CHAPTER 3: Research Methodology

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CHAPTER 3

Research Methodology

This chapter concentrates on the method of solving the problem identified. The research problem in a nut shell is on the analysis of success of women leaders in the IT sector with special reference to the Indian Scenario. This chapter covers an enumeration of the background of the research design, gap in research, makes the problem statement and consequently derives the objectives of research. The hypotheses of the study could be outlined followed by the operational definitions. There will be an enumeration of the scope of research with particular reference to the target group and the universe. Details regarding the instrument development, process of collection of data and results of the pilot study I & II will be documented. The choice of analytical tools would be discussed for its relevance and application. The chapter ends with preparation of data sets for analysis.

3.1 Research Design

The review of literature has enabled carve out the grey area connected with studies on leadership. Most of the studies on leadership have concentrated only on male leaders and irrational conclusions have been drawn as though leadership is associated with only one gender. The ‘gender effect’ can be measured by the fact that successful leaders have been able to reach success not only because of qualities they possess in problem solving and decision making but also due to the support they may have received from their close family associates. The family associates could be people at the workplace; could be the female head of the household or could even be the wife who bears the brunt of all the family responsibilities. The responsibilities of the female head of a household include support in family life and the soft support provided to take all important decisions.

The review of literature further pointed to the fact that no study has been done so far on leaders who are women. There are many women who have been successful and acknowledged as effective leaders and yet no in depth study has been done about their personality, leadership style and the camaraderie that led to their success both at the organizational and family level in the Asian context. The present study enumerates design for research in this area in the backdrop of problem statement and the review of the various studies. The workplace success of most woman may be influenced by the family
environment and the vice-versa also could be true. Although success influences further success, failure is perceived to be a precursor for more to happen. The environment, people, relationships, roles, styles, organizational & family nuances and the peer group may altogether make a composite influence on the performance of a woman leader.

The design of the study has the back drop of all possible influences that may result in a leader to succeed. Performance is a function of leadership relationships, structure, roles, regulations and effectiveness besides pro-activity, up gradation of technology, quality and ability of the human resources. This function is an endogenous setting. The exogenous setting in case of women leaders is peripherally close to the family in the Indian context. The role of women in the family as a wife, mother, daughter, sister and other social relationships do influence her personality. In addition to this, a woman leader as an individual is perceived to be an entity consisting of three inseparable components - Intelligence; Emotion and Volition. The psychographic aspects of a woman are exhibited in terms of Values, Culture, Morale, Life style etc. The critical aspect of the personality is the assessment and evaluation of Emotion, Volition and Life style. The present study considers all the critical aspects associated with leadership in general and women leadership in particular. Thus, an operationally defined woman leader is the centrifugal point of this study. The study intends to analyze, describe and elucidate the role of women leaders and the factors that lead to their success. Utmost care has been taken not to glorify success. The purpose and intent is very clear in not having a gender biased view or a feminist orientation as conceived in the west.

3.1.1 UNIVERSE OF THE STUDY

The universe of the study constitutes women leaders from India, however, it is a particular concentration of women leaders found in the Information Technology sector in Bangalore city. Those women leaders who are working in IT and IT related industries and who are in decision making positions, form in general, the universe of the study.

3.1.2 SELECTION OF STUDY BASE

Bangalore city is considered the IT hub of India and is the test center for introduction of new products. It is also known as the “Silicon valley” of India. The IT and ITES industry began in Bangalore in the year 1981 and as on date has three thousand plus IT and ITES
Firms. (September, 2014) Data on several parameters of relevance to the research study were identified and then collected from different sources.

The parameters on which the firms were identified are as given below -

1. No. of years in Business                        8. Attrition rate
3. Location of Head Quarters                      10. No. of Women on Board of Directors
4. Sector                                         11. Growth Rate
5. Annual Revenue (Rs.)                           12. Listings on Stock exchanges
7. Size and Proportion of women employees         14. Leadership Development Programs

The top twenty two Information Technology firms were shortlisted, (Master Table of Data sets is enclosed - Annexure III) since these top twenty two firms actually cover a major portion of turnover of IT business in Bangalore. These firms have consistently captured a good market share and thus serve as the sampling frame for the research study. Women employees who are appointed in these firms located in Bangalore city form an exhaustive list for the study. The selection of the target group is based on this framework.

**3.1.3 THE TARGET GROUP OR RESPONDENTS**

The Centrifugal point of this study is the operationally defined woman leader in the IT sector:

- Select Women Leaders working in IT & IT related firms of Bangalore with adequate tenure on the job i.e., three years or more than three years of work experience
- Well Qualified and Experienced on the job
- Acquisition of skills in decision making and problem solving through education and training
- Employed and Empowered in a position to take decisions in the areas of finance, human resource management, technology and all managerial decisions involving strategies, actions and other functional exercises.

**Detail Profile of Select Respondent Women Leaders**

In order to create a detailed profile of the target group for the research study the psychographics instrument will be added along with the demographics. It will include all social and psychological characteristics of women leaders in IT. The psychographics
will include a study of an individual woman’s personality, values, opinions, attitudes, interests and lifestyle. It is important to note that psychographics studies can be valuable in the field of demographics but should not be confused with demographics.

