<td>1X</td>
<td>12= 12</td>
</tr>
</tbody>
</table>

For Public

<table>
<thead>
<tr>
<th>Option</th>
<th>Weight</th>
<th>Total Response</th>
<th>Weight</th>
<th>Total Response</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA</td>
<td>5X</td>
<td>150= 750</td>
<td>5X</td>
<td>25= 125</td>
</tr>
<tr>
<td>A</td>
<td>4X</td>
<td>150= 600</td>
<td>4X</td>
<td>28= 112</td>
</tr>
<tr>
<td>N</td>
<td>3X</td>
<td>150= 450</td>
<td>3X</td>
<td>68= 204</td>
</tr>
<tr>
<td>D</td>
<td>2X</td>
<td>150= 300</td>
<td>2X</td>
<td>22= 44</td>
</tr>
<tr>
<td>SD</td>
<td>1X</td>
<td>150= 150</td>
<td>1X</td>
<td>7= 7</td>
</tr>
</tbody>
</table>

A weight has been assigned to each option and each option with its total response is multiplied with weight assigned to it. The total figure for Private and Public sector banks has been taken separately to determine the outcome.

The responses can be analyzed as follows:
- Above 600 : Strongly Agree
- 450-600 : Agree
- 450 (Mean value) : Neither Agree nor Disagree
- 450-300 : Disagree
- Below 300 : Strongly Disagree

**Interpretation:**

From the above calculations researcher can observe that value of both Private and Public Sector bank fall in the category of Agree.

* The value of Z-calculated is 0.4291 which is falling in area of acceptance on the normal distribution curve.

**Conclusion:**

On basis of the objective of question the researcher can conclude that the customers of both Private and Public sector banks agree that the mobile banking facility provided by their bank is Interactive.
13. Do you think that banks are using Mobile banking to enhance Customer Relationship.

**Purpose:** In this question the researcher wants to determine whether there is significant difference in the usage pattern of mobile banking services by private & public sector banks to enhance customer relationship.

**Table 4.12: Data Representation**

<table>
<thead>
<tr>
<th>Bank</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>26</td>
<td>24</td>
</tr>
<tr>
<td>HDFC</td>
<td>28</td>
<td>22</td>
</tr>
<tr>
<td>AXIS</td>
<td>29</td>
<td>21</td>
</tr>
<tr>
<td>SBI</td>
<td>28</td>
<td>22</td>
</tr>
<tr>
<td>UBI</td>
<td>35</td>
<td>15</td>
</tr>
<tr>
<td>PNB</td>
<td>38</td>
<td>12</td>
</tr>
</tbody>
</table>

**Chart 4.12: Graphical Representation**

**Hypothesis 2:**

**H_{0}:** There is no significant difference between Private and Public sector banks in providing Mobile banking service for enhancing customer relationship.

**H_{1}:** There is significant difference between Private and Public sector banks in providing Mobile banking service for enhancing customer relationship.
Analysis:

Level of Significance(\(\alpha\))= 0.05

\(Z\) tabulated (\(Z_{\text{tab}}\)) = 1.96

(The value of \(Z_{\text{tab}}\) is determined by looking in the table which defines the areas under the standard normal probability distribution between the mean & positive value of \(Z\))

According to the question if there is a significant difference between Private and Public sector bank then the value of \(Z\) calculated (\(Z_{\text{cal}}\)) will fall in the area of rejection in normal distribution curve. In case there is no significant difference then the value of \(Z_{\text{cal}}\) will fall in the area of acceptance in the normal distribution curve. To find out the value of \(Z_{\text{cal}}\) for 2 population proportions (Private & Public sector banks) we use the formula mentioned below:

\[
Z_{\text{cal}} = \frac{(\bar{P}_1 - \bar{P}_2) - (P_1 - P_2)}{\sigma_{\bar{P}_1 - \bar{P}_2}}
\]

Where

\(\bar{P}_1\) = Proportion of people having account in Private sector banks and who agree that their bank provide Mobile Banking facility for improving Relationship.

\(\bar{q}_1\) = Proportion of people having account in Private sector banks but do not agree that their bank provide Mobile Banking facility for improving Relationship.

\(\bar{P}_2\) = Proportion of people having account in Public sector banks and who agree that their bank provide Mobile Banking facility for improving Relationship.

\(\bar{q}_2\) = Proportion of people having account in Public sector banks but do not agree that their bank provide Mobile Banking facility for improving Relationship.

\(\sigma\) = Standard Deviation
For Pvt. $\bar{P}_1 = \frac{83}{150} = 0.5533$
\[ \bar{q}_1 = \frac{67}{150} = 0.4466 \]

For Pub $\bar{P}_2 = \frac{101}{150} = 0.6733$
\[ \bar{q}_2 = \frac{49}{150} = 0.3266 \]

\[ n_1 = 150 \]
\[ n_2 = 150 \]

\[
\sigma_{\bar{P}_1 - \bar{P}_2} = \sqrt{\frac{\hat{P}\hat{q} + \hat{P}\hat{q}}{n_1 + n_2}}
\]

Where $\hat{P} =$ Estimated proportion of overall success in Private and Public Sector banks.
$\hat{q} =$ Estimated proportion of overall failure in Private and Public Sector banks.

