Chapter 3
Research Methodology

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This chapter explains the research process and method applied in this study. The chapter is divided into four parts. The first part describes the nature and scope of the study, the second part describes the multistage design process conducted to achieve the objectives of the study in terms of research paradigm, sample size, sampling technique and gives detailed description of the tools used for the data collection, validation and data analysis.

3.1. The Study

The present investigation is an exploratory study focused at examining the importance of corporate communication in an organization. The purpose of the study is to identify the impact of globalization, new technology and corporate social responsiveness on corporate communication to create a distinct corporate image of an organization perceived by the executives of services and manufacturing organizations. The study is also an attempt to identify the constituent factors for globalization, new technology and corporate social responsiveness which influence corporate communication and to determine whether these constituent factors impact differently in services and manufacturing organizations.

3.2. The Research Design

The study was based on a multi-stage descriptive design; Stage I - item generation, Stage II - scale development and Stage III - scale evaluation.

3.2.1. Stage 1

After examining various aspects from relevant literature and in the light of the objectives of the study, the definition of corporate communication, corporate image, globalization, new technology and corporate social responsiveness was framed. 57 items/statements were identified under corporate communication, 61 items/statements were identified under corporate image, 57 items/statements were identified under globalization, 51 items/statements were identified under new technology and 48 items/statements were identified under corporate social responsiveness. In item generation the primary concern is construct validity i.e., whether each item individually and all items collectively adequately reflect the construct being measured (Schriesheim et al., 1993). In the present study content validation of generated items was conducted by presenting them to fifteen expert judges. 15 judges with a post graduate degree working with services,
manufacturing and academic institutes was prepared. The definition was written on the card and shown to the judges who were asked to select the items that went with the definitions of variables shown to them. The cards were placed before the judges who were contacted individually after building up the rapport. The frequency of choices of judges was calculated. The items/statements that had the frequency of 75 percent or above were identified. This was based on Third Quartile (Q3). In descriptive statistics, the quartiles of a ranked set of data values are the three points that divide the data set into four equal groups, each group comprising a quarter of the data. First quartile (Q₁) also called the lower quartile or the 25th percentile (splits off the lowest 25% of data from the highest 75%). The second quartile (Q₂) also called the median or the 50th percentile (cuts data set in half) and the third quartile (Q₃) is the middle value between the median and the highest value of the data set. It is also called the upper quartile or the 75th percentile (splits off the highest 25% of data from the lowest 75%)( Hyndman & Yanan, 1996).

In this process 169 total items/statements were dropped and only 105 total items/statements became the part of the questionnaire. Out of which 21 items/statements were finally identified under corporate communication, 40 items/statements were identified under corporate image, 15 items/statements were identified under globalization, 12 items/statements were identified under new technology and 17 items/statements were identified under corporate social responsiveness.

3.2.2. Stage 2

These items were presented on the five point Likert scale and a pilot study was done on 100 executives working in services and manufacturing organizations and were involved in the process of corporate communication. With a view to establish internal consistency, the data generated was subjected to item-total correlation. Item-total correlation is the process of establishing correlation between each item and all remaining items thereby eliminating those items that do not correlate strongly with the assessed construct. Thus, Item-total correlation was computed on the data generated and all the items showed significant correlation (Significance level 0.05). Linear Regression was applied to identify the impact of corporate communication on corporate image of an organization. It was also applied to identify the impact of globalization, new technology and corporate social
responsiveness on corporate communication to create a distinct corporate image of an organization in services and manufacturing organizations.

The results derived by administering linear regression are mentioned in the Table 3.1.