3.1.4 VARIABLES IN CONTEXT OF THE RESEARCH PROBLEM

Demographics are the statistical characteristics of the population to identify the leaders in the IT sector in Bangalore city {present and in the future} and among these leaders who are the women leaders who are successful. By studying women leaders based on relevant variables one can identify the differences between success & failure besides a basic demographic analysis helps to identify population characteristics to determine successful women leaders and the factors contributing to their success. It also helps build a successful women leader profile to form the target group for the research study.

**Demographic Variables** - Demographics are characteristics of the human population. For example - Age, Income to identify and divide/segment the population into specific groups. This segmentation is easy and measurable. Grouping may be on the basis of - Age, Gender and Size of the family, Occupation, Income, Religion, Education, Race, Nationality and Region.

**Psychographic Variables** - The psychographic variables are less tangible, however, they must be considered to develop a truly accurate profile of respondents for research study. A psychographic variable is a popular segmentation of variables such as social class, life style or personality. Some of the attributes are cultural background, religious background, values & beliefs, political conventions, preferences, opinions and social conditioning.

**Life style Variables** - The life style variables are a set of variables associated with a change in behavior of an individual based on peer group influence in the organizational context. Some of the life style variables are eating habits, style of attire, regularity in habits, family and societal relationships, etiquette, changing trends in personal and professional relationships.

**Performance Variables** - These variables are very important and have a direct bearing on the performance of the business organization. Here the performance is in context of time, efforts & space that is converted into monetary terms. Some examples of the
performance variables in a business organization are sales, price, reach, value generation and sustenance. Other variables that could be linked to performance are organization brand, corporate leadership, quality, structure, goals, tech-suavensness, policies, organizational climate, and adaptability.

**Environment support Variables** - These variables support the environment of the organization. Environment support variables are family, family type, social structure and social conditioning.

**Regional Variables** - These variables are in context of the common geographic environment shared by people who work in a common place of geographic continuity. Examples are north, south, east, west and central regions, also could be in the context of areas such as urban, rural and semi-urban.

In addition to the above mentioned ones the following list of variables identified may have a profound influence on the success and organizational effectiveness of women leaders in the IT Sector. How these variables exert influence on the women leadership in IT Sector needs to be researched.

**Individual Variables** - Intelligence Quotient; Emotional Quotient; Volition Quotient (A scale to be developed to measure VQ) and Creative personality.

**Exogenous Variables** - Behavior at work; Strategic thinking; Attitude towards technology; Value for diversity; Propensity to risk taking and Values and belief structure.

**Aggregate Variables** - Work environment; Family; Achievement motives; Readiness for the leadership role; Creative personality; Communication skills; Impression management; Organizational politics; Power structure; Leadership styles, particularly the Transformation and Charismatic leadership styles; Climate of innovation; Leadership empowerment; Job alienation.

**Endogenous + Exogenous Variable** - Organizational commitment Influence tactics.

**3.1.5 RESEARCH AREAS IDENTIFIED FOR THE STUDY**

1. Identify and analyze Demographic and Psychographic Variables of the Target group.
2. Measure the Emotional Quotient of Target group of Women Leaders.
3. Develop a scale for measuring Volition Quotient and test the same for efficacy.
4. Measure the Volition Quotient of the Target group of Women Leaders

5. Develop a scale for measuring the Organizational Effectiveness and test it for efficacy

6. Measure the Organizational effectiveness of Target group of Women Leaders.

7. Examine the relationship between Demographics and Emotional Quotient of Target group.

8. Examine the relationship between Demographics and Volition Quotient of the Target group.

9. Examine the relation of Demographics and Organizational Effectiveness of the Target group.

10. Examine the relationship between Demographics and Emotional Quotient; Volition Quotient of Target group.

3.1.6 FRAME WORK OF THE RESEARCH DESIGN

The frame work of the research design are as follows –

- The research study is a gender based study with focus on Women Leaders in the IT Sector in Bangalore City and is purposive.
- The Notional IQ is based on self-assessment by the target group of Women Leaders.
- Notional IQ value given by Women Leaders is taken to be their Intelligence Quotient.
- The universe of the study.
- Time point for the study is a concern.
- Formatted conceptual equation tested.

3.2 Methodology

There are several studies on leadership. The range of studies are between several basic theories and testifications of these theories in real life. Several formulations of leadership are mainly concerned with the characteristics, types, formats and manifestations. Many theories move from transactional format to manifestation of leadership. While all these are applicable in real life, such studies are conducted only on leadership provided by men in particular. There are no studies on women leaders in various sectors as to how they co-ordinate their activities both at home and the workplace. The situation calls for a dual
or composite leadership making home as important as the workplace. In Indian conditions, women leaders (not employees) treat the workplace on par with their place of living. The real question is that quality of leadership, which makes the organization and home, both places of growth, development and thereby prosperity. i.e., the traits and features of women leadership would be addressed in a sector (Information Sector) which exhibits signs of well-defined living and yet shows elements of discomfort as well.

