Chapter-4

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4.1 Introduction

In this chapter researcher focused on the Research Methodology concept and the conceptual model of the research opt; which examines the various factors influences the attrition in the IT-units and possible retention strategy to reduce it in the IT-units in around Pune. The need is to understand the research paradigm with understanding the positive research approach and the process of the quantitative and qualitative methodology. Research design will provide the method of data collection and questionnaire design includes target population, sampling method, and sampling frame, sampling plan, sample size, measurement scale, validity and reliability measurement with statistical method of data analysis.

4.2 Research Paradigm

A research paradigm is a basic set of philosophical beliefs about the nature of the world, which guides the thinking of researchers in the conduct of the research \[1\]. It reflects the fundamental position that researchers have to determine what problems are worthy of research exploration and the availability of the method to solve those problems \[7\]. In general, a research paradigm is a whole system of thinking in the social sciences. It includes basic assumptions, the important questions to be answered or puzzles to be solved, the research techniques to be used, and examples of what good scientific research looks like \[12\].

Although choice of paradigm has been the subject of long-standing debate on the adequacy of research methods in the social sciences, failure to think about the philosophical position can seriously affect the quality of research management. That is, the research techniques for diverse methodologies are totally different from one other among the paradigms. For example, interpretative researchers are likely to collect, analyse, and interpret data simultaneously whereas positivist researchers aim to test hypotheses they previously developed (Neuman, 2006)\[9\].

In terms of research quality management, there are three useful factors that may help the researchers understand the importance of philosophical beliefs. Firstly, they help to clarify the consequent research designs \[5\]. This involves an entire system of thinking with every piece of the research, it also includes what kind of evidence is gathered, and from where, and how such evidence is interpreted in order to provide good answers to the basic research questions (Easterly et al., 1991, p.21)\[5\]. Secondly, they can help the researchers to recognize which designs will
work and which will not work (Easterly et al., 1991). Systematic thinking at the beginning of
the research helps to prevent wasting time with incomplete plans. Lastly, they can help the
researchers identify designs that may be outside his or her past experience (Easterly et al.,
1991). The researchers can therefore adapt research designs in relation to the constraints of
different subjects or knowledge structures. Thus, it is believed that the researchers can easily
reach their purposes as a result of the study if they establish what they believe about the nature of
the world prior to the conduct of the research.

Since paradigms of the social sciences offer a variety of views about the nature of the
world, they have been usually divided into a subjective and objective dichotomy. The subjective
view is related to the researchers who look at reality as a projection of individuals’ consciousness
whereas the objective view sees reality purely as a concrete structure. For example,
phenomenological insights represent the basic epistemological stance from a position of
subjectivity. In contrast, the objective epistemology utilizes lab experiments to study the world.
In general, the researchers with a subjective view represent an interpretative paradigm whereas
the objective researchers represent a positivist paradigm. However, the following positivist-
interpretative paradigms will be discussed using ontology, epistemology, and methodology.

4.3 Methodology

Methodology refers to the ways in which researchers discover or create knowledge about
the world. It provides the tool or instrument to researchers that enable them to collect and
analyse the data. The methodology of the positivist paradigm is regarded as the quantitative
approach as it mainly measures variables and tests its hypotheses using descriptive and
inferential data analysis techniques (Neuman, 2006). For example, quantitative researchers
construct a theoretical framework and test the hypothetical relationship between independent
variables such as innovation and creativity and a dependent variable such as decision to stay.

In contrast, the methodology of the interpretative paradigm is regarded as the qualitative
approach as it mainly emphasizes detailed explanations of cases with socially constructed
meaning (Neuman, 2006). It includes ethnographies, case studies, action research, and
grounded theory. The methodological tools used in collecting and analysing data include
observation, in-depth interviewing, and focus groups (Neuman, 2006). For example, the
retention of software development employees could be explored through the in-depth interviewing of case studies.

