CHAPTER 3

RESEARCH FRAMEWORK

3.1 INTRODUCTION

This chapter discusses briefly about research gap, research hypothesis, research paradigm, research design, sampling design, research strategy, data types and data collection and interpretation techniques adapted in addition to explain ethical considerations and limitations included in this study.

3.2 RESEARCH GAP

Existing studies fails to conduct a study and develop a model for financial risk management in IT projects. Several studies have been undertaken by researchers in the area of risk management and the mitigation strategies to be adopted but there has been no convincing research in the specific realm of financial risk management in information technology projects. By examining the enormity of the impact of the financial risks on the project outcomes and the company as a whole, it has been realized that the study on financial risks on information technology projects is of paramount importance. This study was conducted in order to provide unique research on financial risk management in IT Projects. Analyzing the existing researches, this research aimed to provide a clear overview about the importance of financial risk management in IT Projects. A detailed study on the risk management techniques being used was undertaken and the impact of
financial risk management on project success has been established. Based on the primary and the secondary data a new model has been developed which helps the information technology companies to manage their financial risks during the project life cycle.

3.3 PROBLEM STATEMENT

Financial risk management is one of the main areas which have been receiving attention increasingly year by year. This is due to the reason that financial risks if not managed properly cause massive impact on the revenues. The IT projects are well known for their excessive failure percentages. Financial risks occur in project due to many causes such as technological, human resources, inadequate or failed internal process, planning lapses, efficiency issues, change of requirements, time schedule, improper costing, design failures, security issues, unfavorable conditions, rules and policies, and business interruption.

Project risk management has become more and more popular and essential part in the IT companies. Many techniques are proposed by researchers for the effective financial risk management. The researchers had described about financial risk management but they fail to concentrate on the financial risk management in IT projects. In this study several existing models for financial risk management in IT projects were analyzed and a new model developed for financial risk management in IT projects. This research will help the future researchers and IT companies to know about the importance of financial risk management in IT projects. The gaps identified in previous studies were addressed in this research and explained clearly. The new model developed significantly increases success rates of the IT projects.
3.4 RESEARCH QUESTIONS

This research was guided by the following research questions:

i. What are the techniques used for managing the financial risks in IT projects. Which are the techniques that are used more frequently?

ii. Does the use of project financial risk management practices affect the project success as perceived by stakeholders (project managers, IT service suppliers, and business owners), and if so, what are the explanations for this relationship?

iii. Very Often projects run and/or close with significant variance between actual vs. plan, from a financial perspective, indicate a gap in the current Financial risk management approach. The new model is to be developed as part of the study which provides a effective financial risk management solution to the project management practitioners.

Therefore these questions served as a strong motivation to explore the area of Project Financial risk management.

3.5 OBJECTIVES OF THE STUDY

Keeping in view, the literature review, problem statement and research questions, the following objectives were framed:

1. To identify the financial risk management techniques in information technology projects with reference to selected software companies.
2. To find out the impact of financial risk management techniques on project success.

3. To develop a new model for financial risk management by analyzing the behavior of key financial risk factors.

4. To suggest the suitable mechanism to minimize financial risk in project management.

3.6 RESEARCH HYPOTHESIS

The following research hypotheses were proposed and tested based on the above conceptual framework in order to evaluate the impact of financial risk management techniques on project success with respect to selected software companies. These hypothesis had been tested for ensuring its correctness with the help of statistical tools:

1. **Hypothesis \( H_0 \) :** Financial risk planning techniques does not improve the chances of project success in IT Projects.

2. **Hypothesis \( H_0 \) :** Financial risk identification techniques does not improve the chances of project success in IT Projects.

3. **Hypothesis \( H_0 \) :** Financial risk analysis techniques does not improve the chances of project success in IT Projects.

4. **Hypothesis \( H_0 \) :** Techniques for planning responses for financial risks does not improve the chances of project success in IT Projects.

5. **Hypothesis \( H_0 \) :** Financial risk Monitoring and control techniques does not improve the chances of project success in IT Projects.
The study undertaken by Berg (2010) in the area of risk management had been explored in detail as part of the review of literature and had been used as the foundation for building the hypothesis.

