CHAPTER- III

RESEARCH METHODOLOGY
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3.1 Overview:

This chapter illustrates the type of research procedure that has been undertaken for the research. The processes used to gather secondary and primary data and the causes for adopting the selected approach are discussed. As discussed in Chapter- II, literature was searched to gain insights into the question of IPTV acceptability. As this technology is newer in age, literature used for different technologies have also been applied in this research. Regarding the aim and overall objectives, the work has a particular focus on factors influencing the consumers’ acceptance of IPTV service in India. The literature review comprised of; collecting and compiling literature from various published sources like books, articles, newspapers relating to the theories in advertising, interactive advertising, technology acceptance model, marketing and consumer behavior. The focus of the primary data is on the views of the respondents to find the main factors of IPTV service. Chisnall (2001) said Central component of a study is research plan. Therefore, this empirical work attempts to identify the factors influencing IPTV adoption in Indian context and also providing a suggestive IPTV business framework. The adopted methodology and the sample used in the present research add a new dimension to the existing studies available on IPTV. As this technology is in nascent stage in India, this research will open a new window for the IPTV business. Following steps were conducted to complete the study.

1. Finalizing of Research purpose

2. Finalizing of Research approach

3. Developing appropriate Hypotheses for the research

4. Identifying Data Collection Methodology

5. Developing the Survey Instrument and pre-testing

6. Sampling Design
7. Conducting the Survey and Coding the Results

8. Analyzing the Survey Findings

3.2 Research Purpose

Depending on the nature of purpose or research problem, research can be classified into several types. The purpose of academic research can be exploratory (ambiguous problem), descriptive (awareness of problem), or explanatory (clearly defined problem) (Yin, 1994; Zikmund, 2000). Saunders et al. (2009) stated that more than one purpose can be employed in a study. Yin (1994) highlighted that the boundaries among the categories are not always clear.

- Exploratory Research

According to Zikmund (2000), for better understanding of the nature of the problem and to research on it, exploratory research is conducted. When there is a little prior knowledge of the problem researched, exploratory research is suitable. Exploratory research is purposeful to find out “What is happening; to investigate new insight; to ask questions and to assess phenomena in a new light”. The intention of the exploratory research is to provide insight and understanding, not conclusive manifest. Saunders and Thornhill (2003) argued that exploratory study has advantages because it is flexible and adaptable to change. An exploratory investigation is appropriate when research problem is unstructured and difficult to define (Baraghani, 2007).

- Descriptive Research

Zikmund (2000) stated that when a research problem is known but the researcher is not fully aware of the situation, descriptive research is used. According to Huczynski and Buchanan (1991, cited in Baraghani, 2007), when a particular phenomenon of the nature is under research, it is understandable that research is needed to describe it. To explain its properties and inner relationship descriptive research can be used. Zikmund (2000) added descriptive research will answer who, what, Where and how questions and not give any explanation for the reason of the findings.
• Explanatory Research

Studying a problem or a phenomenon in order to establish causal relationship among variables explanatory research is used (Saunders et al., 2009). Explanatory research is sometimes referred to as causal research (Zikmund, 2000; Malhotra 2011). Saunders at al. (2009) stated, normally, exploratory and descriptive research is conducted first and the explanatory research attempts to demonstrate and explain patterns related to phenomenon.

The starting point of our research purpose is the research problem, what are the factors influencing adoptions of internet protocol television. Depending on research problem, literature has been searched in order to set research questions and construct framework. It is clear from the research purpose and research question that this study is primarily descriptive.

