CHAPTER FOUR

Research Methodology
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4. Research Methodology

4.1 Introduction

Why it is important to know what makes some organizations more supportive to their employees than other organizations? Which factors of organizational characteristics and culture affect employee satisfaction? Clearly, if one knows which specific characteristics and management practices distinguish one culture from other, one will wish to emulate the high level of job satisfaction and resultant performance, and to enjoy the same benefits (Ouchi; Schein, 1985).

It is possible to examine employee views of organizational culture and job satisfaction and consider the major components of organizational culture that enhances job satisfaction and other resultant factors like employee commitment and turnover intentions. Much research is not done on the direct relationship between Organizational Culture and Job satisfaction, especially in the areas of software companies.

4.2 Subjects

Despite a large number of studies that have examined the antecedents of Job satisfaction, the investigation of the influence of Organizational culture on Job Satisfaction is noticeably absent. The aim of this thesis is to examine the effect of Organizational Culture on Job Satisfaction and other outcomes like performance & turnover intentions of employees. Other measures which have been shown to be related to either job satisfaction or organizational culture are also included in the study, such as the organizational commitment, organizational performance, turn over intentions of employees and other demographic variables like age, education, years in position and years of experience in the organization.
Recently, multivariate studies have examined the causal relationship between a variety of different variables and job satisfaction, and a number of such studies have concluded that the effect of these variables on job satisfaction is mainly mediated by organizational commitment, organizational performance and turnover intention of employees. The data gathered in the present study is examined to determine if it is consistence with organizational culture fulfilling such a mediating role between organizational culture and the other variables in the study. Also, a multidimensional measure of organizational culture is employed in the study and the effects of the different organizational culture components on job satisfaction are investigated.

The subjects used in this study were employees working in different private software companies. A questionnaire survey was used which was complemented by semi-structured interviews. A total of 700 questionnaires were distributed to computer software employees in seven computer software companies. From which 430 completed questionnaires were returned (response rate 61.43%). The sample was obtained from seven private software companies, out of which two were foreign multinational software companies. Chi-square tests were used to investigate the relationship between organizational culture of software employees and their job satisfaction, and other variables measured in the study. A causal model of organizational culture was developed using a multiple regression analysis in which the role of organizational culture in mediating the causal link between job satisfaction and the other variables was explored.

4.3 Research Design

This research is based on descriptive research design because it starts with the well-defined problem. A questionnaire survey complemented by interviews was used to assess the influence of software companies’ culture, department culture, leadership style and job satisfaction of software employees and commitment to their organization. A number of software employees were chosen from different software companies for the follow up interviews. The data
obtained from the interviews was used to complement the findings of the questionnaire survey. A detailed description of the collection of qualitative data (interviews, observations and procedural manuals) and the results of their analyses are extracted.

Survey research is defined as “the administration of questionnaires to a sample of respondents selected from the some population” (Babbie, 1989. p. 257). Survey research is especially appropriate for making descriptive studies of large population and may be used for explanatory purposes as well. Hence, it is appropriate for this study. The questionnaire survey design was chosen for the following reasons:

a. It can survey large samples at a reasonable cost. In this study, employees from seven software companies were surveyed.

b. It is relatively easy to design and many questions can be asked. In this study, a Likert Scale was used for 50 questions.

c. It is relatively objective, can be anonymous and is able to analyze statistically. The order of causal relationship has remained in question.

4.4 Instrument for Survey Questionnaire:

The Survey Questionnaire used in this study was a selection of established measuring instruments. The following were chosen for this study: Wallach’s (1983) Organizational culture index (OCI), Stogdill’s (1974), Muller and Mc. Closky’s (1990) Job Satisfaction Survey (JSS) and the Mowday et al. (1979). They were chosen because of their established reliabilities, relative ease in administration, user friendliness and also because they had been used extensively by other researchers. Detailed discussion of the selection and description of these instruments is as follows:
Table: 4.1 Reliability Estimates of Instruments used in Previous Studies

