CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Chapter 3 is an overview of the research approach, research objectives, proposed theoretical model for this research, hypotheses for this research, the research design, discussion about the data collection and data analysis methodologies used in the research, and details of the statistical tools used to test the proposed research hypotheses. In this chapter, the systematic plan outlining the research is given, along with details regarding the research questions being looked into, sequence of research tasks, and how the research is conducted. This chapter also lays out clear objectives and specifies the information sources from which data will be collected, the type of data, the design techniques, and the sampling methodology and procedures. Attempt has also been made to provide a clear justification for the research design based on the research questions and objectives.

3.2 Type of Research

According to Bhattacherjee (2012), research design defines how a researcher brings a study of research together to respond to a query or a series of queries. A good research design contains a systematic schedule outlining the study and a description of the compilation methods of the researcher describing how the study will reach its inferences and the research limitations. Research design is not limited to a specific kind of research and may incorporate both qualitative and quantitative analysis. Malhotra (2008) defines research design as the attempt by researchers to set up systematic procedures to solve problems. Most research designs in the social sciences follow the scientific method. Research designs are different
from the method by which the data is collected. Basic research designs are exploratory, descriptive, and casual as shown in Figure 3.1.

Exploratory research is always conducted to explore the problem and is done usually when the alternative choices have not been defined clearly or their scope is unclear (Monsen, 2008). The primary objective of an exploratory design is to provide insights into a problem confronting the researcher. This design is used in situations where the problem needs to be defined clearly, a relevant course of action identified or additional insights gained before an approach is finalized. The research process is unstructured and loosely defined. It consists of interviews, discussions, and the data collection is mostly qualitative in nature.

Conclusive research is meant to offer information that is useful in decision-making or reaching conclusions (Malhotra, 2008). A conclusive research design may be either descriptive or casual in nature. A descriptive research design characterizes specific functions or characteristics that management
is likely to be interested in, such as market opinion, customers, conditions, buying behavior and so on (Malhotra, 2008). A causal research design is used to investigate the cause and effect relationship between variables (Malhotra, 2008). A conclusive research design is typically more formal and structured than an exploratory design. The latter is mostly quantitative in nature and is based on large representative samples. The data obtained through various data collection techniques is then subjected to quantitative analysis. The findings of such research are considered to be less open-ended and more conclusive in nature, given that the context, variables and boundaries are defined well. Exploratory research is more qualitative in nature. According to Malhotra (2008), qualitative research learns things in their natural settings, trying to interpret or make sense of phenomena in meaning terms people bring to them. Monsen (2008) explain quantitative research as the inquiry into a recognized issue, based on theory testing, identified using statistical techniques, and measured with numbers.

Fry, Chantavanich, and Chantavanich (1981) define quantitative research as conclusive in its approach as it tries to solve the issue and understand how it is powerful for projectable outcomes to a bigger population. Bhattacherjee (2012) have described quantitative research as an inquiry mode used always for deductive research when the target is to check hypotheses or theories, collect descriptive information, or inspect variable relationships. This current research makes use of a conclusive, causal approach and hence has a quantitative approach to this research study. The approach for this research is discussed in detail post the development of the hypothesis on the basis of the research objectives.
3.3 Research Objectives

As we have seen already in Chapter 1, this research aims to understand the fundamental concepts of employee engagement, identify and understand the antecedents of employee engagement, and analyze the relationship of those antecedents with employee engagement in the Indian IT industry. This research also analyzes employee intention to quit as an outcome variable and explores the relationship of the variable with employee engagement in the Indian IT industry.

As we have already seen in section 1.8, the research objectives of this research are the following. These are reproduced here from section 1.8 so that we can proceed in the next section to propose the framework to be studied in this research so that the research objectives are met. The framework for the study is proposed keeping in mind the research objectives for this study as well as the understanding of employee engagement from current practice and literature based on the in-depth review of the same in Chapter 2.

i. To understand the basic concept of employee engagement and its measurement.

ii. To identify the antecedents that contribute to employee engagement in the Indian IT industry.

iii. To examine the relationship of the antecedents of employee engagement to employee engagement in the Indian IT industry.

iv. To examine the relationship between employee engagement and employee intention to quit in the Indian IT industry.

v. To suggest effective employee engagement strategies for organization to practice to facilitate the creation of engaged employees in the Indian IT industry.
3.4 Proposed Conceptual Framework Used to Answer the Research Question

The proposed conceptual framework for the current research based on the literature review conducted in the previous Chapter is given in Figure 3.2 and described below. The model that is proposed for the study below will be tested to meet the research objectives of this study.

![Figure 3.2 Proposed Conceptual Framework](image)

**Figure 3.2 Proposed Conceptual Framework**

*Source: Author*

At an organizational level, shared vision and leadership are proposed as antecedents to employee engagement based on the literature review. Leadership was one of the most significant factors that were identified to be a basic component of employee engagement. Further, alignment or understanding of the larger picture and the vision and mission of the
company drives engagement. If people know what the high level story is and how what they do impact that story, they will be more engaged. When there is engagement, every employee responds appropriately to meet the vision of the organization. Hence, shared vision acts as a variable that builds employee engagement.