A scientific research that justifies the managerial decision making in the social world is a traditional approach. It is regarded as an effective problem-solving approach that involves an organized, systematic, critically objective, scientific inquiry into a specific problem that needs a solution. In addition, phenomenal interests of investigation are characterized by the testing of hypothetical relationships (Davis, 2005). The characteristics of positivist research are based on the beliefs that the social world exists externally and its phenomena can be measured through objective methods, rather than being interfered with subjectively through sensation or intuition (Easterby, et al., 1991). These authors have further identified the following elements in order to guide the research of universally accepted.

1. Independence: the observer is independent of what of what is being observed;
2. Value-freedom: the choice of what to study, and how to study it, can be determined by objective criteria rather than by human beliefs and interests;
3. Causality: the aim of social sciences should be to identify causal explanations and fundamental laws that explain regularities in human social behaviour;
4. Hypothetic-deductive: science proceeds through a process of hypothesizing fundamental laws and then deciding what kinds of observations will demonstrate the truth or falsity of these hypotheses;
5. Operational method: concepts need to be made operational in a way which enables facts to be measured quantitatively;
6. Reductionism: problems as a whole are better understood if they are reduced into the simplest possible elements;
7. Generalization: in order to be able to generalize about regularities in human and social behaviour it is necessary to select samples of sufficient size;
8. Cross-sectional analysis: such regularities can most easily be identified by making comparisons of variations across samples (Easterby et al., 1991, p.23).

These guidelines help to answer the research question that examined the relationship between retention factors and software development employees’ decisions to stay in the IT
companies. The choice of the positivist paradigm for this research was justified for the following reasons.

Firstly, the relationship between retention factors and software development employees’ decisions to stay exists objectively and externally. The some retention factors naturally exist according to the literature, and none of them are changed or influenced by the researcher.

Secondly, the researcher has a lower level of influence on collected data than he would in a qualitative study. While no research is wholly value free or fully objective, using a survey method with questions chosen from established instruments and statistical analysis places the research more towards the objective range of a methodological continuum.

Finally, this research tests the hypotheses and explains how the retention factors affect the software development employees’ decisions to stay in the IT industry. This study mainly examines the relationships of hypotheses rather than building a new theory. Therefore, quantitative research is believed to be more suitable for such kind of research.

4.3.1 Quantitative and Qualitative Research Methodology

Neuman (2006)\[^9\] has stressed that quantitative researchers often rely on a positivist approach to social science. The process of this approach is through quantitative techniques using surveys and statistics. This approach precisely measures identified variables and tests hypotheses that are linked to general causal explanations. More importantly, it is an organised method for combining deductive logic with theoretical framework. This consequently discovers and confirms a set of probabilistic causal laws that can be used to predict general patterns of human activity (Neuman, 2006)\[^9\]. Therefore, quantitative research is believed to create knowledge through objective, controlled, statistical tests, measurements, stimulated exercises, and models.

Since quantitative research has been built upon the hypothetical-deductive method, it has created a seven-step process of building blocks of social science \[^4\]. This process begins with the interest of the researcher, and is followed by preliminary information gathering, theory formulation, hypothesizing, further scientific data collection, data analysis, and deduction. Davis (2005, p.59)\[^3\] has also stressed that the direction of the deductive method begins with abstract concepts and theoretical relationships then works towards more concrete empirical evidence.
This research began with the researcher’s interests in the IT employees in the IT-units in around Pune as important assets of companies. It is believed that not retaining those important assets would be a risk to the success of IT companies as voluntary turnover rate is very high in the IT industry in Pune as discussed with the HR managers. This demonstrated the deductive process of the researcher’s interests at the beginning of the quantitative research.

Qualitative research is designed to reveal a target audience’s range of behaviour and the perceptions that drive it with reference to specific topics or issues. It uses in-depth studies of small groups of people to guide and support the construction of hypotheses. The results of qualitative research are descriptive rather than predictive.

Qualitative research methods originated in the social and behavioural sciences: sociology, anthropology and psychology. Today, qualitative methods in the field of research include in-depth interviews with individuals, group discussions (from two to ten participants is typical); questionnaire method, diary and journal exercises; and in-context observations. [11]

4.4 Research Methodology opt for the study

The conceptual model of the research is based on the review of the literatures, and the theoretical framework of the hypothesis consider in the chapter one.