<table>
<thead>
<tr>
<th>Instruments</th>
<th>Cronbach Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wallach's (1983) OCI (Organizational Culture Index)</td>
<td>(Reliability estimates)</td>
</tr>
<tr>
<td>• Bureaucratic</td>
<td>0.71</td>
</tr>
<tr>
<td>• Innovative</td>
<td>0.87</td>
</tr>
<tr>
<td>• Supportive</td>
<td>0.77</td>
</tr>
<tr>
<td>Stogdill's (1974) (Leadership Behavior descriptive Questionnaire)</td>
<td></td>
</tr>
<tr>
<td>• Consideration</td>
<td>0.82</td>
</tr>
<tr>
<td>• Initiating Structure</td>
<td>0.78</td>
</tr>
<tr>
<td>Mueller and Mc.Closky's (1990) (Job Satisfaction Survey)(JSS)</td>
<td></td>
</tr>
<tr>
<td>• Extrinsic Reward</td>
<td>0.52</td>
</tr>
<tr>
<td>• Scheduling</td>
<td>0.84</td>
</tr>
<tr>
<td>• Balance</td>
<td>0.57</td>
</tr>
<tr>
<td>• Co-Workers</td>
<td>0.54</td>
</tr>
<tr>
<td>• Interaction</td>
<td>0.72</td>
</tr>
<tr>
<td>• Professionalism</td>
<td>0.64</td>
</tr>
<tr>
<td>• Praise</td>
<td>0.80</td>
</tr>
<tr>
<td>• Control</td>
<td>0.80</td>
</tr>
<tr>
<td>• Global</td>
<td>0.84</td>
</tr>
</tbody>
</table>

Those found in the corresponding studies.

The Questionnaire Survey, together with a covering letter (see appendix) was given to each participant.
Organizational Culture Index (OCI, Walllach, 1983):

Various questionnaires have been developed to measure an organization's cultural values. Should one use qualitative or quantitative methods? Both approaches are complementary in the study and assessment of organizational culture. The advantages of qualitative measures include use of an organization or unit's own terms to describe it. The advantage of qualitative methods includes the ease of cross sectional assessment and comparisons, the replicability of the assessment by different researchers. Various questionnaires designed by researchers proposed over 50 specific dimensions of cultural values. In a study combining quantitative and qualitative methods, Glaser, Zamanou, and Hacker (1987) administered reliability coded questionnaire and interview. The Organizational Culture Survey (OCS) contains a 31-items questionnaire with five subscales: i) Climate-Atmosphere ii) Involvement iii) Teamwork iv) Communication-Information flow v) Supervision and Meeting.

Cooke and Rousseau (1988) develop a quantitative scale called Organizational Culture Inventory (OCI). This scale consisted of twelve distinct dimensions developed from needs theory, leadership style, and personality studies. These cultural styles are: 1) Humanistic-Helpful 2) Affiliated, 3) Approval, 4) Conventional, 5) Dependent, 6) Avoidance, 7) Oppositional, 8) Power, 9) Competitive 10) Competence/Perfection, 11) Achievement, and 12) Self-Actualizing (Cooke and Rousseau, 1988). The OCI can help managers articulate their vision of change, expressing it in patterns of behavior actualizing desired from members.

O’ Reilly et al (1991) has applied the Q-Sort method to develop a survey measure of culture. Their Organizational Cultural Profile (OCP) consisted of 54 value statements that can capture generic values of individuals and organizations. Their value statements are developed from past research on organization values and culture (e.g. Caldwell & O’ Reilly, 1990; Kennedy, 1982; Schein, 1985) was developed expressly to assess person-organization fit. They found out, not surprisingly, that good person-organization fit predicts actual Job
Satisfaction and Organizational commitment. When the factors analyzed their Q-sort items, O’Reilly et al (1991) was able to define nine dimensions of culture: 1) Rewards, 2) Outcome-Oriented, 3) Aggressiveness, 4) Innovation, 5) Team Oriented, 6) Decisiveness, 7) Supportiveness, 8) Attention-To-Detail, 9) Community Minded.

Wallach’s (1983) Organizational Culture Index (OCI) describes organizational culture in terms of three dimensions: Bureaucratic; Innovative and Supportive. Wallach defines the three dimensions as follows:

“Bureaucratic cultures are hierarchical and compartmentalized. There are clear lines of responsibility and authority. The work is organized and systematic: these cultures are based on control and power. The companies are stable, careful, and usually mature. The high score on bureaucracy means the organization is power-oriented, cautious, established, solid, regulated, ordered, structured, procedural and hierarchical” (Wallach 1983, p. 32).