From the job perspective, one of the key models is the job characteristics model by Hackman and Oldham (1980) that proposes five core characteristics of a job (i.e. skill variety, task identity, task significance, autonomy, and feedback). This is consistent with Kahn (1990) approach of meaningfulness to employee engagement. Meaningfulness in job characteristics can be gained from task characteristics that provide challenging work and variety, allow the use of different skills and personal discretion, and provide the opportunity to make important contributions (Kahn 1990, 1992). Jobs that are high on core job characteristics provide employees with motivation to be more engaged (Kahn 1992). Maslach et al. (2001) model also suggests the importance of job characteristics for engagement, as feedback and autonomy are consistently related to burnout. This is true from a Social Exchange Theory (SET) perspective as well, as employees when provided with challenging and enriched jobs feel obliged to respond with higher levels of engagement. Hence, in the model proposed for the study, it is put forward that all elements of job characteristics will contribute to employee engagement.

Demerouti et al. (2001) developed the Job Demands-Resources (JD-R) model. One central assumption of the JD-R model is that, although every organization may have its own specific work characteristics associated with well-being, it is still possible to model these characteristics under two broad categories, namely, job demands and job resources. Job demands-resources,
such as organizational support, growth opportunities, overload, job insecurity, relationship with colleagues, control, and rewards, offer opportunities to employees for getting engaged in the work and to the organization. If the job is a perfect fit for the employee, it provides the employees opportunities to be immersed in the job much more as he sees the job being meaningful and something he wants to be seen as progressing and making an impact. The Job Demands-Resources model assumes that two underlying psychological processes play a role in the well-being of individuals: an effort-driven process in which excessive job demands and a lack of job resources lead to distress and a motivation-driven process in which job resources lead to work engagement (Demerouti et al., 2001; Schaufeli & Bakker, 2004).

Enhanced organizational level factors, job characteristics, and job demands resources lead to employee engagement. The higher the level of employee engagement, the lower the intention to quit. Although there are other outcome variables, for the IT industry in India, intention to quit is a huge challenge compared to other outcome variables found in literature. Therefore, in this study, the only outcome variable considered is the intention to quit. Employee engagement further creates a positive outcome among employees that results in enhanced efforts on the part of the employee. It is proposed that it leads to decreased intent to quit.

3.5 Hypotheses of the Research

In this study, in addition to exploring the outcome variable—Intention to Quit, the antecedents of employee engagement and their relation to engagement are explored. The null hypotheses for this study based on literature review and the model proposed are derived below after the discussions of each of the aspects of the proposed model.
Towers Perrin (2012) talks about building engagement as an ongoing process. For this process, they found it is fundamental to have a strong leadership. The study Bakker et al. (2006) conducted among schoolteachers showed significant positive association between engagement scores and the leadership provided by the school principals. It is not just leadership, but leadership that provides vision and inspires employees that is fundamental for employee engagement. Schaufeli and Salanova (2008) found that transformational leadership produces stronger engagement in subordinates as they provide inspiration and vision to employees, which builds employee engagement scores. Hence, the following null hypotheses $H_{01}$ and $H_{02}$.

$H_{01}$: Vision of the organization has no relationship with employee engagement.

$H_{02}$: Leadership of the organization has no relationship with employee engagement.

As seen earlier in Chapter 2, Hackman and Oldham's (1980) job characteristics model has a positive relationship with employee engagement. The five core job characteristics—skill variety, task identity, task significance, autonomy, and feedback—provide psychological meaningfulness and hence motivation to be more engaged (Kahn, 1992). Maslach et al. (2001) model also talks about the importance of job characteristics for employee engagement. Hence, the following null hypotheses $H_{03}$, $H_{04}$, $H_{05}$, $H_{06}$, and $H_{07}$.

$H_{03}$: Skill variety has no relationship with employee engagement.

$H_{04}$: Task identity has no relationship with employee engagement.

$H_{05}$: Task significance has no relationship with employee engagement.
H₀₆: Autonomy has no relationship with employee engagement.

H₀₇: Feedback from the job has no relationship with employee engagement.

The Job Demands-Resources model developed by Demerouti et al. (2001) assumes that, although every organization has its own specific characteristics associated with employee well-being, those characteristics can still be categorized into job demands and job resources available to employees to meet those job demands. Job resources refer to the physical, social, or organizational aspects of the job that a) reduce job demands and the associated physiological and psychological costs, b) are functional in achieving work goals, or c) stimulate personal growth, learning, and development (Bakker & Demerouti, 2007; Schaufeli & Bakker, 2004). Job resources play a motivational role, and Schaufeli and Bakker (2004) found that there is a positive relationship between certain job resources and employee engagement. That job resources contribute to employee engagement has also been established in a longitudinal research by Mauno et al. (2007). Job demands refer to physical, psychological, social, or organizational aspects of a job that require sustained physical and/or psychological effort from an employee. Job demands are not necessarily negative but may function as stressors when meeting those demands requires high effort.