3.7 SCOPE OF THE STUDY

The research covered Projects executed in information technology companies and included the following types of projects:

i. Infrastructure Projects - These included IT projects dealing with set up of new infrastructure like data centre set up, movement of a data centre, built of new servers, upgrades of the operating system on the servers, service activation, decommission of servers, set up of backup facilities, set up of monitoring software, decommission of entire data centers, virtualization projects, tool deployments, service and process improvement projects. Projects in the infrastructure domain involved many technical teams like the operating system [OS] teams, database teams, network teams, storage teams, application teams, monitoring teams, operations team, service management teams etc. The infrastructure environment could further be classified into the development, test and the production environments.

ii. Transition Projects - These included the projects arising out of transition of an account from one company to another. This usually happens when the IT contract is awarded to a different IT company. In this case the complete information technology infrastructure, knowledge, practices, and processes are needed to be transitioned to the new company. These were process
driven projects with stiff timeline and budget for moving the delivery of projects to the new team. This comprised technical and the process oriented knowledge transfer to the new team.

iii. Application development Projects - These comprised the application development projects, where new application was developed and tested based on customer specifications. These applications were built on the development environment and tested on the test environment. Once it had passed the testing, the environment was made live and thus it was part of the production system of the business.

iv. Application maintenance Projects - These involved supporting the application that was running on the servers. These projects dealt with upgrades of the application, application level patching, application migrations, up scaling, backups and recovery of the application related projects.

v. Security and compliance Projects - These involved implementing the security and compliance features on the customer's servers. These included the server patching, hardening, server health checks, installation of anti-virus, installing intrusion detection systems, enforcing security features on the customer infrastructure.

3.7.1 Size of the Projects

Only the medium and large Projects were considered for the study.

i. Medium sized Projects: A project was considered of Medium size if the estimated duration in weeks was between 12 and 26
weeks and the estimated Total project hours was 500 – 1000 hours.

ii. Large Sized Projects: A project was considered of Large size if the estimated project duration was more than 26 weeks and the estimated Total project hours was above 1000 hours.

In the different information technology companies, these numbers too may differ. This was an approximate estimation to give an idea about the size of the project examined in the study.

This work explored in greater detail the relationship between risk factors affecting project financials.

3.8 RESEARCH METHODOLOGY

3.8.1 Research Paradigm

Research paradigm is the method that is followed by the researcher in the research work. This section describes the research perspective that is adopted by the researcher. Mackenzie & Knipe (2006) described research paradigm as the framework that encompass the assumptions, methodology and the philosophical motivation for undertaking the study. There was discussion about many theoretical paradigms in the literature: positivistic paradigm, hermeneutics paradigm, transformative paradigm, pragmatic paradigm, critical and emancipatory paradigm. The researcher used the appropriate research paradigm based on the nature and the intend of the study. Cohen et al (2007) referred research paradigm as a vast structure which is comprised of beliefs, understanding and perceptions of several theories and practices that are utilized to conduct a study. It can also be represented as an approximate method which consisted of different steps through which a researcher creates relationship between the queries and objectives of research.
Research paradigms are broadly categorized into positivism and hermeneutics. Many other kinds of research paradigms were also discussed in the literature.

Research paradigm adapted in this study was Positivism. Positivism can also be termed as quantitative research.

3.8.1.1 Justification of research paradigm adapted

This study adapted positivism as the research paradigm. According to Mackenzie & Knipe (2006) positivism is also called the scientific research and relied heavily on empirically proven evidence. This was aligned with the quantitative means of data collection and analysis where observation and measurement played a major role.

Positivism is a more structured methodology in order to arrive at quantifiable outcomes and evaluated the results with the help of statistical tools. Positivism philosophy is used in natural science commonly and it is based on objective and critical method. It is an approach that included varied philosophy of natural science such as unaltered philosophy, universal law, and the view of everything that occurred in nature. Similarly Gadamer (2006) has mentioned that positivism is concerned with truth, accuracy and rational thinking and there is a close tab on real facts, gathered through experience and observation and empirically measured using methods of quantitative approach such as surveys, statistical analysis and experiments. Positivism is also known as quantitative research.

This study adapted positivism since it used quantitative research and it verified research hypothesis by examining collected numerical data from primary respondents. The research undertook a scientific study on the various financial risk management techniques used and its impact on the
project success. The study was conducted using empiricist philosophy where statistical tools were utilized for data analysis and interpretation.

3.8.2 Research Approach

According to Morgan & Gliner (2009) a research approach could be asserted as significant in describing the research and as an effective strategy to increase the validity of social research. The two familiar approaches of research in practice are qualitative and quantitative research. This study combined both qualitative and quantitative research.