3.3 Research Approach

3.3.1 Quantitative versus Qualitative Research Approach

In social science research, two broad approaches to research are Qualitative and quantitative research. In quantitative research numerical representation and manipulation observation for the purpose of describing and explaining the phenomena that those observations reflect are involved, but qualitative research involves non-numerical examination and interpretation of observation (Zikmund, 2000). In quantitative research variables and relationships are the main concern. In quantitative research detailed planning prior to data collection and analysis is required, because it provides tools for measuring concepts, planning design stages and for handling population and sample issues (Malhotra, 2011).
Table 3.1: Quantitative versus Qualitative research. (Source: Saunders et al., 2009)

<table>
<thead>
<tr>
<th>Qualitative Research</th>
<th>Quantitative Research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Based on meanings expressed through words</td>
<td>Based on meanings derived from numbers</td>
</tr>
<tr>
<td>Collection of results from non-standardized data</td>
<td>Collection of results from numerical and standardized data</td>
</tr>
<tr>
<td>requiring classification into categories</td>
<td></td>
</tr>
<tr>
<td>Analysis conducted through the use of</td>
<td>Analysis conducted through the use</td>
</tr>
<tr>
<td>Conceptualization</td>
<td>of diagrams and statistics</td>
</tr>
</tbody>
</table>

The objectives of this study are to find factor influencing the acceptance of IPTV service in India, the advertising strategies of IPTV providers in India. For achieving this, we have chosen a structured framework. The quantitative analyses for finding out the factors will be done on the data collected from the sample customers and then generalize the data to population. Therefore, this theory will be developed by using both quantitative and qualitative research methods.

3.3.2 Inductive versus Deductive Research Approach

For conducting research, two theoretical research approaches are available. These approaches propose two different ways to make decisions. The inductive data involves collecting data and developing theory as a result of data analysis (Saunders et al., 2009). The deductive research can be defined as “the logic process of deriving a conclusion from unknown premise or something known to be true” (Zikmund, 2000).
Saunders et al. (2009) suggests number criteria for deciding what research to be adopted and comments that most important criterion is the nature of the research topic. If one has access to lots of literature about the problem from which a theoretical model can be defined, it is suitable to use the deductive approach. On the other hand, when researching a topic that is new, only limited existing literature can be found, it may be more appropriate to use an inductive approach (Brahma, 2009).

This study is deductive, because in the area of Technology Acceptance Model (TAM) related research, large number of literature is available and conclusion were drawn from theories.

### 3.4 Measurement of Constructs and Developing Hypotheses

In earlier section it is mentioned that, the main goal of this study is to find out the factors influencing the adoption of IPTV service from customer point of view. Based on extended literature review, appropriate research constructs have been developed and which have been validated in prior researches. Following table presents constructs and their corresponding measurements sources used for questionnaire.

<table>
<thead>
<tr>
<th>Construct</th>
<th>Definition</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Usefulness</td>
<td>The degree to which a person believes that using a particular system would enhance his or her job performance</td>
<td>Davis, 1989; Talyor and Todd, 1995; Shin, 2009</td>
</tr>
<tr>
<td>Perceived Ease of Use</td>
<td>The degree to which a person believes that using a particular system would be free of effort</td>
<td>Venkatesh, Davis, 2000; Venkatesh, &amp; Morris, 2000; Igbia et Al. 1997; Davis, Bagozzi, and Warshaw, 1992</td>
</tr>
<tr>
<td>Intention to Use</td>
<td>A person readiness to adopt a particular system.</td>
<td>Davis, 1989; Baraghani, 2007; Shin, 2009; Davis, Bagozzi &amp; Warshaw, 1992</td>
</tr>
<tr>
<td>------------------</td>
<td>------------------------------------------------</td>
<td>---------------------------------------------------------------------</td>
</tr>
<tr>
<td>Perceived Enjoyment</td>
<td>The extent to which the activity of using the computer is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated.</td>
<td>Davis, Bagozzi &amp; Warshaw, 1992; Weniger, S., 2010; Heijden, 2004; Shin, 2009</td>
</tr>
<tr>
<td>Perceived System Quality</td>
<td>The quality of a system is related to whether a user perceives that he or she can accomplish tasks with a workstation</td>
<td>Lucas &amp; Spitler, 1999</td>
</tr>
<tr>
<td>Perceived Complexity</td>
<td>The degree to which computer technology is perceived as relatively difficult to understand and use.</td>
<td>Rogers and Shoemaker (1971, cited in Gardner, C. and Amoroso, D. L., 2004)</td>
</tr>
<tr>
<td>Social Influence</td>
<td>The degree to which an individual perceives that important others believe he or she should use the new system</td>
<td>Venkatesh and Davis, 2000</td>
</tr>
</tbody>
</table>
In this study we use Intention to Use IPTV as dependent variable and it was measured using two items that were validated by Shin (2009) and Weniger (2010). Perceived Usefulness, Perceived Ease of Use, Perceived Complexity, Perceived System Quality, Perceived Enjoyment, Perceived Price Level and Social Influence were used as independent variables.