There are sketchy attempts on success of leaders more so women leaders who are now in the business landscape. Interestingly no study has been done on leadership manifestation based on relationships of IQ, EQ and VQ. All these critical coefficients have not been analyzed with respect to one to one relationship while some studies have been done on IQ with relationship to performance, EQ in relationship to performance but no studies are attempted on the role of VQ which can make an impact on performance. The grey area is much more evident in the women leadership landscape. The present study aims to examine the relationships between IQ, EQ and VQ and the relationships between these coefficients to performance of the organization and its reflection on family and camaraderie. The sector identified for the study is IT and the target group comprises Women Leaders. The universe of the study is Bangalore city which is the IT hub of India.

3.2.1 RESEARCH OBJECTIVES

This research study is being carried out for four main reasons as the researcher wishes to enquire and understand the nuances of leadership of women in the IT sector –

One, by the year ending 2015, women included in the target group of research must have spent close to three or more years and above in the IT sector, and thus have had enough or adequate time on the job with relevant experience to clearly articulate the underlying factors that led to their achievements as leaders - their leadership style, ideals, vision and challenges encountered in addition to the familial support received from the home front and last but not least a clear cut view of their future in the organization/sector.

Two, Women and Leadership when put together brings grace to the table top along with a range of challenges that are to be addressed to be effective and successful. There is a need to explore when and how women exercise power and what blocks their way to attain success after an informed and in depth analysis of the state of women on the personal and professional front.
Three, does EQ and VQ have an impact on the success of women leaders in IT and to find out what VQ offers to successful leadership in the face of the perils of exhibited bias, observed stereotypes, the present thoughts on the importance of women leadership and the “bang on & sure shot” strategies that enable women reach the top.

Four, to know the imperatives of organizational effectiveness and thereby success of women leaders with the impact of family on their work place success. As mentioned earlier, though success influences further success, failure is perceived to be a precursor for more to happen. The environment, people, relationships, roles, styles, organizational & family nuances and the peer group may altogether make a composite influence on the performance of a woman leader which needs to be researched in-depth.

Research has been published about women leadership and their leadership styles in abundance, but this study specifically focuses on the personal qualities or attributes of women leaders and the EQ and VQ competencies in addition to the familial impact on effectiveness and success of women leaders. This study includes the demographic analysis and the EQ and VQ assessment of women leaders from some of the top firms of the IT sector in Bangalore city. These women shall come from the IT sector exclusively with age breakouts of the women leaders in the range of 30-40 years, 40-50 years and 50 years and above.

3.2.2 HYPOTHESES FOR THE STUDY

The following hypotheses have been floated and broadly identified for carrying out the study:

H₀₁: Demographic variables do not significantly impact the Organizational Effectiveness of Women Leaders in the IT sector.

H₁₁: Demographic variables significantly impact the Organizational Effectiveness of Women Leaders in the IT sector.

H₀₂: Psychographic variables do not significantly impact the Organizational Effectiveness of Women Leaders in the IT sector.

H₁₂: Psychographic variables significantly impact the Organizational Effectiveness of Women Leaders in the IT sector.
H\textsubscript{03}: Notional IQ does not have a positive influence on the Organizational Effectiveness of Women Leaders in the IT sector.

H\textsubscript{13}: Notional IQ has a positive influence on the Organizational Effectiveness of Women Leaders in the IT sector.

H\textsubscript{04}: EQ does not have a direct positive influence on Organizational Effectiveness of Women Leaders in the IT sector.

H\textsubscript{14}: EQ does have a direct positive influence Organizational Effectiveness of Women Leaders in the IT sector.

H\textsubscript{05}: VQ does not have a direct positive influence on the Organizational Effectiveness of Women Leaders in the IT sector.

H\textsubscript{15}: VQ does have a direct positive influence on Organizational Effectiveness of Women Leaders in the IT sector.

H\textsubscript{06}: Demographics of Women Leaders does not significantly influence EQ & VQ of Women Leaders in IT sector.

H\textsubscript{16}: Demographics of Women Leaders does significantly influence EQ & VQ of Women Leaders in IT sector.

\subsection*{3.2.3 Research Gap}

Women, Indian women in particular, are enabling faster development of the economy. The research study intends to examine the how’s and why’s of successful women leaders. The demographics & psychographics are likely to influence the success of women leaders in the workplace as well as at home. The role of the organization, influence of the family & the peer group are researched in great detail. The goal is to demonstrate and share organized knowledge with the community and bring in more attention to the problems and highly valued methods of women leaders with the help of the results of the study.

The intention is very clear as to not create any problems or conflicting situations with the research investigation. The aim is surely not to provide strong support to feminism or deny and ignore inherent differences between man and woman. The purpose is to evaluate the changing situation and role of women leaders in our society and economy. There are a number of assumptions, misconceptions and speculations about women leadership.
The study seeks to either prove, confirm, deny or reject the existing misconceptions/assumptions/speculations on women and women leadership. This study is innovative because it attempts to document and analyze the perceptions of women leaders besides the conceptualization of successful leadership and what “Making a Difference” actually means for women in leadership positions in the IT sector.

**Purpose:**

- To evaluate changing situations and role of women leaders in our society and economy.
- Seek clarification on illogical conclusions on women leaders and leadership without due justification.
- Seek to either prove, confirm or deny, reject existing misconceptions / assumptions/speculations.

**Goals:**

- To demonstrate and share organized knowledge with the community
- To call attention to problems, challenges and highly valued methods of Women Leaders with the help of the results of the study.