$\sigma_{\bar{P}_1 - \bar{P}_2} =$ Standard error of the difference between two proportions.

\[
\hat{P} = \frac{n_1\bar{P}_1 + n_2\bar{P}_2}{n_1 + n_2} = \frac{150(0.5533) + 150(0.6733)}{150 + 150} = 0.6132
\]

\[
\sigma_{\bar{P}_1 - \bar{P}_2} = \sqrt{\frac{0.6132(0.3868)}{150} + \frac{0.6132(0.3868)}{150}} = 0.05623
\]

\[
i.e \quad Z_{cal} = \frac{(0.5533 - 0.6733) - (0)}{0.05623} = -2.13
\]

**Interpretation:**

Based on calculations researcher has sufficient evidence to reject the null hypothesis and accept the alternate hypothesis i.e Mobile banking is not used by all the banks to enhance Customer relationship.

**Conclusion:**

Based on calculations from Q.11 and Q.13 the researcher can conclude that though the Private sector banks are providing better Mobile Banking facility but they are not using mobile banking as effectively as Public sector banks to enhance Customer Relationship.
14. Does the branch display the bank’s guidelines regarding stipulated time limits for completing a specific banking transaction/service?

**Purpose:** In this question the researcher wants to determine whether there is significant difference in the display of bank’s guidelines regarding stipulated time limits for completing a specific banking transaction/service at Private and Public sector banks.

**Table 4.13: Data Representation**

<table>
<thead>
<tr>
<th>Bank</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>28</td>
<td>22</td>
</tr>
<tr>
<td>HDFC</td>
<td>26</td>
<td>24</td>
</tr>
<tr>
<td>AXIS</td>
<td>29</td>
<td>21</td>
</tr>
<tr>
<td>SBI</td>
<td>32</td>
<td>18</td>
</tr>
<tr>
<td>UBI</td>
<td>31</td>
<td>19</td>
</tr>
<tr>
<td>PNB</td>
<td>33</td>
<td>17</td>
</tr>
</tbody>
</table>

**Chart 4.13: Graphical Representation**

![Graphical Representation](image)

**Analysis:**

![Analysis](image)
Level of Significance ($\alpha$) = 0.05

$Z$ tabulated ($Z_{tab}$) = 1.96

(The value of $Z_{tab}$ is determined by looking in the table which defines the areas under the standard normal probability distribution between the mean & positive value of $Z$)

According to the question if there is a significant difference between Private and Public sector bank then the value of $Z$ calculated ($Z_{cal}$) will fall in the area of rejection in normal distribution curve. In case there is no significant difference then the value of $Z_{cal}$ will fall in the area of acceptance in the normal distribution curve. To find out the value of $Z_{cal}$ for 2 population proportions (Private & Public sector banks) we use the formula mentioned below:

$$Z_{cal} = \left( \frac{\bar{P}_1 - \bar{P}_2}{\sigma_{P_1 - P_2}} \right) - \left( P_1 - P_2 \right)_{Ho}$$

Where

- $\bar{P}_1$ = Proportion of people having account in Private sector banks and who agree that their branch display the bank’s guidelines regarding stipulated time limits for completing a specific banking transaction/service.
- $\bar{q}_1$ = Proportion of people having account in Private sector banks but do not agree that their branch display the bank’s guidelines regarding stipulated time limits for completing a specific banking transaction/service.
- $\bar{P}_2$ = Proportion of people having account in Public sector banks and who agree that their branch display the bank’s guidelines regarding stipulated time limits for completing a specific banking transaction/service.
- $\bar{q}_2$ = Proportion of people having account in Public sector banks but do not agree that their branch display the bank’s guidelines regarding stipulated time limits for completing a specific banking transaction/service.

$\sigma = $ Standard Deviation

For Pvt. $\bar{P}_1 = 83/150 = 0.5533$
$\bar{q}_1 = 67/150 = 0.4466$

For Pub $\bar{P}_2 = 96/150 = 0.64$
$\bar{q}_2 = 54/150 = 0.36$
$n_1 = 150$
$n_2 = 150$

$$\sigma_{P_1 - P_2} = \left( \frac{\hat{P}\hat{q} + \hat{P}\hat{q}}{n_1 + n_2} \right)^{1/2}$$

Where

- $\hat{P}$ = Estimated proportion of overall success in Private and Public Sector banks.
- $\hat{q}$ = Estimated proportion of overall failure in Private and Public Sector banks.
- $\sigma_{P_1 - P_2}$ = Standard error of the difference between two proportions.
\[ \hat{P} = \frac{n_1 \bar{P}_1 + n_2 \bar{P}_2}{n_1 + n_2} = \frac{150(0.5533) + 150(0.64)}{150 + 150} = 0.5966 \]

\[ \sigma_{\bar{P}_1 - \bar{P}_2} = \sqrt{\frac{(0.5966)(0.4034)}{150} + \frac{(0.5966)(0.4034)}{150}} = 0.0566 \]

\[ \text{i.e } Z_{\text{cal}} = \frac{(0.5533 - 0.64) - 0}{0.0566} = -1.53 \]

**Interpretation:**

The value of Z calculated is falling in the area of acceptance on the normal distribution curve.

**Conclusion:**

It can be concluded from the calculations that there is no significant difference between Private and Public sector banks in display of banks guidelines regarding stipulated time limits for completing a specific banking transaction/service as the value of Z calculated is falling in the area of acceptance.
15. The queries presented by you in your bank is addressed within the stipulated time as per the bank guidelines.

**Purpose:** In this question the researcher wants to find out whether the queries presented at the bank is addressed within the stipulated time limit at Private sector bank or the queries presented at the bank is addressed within the stipulated time limit at Public sector bank.