One of the most extensive scales for job demands-resources is the Job Demands-Resources Scale (JDRS) developed by Jackson and Rothmann (2005). JDRS has seven factors across job demands and resources—organizational support, growth opportunities, overload, job insecurity, relationship with colleagues, control, and rewards—described below as defined by Jackson and Rothmann (2005).
Organizational Support: Relationship with the supervisor, ambiguities regarding work, information, communication, participation, and contact possibilities.

Growth Opportunities: Variety in work, opportunities to learn, and independence in work.

Overload: Pace and amount of work, mental load, and emotional load.

Job Insecurity: Uncertainty about the future.

Relationship with Colleagues: Availability of colleagues to help, whether they could be counted on, and how the employee gets on with colleagues.

Control: communication, participation and contact possibilities.

Rewards: whether the employee can live comfortably on his or her pay, whether it is regarded as sufficient and enough for employees to progress financially.

All these factors are relevant for the Indian IT Industry and form a good job resource-demands model for the sector. Hence, the hypotheses $\text{H}_008$, $\text{H}_009$, $\text{H}_010$, $\text{H}_011$, $\text{H}_012$, $\text{H}_013$, and $\text{H}_014$.

$\text{H}_008$: Overload has no relationship with employee engagement.

$\text{H}_009$: Job security has no relationship with employee engagement.

$\text{H}_010$: Organizational support has no relationship with employee engagement.

$\text{H}_011$: Organizational control has no relationship with employee engagement.

$\text{H}_012$: Support of colleagues has no relationship with employee engagement.
H_{013}: Rewards have no relationship with employee engagement.

H_{014}: Growth has no relationship with employee engagement.

Among all outcome variables, the biggest challenge for the Indian IT industry is the high levels of attrition or, at a basic level, the intention to quit that result in employees psychologically withdrawing from work and physically exiting later. The Indian IT industry has seen higher attrition rates than, for example, the manufacturing industry, and for an industry that is so reliant on people to be the key differentiator, the replacement cost of an experienced resource is very high. No wonder Narayana Muthy, the founder and current chairman of Infosys Technologies, once famously said, "Our assets walk out of the door each evening. We have to make sure that they come back the next morning".

Hence, the consequence or outcome variable of employee engagement specified for this study is the intention to quit. In literature, this is referred to as the intent to leave and intent or intention to turnover. Meaningfulness at work (Kahn, 1990) is what employees seek at work. Holbeche and Springett (2003) say that employees' perceptions of 'meaning' at work are linked to their levels of engagement. They say that employees actively seek meaning through their work, and unless organizations try to provide a sense of meaning, employees are likely to quit. Hence, engaged employees find meaningfulness in their work and are likely to stay longer. Schaufeli and Bakker (2004) found that engaged employees were likely to have a lower tendency to quit, as they were attached to the organization. Intent to quit is withdrawal from one's job where the employee withdraws psychologically, showing high levels of disengagement at job. All consulting studies have observed a reduced intent to quit among engaged employees (Aon Hewitt, 2013; Gallup, 2013). As per research by the Corporate Executive Board
(CED) in 2004, a 10% increase in employee engagement can decrease an employee’s probability of withdrawal by 9%, and engaged employees are 87% less likely to leave a company. Based on how important it is for the IT industry to have engaged employees, the following hypothesis $H_{0,15}$ is examined in this study.

$H_{0,15}$: Intention to quit has no relationship with employee engagement.

Also as part of the proposed study the following demographics are collected — Gender, Role of the employee in terms of being a people manager or an individual contributor, education background as well as work experience and tenure of the employee. Hence hypotheses are formed to see whether employee engagement scores vary across groups.

It has been considered by researchers that gender is a possible factor in employee engagement. For burnout, which is antipode of employee engagement, it was seen in a study of 1,121 mental health professionals (Sprang et al., 2007) that females in the study were found to have a greater risk of suffering from burnout. While it has not been established across all studies, some studies suggest that females are more vulnerable to stress and tend to report higher levels of burnout than males. In addition, the amount of work experience is another variable that is explored to see the impact of the same on employee engagement. Research findings on impact of work experience and tenure on employee engagement scores is not conclusive.

Also on education background and role, this researcher has not come across any studies that looked at how those impact employee engagement scores. The following hypotheses $H_{0,16a}$, $H_{0,16b}$, $H_{0,16c}$, $H_{0,16d}$ and $H_{0,16e}$ are proposed to see how score of employee engagement varies based on demographics.
H0.16a: There is no significant difference in the mean scores of employee engagement between males and females.

H0.16b: There is no significant difference in the mean scores of employee engagement between People Managers and Individual Contributors.

H0.16c: There is no significant difference in the mean scores of employee engagement among employees based on education.

H0.16d: There is no significant difference in the mean scores of employee engagement among employees based on total work experience.