In technology acceptance research, Davis (1989); Davis, Bagozzi, and Warshaw (1992), and Venkatesh (2000) revealed that perceived usefulness influences the intention to use IT. Other researchers (Talyor and Todd, 1995; Shin, 2009) supported the findings. Hence we develop

**Hypothesis 1:** There is a relationship between perceived usefulness and intention to use IPTV.

To test the relationship between perceived ease of use, attitudes, and the usage of other information technologies, many researchers have conducted various studies in recent years (Venkatesh, Davis, 2000; Venkatesh, & Morris, 2000; Igbaria et Al. 1997; Davis, Bagozzi, and Warshaw 1992). According to TAM perceived ease of use and perceived usefulness can predict attitudes toward technology that can then predict the usage of that technology. Several researchers have thus validated TAM using several different applications. Therefore for IPTV we develop

**Hypothesis 2:** There is a relationship between perceived ease of use and intention to use IPTV.

Davis, Bagozzi, and Warshaw (1992); van der Heijden (2004); Weniger, S., (2010); Shin, (2009) indicate that perceived enjoyment serves as intrinsic motivator. So it has an influence on the intention to use Information Technology. This leads to

**Hypothesis 3:** There is a relationship between perceived enjoyment and intention to use IPTV.

Rogers and Shoemaker (1971, cited in Gardner, C. and Amoroso, D. L., 2004) defined perceived complexity as the degree to which computer technology is perceived as relatively difficult to understand and use. Davis (1989) and Igbaria et al. (1996)
tested complexity in terms of time taken to perform tasks. Igbaria, et al. (1995) saw strong relationships between perceived complexity and perceived usefulness with usage. On the basis of these findings following hypothesis is proposed

**Hypothesis 4:** There is a relationship between perceived complexity and intention to use IPTV.

Shin (2009) added perceived cost variable as a significant factor in developing the intention to use IPTV. According to Pavlou and Fygenson (2006), the perceived price level is important in developing intention for service usage. In the development of behavioral intention, consumers compare the benefit from the service to the cost of using it. If the price exceeds the benefit, they do not subscribe to the service. The behavioral intention of customers is determined by their valuation of the service which significantly associates to the perceived cost level (Wu and Wang 2005). Cheong and Park (2005) found that the price has a significant affect in the development of initial willingness to use mobile Internet. Cost should be measured in relation to consumers’ perceptions (Teo et al. 2004). Therefore, we capture the perceived price level and develop next hypothesis.

**Hypothesis 5:** There is a relationship between perceived price level and intention to use IPTV.

Perceived system quality – referring to IPTV may be said to be based on attributes such as response time, system accessibility, and reliability (Weniger, 2010). Aladwani and Palvia (2002) added system quality is especially crucial in the context of Information System (IS), because many people become reluctant to use Information System (IS) when they feel frequent delays in response, frequent disconnection, lack of access, and poor security. Study of DeLone and McLean (1992), information quality and system quality were found to be important constructs for the success of IS. Similarly, Lin and Lu (2000) tested information quality, response time, and system accessibility as IS qualities. They indicate that these three variables are useful predictors of perceived ease of use and perceived usefulness. Cheong and Park (2005) revealed positive causal relationships with perceived system quality and perceived usefulness. So we propose
**Hypothesis 6:** There is a relationship between perceived system quality and intention to use IPTV.