**Table 4.14: Data Representation**

<table>
<thead>
<tr>
<th>Bank</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>28</td>
<td>10</td>
<td>6</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>HDFC</td>
<td>26</td>
<td>9</td>
<td>5</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>AXIS</td>
<td>32</td>
<td>9</td>
<td>4</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>SBI</td>
<td>10</td>
<td>9</td>
<td>7</td>
<td>13</td>
<td>11</td>
</tr>
<tr>
<td>UBI</td>
<td>13</td>
<td>12</td>
<td>6</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>PNB</td>
<td>12</td>
<td>13</td>
<td>8</td>
<td>11</td>
<td>6</td>
</tr>
</tbody>
</table>

**Chart 4.14: Graphical Representation**

**Analysis:**

<table>
<thead>
<tr>
<th></th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>86</td>
<td>25</td>
<td>13</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>Public</td>
<td>35</td>
<td>34</td>
<td>21</td>
<td>34</td>
<td>26</td>
</tr>
</tbody>
</table>
A weight has been assigned to each option and each option with its total response is multiplied with weight assigned to it. The total figure for Private and Public sector banks has been taken separately to determine the outcome.

The responses can be analyzed as follows:

<table>
<thead>
<tr>
<th>Above 600</th>
<th>450-600</th>
<th>450 (Mean value)</th>
<th>450-300</th>
<th>Below 300</th>
</tr>
</thead>
<tbody>
<tr>
<td>: Strongly Agree</td>
<td>: Agree</td>
<td>: Neither Agree nor Disagree</td>
<td>: Disagree</td>
<td>: Strongly Disagree</td>
</tr>
</tbody>
</table>

**Interpretation:**

The calculated value for Private sector banks is 609 which falls in the category of strongly agree while the value of Public sector banks which is 468 falls in the category of agree.

**Conclusion:**

According to the objective of the question the researcher can conclude that the customers of Private sector banks strongly agree that their queries presented in the bank are addressed strictly within the stipulated time while at the Public Sector banks the customers agree that their queries presented in the bank are addressed strictly within the stipulated time.
16. The work timings of your bank are being strictly followed.

**Purpose:** In this question the researcher wants to find out whether the adherence to work timing in Private and Public sector banks is being strictly followed.

**Table 4.15: Data Representation**

<table>
<thead>
<tr>
<th>Bank</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>45</td>
<td>3</td>
<td>0</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>HDFC</td>
<td>40</td>
<td>2</td>
<td>0</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>AXIS</td>
<td>42</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>SBI</td>
<td>5</td>
<td>10</td>
<td>0</td>
<td>25</td>
<td>10</td>
</tr>
<tr>
<td>UBI</td>
<td>7</td>
<td>22</td>
<td>4</td>
<td>10</td>
<td>7</td>
</tr>
<tr>
<td>PNB</td>
<td>5</td>
<td>16</td>
<td>4</td>
<td>20</td>
<td>5</td>
</tr>
</tbody>
</table>

**Chart 4.15: Graphical Representation**

**Analysis:**

<table>
<thead>
<tr>
<th></th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>127</td>
<td>9</td>
<td>1</td>
<td>10</td>
<td>3</td>
</tr>
<tr>
<td>Public</td>
<td>17</td>
<td>48</td>
<td>8</td>
<td>55</td>
<td>22</td>
</tr>
</tbody>
</table>
A weight has been assigned to each option and each option with its total response is multiplied with weight assigned to it. The total figure for Private and Public sector banks has been taken separately to determine the outcome. The responses can be analyzed as follows:

Above 600 : Strongly Agree  
450-600 : Agree  
450(Mean value) : Neither Agree nor Disagree  
450-300 : Disagree  
Below 300 : Strongly Disagree

**Interpretation:**

As per the calculations above researcher can see that the value for Private sector banks fall in the category of Strongly Agree while the value of Public sector banks fall in category of Disagree.

**Conclusion:**

On basis of the objective of the question the researcher can conclude that the work timings at Private sector banks are being strictly followed while at Public sector bank it is not strictly followed.
17. Your complaints about the bank are being registered properly at the branch.

**Purpose:** In this question the researcher wants to find out whether the customer complaints about the bank are being registered properly at Private sector banks and Public sector banks.

**Table 4.16: Data Representation**

<table>
<thead>
<tr>
<th>Bank</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>20</td>
<td>10</td>
<td>4</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>HDFC</td>
<td>17</td>
<td>19</td>
<td>6</td>
<td>6</td>
<td>2</td>
</tr>
<tr>
<td>AXIS</td>
<td>19</td>
<td>17</td>
<td>5</td>
<td>7</td>
<td>2</td>
</tr>
<tr>
<td>SBI</td>
<td>14</td>
<td>13</td>
<td>4</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>UBI</td>
<td>13</td>
<td>12</td>
<td>3</td>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>PNB</td>
<td>11</td>
<td>17</td>
<td>2</td>
<td>11</td>
<td>9</td>
</tr>
</tbody>
</table>

**Chart 4.16: Graphical Representation**

**Analysis :**

<table>
<thead>
<tr>
<th></th>
<th>SA</th>
<th>A</th>
<th>N</th>
<th>D</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>56</td>
<td>46</td>
<td>15</td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td>Public</td>
<td>38</td>
<td>42</td>
<td>9</td>
<td>30</td>
<td>31</td>
</tr>
</tbody>
</table>
A weight has been assigned to each option and each option with its total response is multiplied with weight assigned to it. The total figure for Private and Public sector banks has been taken separately to determine the outcome.