“Innovative cultures are exciting and dynamic. Entrepreneurial and ambitious people thrive these environments. They are creative places to work, filled with challenge and risk. The stimulation is often constant....Innovative environment, however, not easy places in which to work. Burn-out and stress are routine occupational hazards.” (Wallach, 1983, p. 33).

“Supportive Cultures are warm, ‘fuzzy’ places for people to work. People are friendly, fair, and helpful to each other. They are open, harmonious environments like an extended family. They trust, safe, equitable, sociable, encouraging, relationship-oriented and collaborative.” (Wallach, 1983, p. 33).

This instrument was selected as appropriate for this study because it contains dimensions of organizational culture which have shown in previous research, in the employee context, to be significantly related to other variables of interest. Scherer (1988) reported that a supportive culture and an atmosphere of caring and concern for employees led to lower turnover.
Wallach (1983) suggested that the Organizational Culture Index (OCI) would be suitable to assess the subculture or counter-culture of divisions or functional areas within a large organization. Therefore, the OCI was adopted for the purposes of this research to measure both division culture (subculture) and overall software companies’ cultures.

The OCI consists of twenty-four adjective/items. Eight adjectives/items are assigned to each of the dimensions of organizational culture. Each item is rated as to its applicability to an organization. The rating is accomplished on four point Likert scale ranging from "does not describe my organization" (1) to "Describe my organization most of the time" (4). The score is the sum of responses for the items in each category of the index. Each category score indicates the extent to which the culture is perceived as Bureaucratic; Innovative or Supportive, with the highest category score indicating the predominant cultural dimension. Koberg and Chusmir (1987) used the Wallach (1983) OCI to study the relationships of organizational culture to creativity, job satisfaction, propensity to leave, and individual needs of employees. Koberg and Chusmir (1987) concluded that the categories of culture identified in this instrument were related to the type of organization. For instance, public sector companies were more bureaucratic in nature than private organizations which were generally more innovative.

In this study, 41 point/item were used; 5 point scales based on the O'Reilly et al (1991) Q-Sort measure. Sheffey (1994) developed this scale for use in her study of Person-Organization Fit and after factor analyzing the 41 items; she obtained the same nine dimensions as O'Reilly et al. (1991). Employees’ rate items in terms of how a characteristic of these values are of their organization; Sheffey found Cronbach’s alpha reliability coefficient for the actual values to be 90 percent. The survey items for the organizational culture are listed in the Appendix.
Job satisfaction measures traditionally used in organizational research were un-dimensional (Quinn and Staines 1979, Taylor and Bowers 1972, Vroom 1960). However, multidimensional job satisfaction measures (Cook et al. 1981, Hackman and Oldham, 1975, war et. al. 1979) have become more popular. Some research has examined separately the intrinsic and extrinsic dimensions of job satisfaction (Cook et al., Everly and Falcione 1976, Mathieu and Zajac 1990, Newman 1973). Others have used different multiple job satisfaction dimensions to measure job satisfaction. Since this study focuses on employees in software companies, Mueller and McClosky’s job satisfaction instrument was selected because it was specifically designed to be relevant to the employees in software companies.