IT industries in India especially in Pune are 22 years old and skill IT professionals demand is growing day-by-day. The dynamism of IT industry and fluctuation in Attrition in these industries are the key factors for the matter of research frequently. As per research review the retention strategy are changing in IT Industries and dynamically the HR department has to observe the psychology of IT professionals and IT job scenario in IT industries, accordingly the HR department has to reframe their retention policy. So the investigations for the retention strategy of IT industries are to be part of this research. The study is constructed for employee decision to stay with IT-units is associated with the retention variables: compensation scheme, career growth, work life balance, job satisfaction, motivation, environment team work, management effectiveness, competency, commitment, appraisal system, involvement, gender issues, etc. These identified variables were tested for the casual explanations of their relationship with IT employees’ decision to stay.
Finally, a research design was set up to decide on how to collect further data, analyse and interpret those data, and provide an answer to the identified issues (Sekaran, 2000)[10]. This is the deductive process (see Figure 4.1) drawing from the logical analysis of scientific research.

4.4.1 Research Design

Research design is a master plan that specifies methods and procedures for collecting and analysing the needed information [3]. This is a framework that plans the action for the scope of the study as it provides appropriate techniques to conduct the research. In fact, it sets up the preferences of the researcher with the sources of information, the method of data collection, the sampling methodology, explanation of the research variables, and statistical methods for data analysis.

The research design adapted for the present study is a Descriptive and Diagnostic Research Design. This design is found suitable because the study deals with a retention problem that extensively exists in the IT industry and challenges especially for the Human Resource Department of the IT-units to develop different strategies to keep people with the organization for a sufficiently longer time.
The research is divided into two parts - in the first part the conceptual model of the research is based on the literatures review and the theoretical framework of the hypothesis consider with respect to Employee perspectives and the structured Questionnaire directive approach has been considered. In the second part, case study of multiple IT-units has been considered to understand what retention practices adopted by HR manager to retain the employees and effectiveness of the retention practices as an Employer prospective. The semi structured interview method used to collect the data from HRD of the selected IT units of Pune, to cover up what conventional and non- conventional retention practices implemented by the IT units, the effectiveness of retention practices and different level of hierarchy mostly participates in turnover.

4.4.2 Sampling Design

It refers to the technique or the procedure the researcher would adopt in selecting items for the sample. Sample design also leads to a procedure which tells the number of items to be included in the sample also known as size of the sample.

Pune is the Silicon Valley of India. One finds a large number of IT and ITES companies located in and around Pune. The study covers the whole of the geographical region of Pune having only IT companies. These are Indian owned, the Multinationals, small and big employing a couple of hundred people to over a laky of employees – technical, managerial and administrative support. This vast industrial base provides wide opportunities to select IT-units for study purpose. But the time constraint does not permit one to go for a large sample and also the sensitive subject of the study makes a researcher to concentrate on a few IT-units.

Sample area: Sampling population and area taken, is segregated in and around Pune (Hingiwadi IT park, Magarpatta, Koregoan, Rajiv Gandhi IT park PCMC).

Sample Frame is IT-units (MNC, big and small units) listed under Pune Maratha Chambers of Commerce and Industries and Agriculture (MCCIA) have been considered. Out of around 402 IT-units in MCCIA, 42 IT-units taken for the study.

The sampling technique used for study is simple random sampling/ probability sampling.

Respondent type: The IT employee, who has left the organization at least once, is considered for the study. The respondent can be male or female, any age group and any designation with 1 year and onwards experiences.
Sample Size: Out of around 402 IT-units in MCCIA, 42 IT-units had taken for the study. The total approximate populations were 6000 employees in these 402 IT-Units. The data collection was undertaken through the IT employee in IT-units at Pune, the total target population for this study was 600 employees.