The responses can be analyzed as follows:

- Above 600: Strongly Agree
- 450-600: Agree
- 450 (Mean value): Neither Agree nor Disagree
- 450-300: Disagree
- Below 300: Strongly Disagree

### Interpretation:

The calculated value for Private sector banks falls in the category of Strongly agree while the calculated value for Public sector banks fall in the category of Agree.

### Conclusion:

As per the objective of the question the researcher can conclude that the customers of Private sector bank strongly agree that their complaints are being registered properly at the branch while the customers of Public sector banks agree that their complaints are registered properly at the branch. That is the overall process of complaint registration at Private sector bank is more effective than Public sector banks.
18. The complaints are being addressed within the stipulated time.

Purpose: In this question the researcher wants to find out whether there is a significant difference in meeting the stipulated time of complaint redressal by private & public sector banks.

Table 4.17: Data Representation

<table>
<thead>
<tr>
<th>Bank</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>34</td>
<td>16</td>
</tr>
<tr>
<td>HDFC</td>
<td>38</td>
<td>12</td>
</tr>
<tr>
<td>AXIS</td>
<td>39</td>
<td>11</td>
</tr>
<tr>
<td>SBI</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>UBI</td>
<td>28</td>
<td>22</td>
</tr>
<tr>
<td>PNB</td>
<td>25</td>
<td>25</td>
</tr>
</tbody>
</table>

Chart 4.17: Graphical Representation

Hypothesis 3:

$H_0$: There is no significant difference between Private and Public sector banks addressing the customer complaints within the stipulated time.

$H_1$: There is significant difference between Private and Public sector banks addressing the customer complaints within the stipulated time.
Analysis:

Level of Significance(\(\alpha\)) = 0.05

Z tabulated (\(Z_{tab}\)) = 1.96

(The value of \(Z_{tab}\) is determined by looking in the table which defines the areas under the standard normal probability distribution between the mean & positive value of \(Z\))

According to the question if there is a significant difference between Private and Public sector bank then the value of \(Z\) calculated (\(Z_{cal}\)) will fall in the area of rejection in normal distribution curve. In case there is no significant difference then the value of \(Z_{cal}\) will fall in the area of acceptance in the normal distribution curve. To find out the value of \(Z_{cal}\) for 2 population proportions (Private & Public sector banks) we use the formula mentioned below:

\[
Z_{cal} = \frac{(\bar{P}_1 - \bar{P}_2) - (P_1 - P_2)_{Ho}}{\sigma\bar{P}_1 - \bar{P}_2}
\]

Where
- \(\bar{P}_1\) = Proportion of people having account in Private sector banks and who agree that their complaints are being addressed within the stipulated time.
- \(q_1\) = Proportion of people having account in Private sector banks but do not agree that their complaints are being addressed within the stipulated time.
- \(\bar{P}_2\) = Proportion of people having account in Public sector banks and who agree that their complaints are being addressed within the stipulated time.
- \(q_2\) = Proportion of people having account in Public sector banks but do not agree that their complaints are being addressed within the stipulated time.
- \(\sigma\) = Standard Deviation

For Pvt. \(\bar{P}_1 = \frac{111}{150} = 0.74\)
- \(q_1 = \frac{39}{150} = 0.26\)

For Pub \(\bar{P}_2 = \frac{83}{150} = 0.5533\)
\[ \hat{q}_2 = 67/150 = 0.4466 \]
\[ n_1 = 150 \]
\[ n_2 = 150 \]

\[ \sigma \hat{p}_1 - \hat{p}_2 = \sqrt{\frac{\hat{p}\hat{q}_1 + \hat{p}\hat{q}_2}{n_1 + n_2}} \]

Where

\( \hat{P} = \) Estimated proportion of overall success in Private and Public Sector banks.

\( \hat{q} = \) Estimated proportion of overall failure in Private and Public Sector banks.

\( \sigma \hat{p}_1 - \hat{p}_2 = \) Standard error of the difference between two proportions.

\[ \hat{P} = \frac{n_1 \hat{p}_1 + n_2 \hat{p}_2}{n_1 + n_2} = \frac{150(0.74)+150(0.5533)}{150+150} = 0.6466 \]

\[ \sigma \hat{p}_1 - \hat{p}_2 = \sqrt{\frac{(0.6466)(0.3534)}{150} + \frac{(0.6466)(0.3534)}{150}} = 0.0551 \]

i.e \( Z_{cal} = \frac{(0.74-0.5533)-0}{0.0551} = 3.388 \)

**Interpretation:**

Based on calculations of Q.18 the researcher has sufficient evidence to reject the null hypothesis and accept the alternate hypothesis that all the banks do not address the customer complaints within the stipulated time.

**Conclusion:**

Based on data collected and calculations the researcher can draw out the conclusion that the private sector banks address more customer complaints within the stipulated time than the public sector banks.
19. What is the effectiveness of complaint redressal system in your bank?

**Purpose:** In this question the researcher wants to find out whether the complaint redressal system of Private sector bank is better or Public sector bank is better.