### 3.5 Research Model

This study proposes to investigate the research model shown in Figure 3.1 in next page. This study will test empirically the six hypotheses (perceived usefulness, perceived ease of use, perceived enjoyment, perceived complexity, perceived price level, perceived system quality).

**Figure 3.1: Research Model**

![Research Model Diagram]

### 3.6 Sampling Design

#### 3.6.1 Identification of the Survey Pool

The population of interest was defined as a group of people who are using IPTV service. Since we were interested in the concept of intention the respondents are IPTV system users. As in the eastern part of India IPTV system was only available in
Kolkata, we have chosen the place for conducting the study. The respondents include the consumers belonging to all income groups and covering all age groups namely students, working class in private sector, working class in govt. or public sector, housewives and businessmen or self-employed. Respondents were comfortable with English language.

3.6.2 Selecting of Sampling Technique

Traditional sampling method can be divided into two categories: (Malhotra, 2011)

- Probability
- Nonprobability

In probability sampling, sampling units are chosen randomly. If done in the right way, probability sampling assures that the sample is representative (Hair et al., 2003). Usually Probability sampling is used in survey–based research where researcher needs to make inferences from the sample about a population to meet research objectives (Saunders et al. 2009).

In non-probability sampling, researcher decides what elements to include in the sample either arbitrarily or consciously (Malhotra, 2011). In non-probability sampling the selection of elements for the sample is not necessarily made with the aim of being statistically representative of the population.

For this study two stage cluster sampling under probability sampling was chosen. In this type of sampling method, there is initial sampling of groups of clusters and then selection of elements within each selected cluster. The clusters are made up of individual units which constitute mutually exclusive and exhaustive subsets. This is a probability sampling method. Two-stage sampling is a complex form of cluster sampling. Using all the sample elements in all the selected clusters may be prohibitively expensive or not necessary. Under these circumstances, two-stage cluster sampling becomes useful (Malhotra, 2011). Instead of using all the elements contained in the selected clusters, the researcher randomly selects elements from each cluster.
Constructing the cluster is the first stage. Deciding what elements within the cluster to use is the second stage. The technique is used frequently when a complete list of all members of the population does not exist and is inappropriate.

Hinkin (1998) argued that, the determination of suitable sample size is debatable. As the sample size increases, the likelihood of achieving statistical significance also increases (Field, 2009). Hair et al. (2003) discussed, the large sample has an advantage that it can produce stable estimates of the standard errors to ensure that factor loadings are exact manifestations of the true population values. From literature, recommended item-to-response ratios in exploratory and confirmatory factor analysis ranged from 1:4 to 1:10 (Hair et al. 2003; Hinkin 1998; Field, 2009). In this study, 27 items were finalized and the sample size was estimated 500.

At the first stage, the clustering was done on the basis of area and then at the second stage the respondents were randomly selected from the clusters thus formed.

3.7 Developing the Survey Instrument

The first step of scale development is item generation (Brahma, 2009). A review of literature on this subject reveals that most of the work in this area has been undertaken in industrially advanced countries of Europe, USA and Asia. The issue of IPTV in developing countries like India has received little attention till date. Earlier studies on technology acceptance behavior have been inconclusive about the applicability of a western-developed model of technology acceptance in other non-western countries (e.g., Rose and Straub, 1998; Straub et al., 2001; Bagozzi et al., 2000).

The overview of literature identifies that very few studies that have examined the relationship of new technology and a set of determinants influencing them are available in the Indian context. Moreover, all these works are mainly confined to the mobile phone. The researchers in this regards have neglected the IPTV sector.

Hinkin (1998) suggested, for a successful item generation, existence of a well-formulated theoretical background that indicates the content domain for the measure is required. One of the best processes to ensure content validity is to select and adapt items
from previously validated instruments. This research attempts to borrow items from prior research. The researcher should have objective to create items that will result in tests that sample the theoretical domain of interest to demonstrate content validity. Simple and short statements should be used, and the target population should be familiar with the language used in the questionnaire. Also, each item should address a single issue (Hinkin 1998). One way of getting a low measurement error when developing a sample of items is to draw items from already existing validated scales (Churchill 1979).