4.4.3 Questionnaire Design

Relevancy and accuracy are two major concerns associated with questionnaire design. Relevancy refers to questions being asked that are relevant to the identified variables, whereas accuracy refers to information that is reliable and valid (Zikmund, 2003). Generally, it relates to principles of wording, which include content and length, wording and language, and form of questions (Sekaran, 2000).

Content: Content of questions should properly measure respondents’ attitudes, beliefs, and opinions based on the variables of a conceptual model (Sekaran, 2000). In this research, there were twelve independent variables and two dependent variables which were identified and considered. The independent variables were financial compensation scheme, career growth, work life balance, job satisfaction, motivation, environment team work, management effectiveness, competency, commitment, appraisal system, involvement and gender issues. This is also considered to understand most influencing reason for attritions which will help the HR department to frame their retention policies. The dependent variables age and experience were main factors for the decision of attrition and retention.

Wording and Language: Words and wording used for this research were reviewed by the software development employees in IT industries in Pune. This ensured that target respondents were properly communicating and using the same language. This ensured that the questions were developed based on the art of asking questions, which is using simple and conversational language, and avoiding leading and ambiguous questions (Zikmund, 2003).

Form of Questions: The questionnaire is divided into four sections– in the first section information collected on general information as Name of the Organization (optional), Type-National/MNC, Total working force, Current designation of the respondent, . The information collected on Dependent variables through this questions- How long ago did you leave your prior company?, Previous designation of the respondent, How long were you in your current position?, Total work experience, No. Of jobs changed to test the hypothesis-
those 1-2 years experienced employees leave job more frequently in 21 to 35 years of age, employees leave job for change in designation. Second section was designed to collect information on background- Gender, Marital Status, No. of dependents to understand the factor influencing for job attrition or not. The next section which is third one was used to understand the trends of most influencing reasons for attrition which one should consider for retention design. Section four is to understand and prove the hypothesis of to test whether the satisfaction level is independent of the reasons for jobs changed.

**Welcome Message:** The welcome message was included in the questionnaire which motivates respondents by providing an opportunity to describe the purpose of the survey and discuss the conditions of anonymity and confidentiality.

**Development of the Measurement Scale:** In section one and two the questions asked were open ended for nominal and ordinal scale. The section three contains closed ended questions which consist of Likert-type scale of 1-5, as can be “5 for poor”, “4 for bad”, “3 for neutral”, “2 for good”, “1 for Excellent”. Based on the above the questionnaire is designed and used for main data collection survey. The details of the questionnaire are in the appendix - 1.

### 4.5 Data collection

The steps in the data collection process for this study involved the pilot study and main study. Both studies were sequentially important to the consequence of data interpretation with validity and reliability. Gorard (2003)\(^6\) has stressed that comments made in the pilot study could apply equally well to the main study. That is because the pilot study is a pre-tested study which involves a much smaller sample, testing out all aspects of the survey\(^8\). Therefore, a pilot study was conducted on a small sample to:

a. To check the clarity of the items enlisted in the selected questionnaires.

b. To get an approximation of time required to complete the questionnaire.

c. To ensure the feasibility of the tools selected for the study.

d. To get a fair idea of the respondents’ reaction towards the strategies their managements have adopted to retain people.

Further, for the main study the questionnaire is modified for the survey.
4.5.1 Pilot study:

In this study, 30 employees from six IT-units (Capgemini, Tech Mahindra, Cognizant, Infosys, Sementac and Syntel) have been approached with the condition that they have switched their job at least once. The questionnaire were distributed to the employees who were willing to help researcher in pilot study considering that within 7 to 8 days they will read & and return the questionnaire with suggestions. Out of 30 respondents, 25 had responded effectively for the completion of pilot study and 5 respondents did not responded due to various reasons, so the response rate was 83.33% as per table-X

Table-4.1: Pilot study statistics.