**Table 4.18: Data Representation**

<table>
<thead>
<tr>
<th>Bank</th>
<th>Very Effective</th>
<th>Effective</th>
<th>Neutral</th>
<th>In Effective</th>
<th>Very Ineffective</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>3</td>
<td>34</td>
<td>4</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>HDFC</td>
<td>5</td>
<td>32</td>
<td>3</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>AXIS</td>
<td>4</td>
<td>32</td>
<td>2</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>SBI</td>
<td>3</td>
<td>13</td>
<td>6</td>
<td>22</td>
<td>6</td>
</tr>
<tr>
<td>UBI</td>
<td>4</td>
<td>15</td>
<td>2</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>PNB</td>
<td>6</td>
<td>20</td>
<td>4</td>
<td>13</td>
<td>7</td>
</tr>
</tbody>
</table>

**Chart 4.18: Graphical Representation**

**Analysis:**

<table>
<thead>
<tr>
<th></th>
<th>VE</th>
<th>E</th>
<th>N</th>
<th>IE</th>
<th>VIE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>12</td>
<td>98</td>
<td>9</td>
<td>17</td>
<td>14</td>
</tr>
<tr>
<td>Public</td>
<td>13</td>
<td>48</td>
<td>12</td>
<td>50</td>
<td>27</td>
</tr>
</tbody>
</table>
A weight has been assigned to each option and each option with its total response is multiplied with weight assigned to it. The total figure for Private and Public sector banks has been taken separately to determine the outcome.

The responses can be analyzed as follows:
- Above 600: Very Effective
- 450-600: Effective
- 450 (Mean value): Neither Effective nor Ineffective
- 450-300: Ineffective
- Below 300: Very Ineffective

**Interpretation:**
The calculated value for Private sector banks fall in the category of Effective while that of Public sector banks fall in the category of Ineffective.

**Conclusion:**
As per the objectives of the question and the above calculations the researcher can conclude that the Complaint redressal system of Private sector banks is better than that of Public sector banks.
20. Is the staff of your bank polite in dealing with you?

Purpose: In this question the researcher wants to find out whether there is a significant difference in the politeness of staff of Private and Public sector banks in dealing with their customers.

Table 4.19: Data Representation

<table>
<thead>
<tr>
<th>Bank</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>29</td>
<td>21</td>
</tr>
<tr>
<td>HDFC</td>
<td>32</td>
<td>18</td>
</tr>
<tr>
<td>AXIS</td>
<td>35</td>
<td>15</td>
</tr>
<tr>
<td>SBI</td>
<td>12</td>
<td>38</td>
</tr>
<tr>
<td>UBI</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>PNB</td>
<td>27</td>
<td>23</td>
</tr>
</tbody>
</table>

Chart 4.19: Graphical Representation

Analysis:
Level of Significance($\alpha$) = 0.05

$Z$ tabulated ($Z_{tab}$) = 1.96

(The value of $Z_{tab}$ is determined by looking in the table which defines the areas under the standard normal probability distribution between the mean & positive value of $Z$)

According to the question if there is a significant difference between Private and Public sector bank then the value of $Z$ calculated ($Z_{cal}$) will fall in the area of rejection in normal distribution curve. In case there is no significant difference then the value of $Z_{cal}$ will fall in the area of acceptance in the normal distribution curve. To find out the value of $Z_{cal}$ for 2 population proportions (Private & Public sector banks) we use the formula mentioned below:

$$Z_{cal} = \frac{(\hat{P}_1 - \hat{P}_2) - (P_1 - P_2)_{Ho}}{\sigma_{\hat{P}_1 - \hat{P}_2}}$$

Where $\hat{P}_1$ = Proportion of people having account in Private sector banks and who agree that the staff of the bank is polite in dealing with them.

$\hat{Q}_1$ = Proportion of people having account in Private sector banks but do not agree that the staff of the bank is polite in dealing with them.

$\hat{P}_2$ = Proportion of people having account in Public sector banks and who agree that the staff of the bank is polite in dealing with them.

$\hat{Q}_2$ = Proportion of people having account in Public sector banks but do not agree that the staff of the bank is polite in dealing with them.

$\sigma$ = Standard Deviation

For Pvt. $\hat{P}_1 = 96/150 = 0.64$

$\hat{Q}_1 = 54/150 = 0.36$

For Pub $\hat{P}_2 = 69/150 = 0.46$

$\hat{Q}_2 = 81/150 = 0.54$

$n_1 = 150$

$n_2 = 150$

$$\sigma_{\hat{P}_1 - \hat{P}_2} = \sqrt{\hat{P}\hat{Q} + \hat{P}\hat{Q}}$$

Where $\hat{P}$ = Estimated proportion of overall success in Private and Public Sector banks.

$\hat{Q}$ = Estimated proportion of overall failure in Private and Public Sector banks.

$\sigma_{\hat{P}_1 - \hat{P}_2}$ = Standard error of the difference between two proportions.

$$\hat{P} = \frac{n_1\hat{P}_1 + n_2\hat{P}_2}{n_1 + n_2} = \frac{150(0.64) + 150(0.46)}{150 + 150} = 0.55$$
\[ \sigma^{2}_{1} - \sigma^{2}_{2} = \sqrt{\frac{(0.55)(0.45)}{150} + \frac{(0.55)(0.45)}{150}} = 0.05744 \]

\[ \text{i.e } Z_{\text{cal}} = \frac{(0.64-0.46)-(0)}{0.05744} = 3.3088 \]

**Interpretation:**

The calculated value of Z in the above test is falling in the area of rejection in normal distribution curve.

**Conclusion:**

Based on the data collected and calculations the researcher can draw out the conclusion that the Staff of Private sector banks are more polite in dealing with the customers than Public sector banks.
21. Does the staff of your bank goes extra mile in addressing your queries?

**Purpose:** In this question the researcher wants to find out whether there is a significant difference among the staff of Private and Public sector banks in putting in the extra efforts in addressing the customers.