**Clear Intentions:**

- The author has no intentions to create conflicting situations with the research investigation.
- The author does not aim to provide any support to feminism or be in denial or ignore the inherent gender differences.

### 3.2.4 PROBLEM STATEMENT

The problem statement has been crystallized as follows -

1. To identify and analyze the Demographic Variables leading to success of women leaders in Information Technology sector.
2. To identify and analyze the Psychographic Variables leading to success of women leaders in Information Technology sector.
3. To measure the Emotional Quotient and Volition Quotient of the target group.
4. To examine the relationship between Women leadership and Organizational effectiveness in the IT sector.
3.2.5 OPERATIONAL DEFINITIONS

The present study dictates the need for organizational definitions for the target group and characteristics of interest. These definitions could extend to basic parameters as defined in studies of Leadership and that of Organization Behavior.

**Target Group** - The target group for this study are women employed in IT and IT related firms and in decision making positions. The decisions that the person is empowered to make or take could cover various areas such as technology, finance, human resource management, management strategies, actions and other functional exercises for which they are empowered.

**Leader** - Any person associated in leading a team or a group or a wing or an organization is defined as a leader. The formal designation of a leader is used for clarification purpose.

**Woman Leader** - That person with a specific gender in action in the organization as mentioned above in the definition of leadership, is a woman leader in an organization.

**Organization** - That organization or unit which is formally recognized as a public/private/domestic/transnational/multinational/global organization in the IT sector is considered as the organizational domain for the study.

**Intelligence Quotient** - An ability of thinking in problem solving, which is not adequate to make an individual competent. (Stenberg; 1985)

IQ is a score derived from one of several standardized tests designed to assess human intelligence. The IQ scores are used as predictors of educational achievement, special needs, job performance and income. The scores are also used to study IQ distributions in populations and to establish correlations between IQ and other variables.

**Emotional Quotient** - An ability of an individual in knowing and understanding one’s self and other people. (Goleman; 1995)

EQ is that number which examines the strength of a personality in dealing with problems at the workplace, home and society.

**Volition Quotient** - An ability or will of an individual to take the right decision with limited inputs or at times lack of inputs. VQ is that number which recognizes the strength of the person dealing with issues of transactions, relationships and beyond in the presence of part or scanty information.
**Organization Effectiveness** - A concept of how effective an organization is in achieving the outcomes, the organization intends to produce.

**Quality of Leadership** - A set of factors drawn from family life, intelligently used for solving organizational problems including internal and external threats.

**Personal Quality** - It refers to positive personal attributes exhibited in promoting excellent human relations both in the personal and professional arena and associated with superior work performance.

### 3.2.6 SCOPE OF RESEARCH

The present research is twofold, first it enables to expand the theoretical base. There is scope for theoretical re-sketch on the basis of personality and performance of leaders, women leaders in particular and within the IT sector. This will enable enhancement of knowledge base by reformulation of the theoretical relationships between Intelligence Quotient; Emotional Quotient and Volition Quotient. The next aspect is relating the theoretically postulated construct to performance in actual life. The scope of the industry is however, restricted to the IT sector.

The universe of the study is Bangalore city. The ideality of the choice of Bangalore city will be enumerated by marking out the contours of research, while relating performance to personality and the support of family covering spouse, parents, parents-in-law and children. In case of children, the influence is from teen adolescents and grown up children which are considered viable. The present study juxtaposes the performance of women leaders in the industry to the theoretical construct and the family.

### 3.2.7 DATA COLLECTION TOOLS

**Instrument Development** - The instruments of research were derived in four phases. In the first phase a detailed check list was prepared based on the scope of research. The prepared checklist was validated and completed after several rounds of discussions with industry and fellow researchers. The second phase of research was the identification of the instruments within the framework of the problem and scope of research. The instruments were designed in four stages. In the first stage, a questionnaire was developed covering the Demographics and Psychographics of the target group. As many as sixty five variables were identified and the questionnaire was kept ready for the pilot study.
The second phase aimed at developing a questionnaire to assess the Emotional Intelligence of women leaders. It was found that there were numerous standard Emotional Intelligence questionnaires available. A number of validated and standardized questionnaires were examined. The adaptability of the instruments to Indian conditions, and in particular, to the target group were investigated. It was noted that the selected instrument for the study had to cover all the Emotional Intelligence dimensions. A standard and validated questionnaire on Emotional Intelligence Assessment [Source : Linac;UK] was finally selected for the study which had fifty statement batteries covering all the five dimensions of Emotional Intelligence namely, Self- awareness; Self-regulation; Self -motivation; Social awareness and Social skills or Relationship Management. The selected instrument develop by Linac was used for the pilot study. The third phase aimed at developing a questionnaire for measuring Volition Quotient. Several probes suggested that Volition Quotient Assessment has been attempted for measurement in clinical trials. [Source: Kuhl J; Fuhrmann A (1998) Simon Forstmeier, Heinz Rueddel; 2007]. It was clear that there was no instrument to measure Volition Quotient under normal circumstances i.e.in a societal environment. The Volition instrument was developed for twenty five variables with seventy five statement batteries covering all aspects of volition. Three statements for each volition variable was developed for assessing the volition quotient of the individual woman leader. The fourth phase aimed at developing an instrument for measuring the Organizational Effectiveness. OE is viewed from the goal attainment approach, in particular of women leaders. Ten dimensions were identified all purporting to measure the Personal and Organizational effectiveness of Women Leaders. OE is a much researched construct and an adapted version was developed with ten dimensions with three statements all adding up to thirty statement batteries. All statements were meant to examine the stability and consistency of the results obtained in the pilot study. Fine tuning of Demographics, VQ and OE instruments for final field study was done with requisite additions and deletions as per the results of two pilot studies. The standard IQ instrument – STANFORD - BINET Intelligence test was withdrawn after the first pilot study due to women leaders’ inability to answer the IQ questionnaire, the questionnaire being too lengthy, cumbersome and time consuming. Instead, a notional IQ assessment by self (Women Leaders) was introduced in the Demographics and Psychographics instrument. The standard EQ instrument identified was found suitable for the assessment of EQ of women leaders.