Creswell (2014) had described research approach as the overall scheme for the research which included the procedures used for data collection, analysis, discussion and interpretation. The researcher determined the most appropriate research approach based on the nature of the research problem being dealt with.

There are three research approaches that are usually used in carrying out studies. They are (a) quantitative, (b) qualitative, and (c) mixed methods. In quantitative research approach, the theories are tested and proved by investigating the association among the variables. Definite measurements and statistical tools are employed for the study. In terms of quantitative hypothesis testing, the closed-ended questions are used and the structured form of survey is used. Qualitative research approach is used for the purpose of exploration and made use of inductive style of investigation. This is characterized by use of unstructured form of investigation, like open-ended questions, case study methods where the researcher made interpretation using the information collected. Mixed research combined the use of qualitative and quantitative approaches and comprised collecting and examining both qualitative and quantitative data, and the use of a integrated framework and
design. This proved to be a more comprehensive method and tackled the research problem in a better way.

3.8.2.1 Justification of research approach

This study used both qualitative and quantitative research approaches. The primary and secondary data was collected and analyzed using quantitative methodologies. Structured close-ended questions were used for gathering primary data and statistical tools were used for the analysis of the data. Qualitative approach was also used in the form of case studies undertaken to complement the findings. This provided a more complete understanding of the research problem and helped in arriving at a suitable conclusion.

3.8.3 Research Design

The research design is the blueprint of entire research and it provides overall structure or framework and also direction to entire research.

This research made use of descriptive research design. Descriptive research is otherwise called as statistical research, it described about the data and characteristics of the study (Gliner & Morgan 2009). The objectives of the study are framed with precision for ensuring that the data collected are relevant for this study. Gravetter & Forzano (2014) had indicated that descriptive design plays a important role in behavioral studies. Descriptive research aims at measuring a single variable or multiple variables as they are present in the environment. This research does not intend to study the relationships among variables, but to describe about the single variable or to derive separate descriptions when many variables are involved. The outcome of the descriptive research helps in explaining or describing the variable/behavior being studied. The descriptive research also deals with
queries that views to describe what things are similar and explains relationships but do not find relationships between relationship direction and the variables.

3.8.3.1 Research design used in this study

This study made use of descriptive research design. The study was designed as per the principles of descriptive research, and the statistical methods were used as part of the methodology followed.

3.8.4 Sampling Design

The sample design is determined before the data are gathered. There are two techniques of sampling namely:

i. Non random sampling or non-probability sampling.

ii. Random sampling or probability sampling.

3.8.4.1 Sampling design adapted

The study made use of probability sampling design. Probability samples are based on simple random sampling technique where each item in the target population has a equal chance of inclusion in the sample.

3.8.4.2 Target population

The target population in this research for the quantitative study were the IT professionals who were either project managers, program managers or project team members managing information technology projects working in IT companies in Bangalore, India. The sample size initially planned for the quantitative study was 750 respondents. But as part of data collection stage, only 540 responses were received that were complete and amenable for data analysis.
3.8.5 Data Collection Method

Olsen (2012) explained that research was initiated with the problem identification followed by stating the research question and objectives. After the suitable review of literature, researcher plans the research design and data collection methods. In carrying out any research, data is essential. The researcher may collect fresh data or reuse and metamorphose the existing data. It may take few weeks, months or year's time for collecting data based on the nature of the research. Kothari (2006) mentioned that the data that is collected for the first time is the primary data. These constitute original data used for the research. The primary data can be collected through several methods such as questionnaires, observation, schedules, interview and so on. The data that has already been gathered by another person/group and had already gone through the statistical analysis is called the secondary data.

This research made use of primary as well as secondary data for the study.

3.8.5.1 Method adapted to collect primary data

Panneerselvam (2014) had dealt at length the data collection methods used in research. The process of gathering of fresh data from the field, as part of the research by the investigator is termed as primary data collection. The primary data collection is performed through observation, questionnaire survey, personal interview and telephonic interview.