**Table 4.20: Data Representation**

<table>
<thead>
<tr>
<th>Bank</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>26</td>
<td>24</td>
</tr>
<tr>
<td>HDFC</td>
<td>28</td>
<td>22</td>
</tr>
<tr>
<td>AXIS</td>
<td>30</td>
<td>20</td>
</tr>
<tr>
<td>SBI</td>
<td>2</td>
<td>48</td>
</tr>
<tr>
<td>UBI</td>
<td>9</td>
<td>41</td>
</tr>
<tr>
<td>PNB</td>
<td>10</td>
<td>40</td>
</tr>
</tbody>
</table>

**Chart 4.20: Graphical Representation**
Analysis:

Level of Significance(α)= 0.05

Z tabulated (Z_{tab}) = 1.96

(The value of Z_{tab} is determined by looking in the table which defines the areas under the standard normal probability distribution between the mean & positive value of Z)

According to the question if there is a significant difference between Private and Public sector bank then the value of Z calculated (Z_{cal}) will fall in the area of rejection in normal distribution curve. In case there is no significant difference then the value of Z_{cal} will fall in the area of acceptance in the normal distribution curve. To find out the value of Z_{cal} for 2 population proportions (Private & Public sector banks) we use the formula mentioned below:

\[
Z_{cal} = \frac{(\bar{P}_1 - \bar{P}_2) - (p_1 - p_2)}{\sigma}\]

Where  
\(\bar{P}_1\) = Proportion of people having account in Private sector banks and who agree that the staff of the bank goes extra mile in addressing their queries.
\(\bar{q}_1\) = Proportion of people having account in Private sector banks and who do not agree that the staff of the bank goes extra mile in addressing their queries.
\(\bar{P}_2\) = Proportion of people having account in Public sector banks and who agree that the staff of the bank goes extra mile in addressing their queries.
\(\bar{q}_2\) = Proportion of people having account in Public sector banks and who do not agree that the staff of the bank goes extra mile in addressing their queries.
\(\sigma\) = Standard Deviation

For Pvt.  
\(\bar{P}_1 = \frac{84}{150} = 0.56\)
\(\bar{q}_1 = \frac{66}{150} = 0.44\)

For Pub  
\(\bar{P}_2 = \frac{21}{150}= 0.14\)
\(\bar{q}_2 = \frac{129}{150} = 0.86\)
\(n_1 = 150\)
\[ n_2 = 150 \]

\[
\sigma \bar{P}_1 - \bar{P}_2 = \sqrt{\frac{\hat{P}\hat{q} + \hat{P}\hat{q}}{n_1 + n_2}}
\]

Where \( \hat{P} \) = Estimated proportion of overall success in Private and Public Sector banks.

\( \hat{q} \) = Estimated proportion of overall failure in Private and Public Sector banks.

\( \sigma \bar{P}_1 - \bar{P}_2 \) = Standard error of the difference between two proportions.

\[
\hat{P} = \frac{n_1\bar{P}_1 + n_2\bar{P}_2}{n_1 + n_2} = \frac{150(0.56) + 150(0.14)}{150 + 150} = 0.35
\]

\[
\sigma \bar{P}_1 - \bar{P}_2 = \sqrt{\frac{(0.35)(0.65) + (0.35)(0.65)}{150} + \frac{(0.35)(0.65)}{150}} = 0.0389
\]

i.e \( Z_{cal} = \frac{(0.56 - 0.14) - (0)}{0.0389} = 10.796 \)

**Interpretation:**

The value of Z calculated is falling under area of rejection in the normal distribution curve.

**Conclusion:**

Based on the calculations of Q.21 the researcher can reach on the conclusion that the Staff of Private sector banks are more customer friendly and generally go extra mile i.e can put in extra efforts in addressing the customers than the staff of Public sector banks.
22. What is the major problem you encounter when you approach your bank.

**Purpose:** In this question the researcher wants to find out the major problem among the given choices encountered by the customer when he/she approaches the bank.

**Table 4.21: Data Representation**

<table>
<thead>
<tr>
<th>Bank</th>
<th>Crowded</th>
<th>Slow Service</th>
<th>Technical</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>26</td>
<td>2</td>
<td>8</td>
<td>14</td>
</tr>
<tr>
<td>HDFC</td>
<td>23</td>
<td>6</td>
<td>9</td>
<td>12</td>
</tr>
<tr>
<td>AXIS</td>
<td>7</td>
<td>8</td>
<td>19</td>
<td>16</td>
</tr>
<tr>
<td>SBI</td>
<td>30</td>
<td>15</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>UBI</td>
<td>13</td>
<td>28</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>PNB</td>
<td>10</td>
<td>32</td>
<td>3</td>
<td>5</td>
</tr>
</tbody>
</table>

**Chart 4.21: Graphical Representation**

**Interpretation:**

From the above data the researcher can interpret that for Public sector banks Slow service is a major problem followed by Overcrowded branches.

In Private sector banks Crowded branches are a major problem followed by technical problems.
23. What is your opinion about Service Quality of your bank.

**Purpose:** In this question the researcher wants to find out whether there is a difference in the service quality of the Private and Public sector banks.