Based on Moore and Benbasat’s (1991) item creation process, the following steps were adopted:

- Step 1 – Literature survey of existing instruments
- Step 2 – Choosing of appropriate items
- Step 3 – Add necessary items if dimensions were not covered and testing the reliability
- Step 4 – Analyse and categorize all items based on the similarities and differences among items
- Step 5 – Revise items - uniform and clarity of wording

The TAM (Davis, 1989) frameworks were developed for relatively simple and mainly work or job related technologies (e.g. word processing tools and e-mail). However, as IPTV service is not directly related to job or work place, adopting all TAM constructs may not be a useful idea. Therefore, new items were generated based on IPTV technology. To generate new items, the focus group study was conducted and opinions were taken from experts in this field.

In this research constructs were borrowed from TAM related studies and were used on the specific feature of IPTV. As suggested by Churchill (1979), in order to obtain first-hand insights on IPTV related issues one focus group session was conducted. In the work of developing a new set of items to measure the constructs,
qualitative research was conducted. Cronbach (1971, cited in Brahma, 2009) and another study (Subramaniam and Venkatraman, 2001) describes, experts who are familiar with the content universe can evaluate the items until a consensus is reached. Therefore, after completion of focus group session, experts’ opinions were also taken for generating new items.

In this study, 50 numbers of initial items were created by doing literature search, focus group method and experts’ opinion.

To ensure the reliability of the research constructs while doing the research, it has been tried to choose previously validated items in the literature. Besides this, few new items has been suggested to be added by the experts. All the new items are related to IPTV in Indian context.

3.7.1 Pretesting the Instrument

Pretesting is testing of questionnaire for identifying and eliminating potential problems. It is done on small sample. Pre-tests are best done by personal interviews (Malhotra, 2011). A preliminary survey was carried out through a questionnaire consisting of both open ended and close-ended questions to get the initial feedback on the issues concerned. Therefore, the questionnaire was pre-tested on a group of 100 subjects (both male and female) to find the reliability and credibility of the instrument (Survey period was 15th February, 2012 to 10th March, 2012). Senior academicians and experts who have a lot of experience in the field of IPTV and Customer service were consulted and their views were suitably incorporated in the questionnaire. From this pre-testing, many valuable feedbacks were obtained concerning language and structure.

The final questionnaire constitutes of three sections. The first section consisted of 27 questions on all the independent and dependent variables. The second section was designed to collect qualitative data to know the source of awareness i.e. from where did they get to know about IPTV, what motivated subscribers’ to switch to IPTV and which service of IPTV they like most. By analysing these data, which media is playing important role for the advertisement of IPTV and which service of IPTV is playing significant role to customers can be identified. The third part was for collecting
demographics data, pertaining to age, gender, academic qualification, occupation and level of income.

The most frequently used summated scales in the study of social attitude follow the pattern prepared by Likert (Kothari C.R, 2006); therefore, all the 27 items were presented in the questionnaire consisted of a five point Likert scale. This five-point scale ranged from “strongly agree” to “strongly disagree”; with the middle of the scale identified by the response alternative “neither agree nor disagree”. As recommended by Parasuraman (2000), the items were presented in a randomly mixed order. A detail of the items with origin is given in table Annex-2 in Annexure II. Questionnaire in English was derived for the study. A complete version of the questionnaire is listed in Annexure III.

3.8 Operational Measures of the Study Variables

One important question in research design using factor analysis techniques is how to determine the number of variables to be included in the study. Hair et al. (2003) suggest that “the researcher should attempt to minimize the number of variables included but still maintain a reasonable number of variables per factor”. With this in mind, all the variables (dependent and independent variables) were adopted from prior studies for the purpose of this study. The complete results of factor analysis are exhibited in findings section.