Mueller and McClosky job satisfaction instrument is multi-dimensional and measures eight aspects of job satisfaction. The item for this questionnaire was designed by McClosky (174) to form three categories derived from Maslow’s theory of hierarchy of needs (that is, low to higher order needs). Although factor analysis by Mueller and McClosky (1990) did not show McClosky’s (1974) original three categories (Safety, Social and Psychological), their eight factor solution has provided a satisfactory alternative multi-dimensional measurement of job satisfaction. These factors or dimensions of job satisfaction (extrinsic rewards, scheduling, balance of family/work, co-workers, interaction opportunities, professional opportunities, praise and recognition, and control and responsibilities) however, are related to McClosky’s original three categories. The job satisfaction dimensions of scheduling, extrinsic reward and balance of family/work were defined by items which were included in Mueller and McClosky’s (1990) safety category. Items which were based on the job satisfaction dimensions of co-workers and interaction opportunities were in Mueller and McClosky’s (1990) social category, and the dimensions of praise and recognition, professional opportunities, and control and responsibilities were formed by item in Mueller and McClosky’s (1990) psychological category. McClosky’s (1974) three categories, and the eight dimensions of Mueller and McClosky (1990), can also be related to the distinction between the intrinsic and
extrinsic dimensions of job satisfaction (Cook et. al. 1981, Newman 1973). Items defining McClosky's (1974) psychological and social categories, and the corresponding factors from Mueller and McClosky (1990) eight dimensions, can be seen as similar to those which have been used to define the intrinsic components of job satisfaction, with the safety and category items (or lower order needs in Maslow's hierarchy) being similar to those which define the extrinsic component of job satisfaction.

Mueller and McClosky's (1990) job satisfaction survey (JSS) has thirty-one items assigned to eight dimensions. It uses a five point Likert scale ranging from "very dissatisfied" (1) to "very satisfied" (5). As stated by Mueller and McClosky (1990), scores for each of the eight dimensions are obtained by either summing or averaging the relevant items. The reliability coefficient for the eight dimensions of job satisfaction obtained by Mueller and McClosky (1990), as well as that for a measure of overall job satisfaction (found by summing all items) as presented in the table.

Minnesota Satisfaction Questionnaire (MSQ) by Weis, Davis and England:

The Minnesota Satisfaction Questionnaire (MSQ) is designed to measure an employee's satisfaction with his job. Three forms of MSQ are available, two long, (1977 version & 1967 version) and one a short form. The MSQ long Form requires 15 to 20 minutes to complete and short form about five minutes.

The MSQ is a 100-item, self-report instrument. The MSQ measures job satisfaction across 20 different dimensions, with five questions on each dimension. Dimensions on which job satisfaction is measured are as follows:

- ability utilization – the chance to use one's abilities
- achievement – feelings of accomplishment
- activity – being able to stay busy on the job
- advancement – the opportunity to advance
- authority – the chance to direct others
- company – satisfaction with company policies
- compensation – pay for the work done
- **co-workers** – relationships with co-workers
- **creativity** – the chance to try own work methods
- **independence** – the opportunity to work alone
- **moral values** – not having to violate conscience at work
- **recognition** – praise received from work done
- **responsibility** – freedom to use own judgment
- **security** – steady employment of the job
- **social service** – the chance to do things for others
- **social status** – the opportunity to be “somebody”
- **supervision (HR)** – the way the boss handles employees
- **supervision (technical)** – competence of supervisor
- **variety** – the chance to do different things occasionally
- **working conditions** – all facets of the work environment

Table: 4.2 Long-Forms MSQ. Measures job satisfaction on 20 five-item scales:

<table>
<thead>
<tr>
<th>Ability Utilization</th>
<th>Co-workers</th>
<th>Moral Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Achievement</td>
<td>Creativity</td>
<td>Recognition</td>
</tr>
<tr>
<td>Activity</td>
<td>Independence</td>
<td>Responsibility</td>
</tr>
<tr>
<td>Advancement</td>
<td>Security</td>
<td>Supervision—Human Relations</td>
</tr>
<tr>
<td>Authority</td>
<td>Social Service</td>
<td>Supervision—Technical</td>
</tr>
<tr>
<td>Company Policies</td>
<td>Social Status</td>
<td>Variety</td>
</tr>
<tr>
<td>Compensation</td>
<td></td>
<td>Working Conditions</td>
</tr>
</tbody>
</table>

Short-Form MSQ: This form consists of 20 items from the long-form MSQ that best represents each of the 20 scales. Factor analysis of the 20 items resulted in two factors—Intrinsic and Extrinsic Satisfaction. Scores on these two factors plus a General Satisfaction score may be obtained. The short-form MSQ uses the same response categories, which were used in the 1977 long form. Normative data for the three scales for six selected occupations are in the manual.
Facets of the Minnesota Satisfaction Questionnaire in their Respective Categories

Intrinsic Job Satisfaction:

- Responsibility
- Security
- Creativity
- Social Service
- Social Status
- Variety
- Moral Values
- Ability Utilization
- Activity
- Achievement
- Authority
- Independence

Extrinsic Job Satisfaction Advancement

Company Policy
Compensation
Recognition
Supervision – human relations
Supervision – technical
General Satisfaction Working Conditions
Co-workers
(+ Intrinsic Job Satisfaction)
(+ Extrinsic Job Satisfaction)
Benefits of the MSQ: Job satisfaction is directly related to job performance, attitude, motivation, morale, and productivity. The value of the MSQ is that it accurately measures job satisfaction, and identifies specific areas (20 dimensions mentioned above) that have an impact on performance and human behavior in the workplace. The highly valid and reliable MSQ is:

- Easy to use, easy to understand
- Valid and reliable
- Applicable to any organization
- Applicable for managers, supervisors, and employees

4.5 Validity Issues:

Four major threats to the validity of research findings are the lack of internal validity, external validity, construct validity and statistical conclusion validity. (Cook and Campbell, 1979). Many of the threats to validity arise from the research design and the design of the instruments used. In this study attempts were made to reduce these threats. When this was not possible, the limitations which such threats impose on the results and potential contribution of the findings are acknowledged.

Internal validity:

The major issue for internal validity is the possibility of an alternative plausible explanation for relationships found in research results from the presence of a “third” variable that has not been measured. Survey research conducted in the field is particularly open to this threat. This is an integrative study covering organizational, job and personal variables in its analysis. It has been recognized that this study could examine only a limited number of variables that could influence job satisfaction on software company employees. This limitation is acknowledged. However, this threat was substantially reduced by the choice of the relevant variables, which were suggested in relevant literature.
as being related to each other. Also, the survey was complemented by interview data. The results of interview were then compared with the survey findings to assess their compatibility. However, it must be acknowledged that regression coefficient might not reflect the magnitude of causal links between the dependent and independent variables as they may be altered by the inclusion of other variables, which are not present in the study.

External Validity:

External validity refers to the extent to which the results of the study can be generalized to other populations, environmental conditions or times. Sampling is not truly representative of the population when non random selection of participants or subjects occurs. In this study the selection of participants was not fully random, because of the constraints said by the participating companies. However, the response rate 61.43% is relatively high for this type of study, as it is very difficult to collect response from employees from software companies. Comparative findings from the different groups would be required to confirm the external validity of this empirical study.

Construct Validity

The construct validity of an instrument refers to the extent to which the instrument measures what it is intended to be measured. The instruments used in this study were chosen from previously used and validated instruments. The established reliabilities and validities of these instruments were mainly obtained from other studies, in different foreign countries. However, software company practices and the bureaucratic structure of software companies in these countries may or may not be similar in our country.

Statistical Conclusion Validity:

Statistical conclusion validity is concerned with “inferences about whether it is reasonable to presume covariation given a specific alpha level and
the obtained variances" (Cook and Campbell 1979, p 14). This could involve Type 1 error which concludes that effect exists when in fact it does not. Alternatively, Type 2 error can occur whereby the effect does exist but it is concluded that it does not. To minimize the likelihood of these errors occurring, established instruments with high reliability were used in this study. Also, an adequate sample size was used in the study. In this study, 430 returns or responses were secured (61.43% response rate).

**Pilot Test of the Questionnaire:**

A small pilot study was carried out to assess the clarity of the instructions in the questionnaire and to detect any procedural problems in the distribution and collection of questionnaires. The piloting questionnaire was conducted by the author in a department of a private software company. The questionnaire was distributed to a total of 50 software employees. The average time to complete the questionnaire was 25 minutes. Software employees were also encouraged to enter extra comments and opinions about their working environment and interactions in the questionnaire. A total of 35 responses were collected, two of which were incomplete and were discarded.

The size of the sample for the pilot study (a total of 35 responses) is not large enough to obtain accurate estimate of the reliabilities of the scales, or of correlations between them. However, in order to obtain initial rough estimates, Cronbach alpha reliabilities were calculated for each of the scales, as well as correlations between job satisfaction and the other scales.