**Table 4.22: Data Representation**

<table>
<thead>
<tr>
<th>Bank</th>
<th>Very Good</th>
<th>Good</th>
<th>Satisfactory</th>
<th>Unsatisfactory</th>
<th>Very Unsatisfactory</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>2</td>
<td>40</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>HDFC</td>
<td>1</td>
<td>42</td>
<td>6</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>AXIS</td>
<td>15</td>
<td>30</td>
<td>4</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>SBI</td>
<td>0</td>
<td>10</td>
<td>35</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>UBI</td>
<td>3</td>
<td>38</td>
<td>6</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>PNB</td>
<td>9</td>
<td>25</td>
<td>7</td>
<td>6</td>
<td>3</td>
</tr>
</tbody>
</table>

**Chart 4.22: Graphical Representation**

**Analysis:**

<table>
<thead>
<tr>
<th></th>
<th>VG</th>
<th>G</th>
<th>S</th>
<th>US</th>
<th>VUS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private</td>
<td>18</td>
<td>112</td>
<td>14</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Public</td>
<td>12</td>
<td>73</td>
<td>48</td>
<td>13</td>
<td>4</td>
</tr>
</tbody>
</table>
A weight has been assigned to each option and each option with its total response is multiplied with weight assigned to it. The total figure for Private and Public sector banks has been taken separately to determine the outcome.

The responses can be analyzed as follows:

- Above 600: Very Good
- 450-600: Good
- 450 (Mean value): Satisfactory
- 450-300: Unsatisfactory
- Below 300: Very Unsatisfactory

**Interpretation:**

On basis of calculations we can see that the value for both Public Sector Bank and Private sector banks fall at the category of agree.

* The value for Z calculated for the above data if falling in the area of acceptance which is 0.9799.

**Conclusion:**

The researcher can draw out the conclusion that the overall service quality of both Private Sector Banks & Public Sector banks as per the opinion of customers is good.
24. Tick the financial products & services offered by your bank

<table>
<thead>
<tr>
<th>Bank</th>
<th>Demat</th>
<th>GI</th>
<th>LI</th>
<th>OD</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>ICICI Securities</td>
<td>ICICI Lombard</td>
<td>ICICI Prudential</td>
<td>Yes</td>
</tr>
<tr>
<td>HDFC</td>
<td>HDFC Securities</td>
<td>HDFC Ergo</td>
<td>HDFC Life</td>
<td>Yes</td>
</tr>
<tr>
<td>AXIS</td>
<td>Axis Direct</td>
<td>Tata AIG</td>
<td>Max Life</td>
<td>Yes</td>
</tr>
<tr>
<td>SBI</td>
<td>SBI Cap Securities</td>
<td>SBI General</td>
<td>SBI Life</td>
<td>Yes</td>
</tr>
<tr>
<td>UBI</td>
<td>Union Demat</td>
<td>New India Assurance</td>
<td>Star Union Daichi</td>
<td>Yes</td>
</tr>
<tr>
<td>PNB</td>
<td>PNB Demat</td>
<td>Oriental</td>
<td>Metlife</td>
<td>Yes</td>
</tr>
</tbody>
</table>
25. Does your bank sends you greetings on special occasions such as Birthday, Anniversary etc.

**Purpose:** In this question the researcher wants to find out the significant difference in sending greetings on special occasions by Private sector banks and Public sector banks.

**Table 4.23: Data Representation**

<table>
<thead>
<tr>
<th>Bank</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>15</td>
<td>35</td>
</tr>
<tr>
<td>HDFC</td>
<td>14</td>
<td>36</td>
</tr>
<tr>
<td>AXIS</td>
<td>18</td>
<td>32</td>
</tr>
<tr>
<td>SBI</td>
<td>0</td>
<td>50</td>
</tr>
<tr>
<td>UBI</td>
<td>10</td>
<td>40</td>
</tr>
<tr>
<td>PNB</td>
<td>4</td>
<td>46</td>
</tr>
</tbody>
</table>

**Chart 4.23: Graphical Representation**

**Analysis:**
Level of Significance ($\alpha$) = 0.05

$Z$ tabulated ($Z_{tab}$) = 1.96

(The value of $Z_{tab}$ is determined by looking in the table which defines the areas under the standard normal probability distribution between the mean & positive value of $Z$)

According to the question if there is a significant difference between Private and Public sector bank then the value of $Z$ calculated ($Z_{cal}$) will fall in the area of rejection in normal distribution curve. In case there is no significant difference then the value of $Z_{cal}$ will fall in the area of acceptance in the normal distribution curve. To find out the value of $Z_{cal}$ for 2 population proportions (Private & Public sector banks) we use the formula mentioned below:

$$Z_{cal} = \frac{(\hat{P}_1 - \hat{P}_2) - (P_1 - P_2)_{Ho}}{\sigma_{P1 - P2}}$$

Where

- $\hat{P}_1$ = Proportion of people having account in Private sector banks and who agree that the bank sends greetings on special occasions.
- $\hat{q}_1$ = Proportion of people having account in Private sector banks and who do not agree that the bank sends greetings on special occasions.
- $\hat{P}_2$ = Proportion of people having account in Public sector banks and who agree that the bank sends greetings on special occasions.
- $\hat{q}_2$ = Proportion of people having account in Public sector banks and who do not agree that the bank sends greetings on special occasions.

$\sigma = $ Standard Deviation

For Pvt. $\hat{P}_1 = 47/150 = 0.3133$
$\hat{q}_1 = 103/150 = 0.6866$

For Pub $\hat{P}_2 = 14/150 = 0.0933$
$\hat{q}_2 = 136/150 = 0.9066$

$$\sigma_{P1 - P2} = \sqrt{\frac{\hat{P}\hat{q} + \hat{P}\hat{q}}{n_1 + n_2}}$$

Where

- $\hat{P}$ = Estimated proportion of overall success in Private and Public Sector banks.
- $\hat{q}$ = Estimated proportion of overall failure in Private and Public Sector banks.
- $\sigma_{P1 - P2}$ = Standard error of the difference between two proportions.
\[ \hat{p} = \frac{n_1 \hat{p}_1 + n_2 \hat{p}_2}{n_1 + n_2} = \frac{150(0.3133) + 150(0.0933)}{150 + 150} = 0.2032 \]

\[ \sigma_{\hat{p}}^2 = \sqrt{\frac{(0.2032)(0.7968)}{150} + \frac{(0.2032)(0.7968)}{150}} = 0.04646 \]

i.e \[ Z_{\text{cal}} = \frac{(0.3133 - 0.0933) - 0}{0.04646} = 4.735 \]

**Interpretation:**
Based on calculations the researcher can see that the value of \( Z_{\text{cal}} \) is falling in the area of rejection under the normal distribution curve.