This research used the primary data gathered with the help of questionnaires. Structured and closed-ended questionnaires were distributed as part of the survey.
3.8.5.2 Use of Questionnaire for data collection

The questionnaire method was used for performing data collection. A pilot questionnaire was developed and put through three rounds of review by senior IT practitioners and academicians. It was tested and based on the results, revisions were done to the questionnaire. A five point scale was used in the final questionnaire (Strongly agree, Agree, Neutral, Disagree, Strongly disagree). For calculating the probability and impact a 5-point scale with quantifiable base was used: Probability - scale used - 0.0 - 0.2 (very low), 0.2 - 0.4 (low), 0.4 - 0.6 (medium), 0.6 - 0.8 (high), 0.8 - 1.0 (very high). For Impact scale used - 0.0 - 0.2 (very low), 0.2 - 0.4 (low), 0.4 - 0.6 (medium), 0.6 - 0.8 (high), 0.8 - 1.0 (very high). These scales are derived from the risk related literature from Project Management Body of Knowledge [PMBOK] and discussion with the project management practitioners. Non disclosure agreement was stated while distributing the questionnaire and the questionnaire did not contain any questions that disclosed the identity of the respondent, customer, company and the project. The survey was started with the support of former colleagues and friends in the IT industry and they were requested to forward the survey to their friends.

The respondents belonged to the global IT companies that included Accenture, IBM India, Infosys, Wipro and Oracle India Pvt Ltd. These companies possessed organizational process maturity of CMM level 4 and above and they dealt with numerous IT projects.

3.8.5.3 Method adapted to collect secondary data

Thyer (2010) had stated that secondary data includes survey data gathered through interview or questionnaires method, collected for a different study earlier which can be brought to use and reanalyzed. Official records,
reports, statistics for instance census data which was generated for a different research could also be used as secondary data. Secondary data can also be collected from newspapers, journals, books and magazines, reports generated by research universities, historical documents, Governments publications etc. The benefits of using secondary data is its savings in terms of cost, personnel and time, social good and knowledge advancement. Secondary data for this research had been collected with the help of books, journals, magazines, and online sources.

This research made use of secondary data in the form of project reports of 640 medium and large projects (projects which closed in 2013 & 2014) from IT companies and this data was used to analyze and understand the impact of financial risk management techniques on project success.

3.8.6 Data Analysis and Data Interpretation

Panneerselvam (2014) had discussed the analysis of data using statistical means which include mean, standard deviation, median, mode, correlation analysis, regression equation setting, factor analysis, conjoint analysis, hypothesis testing etc. The data analysis is categorized into (a) preliminary analysis and (b) hypothesis testing. Preliminary analysis comprise presenting data in the form of graphs and charts and drawing conclusions. As part of this stage the hypotheses formulated during the initial phases are tested. The hypothesis testing divulge certain fundamental understanding of the research problem.

Data analysis and interpretation involves many closely related operations which allow the researcher to arrive at the answers to his research problems and reach conclusion. Based on the nature of the study, and the data collected, the appropriate statistical tools were used to arrive at the conclusion.
3.8.7 Statistical Tools Employed

This study employed the following statistical tools to analyze the primary data and secondary data collected:

i. Descriptive Statistics

Descriptive statistics refers to the analysis of data in a way that summarize and describe the data and enable the researcher to have a meaningful understanding of the patterns that might emerge from the data collected.

The research makes use of weighted average, ranking and simple percentage to arrive at the conclusions. Simple percentage is one of the most commonly used statistical methods for data analysis.

\[
\text{Percentage} = \frac{\text{Number of responses}}{\text{Total number of responses}} \times 100
\]

This method had been used to identify the financial risk management techniques used in information technology projects. The primary data in the form of filled-in questionnaires from 540 respondents had been tabulated and simple percentage analysis, weighted average and ranking performed. This result was used for arriving at the financial risk management techniques used in information technology projects (Objective 1).

ii. Chi-square test

The chi-square test is a statistical test used to understand if the observed frequencies are significantly different from expected frequencies of the sample data. As stated by Aczel & Sounderpandian (2009) the chi-square statistic is the squared difference between the observed count and expected
count divided by the expected count. This value is added for all the cells. If the data table has \( k \) number of cells, let the observed count in the cell \( i \) be \( O_i \), the expected count (as expected in \( H_0 \)) be \( E_i \). This definition is for all cells \( i = 1, 2, \ldots, k \).

\[
\chi^2 = \sum_{i=1}^{k} \left( \frac{(O_i - E_i)^2}{E_i} \right)
\]

As part of the study, the null hypothesis (\( H_0 \)) was stated with the assumption that there is no significant difference between observed and the expected frequencies. The critical value for the chi-square test is calculated and if the chi-square value is greater than or equal to this critical value, the null hypothesis had been rejected.