**Table 3.1 Linear Regression Analysis (Pilot Study)**

<table>
<thead>
<tr>
<th></th>
<th>Corporate Communication and Corporate Image</th>
<th>Globalization and Corporate Communication</th>
<th>New Technology and Corporate Communication</th>
<th>Corporate Social responsiveness and Corporate Communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>0.574</td>
<td>0.613</td>
<td>0.514</td>
<td>0.539</td>
</tr>
<tr>
<td>R Square</td>
<td>0.329</td>
<td>0.375</td>
<td>0.264</td>
<td>0.290</td>
</tr>
<tr>
<td>Adjusted R Square</td>
<td>0.323</td>
<td>0.369</td>
<td>0.257</td>
<td>0.283</td>
</tr>
<tr>
<td>F</td>
<td>48.1</td>
<td>58.9</td>
<td>35.2</td>
<td>40.0</td>
</tr>
<tr>
<td>p value</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>Unstandardized Coefficient β</td>
<td>0.574</td>
<td>0.613</td>
<td>0.514</td>
<td>0.539</td>
</tr>
<tr>
<td>t</td>
<td>6.93</td>
<td>7.67</td>
<td>5.93</td>
<td>6.33</td>
</tr>
</tbody>
</table>

R indicates the strength and direction of a correlation, while \( R^2 \) signifies the proportion of variance in the criterion variable predictable from the variation in the derived variable of composite scores. Basically, the \( R^2 \) value explains the amount of variation of the dependent variable, attributed to the set of predictor variables. The adjusted \( R^2 \) value is simply based on the number of variables and objects studied. Therefore, the adjusted \( R^2 \) value is what is to be used to test the explanatory power of each regression model tested. The size of the standardized beta weights reflect the relative importance of the variables with which they are attached. Therefore, a variable with a high beta coefficient should account for more of the variance in the criterion variable than a predictor variable with a small beta coefficient. It is important to realize that these coefficients simply show the relative importance of the predictor variables, rather than the absolute contributions of the predictor variables. The ANOVA table tells us whether or not our simple linear regression model is better at predicting the outcome variable than simply using the mean.
of the outcome variable. The F-ratio is statistically significant at $p < .0005$, suggesting that our model does prove the prediction. Finally the t-test tells us whether the variable is making a statistically significant contribution to the predictive power of the model (Kachigan, 1986).

**The following null hypotheses were tested during the pilot study:**

H$_{01}$: Corporate communication has no impact on corporate image of an organization.

Null hypothesis is rejected ($p < 0.05$). The coefficient of 0.574 suggests there is a significant relationship between corporate communication and corporate image of an organization. The R Square indicates explained variance of approximately 33%. The F ratio of 48.1 is statistically significant at $p < .005$ suggesting that our model does prove the prediction while ($t = 6.93$, $p < .0005$) tell us that globalization is a statistically significant predictor of the outcome. Unstandardized Coefficient $\beta = 0.973$, 95% Confidence Interval for Unstandardized Coefficient $\beta$ are 0.695 and 1.25. This shows that corporate communication has significant impact on corporate image of an organization.

H$_{02}$: Globalization has no impact on corporate communication in services and manufacturing organizations to create a distinct corporate image of an organization.

Null hypothesis is rejected ($p < 0.05$). The coefficient of 0.613 suggests there is a significant relationship between globalization and corporate communication of an organization. The R Square indicates explained variance of approximately 29%. The F ratio of 40.0 is statistically significant at $p<.005$ suggesting that our model does prove the prediction while ($t = 7.67$, $p < .0005$) tell us that new technology is a statistically significant predictor of the outcome. Unstandardized Coefficient $\beta = 0.988$, 95% Confidence Interval for Unstandardized Coefficient $\beta$ are 0.733 and 1.24. This shows that globalization has significant impact on corporate communication of an organization.

H$_{03}$: New technology has no impact on corporate communication in services and manufacturing organizations to create a distinct corporate image of an organization.

Null hypothesis is rejected ($p < 0.05$). The coefficient of 0.514 suggests there is a significant relationship between new technology and corporate communication of an organization. The R Square indicates explained variance of approximately 26%. The F
ratio of 35.2 is statistically significant at p<.005 suggesting that our model does prove the prediction while (t = 5.93, p < .0005) tell us that new technology is a statistically significant predictor of the outcome. Unstandardized Coefficient $\beta = 0.941$, 95% Confidence Interval for Unstandardized Coefficient $\beta$ are 0.626 and 1.25. This shows that new technology has significant impact on corporate communication of an organization.