H0.16e: There is no significant difference in the mean scores of employee engagement among employees based on work experience in the organization.

3.6 Research Design for the Study

The process flow for this research is presented as a flowchart in Figure 3.3 and discussed in detail subsequently. The first stage is selecting, developing, and finalizing the research instrument for the study. This is followed by the pilot study and finalizing the questionnaire for the survey and data analysis.
3.6.1 Research Instrument/Research Questionnaire

The antecedents of employee engagement, employee engagement itself, and the intention to quit or turnover intent were measured by using the following standard measurement scales.

3.6.1.1 Employee Engagement

Utrecht Work Engagement Scale (UWES) (Schaufeli, Salanova, Gonzalez-Roma & Bakker, 2002) measures engagement along three dimensions—
vigour, dedication, and absorption—through a 17-item, self-report questionnaire (UWES-17). The UWES is scored on a 7-point Likert scale ranging from 1 (never) to 7 (everyday). Absorption in engagement is thought to be the opposite of professional inefficacy and is characterized by being immersed in one's work as per Schaufeli (2001). Items, such as ‘Time flies when I'm working’ or ‘When I am working, I forget everything else around me’, are used to measure absorption. Vigour is measured by another set of items that refer to high levels of energy and resilience. Items, such as ‘At my work, I feel bursting with energy’, are used to measure vigour. The third aspect of employee engagement is dedication. This factor refers to the employees' feelings of pride and enthusiasm for their work and the challenge it throws down to them. Dedication is measured by items, such as ‘I am enthusiastic about my job’.

### 3.6.1.2 Job Characteristics

The Job Diagnostics Survey (Hackman & Oldham, 1975) has 15 items and uses a 1 to 7 scale. Although several decades old, the Job Characteristics Model is about enriching jobs and, in that process, making sure that employees are motivated to increase their personal outcomes. This, in fact, is nothing other than better engaged employees, as engaged employees are willing to put in discretionary efforts. In a nutshell, the Job Characteristics theory describes the relationship between job characteristics and individual responses to work. There are five job dimensions prompting psychological states that lead to beneficial work outcomes (Hackman and Oldham, 1976, 1980). The five job characteristics are described below.

**Skills Variety**: The degree to which a job involves a variety of different activities and utilizes a number of different skills and talents of a person.
Task Identity: The degree to which the job involves completing a whole, identifiable piece of work, that is, doing a task from beginning to end with visible outcome.

Task Significance: The degree to which the job has a substantial impact on the lives of other people, whether within the immediate organization or in the world at large.

Autonomy: The degree to which the job provides freedom, independence, and direction to the individual in scheduling their work and determining the procedure to be used to carry it out.

Job Feedback: The degree to which completing job-related tasks provide the individual with direct and clear information about the effectiveness of his/her performance.

Critical psychological states that result from the five factors are a) experience of the meaningfulness of work, b) experience of the responsibility for the outcomes of the work, and c) knowledge of the actual results of the work activities. Sample items are ‘My job requires me to use a number of complex or high-level skills’ and ‘This job permits me to decide on my own, how I should go about doing the work’.

3.6.1.3 Organizational Vision/Leadership

Vision and leadership of a company could have an impact on how engaged the employees are. The top leadership and the manner in which they set the vision for the organization can result in discretionary efforts, as employees see how they are contributing to the big picture. Adapted items are used in the survey to understand shared vision and the extent to which the respondents identify with the vision of the organization. The impact of
having the right leadership to achieve the vision and employees' trust in the top leadership are measured through adapted items, such as 'I share the vision of my organization'.

### 3.6.1.4 Job Demand-Resources

The JDRS (Jackson & Rothmann, 2005a) is used to measure specific job characteristics (demands and resources) of participants. The JDRS consists of 42 items with the questions rated on a four-point Likert-scale ranging from 1 (never) to 4 (always). Jackson and Rothmann (2005a) found that the dimensions of the JDRS consisted of seven reliable factors, namely, organizational support, growth opportunities, overload, job insecurity, relationship with colleagues, control, and rewards.

Demerouti et al. (2001) developed the Job Demands-Resources (JD-R) model. This model is based on the premise that every organization will have Job Demands and Job Resources that an individual in the organization will experience. All the characteristics that one experiences at work can be modeled under these two broad categories.

Job demands are factors that will strain an employee if they go beyond what the employee can handle. These could be physical, social, or organizational aspects of the job that require either or both physical and psychological efforts on the part of the employee. These are therefore associated with certain physiological and/or psychological costs (Schaufeli & Bakker, 2004). The JD-R model recognizes that demanding characteristics of the working environment, work pressure, overload, emotional demands, and poor environmental conditions may lead to the impairment of health and ultimately to absenteeism (Schaufeli & Bakker, 2004).
Job Resources are factors that provide employees support, enhancing their ability to do the job. These are also physical, psychological, social, or organizational aspects of the job that help reduce job demands and stimulate personal growth, learning, and development. Job Resources can be at the level of the organization, at the level of interpersonal and social relations, at the level of the organization of work, and at the level of the task. Job resources play an intrinsic motivational role (by furthering employee growth, learning, and development) or an extrinsic motivational role (by being instrumental in achieving work goals) (Schaufeli & Bakker, 2004). Job Demand Resources have to be looked in the context of the organization as the demands from the job and the resources available will change. All the factors here, where relevant for the Indian IT industry.