Greenwood & Nikulin (1996) explained that chi-square tests could be used for testing multivariate distributions. The process of hypothesis testing involves computing the experimental values of Pearson's statistic \( x \) and comparing it with the critical value:

- In case \( \chi^2 \geq c_\alpha \), the hypothesis is rejected, and
- in case \( \chi^2 < c_\alpha \), the hypothesis is not rejected.

This form the basis for many scientific hypothesis testing.

For this research, the secondary data of 640 projects collected from the weekly reports of information technology companies have been used. Initially the null hypothesis was formulated, \( H_0 \) for each of the 5 steps in the area of financial risk management for information technology projects. In each case the observed count, expected count, degrees of freedom were calculated and chi-square statistics were computed based on these values. The chi-square value was compared with the critical value (based on the degree of
freedom and significance level) and the null hypothesis rejected/accepted based on the outcome. This was used for proving the Objective 2 of the study.

iii. **Factor Analysis**

Child (2006) had described factor analysis where he states it as an well ordered simplification of many interdependent measures using mathematical calculations. The prominent statistic used for this is the correlation coefficient. Galton, a scientist in nineteenth century laid the foundation for the factorial study. Karl Pearson, in the year 1901, developed the procedure for factor analysis. In natural, applied and behavioral science there are patterns that needs to be uncovered as part of studies. And factor analysis is a useful technique in this process. In case of a group of variables, if there are items in common, it is called a factor. In order to discover factor, the correlations among the variables are studied. There are many areas where factor analysis can be applied such as social studies, economics, politics, management studies, medicine, biology, geology, taxonomy, and so on. Factor analysis inherits from the notion of variance. Variance is the square of standard deviation and is equal to the square of the loading. By adding the squared loadings in rows and columns we derive the communalities and the total factor variance. The sum of squares in the rows is called the communality. The sum total of variance that is apportioned with other variables is usually less than 1. The shared variance is known as the common variance. The prime objective of factor analysis is to find out the common factors with the use of common variance. Initially during extraction, the first factor emerges which has as much common variance as possible. The successive factors are extracted for the maximum value of the remaining common variance, till there is no common variance left. The sum total of the squared loadings in columns is called as Eigen value as in case of principal
component analysis, or latent root. Factor analysis is employed in many scientific research studies.

Fabrigar & Wegener (2012) had stated that factor analysis is an extremely valuable analytic method used by researchers in many substantive disciplines. It is an important tool for interpreting, analyzing and working with quantitative data.

In this study we had used Factor analysis for understanding the commonality among the probability and impact of the major financial risk factors - technology related risks, resource related risks, scope related risks, vendor related risks, requirement related risks, procurement related risks, design related risks, project complexity related risks, planning and control related risks, organizational environmental related risks, information security related risks, their probability of occurrence and the impacts. This key information has been used for developing the new model for financial risk management (Objective 3).

iv. Case Study Research

Woodside (2010) had stated that case study research is a process of describing, comprehending, monitoring and predicting the subject, where the subject may be a process, person, organization, culture group or an industry. This careful examination brings to light the conscious, subconscious thoughts of the subject which brings out the deepest hidden thoughts, analogies and truths. This is the specialty of the case study research. This includes a clearer understanding of the sense making and thinking process of the individual/group and the process and system thinking along with the mapping of policy and processes and is called as meta sense making (or meta cognition) as a whole. Case study method throws a deeper insight into the model dynamics of a system or a process. As part of the case study the subject
is directly observed by the researcher and investigated by way of checking for elucidation of the current state of affairs, and followed by analyzing the documented data. This gives a complete view of the situation including what can be observed, the inter-linkages of the processes along with the subconscious thought system. Usually case study research is associated with the qualitative research, but in many cases can also be used along with quantitative methods. The worth and effectiveness of the case study can be achieved by using the appropriate tools in the same study which may include both qualitative and quantitative methods.