The Demographics & Psychographics instrument, VQ and OE instruments developed by
researcher were also found suitable for assessment. All the instruments developed and identified for the final survey were checked for reliability.

**Final instrument used for the field survey** - It consists of four parts covering all important aspects of Demographics, Psychographics, EQ, VQ and OE of women leaders in IT.

**Part 1.** Demographics & Psychographics Questionnaire. (DP 65 items)
**Part 2.** Standard Emotional Intelligence Questionnaire. (EQ 50 items)
**Part 3.** Volition Quotient Questionnaire. (VQ 75 items)
**Part 4.** Organizational Effectiveness Questionnaire. (OE 30 items)

The field study for data collection was undertaken between mid-October 2014 and mid-February 2015 with sample size of 156 women leaders derived based on population size and drawn exclusively from the listed top twenty two IT firms of Bangalore city.

**Questionnaire Development and Testing** - Questionnaire was developed to survey women leaders in IT sector. In order to improve the quality of the data, the questionnaire was pretested with a small number of respondents using a sample size of twelve first and later on one hundred and six respondents. Pre-test interviews were conducted and monitored to judge the quality of the answers given and to check the degree to which respondents have understood the questions framed. Requisite changes were made to the questionnaire based on the monitored pre-test interviews for conducting the final survey.

**Contact procedures** - Interviews were conducted in person by the researcher. As many attempts as required, were made to contact woman leaders identified and selected for the research study. Attempts to reach them to closely mirror the population in terms of age, designation, income, years of experience etc. were done.

**Qualitative Research Check List**
- Check list
- Questionnaire
- Schedule

**3.2.8 DATA ANALYSIS TOOLS**

The tools of data analysis were chosen to facilitate answers to the questions raised in this research study. The following tools were considered appropriate for definitive solutions.
1. Central tendency and Diffusion measures.
2. Relationship measures – Correlation and Regression.
3. Auto Correlation.
4. Multi Collinearity.
5. Index numbers

**Central tendency and Diffusion Measures** - Mean, Median and Mode were computed for univariate frequencies. The relationships between Mean, Median and Mode under non-normal settings were analyzed. The skewness of the frequency distribution kurtosis coefficient were computed to examine the overall nature of data sets across all variables. Careful interpretation of numbers in the backdrop of quality of data sets were attempted.

**Relationship Measures - Correlation and Regression** - Two way and multi way relationships were established between demographics and response variables. The degree of association between two variables were assessed by correlation coefficients. The strength of regression equation was assessed to know the power of prediction of the equation $R^2$. The coefficient of determination, $R^2$ was used for each equation to examine the degree of the power of predictability. Linear and Non-linear regression models were tried and the model that resulted in $R^2$ was selected for the analysis.

**Auto Correlation** - The association of errors will lead to problem of Auto Correlation. The D-W of Auto Correlation Statistic was used to assess the presence or absence of association. The D-W statistic having a value of two means no Auto Correlation in the data set. The value D-W statistic other than two, means presence of Auto Correlation affecting the values of coefficients in the regression equation. The objective of using Auto Correlation was to assess the influence of related errors lagged by a time period which makes a distortion in the values of coefficients.

**Multi-Collinearity** - The problem of inter relationships between independent variables on the right hand side of the equation leads to Multi Collinearity. The presence of Multi Collinearity means violation of one of the basic assumptions of the regression model. Simulation exercises tend to get distorted results in the presence of Multi Collinearity as such several models were tried by trial and error to get meaningful results. One of the indications of Multi Collinearity is the high correlation between several pars of independent variables given the significance of correlation coefficients Multi Collinearity will be detected. The
seriousness of the Multi Collinearity problem is an influencing factor on the value of
coefficients of response variables.

**Index Numbers** - Composite index numbers were developed to assess Emotional Quotient and Volition Quotient of the target group of women leaders. A simple weighted average formula was used to compute index numbers. This gives an indication of the levels of presence of the variable under consideration. The level of EQ and VQ is a pointer to the level of success or failure of an individual in a work culture setting. Appropriate interpretations were then made in the backdrop of the theoretical framework and the construct derived for the study.

**Data treatment; Reliability analysis: Cronbach’s α; Identification of outliers.**

- Outliers identified.
- Examined all inconsistencies.
- Deleted incomplete data sets.
- Zeroed in on 106 samples for second pilot study.
- Another forty five samples to be collected for further examination.