3.6.1.5 Intention to quit/ Turnover Intent

In the literature review in Chapter 2, the intention to quit or turnover intent is seen as the voluntary intention of an employee to leave an organization. In the survey, the intention to quit is measured by a modified 4-item questionnaire by Jackson et al. (1987) and Mitchel (1981) on a Likert scale. The measurement of intention to quit consists of items, such as ‘I am likely to be working here this time next year (Reverse)’.

3.6.1.6 Demographics

Information about age, gender, role (individual contributor versus people manager), work experience (both total and in the present company), and educational background is collected as part of the survey. This information is collected towards the end of the survey through a web-based survey tool.
### 3.6.2 Pilot Study

The proposed research questionnaire was pilot tested with 86 employees from Facebook India and Google India. Based on the pilot study, changes were made to the survey questionnaire before the final survey was conducted. The pilot questionnaire has 88 items in all, and the data from the pilot study was analyzed before the final questionnaire was finalized and deployed to the sample population.

In the pilot study, all constructs had Cronbach’s Alpha Coefficient of more than 0.7. Since the reliability was more than 0.7, the internal consistency between the constructs was deemed to be good. The factor loadings for most of the constructs were above 0.4. The factor loadings and reliability for values for the constructs is given in Appendix B.

Principal components analysis (PCA) was run on the response obtained from the 88-question questionnaire that measured the antecedents of employee engagement, employee engagement and intention to quit as per the proposed model. The suitability of PCA was assessed prior to analysis. Inspection of the correlation matrix showed all variables had at least one correlation coefficient greater than 0.3. The overall Kaiser-Meyer-Olkin (KMO) measure was greater than 0.7. Based on the PCA results, the eigen values and factor loadings Control as a factor was dropped and Organizational Support broken into Organizational Support and Supervisor Support. The changes will be discussed later in this section. The rotated component matrix with the loadings is given in Appendix B. On analyzing them the factors for the final study was finalized and the researcher labeled the factors according to the literature and the items that better described each factor.

The Exploratory factor analysis (EFA) resulted in a number of items getting dropped, modified, or grouped separately. For the outcome variable—
intention to quit, one item was modified to reflect the Indian IT industry, where the average tenure is much shorter than in other industries. Further, dropping the items that were cross loading items and adding other items loading with feedback modified items measuring feedback in the job characteristics section. The support of the supervisor was identified as an additional factor separate from organizational support, based on factor loadings in the exploratory factor analysis. Control as a variable was dropped based on the factor loadings. Overload was broken down into two factors—Role Stress and Overload—also based on factor loadings and EFA. Overall 16 items were dropped based on the pilot survey results, and the final questionnaire was revised to 72 items. The modified model for the research, based on the pilot survey results is given in Figure 3.4.

![Diagram of Employee Engagement Model](image)

**Figure 3.4: Post Pilot Study Employee Engagement Model**

**Source:** Author
The pilot survey results and the modifications made to the questionnaire resulted in two additional hypotheses.

\( H_{08.1} \): Role stress has no relationship with employee engagement and

\( H_{010.1} \): Supervisor support has no relationship with employee engagement.

Also Control as a factor was dropped due to cross loading with feedback of items there and hence hypothesis \( H_{011} \) was dropped. Factor loadings from the pilot survey backed by theory had indicated that Role Stress factor was different from Job Overload. Supervisor Support too emerged as separate factor based on the factor loadings. Another insight from the exploratory factor loadings (EFA) of the pilot study was that Vision and Leadership were highly correlated and was loading as one factor. This, in retrospect, is not unusual as both the companies—Google and Facebook—are very strongly founder led, where the vision of the organization and the leadership are seen by employees as one and the same. A word of caution here that the correlation between vision and leadership will not necessarily be true for other organizations that are not actively founder led and managed.

The final hypotheses for the research after the pilot study, including \( H_{08.1} \) and \( H_{010.1} \) and removing hypothesis \( H_{011} \) has been dropped are stated below.

\( H_{001} \): Vision of the organization has no relationship with employee engagement.

\( H_{002} \): Leadership of the organization has no relationship with employee engagement.
$H_03$: Skill variety has no relationship with employee engagement.

$H_04$: Task identity has no relationship with employee engagement.

$H_05$: Task significance has no relationship with employee engagement.

$H_06$: Autonomy has no relationship with employee engagement.

$H_07$: Feedback from the job has no relationship with employee engagement.

$H_08$: Overload has no relationship with employee engagement.

$H_09.1$: Role stress has no relationship with employee engagement

$H_09$: Job security has no relationship with employee engagement.

$H_10$: Organizational support has no relationship with employee engagement.