$H_{04}$: Corporate social responsiveness has no impact on corporate communication in services and manufacturing organizations to create a distinct corporate image of an organization.

Null hypothesis is rejected (p < 0.05). The coefficient of 0.539 suggests there is a significant relationship between corporate social responsiveness and corporate communication of an organization. The R Square indicates explained variance of approximately 37%. The F ratio of 58.9 is statistically significant at p<.005 suggesting that our model does prove the prediction while (t = 6.33, p < .0005) tell us that corporate social responsiveness is a statistically significant predictor of the outcome. Unstandardized Coefficient $\beta = 0.735$, 95% Confidence Interval for Unstandardized Coefficient $\beta$ are 0.505 and 0.966. This shows that corporate social responsiveness has significant impact on corporate communication of an organization.

The main objective to conduct the pilot study was to gather information prior to a larger study, in order to improve its quality and efficiency. A pilot study can reveal deficiencies in the design of a proposed research study and these can then be addressed before time. The results of the pilot study conducted for present research study indicated a significant relationship between corporate communication and corporate image of an organization. The results also indicated a significant relationship between corporate communication and globalization, new technology and corporate social responsiveness. Thus, the pilot study for the present research study resulted in development of working model that could be scaled up for the wider application.

3.2.3. Stage 3

The five point Likert scale thus generated was administered on the total sample size of 400 respondents. 200 respondents were from services industry and 200 were from manufacturing industry. The data generated was subjected to item total correlations. All the items showed significant correlation (level of significance 0.05). Factor analysis was
conducted to identify constituent factors for globalization, new technology and corporate social responsiveness. Further, linear regression, ANOVA and multiple regressions were used in order to establish the relationship between the identified factors.

3.3 The Sample

The external validity and generalization of a psychometric measure depends upon the subjects on which the study is conducted. Keeping this in view, a sample of the employees of different sectors was used. The total sample size was 400 respondents working in different services and manufacturing industries who are involved in the process of corporate communication. 200 were from services industry and 200 from manufacturing industry. Services industry included Banking, Insurance, Financial Services, Information and Technology, Advertising, Media and Entertainment, Education, Hotels Tours and Travels and Hospitals, and Telecommunication Sector. Manufacturing industry included Automobile, Metal and Machinery, Paper, Pharmaceutical, Textile, Electronics, Paints and Oil, Construction and Construction Material Manufacturing Sector. The respondents were selected on convenience basis. Before processing the responses, the completed questionnaires were checked for completeness and consistency. 500 questionnaires were administered in total out of which 410 questionnaires were complete. The incomplete questionnaires were rejected and thus dropped. 400 questionnaires were taken for final analysis. An attempt was made to have equal numbers of respondents for each category of industries considered under the study. The sample was collected from different cities of India such as Indore, Mumbai, Ahmedabad, Delhi, Bangalore, Chennai and Hyderabad taking them as representative cities of North, East, West, South and Central regions of India. Moreover, the head offices and corporate communication department were situated in these cities. All the subjects were well versed with English in addition to being multilingual. The tool was administered personally on the subjects and they were asked to fill up their responses on their own with universal instructions given to all on the title page of the instrument.

3.3.1 Representative Sample Size: Sample size was determined by using the formula:

\[
n = \frac{Z^2p(1-p)}{d^2}
\]
Where

\( n \) refers to the sample size

\( Z \) refers to the confidence limits of the survey results.

\( p \) refers to the proportion of the population

\( d \) refers to the desired precision of the estimate

Confidence level approach was used to decide the representative sample size in this study. To determine the proportion of executives involved in the process of corporate communication in services and manufacturing organizations in the study the level of confidence considered was 95%, standard error of mean was taken at 5% and \( p \) was taken as 0.5

The sample size determined at the end of the calculations was 384. In view of the sample, the derived sample size was rounded off to a total of 400 executives involved in the process of corporate communication. The total sample was divided into 200 for services and 200 for manufacturing organizations.