The results indicated that the reliability estimates for the variables were generally satisfactory except for the job satisfaction (balance) and job satisfaction (co-worker) variables, which have relatively low alphas of 0.57 and 0.52, respectively. It was decided that these two variables would be retained for use in the main study because of the small sample size used in the pilot study (and hence a large sampling variability), and also to maintain the integrity of the original questionnaire. However, the reliability of these two variables in the main study should be noted, and results involving these two variables treated accordingly. The correlation between organizational culture and other variables was statistically significant, except for the variables job satisfaction.
4.6 Sampling and Data Collection

Sample selections from hundreds of private software companies in Bangalore city were used to reflect the broad range of software company environment and the employees working in these companies. A total of seven private software companies in Bangalore region were identified as potential targets for sample in this study. As this information provided a greater access to software company's employees. It was calculated that approximately seven software companies (with an average of 100 employees in each company) were needed to provide an adequate sample size of around seven hundred. Therefore was a random selection of software companies, from hundreds of private software companies in Bangalore, to provide a good representation of each group of software companies. Five Indian software companies and two foreign software companies were selected randomly. Permissions were obtained from these seven companies to conduct the survey.

After the selection of sample companies, the use of appropriate branch or department for this study was discussed with the research supervisor and senior executives. Only the departments, which satisfied the criteria, were selected. Care has been taken to include employees at all levels or designations.

Employees having a minimum and maximum experience, both male and female were considered to have a perfect representation of whole population under study. A random selection of departments occurred which resulted in total sample of 100 employees from each software company. All the employees from the selected companies were invited to participate in the questionnaire survey. Questionnaires were distributed either in person or by email. Time given for questionnaire completion was 20 minutes. In total, 700 employees were invited to take part in the study, of which 500 were from Indian software companies and 200 from foreign software companies. Designation of most of the participants was Senior Software Engineer, Junior Software Engineers, System Administrators, Programmers, Assistant Programmers, Programme Leaders.
and Team Leaders (Designation is known by different names in different companies).

The questionnaires were given to all participants with a covering letter and a blank envelope personally. Other than the questionnaire survey, interviews were conducted with few employees so that we can reduce the limitations of questionnaire survey.

To some of the participants questionnaires were sent by email due to their non-accessibility in person. Sometimes questionnaire responses were collected within 30 minutes if they had leisure. A total of 430 responses or returns were obtained from 700 questionnaire distributed. Therefore a total of 430 questionnaires were used for the final analysis which represents a response rate of 61.43%.

4.7 Analysis of Data:

Survey questionnaires were collected and responses to items defining the variables (Software Company's culture, Subcultures, Job Satisfaction, and Demographic Variables) were entered into the SPSS for Windows (version 6.0) program for statistical analysis. Mean and Standard Deviation were calculated for each variable. Although the instruments selected in this study were all well established, it was necessary to confirm their reliability once again for this study because of its usage in the context of Indian Software Company. Cronbach alpha estimate of reliability was calculated for all scales. Relationship between all variables was calculated by using Chi-square test. Chi-square test was used to investigate the relationship between the dependent variable Software company's culture and independent variable (Job satisfaction and Demographic Variables). In particular, Chi-square test was used to determine the effects of organizational culture on job satisfaction. A path analytical framework was used to interpret the results of the Chi-square analysis.
Summary

This chapter described the methods used to investigate the interrelationships and influences of specific antecedent variables on software employee's job satisfaction from their organizational culture. A survey, complemented by interviews, was utilized in this study. The major challenges for research design were: (1) to obtain permission to survey the appropriate groups of software employees, and (2) to execute the necessary steps to gather reliable and valid information about software employee's job satisfaction and relevant specific antecedent variables. The rationale for using a combination of established instruments in the survey was detailed. Description of the instruments used for the quantitative survey and the process used are also presented. Procedures for sampling and data collection were discussed for the main study. In total seven companies were surveyed and 700 software company employees were invited for this study. A response rate of 61.43% (n = 430) was obtained in this survey. Methods of analyzing qualitative data such as chi-square test were obtained. Finally, strategies used to minimize threats to internal validity, external validity, construct validity and statistical conclusion validity, were discussed. Collection of qualitative data and the procedure used in the interpretation of interview data and other observations will be discussed in next chapter.