$H_10.1$: Supervisor support has no relationship with employee engagement.

$H_12$: Support of colleagues has no relationship with employee engagement.

$H_13$: Rewards have no relationship with employee engagement.

$H_14$: Growth has no relationship with employee engagement.

$H_15$: Intention to quit has no relationship with employee engagement.

$H_{016a}$: There is no significant difference in the mean scores of employee engagement between males and females.
H_0, 16b: There is no significant difference in the mean scores of employee engagement between People Managers and Individual Contributors.

H_0, 16c: There is no significant difference in the mean scores of employee engagement among employees based on education.

H_0, 16d: There is no significant difference in the mean scores of employee engagement among employees based on total work experience.

H_0, 16e: There is no significant difference in the mean scores of employee engagement among employees based on work experience in the organization.

After validation of the questionnaire using the pilot study, 72 items remained. Another six questions in the demographics sections take the number of questions in the final survey to 79 questions.

The above-listed hypotheses have been tested in this study using the quantitative research methodology. The primary data for the study was collected through an online survey of employees of companies in the Indian IT Industry with online products. A survey questionnaire is a research instrument consisting of a set of questions or items intended to capture responses in a standardized manner. Questions can be structured or unstructured. The questionnaire method can be used when the target population is literate and are not children, as per Bhattacherjee (2012). In this research, a structured questionnaire survey technique has been used which has been validated through the pilot study. The final questionnaire will be sent to be the sample identified for the research.
3.6.3 Reliability

According to Johnson et al (2004), reliability is the degree to which the measures yield stable results and are free from error—the measurement procedure stableness. According to Bhattacherjee (2012), reliability is the measure to which a test, questionnaire, measurement procedure, or any observation generates similar outcomes in repeated trials. Reliability is the relative absence of measurement errors in a measuring tool. In quantitative research, reliability is often a concern. In this research, reliability has been maintained by ensuring that all respondents answer all questions and they do so only once. Further, internal consistency reliability has been estimated by calculating Chronbach’s Alpha values for each construct. Cronbach Alpha proposed by Cronbach (1951) is considered to be one of the most popular tests for determining the reliability of the data collection instrument used. It helps in determining the average correlation of items in a survey tool or, in others words, the internal consistency of the survey instrument, for gauging the reliability of the instrument. Consistent with other research studies, here too Chronbach’s Alpha value above 0.7 was taken as an acceptable measure of reliability (Bhattacherjee, 2012) of the construct. Cronbach’s alpha is the average of all possible split-half coefficients resulting from different ways of splitting the scale items (Malhotra, 2006).

3.6.4 Validity

Validity decides whether the research truly measures what it is intended to measure or how real the outcomes of research are (Johnson and Onwuegbuzie, 2004). Consistency may be applied to the measurement of varied individuals or groups or to the measurement of similar groups or individuals at varied times. For quantitative data, validity can be ensured through appropriate instrumentation, careful sampling, and proper statistical treatments of data. Validity must be viewed as a matter of extent
rather than as an absolute state (Malhotra, 2008). In this research, validity has been ensured by designing a questionnaire with questions relevant to that of the research objectives, research hypotheses, and review of literature. Moreover, standard scales have been used in this research, which have been tested in different contexts, as well as accepted only after a pilot study. This has therefore external validity and construct validity. **Convergent validity and discriminant validity—sub divisions of construct validity**—are also established in this study as part of the structural equation modeling (SEM) data analysis used.

In order to evaluate the reliability and validity of the 88 measurement items relating to the various constructs, estimated loadings (regression coefficients) were tabulated for the entire set of measurement items. Items with loading values less than 0.7 (Bontis et al., 2002) were removed to ensure construct validity. To test discriminant validity, a matrix of loadings and cross-loadings were tabulated. As part of the analysis, the loading of an item with its associated factor (construct) was compared with the cross loadings. The items that were chosen for the final survey questionnaire had higher loadings with their corresponding factors in comparison to their cross-loadings. In terms of convergent validity, an average variance extracted threshold of 50 percent was used.

### 3.6.5 Sampling

A sample is a part of a larger population or universe that is meant to represent the whole. Sampling is the process by which a portion of a population or universe is chosen as representative of that population or universe. For this research, the responses elicited from the chosen sample have been used to test the extent of relationship between the various antecedents and employee engagement, as well as to explore how employee engagement is related to the intention to quit as an outcome variable. In this
research in addition to the primary data collected, for the research purpose there was no need to look at any secondary data. To establish the research need and identify the research gap employee engagement measures by third party consulting firms has been looked into in Chapter 1. Also, the researchers experience in terms of qualitative inputs has been used to discuss and debate the various issues related to employee engagement in the IT industry. This in no way is interfering in the integrity of the research study, which remain to be primarily a quantitative study. To contextualize the research and its findings secondary data have been collected from company websites, discussions with company officials, external survey agency reports, presentations, and studies the researcher has access to based on the researchers professional experience and contacts.