**Conceptual Relationship Analysis**

1. Demographics & Psychographics Vs. All other variables (Emotional Quotient, Volition Quotient and Organizational Effectiveness.
2. Demographics vs. Emotional Quotient; Volition Quotient.

- **Listing of Tables:** One-way, Two-way and Multiple way tables.
- **Testing Hypotheses:** List of hypotheses; Sub hypotheses
- Abstract of results.
- Methodology and tools used.
  ✓ Choice of methods.
  ✓ Implications of methods.
  ✓ Limitations /Assumptions of tools and methods used.
- Limitations of the study.
- Conclusion.

**3.3 Pilot Study** - Before scaling for full research, two pilot studies were initiated with twelve women leaders at the first instance and one hundred and six women leaders in the second study conducted later on. The first pilot study was undertaken with the women leaders from various sectors. The collected questionnaire was analyzed to determine whether the data collected helped the researcher in meeting the objectives of the study apart from testing the reliability and validity of the questionnaire put across to the target group.
In this section, the researcher discusses the results of the survey done. The validity of the questionnaire was adjudged using Cronbach’s coefficient alpha calculated to test the reliability and internal consistency of the responses obtained from the respondents. Cronbach’s coefficient of 0.7 was found adequate for full scale collection of data.

3.3.1 Pilot Study 1:

A pilot study was undertaken. Structured questionnaires with relevant questions on the prioritized themes was identified and used for the pilot study.

Four instruments were used – 1.} Demographics, 2.} Stanford – Binet Intelligence test, 3.} Emotional Quotient test and finally the 4.} Volition Quotient test.

A standard Emotional Quotient questionnaire by Linac, UK was found suitable to check on the EQ of women leaders while the Volition Quotient instrument was developed for use in the pilot study as none were available for testing the VQ of women leaders. An edited version with relevant additions and deletions will make it suitable for use in the main field study.

- Random sampling technique used.
- Sample size taken was twelve women leaders of Bangalore city.
- Women Leaders drawn from private & public sector units of Bangalore city.
- All women identified were currently working women and in Leadership roles in the age group 30 years and above.
- Women leaders had education in Technical and Management streams.
- Designations ranged from Executive VP’s, GM to DGMs & Team leaders.
- Research methodology - 4 sets of instruments used; Demographics instrument along with the VQ instrument was developed by researcher for the study.

Appropriate statistical tools were used to arrive at results using SPSS as given in the findings.

Pilot Study I Findings:

Four analyses have been done - Reliability Analysis, ANOVA Analysis and Factor Analysis & Correlation Analysis. The Results arrived at are optimistic and as given in Results I - IV.
**Result 1:** The reliability co-efficient is very high indicating high quality data captured from the group of respondents.

**Result 2:** The curvi-linear behavior of respondents is evident under the ANOVA analysis.

**Result 3:** The Correlation analysis results are indicative of Volition being associated with Emotion. Many values of correlation coefficients are significant, suggesting a strong association between Emotions and Volition.

**Result 4:** On the basis of values of the component matrix statements which have a factor loading of 0.5 or more will be retained in the final questionnaire as per Factor Analysis.

**Conclusions of Pilot Study I:** The inferences drawn on the basis of the pilot study are -

IQ instrument is to be withdrawn; EQ & VQ instruments being valid on the basis of both Reliability & Factor analyses will be used after required editing on the basis of the results of Factor Analysis for final enumeration. An instrument for measuring Organizational effectiveness is to be developed and tested for efficacy before its use in the main research study.

**3.3.2 Pilot Study II**

**Instrument Development and Profile of Select Respondent Women Leaders for the Pilot Study II:** A standard Emotional Quotient instrument developed by Linac, UK was found suitable among the many available ones for use in the study. Demographics and Psychographics, Volition Quotient and Organizational Effectiveness instruments were developed for the research study. The psychographics instrument was added along with the demographic instrument for the survey and will include social and psychological characteristics such as the individual’s personality, values, opinions, attitudes, interests and lifestyle.

Demographics & Psychographics; VQ instrument and Organizational Effectiveness instrument developed were checked for reliability. Fine tuning of Demographics and Psychographics, EQ, VQ and Organizational effectiveness instruments for final field study will be done with requisite additions and deletions as per results of pilot study obtained.

**Data collection tools**

The first part in the data collection on Demographics and Psychographics of the target group, 65 statements are developed to cover Demographics and Psychographic variables. The second part is the instrument on EQ which is standardized and accepted for universal
application as developed by Linac, UK. The instrument has ten statements with five domains identified for assessment of EQ of respondents. The EQ dimensions are Self-awareness; Self-regulation; Self-motivation; Social awareness and Social skills or Relationship management.

The assessment of VQ which is defined for the study has seventy five statements with twenty five main items with each main item having three sub items. The VQ instrument has been developed to apply it to women leaders under normal conditions of human psyche. There are only two studies {Kuhl J; Fuhrmann A – cited by Simon Forstmeier and Heinz Ruddel} wherein VQ is developed and tested under clinical conditions. The VQ instrument was pilot tested and appropriate corrections, editing and reformation of statements have been done.