### 3.4 Tools for Data Collection and Validation

#### 3.4.1 Data Collection and Validation:

A self-designed five point Likert scales were used for Data collection. It had three parts, A, B & C. Part A had three sub parts: A1 was for Globalization, A2 on New technology, and A3 on Corporate Social Responsiveness, Part B was on Corporate Communication and Part C on Corporate Image with (5= strongly agree, 4= agree, 3= neutral, 2= disagree and 1= strongly disagree)

#### 3.4.1.1. Item Total Correlation:

The data generated was subjected to item-total correlation with the view to establish internal consistency and eliminate those items that do not correlate strongly with the assessed construct. Thus, Item-total correlation was computed on the data generated and all the items showed significant correlation (Significance level 0.05).

#### 3.4.1.2. Reliability:

The reliability of the scale was determined by the split-half method corrected for full length by applying Spearman Brown Prophecy formula on the data collected from the sample of 400 subjects. Spearman’s coefficient of correlation (or rank correlation) is the technique of determining the degree of correlation between two
variables. The main objective of this coefficient is to determine the extent to which the two sets of ranking are similar or dissimilar. This coefficient is determined as under (Kothari, 2004).

\[
\text{Spearman's coefficient of correlation (or } r_s) = 1 - \left[ \frac{\sigma \sum d_i^2}{n(n^2 - 1)} \right]
\]

Where \( d_i \) = difference between ranks of \( i \)th pair of the two variables;

\( n \) = number of pairs of observations.

The reliability coefficient for the scale administered is shown below in Table 3.2

Table 3.2 Reliability Coefficient (Spearman Brown Prophecy)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Reliability Coefficient (Spearman Brown Prophecy)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Globalization</td>
<td>0.73</td>
</tr>
<tr>
<td>New Technology</td>
<td>0.73</td>
</tr>
<tr>
<td>Corporate Social Responsiveness</td>
<td>0.88</td>
</tr>
<tr>
<td>Corporate Communication</td>
<td>0.91</td>
</tr>
<tr>
<td>Corporate Image</td>
<td>0.93</td>
</tr>
</tbody>
</table>

Reliability is an indication of the extent to which a measure contains errors that can vary from observation to observation during any one measuring instance (Hair et al. 2007). The reliability of the scale was also determined by using Cronbach alpha coefficient (Cronbach, 1951) on the data collected from a sample of 400 respondents. The Cronbach’s alpha is the most commonly accepted method for assessing the internal consistency reliability of a measurement scale with multiple items. The reliability coefficient values for the present study are as follows:
Table 3.3 Cronbach Alpha Values

<table>
<thead>
<tr>
<th>No.</th>
<th>Name of the Scale</th>
<th>No. of Cases</th>
<th>No. of Items</th>
<th>Cronbach Alpha Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Globalization</td>
<td>400</td>
<td>15</td>
<td>0.719</td>
</tr>
<tr>
<td>2.</td>
<td>New Technology</td>
<td>400</td>
<td>12</td>
<td>0.720</td>
</tr>
<tr>
<td>3.</td>
<td>Corporate Social Responsiveness</td>
<td>400</td>
<td>17</td>
<td>0.846</td>
</tr>
<tr>
<td>4.</td>
<td>Corporate Communication</td>
<td>400</td>
<td>21</td>
<td>0.881</td>
</tr>
<tr>
<td>5.</td>
<td>Corporate Image</td>
<td>400</td>
<td>40</td>
<td>0.904</td>
</tr>
</tbody>
</table>

3.4.1.3. Validity: When a scale is developed for a particular situation and no other standardized instrument is available, the reliability index based on reliability coefficient can be taken as equivalent to validity of the scale (Garrett & Woodworth, 1981). Further, the validity was taken to be equivalent to reliability index computed for the scale as mentioned below in Table 3.4.