The sample selection process for this research looks at the IT product companies in India where the population is defined as the online IT product companies in India. The sample selection process is given in Figure 3.5 and discussed in detail in a later section.

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Figure 3.5: Sample selection for this research
Source: Author
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3.6.5.1 Rationale for the Sampling Element

Across the IT industry, there are similarities in the work environment, the basic nature of work done, and how teams are managed. For an Indian IT company, leveraging product development and becoming a product company is the best way to make the most of the opportunities ahead and to ensure continuous growth. Hence, the target population of this study has been defined as IT product companies in India. The sampling frame for this study consists of Google India Private Limited and Facebook India Private Limited, the 100% subsidiaries in India of Google and Facebook, respectively. Google India and Facebook India are companies known for their high levels of employee engagement. Google India has consistently for many years been ranked as the best company to work for in India by third party survey companies, such as Great Places to Work, which is a subsidiary of Great Places to Work, Inc. known for their objective quantitative and qualitative studies. Facebook India follows similar employee friendly measures and has similar human resource factors. Both these companies experience lower attrition levels than the industry average. Moreover, having worked in these companies, building them in India, for almost a decade now, the researcher has gained insights relevant to this research. This sampling frame also helps in controlling for variations in external factors.

3.6.5.2 Target Population and Sample Size

Google India Private Limited has 1,475 employees, and Facebook India Private Limited has 183 as on Jan 1st 2013. Together, they form the target population of this research.
The size of the employee base in Google India and Facebook India together is around 1658. Given the similarities of the two companies, the variability of the population is controlled—the population is more homogeneous than heterogeneous. Even then, a 50% variability of the population is considered for identifying the sample. Further, a confidence level of 95% is considered, as is the normal practice in most social science studies.

The sample size for the study was calculated using the equation below:

\[ n = \frac{P(1 - P)}{\left((\frac{A^2}{Z^2}) + (P(1 - P)/N)\right)} \]

where 
- \( n \) = sample size required
- \( N \) = number of people in the population
- \( P \) = estimated variance in population as a decimal (0.5 for 50-50)
- \( A \) = precision required, expressed as a decimal (0.05 for 5%)
- \( Z \) = based on confidence level; 1.96 for 95% confidence

In this case, \( N = 1658 \), \( P = 0.5 \), \( A = 0.05 \), and \( Z = 1.96 \).

Based on this calculation, the minimum sample size required is 271 respondents for this research.

In structured equation modeling (SEM)—the data analysis methodology used in this research, the rule of thumb is a 5 to 1 ratio of sample size to the number of free parameters (Gerbing & Anderson, 1988). The final questionnaire of this study has 73 items. So by the rule of thumb of SEM, the sample size again comes to \( 73 \times 5 = 365 \) responses. As some items are expected to be dropped in the final analysis, any sample that is above 365 is an acceptable sample if the SEM methodology is used. Bentler & Chou (1987) regards the 5 to 1 ratio as a goal and holds that 200 is a good sample size to aim for in SEM research.
Keeping in mind a number of factors, such as incomplete responses, genuine inability of respondents to complete the survey due to projects/vacation travel, and the reluctance that could arise from the fact that the larger organization here is a competitor to the researcher's organization, the expected response rate was kept at a modest 60%. Based on the very conservative 60% response rate expected, the survey was targeted to be emailed to around 610 potential respondents across the two organizations. The online survey methodology was used, and the survey was so scheduled that it could successfully gather data from 365 employees working in two different companies—Google India Private Limited and Facebook India Private Limited which are 100% subsidiaries of their parent companies in United States of America.

3.6.5.3 Sampling Design

The current study uses the non-random/non-probability sampling technique as opposed to random/probability sampling. The samples, therefore, were not chosen randomly. From among the various techniques of non-probability sampling, the study uses a combination of convenience sampling and snowball sampling. Convenience sampling or opportunity sampling is the technique whereby a sample is drawn from that part of the population that is close to hand, readily available, or convenient. In the absence of a clear population, this is an accepted way of sampling. When a set of respondents already identified is given the opportunity to recommend others who meet the selection criteria, it is called the snowball sampling technique.
3.6.6 Administration of Questionnaire

A web-based structured survey tool was used to administer the questionnaire, as it was both cost and time efficient. Further, as the respondents were from the IT industry, they were used to taking surveys online and were, therefore, familiar with this methodology. For this study, SurveyMonkey, one of the top survey tools on the Internet, was used. The web survey method of data collection was appropriate because not only was the target population very familiar with this survey technique, but this method of data collection also provided a number of other advantages as discussed below.

As per Wright (2006), the web survey model has a number of advantages: (a) web surveys are relatively inexpensive; (b) responses may be entered and stored in a format conducive to analysis; (c) there is increased accuracy in data entry, as well as decreased time; and (d) automatic coding saves a great deal of time. Web surveys also have several unique disadvantages: (a) only individuals with web access can complete the survey creating coverage problems; (b) unless security measures are in place, anyone who happens upon the survey may take it and, thus, bias results; (c) illiteracy is a problem; and (d) technical problems, including slow connections and connect-time costs might decrease response rates.