**Instrument used for the field survey for Pilot study II consists of four parts –**

**Part 1.** Demographics & Psychographics Questionnaire. (DP 65 items)

**Part 2.** Standard Emotional Intelligence Questionnaire. (EQ 50 items)

**Part 3.** Volition Quotient Questionnaire. (VQ 75 items)

**Part 4.** Organizational Effectiveness Questionnaire. (OE 30 items)

The field study for data collection undertaken with sample of 106 women leaders drawn exclusively from the IT firms of Bangalore city. A Master Table for the mathematical computation of “n” was prepared with fourteen criteria ranging from the year the IT firm was established, its market share in the sector to revenues and the % of women employees in the work force are taken into consideration.

**Mathematical Computation for Sample Size “n” for the study.**

1. Population: 28, 05,040

2. Women employees: 7, 82,326

3. Women executives: 1, 36, 907

4. Inflation Factor: 136907/150 = 912.71

5. Sampling Fraction: 0.011%

\[
n = \frac{0.20111479 \times 137.35 = 138}{0.0014642} = 912.71
\]

\[
\sigma \bar{p} = 0.075
\]

\[
p = 0.278
\]

\[
q = 0.7211
\]
Success 95% or 5% error = 150.
Sample Size to be chosen for target group = 150.

In all, data from 106 women leaders were collected. The data collected were scrutinized for ensuring completeness of data before tabulation & analysis.

1.1 Data Analysis and Interpretation

- Data treatment; Reliability Analysis: Cronbach’s $\alpha$; Identification of outliers.
  - Outliers identified.
  - Examined all inconsistencies.
  - Deleted incomplete data sets.
  - Zeroed in on 106 samples.
  - Another 45 samples to be collected for further examination.

- Conceptual Relationship Analysis:
  - Demographics & Psychographics Vs. All Variables mentioned below.
    - Emotional Quotient; Volition Quotient & Organizational Effectiveness.

- Listing of Tables – One way; two way and multiple way tables.

- Testing Hypotheses: List of hypotheses; Sub hypotheses
  - Abstract of results.
  - Methodology and tools used.

- Conclusions.

3.4 Key Findings of Pilot Study II

3.4.1 Part 1 - Demographics and Psychographics Survey Findings.

- Average age of respondents was 35 years.
- Language Composition – Majority from Telugu and Tamil background.
- Marital Status – 89.6% are married; 10.4% single.
- No. of Children – 2 children per family.
- Education level of Respondents – Post Graduation and above - 69.8%
- Average IQ (Notional Value) – 128.
- Education level of Respondent’s Spouse - Post Graduation and Above - 84%

- The **Present Designation** of target group ranges from Vice Presidents at the top to Team Leaders at the bottom.
  - VP – 8.5%
  - Directors – 3.8%
  - GM – 3.8%
  - DGM – 1.9%
  - Delivery Heads – 13.2%
  - Program Managers – 22.6%
  - Team leaders, Tech Leads, Test Leads & Project Managers – 23.6%.

- Average Experience – 5.84 years
- TAHI – 16.5 lakhs per annum
- No. of Dependents per woman leader – 2.4
- Education level of Parents – Graduation and above.
- Education level of Parents-in-law
  - Father in law – Post Graduation.
  - Mother in law - Post Graduation and PhD.
- High level of Camaraderie with Boss – 3.24/5; Peer -3.65/5; Bottom line -3.46/4

- Maximum Influencer on Self – **Family**.

- Assessment of Perception of Boss is moderate at 2.20%; the same with the Peer group and Bottom line are very good at 3.25% and 3.31% respectively.

- Performance & Goal Orientation in terms of Target achievement is good at 3.59/5 and for Team achievement and Personal achievement is very good at 3.59/5 & 3.55/5 respectively.

- Co- operation from Male Bosses is very good at 3.44/5; Male Peers is 3.34/5 and Male Bottom line 3.41/5 as compared to the Co- operation from Female Bosses which is good but less than males at 3.29/5; Female Peers is 3.27/5 and Female Bottom line 3.31/5

- **Social values** –
  - Relationship with Colleagues – 3.31/5
  - Family co-ordination with shared values – 3.35/5
  - **Learnt or acquired values from Organization** – 3.51/5
  - Learnt or acquired values from Family – 3.30/5

- **Participation in Social Activities in Organization or Place of work** -
  - Social clubs – 3.68
  - Social groups – 2.53
  - Ethnic group – 2.49
  - Other Ethnic group – 2.62
- Participation in Social Activities near Dwelling Place -
  Social clubs – 2.50
  Social groups – 2.31
  Ethnic group – 2.27
  Other Ethnic group – 2.40

- Assessment of interest in Festivals and Religious functions
  Respondent’s Ethnic group – 2.27
  Other Ethnic group – 2.72

- Assessment of interest in Family functions
  Boss – 2.46
  Peer Group – 2.64
  Bottom Line – 3.50

- Assessment of Liking for Western Culture
  Western Wear – 1.98 & Western Food – 4.03

- Assessment of Learning
  Arts – 0.17/4
  Music – 2.09/4
  Painting – 1.62/4
  Writing – 2.29/4
  Research – 2.29/4
  Sports – 1.95/4

- Assessment of participation in formal organizational activities at the work place is moderate at 1.79/5

- Assessment of overall participation in Public activities is good at 3.20/5.
- Assessment of role in Specific Public Activities is moderate.
  Environment Initiatives – 2.69/5
  Teaching/Training – 2.70/5
  Public health Initiatives – 1.96/5
  Government Programs – 1.96/5
  Sports – 1.73/5

3.4.2 Part 2 - Emotional Quotient Survey Findings:

Standard Five step model of EI taken for EQ Assessment of Women Leaders:

1. EQ Self-Awareness
2. EQ Self-Regulation
3. EQ Self-Motivation
4. EQ Social-Awareness
5. EQ Social Skills (Relationship Management)
**EQ Self-Awareness**

Regression Analysis was carried out on Demographic & Psychographic as the Dependent Variable and ten EQ-Self-awareness as predictor variables.