This method had been used in this study for understanding the situation, process behavior and effectiveness of the new model in case of 4 large complex projects [a total of 10 projects had implemented the new model] which had implemented the new model. In the research the case study research was used along with control charts for observing the variability. As part of the study, a thorough study of the project deliverables, scope, budget and the timelines, skills required, procurements planned and the overall organization structure which forms the ecosystem for the project was undertaken. An unstructured interview with the project manager or the program manager was conducted along with the review of the project reports for a period of one year where the new model had been implemented. This brought to light the conscious, unconscious thoughts related to the delivery of these projects, the improvements in performance observed, and the predictive model put in place for ensuring the performance sustenance for future (Objective 3).

v. Control charts

Hill & Schvaneveldt (2011) had described the statistical control charts in detail and its applications. The control charts and process behaviors analysis was developed by William Shewhart in 1920's at AT & T's Bell
laboratories and has since been used as a useful tool for monitoring process behavior and studying the variance for taking better management decisions. The variations observed has been classified as common cause variation and exceptional variation. The common cause variation is ignored and it is intuitively understood that there are bound to be some natural variability in the process. The exceptional variation is analyzed in detail and efforts made to understand this variation before drawing conclusions from the data, which is essential for improving the performance. Here the individual reading, moving ranges, upper natural process limits, lower natural process limits, moving range mean, and range upper natural process limits are calculated. Control charts is one of the powerful quality control techniques used for monitoring a variable over a period in time. The upper control limit [UCL] and lower control limit are calculated as follows:

\[
\text{UCL} = \text{Average of the individual values} + (2.66 \times \text{Average Moving Range})
\]

\[
\text{LCL} = \text{Average of the individual values} - (2.66 \times \text{Average Moving Range}).
\]

Here 2.66 is a empirically derived constant and Shewhart came up with it. This is also called as 3-sigma limits. It means 3 standard deviations above and below the mean.

The average moving range is a measure of time-to-time variability. The change of the moving average drives the changes in the width between the UCL and LCL. Process behavior analysis and control charts helps to focus on improvement efforts.

In this research, control charts had been used for monitoring the newly developed performance sustaintment score [PSS] that was developed as part of the study (Objective 3). These control charts were observed keenly to understand any deviation or exceptions. In case where exceptions occurred,
these were studied and eliminated, and in cases where there was no exceptions found, improvements suggested on the entire process.

3.8.8 Summary of statistical tools employed

The statistical tools used as part of the study are summarized in Table 3.1:

<table>
<thead>
<tr>
<th>Phase</th>
<th>Nature of work</th>
<th>Methods of collection &amp; analysis.</th>
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</thead>
<tbody>
<tr>
<td>i.</td>
<td>Collection of data</td>
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<td></td>
<td>Primary</td>
<td>Questionnaire.</td>
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<td></td>
<td>Secondary</td>
<td>Project reports of IT projects, Publications, Official records, Websites etc.</td>
</tr>
<tr>
<td>ii.</td>
<td>Data Coding, Recording and Tabulation</td>
<td>Microsoft Excel package, SPSS.</td>
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<tr>
<td>iii.</td>
<td>Computation of Basic Statistics</td>
<td>Descriptive Statistics.</td>
</tr>
<tr>
<td>iv.</td>
<td>Testing of Hypothesis</td>
<td>Chi-square test.</td>
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<td>v.</td>
<td>Association and relationship</td>
<td>Factor Analysis.</td>
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<td>vi.</td>
<td>Model Development &amp; testing</td>
<td>Factor analysis and Control charts for monitoring phase in financial risk management, case studies.</td>
</tr>
<tr>
<td>vii.</td>
<td>Graphs and charts</td>
<td>Control charts and MS Excel.</td>
</tr>
</tbody>
</table>

Source: Summary of the statistical tools used in the study.

3.8.9 Ethical Considerations

Gallagher et al (1995) had studied at length the ethical issues in the domain of social sciences research. This subject has been considered controversial. Ethics is the field of inquiry in determining what behaviors are
considered pertinent under certain circumstances, as recommended by codes of behavior that are set by society. Ethical considerations in research are very crucial in the recent scenario. There is tremendous information that is generated as part of the social sciences research. These are collected from the participating respondents, the agencies and various other sources. Many times the researchers are faced with the problem of how to address the ethical issues. The author had brought out the different approaches for tackling ethical dilemmas, and focus upon the complexity of the ethical principle and the importance of giving greater attention to this subject. The researcher needs to uphold integrity and social cause while conducting research. The secrets and the procedures, cultures of the company are to be dealt with utmost care while conducting the research.

The information collected and analyzed for the study were used for education purpose only and sensitive information were kept confidential and not publicized.