Table 3.4 Validity Index

<table>
<thead>
<tr>
<th>Variables</th>
<th>Validity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Globalization</td>
<td>0.85</td>
</tr>
<tr>
<td>New Technology</td>
<td>0.85</td>
</tr>
<tr>
<td>Corporate Social Responsiveness</td>
<td>0.93</td>
</tr>
<tr>
<td>Corporate Communication</td>
<td>0.95</td>
</tr>
<tr>
<td>Corporate Image</td>
<td>0.96</td>
</tr>
</tbody>
</table>

3.4.2. Data Analysis

After item-total correlation, Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity was conducted to assess the suitability of the respondent data for factor analysis. Prior to the extraction of the factors, several tests should be used. These tests include Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity. The Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy is the sum of all the squared correlation coefficients in the numerator and the denominator is the sum of all the squared correlation coefficients plus the sum of all of
the squared partial correlation coefficients (Norusis, 2003). A partial correlation is a value that measures the strength of the relationship between a dependent variable and a single independent variable when the effects of other independent variables are held constant (Hair, et al., 2006).

The KMO index, in particular, is recommended when the cases to variable ratio are less than 1:5. The KMO index ranges from 0 to 1, with 0.50 considered suitable for factor analysis. The following criteria are used to assess and describe the sampling adequacy (Kaiser, 1974):

0.90 = Marvelous  
0.80 = Meritorious  
0.70 = Middling  
0.60 = Mediocre  
0.50 = Miserable  
Below 0.50 = Unacceptable

The Bartlett's Test of Sphericity should be significant (p<.05) for factor analysis to be suitable (Anderson et al., 1995). The following table shows the KMO and Bartlett’s Test conducted for the present research study:

<table>
<thead>
<tr>
<th>Variables</th>
<th>KMO Measure of Sampling Adequacy</th>
<th>Bartlett’s Test of Sphericity – Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Globalization</td>
<td>0.743</td>
<td>.000</td>
</tr>
<tr>
<td>New Technology</td>
<td>0.765</td>
<td>.000</td>
</tr>
<tr>
<td>Corporate Social Responsiveness</td>
<td>0.864</td>
<td>.000</td>
</tr>
</tbody>
</table>

The KMO value is 0.743, 0.765 and 0.864, which is greater than 0.5. The sampling adequacy of Bartlett’s test is rather high. Therefore, it is suitable for the factor analysis.

The data was subjected to factor analysis using statistical package for social science (12.0) to identify constituent factors of globalization, new technology and corporate social responsiveness. Five factors emerged for globalization from factor analysis namely collaboration, open trade, cross cultural communication, innovative technology and
quality services which impact corporate communication in services and manufacturing organizations. Three factors emerged for new technology namely prompt services, virtual ability and transformed networks while four factors emerged for corporate social responsiveness namely social responsibility, corporate ethics, corporate virtue and social image.

Linear Regression was applied to identify the impact of corporate communication on corporate image of an organization. It was further applied to identify the impact of globalization, new technology and corporate social responsiveness on corporate communication to create a distinct corporate image of an organization in services and manufacturing organizations. Multiple regression analysis was applied to understand which independent variable (globalization, new technology or corporate social responsiveness) is perceived to have more impact on corporate communication.

ANOVA was used to identify whether the role of corporate communication differ in services and manufacturing organizations. The purpose was to identify whether corporate communication is important for corporate image of an organization irrespective of the industry type. Linear Regression analysis was further used to understand the difference in services and manufacturing industry on the dimension of globalization, new technology and corporate social responsiveness. The constituent factors for globalization, new technology and corporate social responsiveness which impact corporate communication in services and manufacturing organizations are further compared by applying linear regression analysis.

Multiple Regression was applied to study the level of impact the five constituent factors for globalization that is collaboration, open trade, cross cultural communication, innovative technology and quality services, three factors for new technology namely prompt services, virtual ability and transformed networks and four factors for corporate social responsiveness that is social responsibility, corporate ethics, corporate virtue and social image have on corporate communication within services and manufacturing organizations.