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Name of the company</th>
<th>Survey in</th>
<th>Employees approached</th>
<th>Response received</th>
<th>Response not received</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Capgemini</td>
<td>Mid of Feb to 23rd April 2009</td>
<td>5</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Tech Mahindra</td>
<td></td>
<td>3</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>Cognizant</td>
<td></td>
<td>7</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>Infosys</td>
<td></td>
<td>4</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>Sementac</td>
<td></td>
<td>5</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>6</td>
<td>Syntel</td>
<td></td>
<td>6</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td>30</td>
<td>25</td>
<td>5</td>
</tr>
</tbody>
</table>

4.5.2 Main Study

The study was conducted in two phases. In the First Phase, the permission from the concerned authorities of IT industries was obtained by the researcher in advance. In the Second Phase the researcher introduced himself to each respondent individually and briefed them about the need for the study. They were conveyed orally that they are voluntarily participating in the research study and the consent for the same are optioned from their authority and nothing is going to be wrong with them. The respondents were requested to fill up the four sections of the questionnaire. They were requested to give frank and honest answers and not to omit any item; they were informed that it was important to respond to every statement in the questionnaire. Further they were requested to seek clarifications on any statement. Sufficient rapport was established with the respondents during this phase of the session. The researcher administered the questionnaire with the introductory conversation.
The researcher clarified the doubts of the respondents, if any. When the researcher was sure that the respondent has understood the mode of recording his responses he/she was permitted to record his/her responses. The respondent was asked to return the filled in questionnaire after he/she completed giving responses. The researcher clarified the doubts of the respondents, if any, while answering the questionnaire.

During main study, a few of the IT-units were not ready to corporate, some of them were closed down, because of which data were collected from 36 units only as considered 42 units during the sample size consideration. In order to achieve a similar or better response rate, that of the pilot survey was, the 600 respondents were invited to participate in the main survey and 576 respondents response were found valid. The response rate was 96% for the main study. Two types of scale were used. Likert 5 point scale (1-Very low influenced, 2- Low influenced, 3- Moderate influenced, 4- Highly influenced, 5- Very highly influenced) for composite variables and dichotomous scale (1= Yes and 2 = No) for retention variables. Details of company type and responses receives is tabulated in Table- XX

Table-4.2 Period and response analysis of respondents of various industries during main study

<table>
<thead>
<tr>
<th>Sr. no.</th>
<th>Name of the company</th>
<th>Survey in</th>
<th>No. of employees approached</th>
<th>No. of employees responded</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Access IT connect Pvt. Ltd.</td>
<td>May 2009</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>Amdocs</td>
<td></td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>3</td>
<td>ATOS Origin</td>
<td></td>
<td>15</td>
<td>12</td>
</tr>
<tr>
<td>4</td>
<td>Axis IT connect Pvt. Ltd.</td>
<td>June 2009</td>
<td>30</td>
<td>27</td>
</tr>
<tr>
<td>5</td>
<td>Capgemini</td>
<td></td>
<td>25</td>
<td>22</td>
</tr>
<tr>
<td>6</td>
<td>CDAC</td>
<td></td>
<td>19</td>
<td>17</td>
</tr>
<tr>
<td>7</td>
<td>Cognizant</td>
<td></td>
<td>17</td>
<td>25</td>
</tr>
<tr>
<td>8</td>
<td>EFKON</td>
<td>July 2009</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>9</td>
<td>Electronic Data system</td>
<td></td>
<td>19</td>
<td>15</td>
</tr>
<tr>
<td>10</td>
<td>HI Logic Pvt. Ltd.</td>
<td></td>
<td>20</td>
<td>19</td>
</tr>
<tr>
<td>11</td>
<td>HSBC</td>
<td></td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>12</td>
<td>IBM</td>
<td>August 2009</td>
<td>16</td>
<td>15</td>
</tr>
<tr>
<td>13</td>
<td>Indus Soft</td>
<td></td>
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<td>16</td>
</tr>
<tr>
<td>14</td>
<td>Infinite Technology</td>
<td></td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>15</td>
<td>Infosys</td>
<td></td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>16</td>
<td>JRC Software</td>
<td></td>
<td>18</td>
<td>16</td>
</tr>
</tbody>
</table>
It needs to be mentioned here that the data collection process as pilot survey and main survey was happened in February 2009 to January 2010.