The multiple regression relationships are statistically significant at 5% and 1% levels of significance.

Co-relation analysis was done across all Demographic variables and the EQ self-awareness variables. It was found to be statistically significant for the target group.

i.e., *Self-awareness is high among Women Leaders across demographics.*

*Self-awareness predictor variables, 10 in no. are all positively, statistically significantly correlated at 1% level.*

**EQ Self-Regulation.**

Reliability of data sets is high with Cronbach’s $\alpha$ at 0.879. The Cronbach’s $\alpha$ for standardized items or predictor variables is 0.906. The $F$ statistic of hypotheses of differential means is 78.925 at .000 level of significance.

\[ F = 78.925 \text{ at .000 level of significance.} \]  

The model of ANOVA is linear.

**EQ Self-Motivation, EQ Social Awareness and EQ Social Skills.**

The correlation and regression equation of EQ Self-Motivation, EQ Social Awareness and EQ Social Skills are more pronounced and strongly related under the ANOVA Linear Model.

**3.4.3 Part 3 - Volition Quotient Survey Findings**

All the 75 statements of VQ developed are statistically significant at 1% or at 5% level.

The association between the variables are established in assessing levels of VQ. Some of the statistically significant variables are as given below -

- VQ develops with age. $F = 1.410; \alpha = 14.8\%$.

- VQ and Language are significantly related at 6.9% with $F= 1.628$.

- Interestingly D-W statistics at 2.037 is a sign of no auto correlation amongst VQ variables.

- The Notional IQ of Women Leaders and VQ was found to be statistically significant at $F = 1.547$ and $\alpha = 9.2\%$. 
- VQ statement and Present Designation at the work place are moderately significant at 18.2% with $F = 1.348$.

- **The educational level of the respondent’s father significantly influences the VQ level of the respondent. It is at a high level of significance with $F = 2.961$; $\alpha = 0.001$.**

- The educational level of the respondent’s mother-in-law significantly influences the VQ level of the respondent at $F = 1.568$; $\alpha = 0.085$ or 8.5%.

- Co-operation from Male Peers is significant at 16.2% and $F=1.383$. The Bottom line Male employees are also significant at 16.6% and $F=1.375$.

- Ethnic groups to which respondent belongs significantly influences VQ of respondent at $F = 1.463$; $\alpha = 12.3\%$.

- Interest in Festivals and Religious functions of the respondent’s ethnic group is significant at $F = 1.561$; $\alpha = 8.7\%$.

- Western Wear is highly statistically significant at 0.2% and $F=2.658$ while western food is moderately significant at $\alpha = 13.4\%$; $F=1.438$

- Assessment of Learning painting is highly significant at 1.2% and $F= 2.108$ while sports is also significant at 1.8% and $F=2.007$.

- Participation in overall public activities is statistically significant at 8.4% and $F=1.572$

- Participation in Public Health Initiatives is moderately significant at 14.85 % with $F=1.409$ while Environmental initiatives is also only moderately significant at 19.8% with $F=1.323$.

- Fourteen Factors have been identified which will explain 80.99% of variations in the VQ statements. The component one explains 34.763% of variations while component two is able to explain 5.838%.

- The Cronbach’s $\alpha$ is .983 which is reflective of the high level of reliability of the instruments. The F statistic between items is significant at .000% level with $F= 18.67$.

- Interestingly TUKEY’S Test for non additivity of the ANOVA model is highly significant at .000% with $F=17.274$.

- This implies that ANOVA has to be retested for certain non-additive models.
The data analysis tools used for Analysis and Interpretation for 106 responses obtained in Pilot study II -

- ✓ Frequency Test
- ✓ Correlation Analysis
- ✓ Multiple Regression Analysis
- ✓ Factor Analysis &
- ✓ Reliability Analysis

- The analysis of OE instrument is due. The Correlation and Regression analysis of Demographics and Psychographics with Organizational Effectiveness will be completed in the next phase as also the analysis of EQ in relation to VQ and Demographics in relation to EQ;VQ.
- The overall results of the pilot study was found to be optimistic.
- Full scale survey will be undertaken for determined sample size of 156 respondents.
- Validated and Coded questionnaire will be entered into SPSS software package for analysis.

3.5 Conclusions

The enumeration of research design in the context of the universe of the study has been done. This has enabled the researcher to set the tone & tenor of research on the path of objectivity. The framework of the research has enabled the researcher to enumerate the results of pilot test for the full scale study. The instruments are developed & used to enable smooth collection of data from the target group. The VQ instrument has been developed & pilot tested for the study. The next chapter details the analysis of data collected on the basis of determined sample size.