**Conclusion:**
As per the objective of the question the researcher can conclude that Private Sector banks are more frequent in sending greetings to their customers on special occasions than Public sector banks.
27. Do you think CRM services if properly implemented will lead to better relationship between organization & customers in both private sector & public sector bank.

**Purpose:** In this question the researcher wants to find out whether there is a significant difference between the customers of Private Sector bank and Public sector bank who think that CRM services if properly implemented will lead to better relationship between organization & customers.

Table 4.24: Data Representation

<table>
<thead>
<tr>
<th>Bank</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICICI</td>
<td>49</td>
<td>1</td>
</tr>
<tr>
<td>HDFC</td>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>AXIS</td>
<td>42</td>
<td>8</td>
</tr>
<tr>
<td>SBI</td>
<td>45</td>
<td>5</td>
</tr>
<tr>
<td>UBI</td>
<td>47</td>
<td>3</td>
</tr>
<tr>
<td>PNB</td>
<td>40</td>
<td>10</td>
</tr>
</tbody>
</table>

Chart 4.24: Graphical Representation

Hypothesis 4:

Hₐ : The Customer Relationship Management Process leads to better relation between Organisation and Customers.

H₁ : The Customer Relationship Management Process does not leads to better relation between Organisation and Customers.
Level of Significance (α) = 0.1

$Z_{tab} = -1.28$

(The value of $Z_{tab}$ is determined by looking in the table which defines the areas under the standard normal probability distribution between the mean & positive value of $Z$)

According to the question if there is a significant difference between Private and Public sector bank then the value of $Z$ calculated ($Z_{cal}$) will fall in the area of rejection in normal distribution curve. In case there is no significant difference then the value of $Z_{cal}$ will fall in the area of acceptance in the normal distribution curve. To find out the value of $Z_{cal}$ for 2 population proportions (Private & Public sector banks) we use the formula mentioned below:

$$Z_{cal} = \frac{(\bar{P}_1 - \bar{P}_2) - (P_1 - P_2)_{Ho}}{\sigma\sqrt{\frac{\bar{P}_1(1-\bar{P}_1)}{n_1} + \frac{\bar{P}_2(1-\bar{P}_2)}{n_2}}}$$

Where
- $\bar{P}_1$ = Proportion of people having account in Private sector banks and who agree that the bank sends greetings on special occasions.
- $q_1$ = Proportion of people having account in Private sector banks and who do not agree that the bank sends greetings on special occasions.
- $\bar{P}_2$ = Proportion of people having account in Public sector banks and who agree that the bank sends greetings on special occasions.
- $q_2$ = Proportion of people having account in Public sector banks and who do not agree that the bank sends greetings on special occasions.
- $\sigma$ = Standard Deviation

For Pvt. $\bar{P}_1 = \frac{131}{150} = 0.8733$
\[ q_1 = \frac{19}{150} = 0.1266 \]

For Pub
\[ P_2 = \frac{132}{150} = 0.88 \]
\[ q_2 = \frac{18}{150} = 0.12 \]
\[ n_1 = 150 \]
\[ n_2 = 150 \]

\[
\sigma \sqrt{\frac{P \hat{q} + P \hat{q}}{n_1 + n_2}}
\]

Where
\[ \hat{P} = \text{Estimated proportion of overall success in Private and Public Sector banks.} \]
\[ \hat{q} = \text{Estimated proportion of overall failure in Private and Public Sector banks.} \]
\[ \sigma \sqrt{\frac{P \hat{q} + P \hat{q}}{n_1 + n_2}} = \text{Standard error of the difference between two proportions.} \]

\[
\hat{P} = \frac{n_1 \cdot P_1 + n_2 \cdot P_2}{n_1 + n_2} = \frac{150(0.8733)+150(0.88)}{150+150} = 0.8766
\]

\[
\sigma \sqrt{\frac{(0.8766)(0.1234) + (0.8766)(0.1234)}{150}} = 0.0379
\]

i.e \[ Z_{\text{cal}} = (0.8733-0.88) - (0)/0.0379 = -0.17 \]

**Interpretation:**

The researcher does not have sufficient evidence to reject the null hypothesis, so we accept the null hypothesis that CRM process if properly implemented will lead to better relationship between customer and organization in both private sector & public sector banks.

**Conclusion:**

If properly implemented both Private and Public sector banks will be benefited by Customer Relationship Management.
28. What more service should be provided by your bank?

- Home banking.
- All bill payments at the banks branch.
- Banks should become a one stop financial solution.
- Cheque clearing process should be fast.
- Queue time or waiting time should be reduced.
- Biometric ATM machines should be introduced so as to improve security.

29. Can you suggest ways of further improving relations between customer & bank.

- Customer week should be introduced or if already functional should be made more effective.
- Improvement ideas should be taken directly from the customers.
- A quarterly customer discussion forum can be launched which will enable the banks to generate new ideas for improvement.