### 4.6 Method used for Data Analysis

Qualitative and quantitative methods will be used for data analysis. Collected data will be interpreted through Table, charts, graphs for quantitative analysis and Histograms, Bar, Pie etc for graphical presentation of findings. Non-Parametric–Tests will be applied for hypothesis testing, which are:

- **Cochran Q-Test** will be done to find most and least influencing retention variables.
- **Friedman chi square** and **Wilcoxon signed –rank test** for the significant test
- **Skewness test** and **Kurtosis tests** will be used for ranking the composite variables under each retention variables.
- **Pearson chi-square test** will be applied to understand that is there any relationship between age and number of job changed,

<table>
<thead>
<tr>
<th></th>
<th>Company Name</th>
<th>Date</th>
<th>Number</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>17</td>
<td>Magnus OPUS</td>
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<td>20</td>
<td>15</td>
</tr>
<tr>
<td>18</td>
<td>Mahindra Satyam</td>
<td></td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>19</td>
<td>Mphasis</td>
<td></td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>20</td>
<td>Net Pulse</td>
<td></td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>21</td>
<td>Nihilent Tech.</td>
<td></td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>22</td>
<td>Pragmities Pvt. Ltd.</td>
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<td>16</td>
<td>16</td>
</tr>
<tr>
<td>23</td>
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<td>October 2009</td>
<td>15</td>
<td>15</td>
</tr>
<tr>
<td>24</td>
<td>S1</td>
<td></td>
<td>16</td>
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<td>Sementac</td>
<td></td>
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<tr>
<td>26</td>
<td>Sugen Software</td>
<td></td>
<td>14</td>
<td>14</td>
</tr>
<tr>
<td>27</td>
<td>Sumeru Info System Pvt. Ltd</td>
<td>November 2009</td>
<td>10</td>
<td>10</td>
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<tr>
<td>28</td>
<td>Sungard</td>
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<td>Syntel</td>
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<td>15</td>
</tr>
<tr>
<td>30</td>
<td>Tech Mahindra</td>
<td></td>
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<td>22</td>
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<tr>
<td>31</td>
<td>TTP Technology</td>
<td>December 2009</td>
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<td>7</td>
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<tr>
<td>32</td>
<td>Web Tech. Developer Pvt. Ltd</td>
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<td>17</td>
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<td>33</td>
<td>Web Tech. Pvt. Ltd</td>
<td></td>
<td>17</td>
<td>17</td>
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<tr>
<td>34</td>
<td>Wipro</td>
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<td>WNS</td>
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<tr>
<td>36</td>
<td>Zenser Tech.</td>
<td>January 2010</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>600</strong></td>
<td><strong>576</strong></td>
</tr>
</tbody>
</table>
Cross tabulation will be done to find out the nature of relationship between age group and no of job changed.

One way ANOVA will be used to come across difference between levels of retention significance in different age groups.

In Multi-case study, the data collected in structured and non-structured form will be analysis using graph and table to understand employee retention practices followed in IT-units and their effectiveness.

4.7 Conclusion.

Quantitative methodology was chosen for this research based on the justification of the research question which examined the relationship between retention factors and software development employees’ decisions to stay in the IT industry in Pune. The sample of the target population was full-time IT employees working in an around Pune IT-units. A random sampling technique for IT-units including National and Multi-national and IT employees were used for this research. The sample sizes of 600 are collected for the data analysis. The questionnaire design was developed based on the hypotheses and conceptual framework considered. The questionnaire is divided into three sections, the first sections is Background Information of respondents, second session consist of research questions to test retention factors for job changed with composite variables to test more inside the retention and the last section is to understand the objective of age group and retention variable relationship. The data collection process is completed from May 2009 to January 2010 from effective 36 IT-units with 576 respondents. Collected data are further processed using various statistical tools to find the answer of the research question and objectives in next chapter (data analysis and results).
References