The survey questionnaire was coded in SurveyMonkey and sent to the email ids of potential respondents collected for the purpose. The email text preceding the survey link from SurveyMonkey provided the context of the survey, the purpose of the research, assurance of confidentiality, and the contact information of the researcher in case the respondents had any questions. As expected, a number of follow-ups were required to get the respondents to take the survey.
3.6.7 Response Rate

A total of 610 employees across Google India and Facebook India were emailed the SurveyMonkey link to the questionnaire. Of the 437 employees who attempted the survey, 26 left it incomplete; in other words, they did not submit the survey even though they had started responding to survey items. Among the 417 employees who submitted their responses, 29 had missing data. As there were still enough number of complete survey responses that met the sample size requirements, these were also not included in the final analysis, although there was the option to include them by replacing the missing data with the person mean within the scale or item mean from the sample (Bhattacherjee, 2012). For the final analysis, responses from a total of 382 respondents were used, which means the response rate of usable responses was 63% that is in line with what we see usually in surveys such as this.

3.6.8 Data Analysis

The survey results from SurveyMonkey were downloaded to a spreadsheet and cleaned up for reverse coded items and incomplete responses. All constructs were coded in a way that is ready for statistical analysis. The survey responses obtained were analyzed using SPSS 21 and AMOS 16.0. The questionnaire was refined using factor analysis where the statements were reduced from 88 to 72 based on the factor loadings obtained in the EFA. These 72 statements were utilized to gather responses and compute results of statistical tests used in this research. Confirmatory Factor Analysis (CFA) was employed to confirm the relationship between observed variables and their underlying latent construct. For Hypotheses 16a to 16c as it entailed comparison of population means as a test of
difference, t-test and ANOVA were used using SPSS. For the rest of the hypotheses, Structural Equation Model (SEM) was used. The path diagram was generated and the goodness of fit statistics was observed for the entire research model. For the structural equation model, maximum likelihood estimation (MLE) method was used.

Structural equation modeling (SEM) is similar to multiple regressions but is more appropriate for this research as it allows simultaneous treatment of data. SEM considers models of interactions, correlations, measurement and correlated error, and both multiple latent independent and dependent variables (Suhr, 2006). In addition, it has much more flexible assumptions, the ability to test models (as against testing individual relationships), and an integral use of the confirmatory factor analysis (CFA). Confirmatory factor analysis is used to determine the factor structure of all the instruments. Confirmatory factor analysis is a statistical technique that helps the researcher to test a hypothesis and investigate if an actual relationship exists between the observed variable and underlying latent constructs (Suhr, 2006). Cronbach's Alpha coefficients are used to test the internal consistency of the measuring instruments.

SEM implies a structure of the covariance matrix of the measures. Once the model's parameters have been estimated, the resulting model-implied covariance matrix can be compared to an empirical or databased covariance matrix. If the two matrices are consistent with one another, then the structural equation model can be considered a plausible explanation for the relations between the measures.

SEM is a combination of factor analysis and regression or path analysis. In SEM, the relationship between theoretical concepts is represented by regression or path analysis. This model implies a structure of the co-
variances between the observed variables and can be extended to include the means of the observed variables. SEM is a convenient framework that includes several traditional multivariate procedures, such as factor analysis, regression analysis, discriminant analysis, and canonical regression, as special cases. SEM has its roots in path analysis. In the notations, single headed arrows or paths are used to define causal relationships in the model with the variable at the tail causing the variable at the point. Double-headed arrows indicate co-variations or correlations with no causal interpretation. In statistics, single headed paths show regression coefficients and double-headed arrows co-variances.

In SEM, it is important to specify a model before analysis is started based on previous theory, prior research, or other empirical studies. Once the model is specified, factor loading and co-variances can be estimated. A statistical chi square test is used to decide how the hypothesized model fits the data. The chi square statistics helps to test the statistical significance of the observed association in a cross tabulation. In SEM, it is usually assumed that the sample data follow a multivariate normal distribution—in other words, the means and co-variance matrix contain all the information. Simulation research has shown that with a good model and multivariate normal data, a reasonable sample size is about 200 (Bentler & Chou, 1987). By explicitly modeling measurement error, SEM helps to derive unbiased estimates for the relations between latent constructs. To this end, SEM allows multiple measures to be associated with a single latent construct that make the model flexible and most appropriate to study the model proposed in the current research.
3.7 Conclusion

In this chapter, the research design used for the study has been discussed in detail. The research objectives and the research questions led to the hypotheses is discussed in this chapter. Also the sampling method, the sampling frame, and the final proposed model for research are discussed. The details of the pilot study stage and the resulting modifications in the proposed measuring instruments were also discussed in detail in this chapter. Introduction to the reliability and validity of the measuring instrument that will be looked into in detail in next chapter is introduced here. Also the data analysis approach for this research, the rationale for the approach and the statistical tools used and its details are also discussed in this chapter.