3.9 Data Collection Methodology

3.9.1 Secondary Data

Searching the literature on chosen topic is a vital step. The fresh data, which are specifically collected for the recent research project, is called primary data, where the researcher is the first user, as opposed to secondary data (Kothari C.R, 2006). Review of literature is an important part of nearly all research. According to Malhotra (2011) existing data which was collected for an intention other than that of the current study but which can be used a second time for a current project is referred as secondary data. Sometimes secondary data can be superior to primary data, as earlier researchers could have had different situations to work under.
Secondary data played a vital role for this research. In this case, few studies on the related topic have been done. However, no research has been done in Indian context, where the market potentiality is huge. In this country, a significant number of users are already using mobile phones, internet, broadband system and Television.

The literature review allowed the researcher to gain the concept of key issues of IPTV related system. Furthermore, the use of secondary data helped the researcher to establish new relationships between the ideas that were at the beginning of the research collection, entirely unforeseen. Moreover, the use of existing sources helped the researcher to formulate and realize the research problem better (Ghauri et al. 2002)

The literature review contained academic work and other published sources related to the theories in interactive advertising, Technology Acceptance Model and IPTV. Regarding the aim and overall objectives, it had in particular a focus on acceptability of IPTV system. In this study, the first objective is the advertising strategies of IPTV providers in India, which purely depends on secondary data. Academic journals on the subject and newspapers formed an important source of information.

Use of secondary data might not always be appropriate for a specific research as the information might have been collected for a different purpose or in a different circumstance, but nonetheless it helps in building a sound idea on the subject.

3.9.2 Primary Data

Primary data are new data specifically collected in the current study, where the researcher is the first user, as opposed to secondary data (Malhotra, 2011). For the primary data collection a quantitative method was applied which is a structured form of data collection and it employs quantitative measurement and statistical analysis.

This research has two parts, these are (a) Acceptance related- for this part, 27 statements were specially constructed for quantitative analysis and for this purpose the technology acceptance related literature was searched, the focus group study was conducted and opinions were taken from experts in this field. (b) Awareness related – for this part items were created to know the source of knowing about IPTV and their
motivations behind subscription of IPTV. For this study, 3 questions (Group-B, ANNEXURE-IV) were constructed within the questionnaire.

3.10 Assessment of the Instrument by Reliability and Validity Analysis

One of the main objectives of the item generation process is to ensure content validity (Moore and Benbasat 1991). Validity and reliability are vital factors when considering errors that might influence the results. Reliability is the extent to which a set of variables is consistent in what it is intended to measure, while validity refers to how well the measures correctly represent the concept of the study. That is, validity is concerned with what is studied, and reliability relates to how it is measured (Hair et al. 2003).

“Reliability refers to the extent to which a scale produces consistent results if repeated measurements are made” (Malhotra, 2011). As reliability is a necessary condition of validity, a researcher first provides evidence that his scale has achieved a satisfactory level of reliability. Reliability of a scale can be described as the degree to which a measure is free from error and, therefore, yields consistent results (Peter 1979; Brahma 2009). The internal consistency of reliability when items in the measurement scale all coincided with the same underlying construct, was measured using Cronbach’s alpha and corrected item to total correlations. Cronbach’s alpha is one of the most popular methods for measuring internal consistency reliability. Essentially Cronbach’s alpha can be referred as an average correlation of every combination of one item to the other items in the same scale (Brahma, 2009). Reliability assessment was carried out using Cronbach’s alpha, in order to ensure that the variables comprising each proposed research construct were internally consistent. As per guideline, minimum alpha is considered as .70; however, a value of .60 may be acceptable for new scales (Nunally 1978; Hair et al. 2003). Thus for this purpose Cronbach’s alpha value has been measured for all questions. The total Cronbach’s alpha was equal to .728 which is acceptable according to the reliability value mentioned by Hair et al. (2003).

For determining construct reliability, based on the data from pilot testing of the survey instrument, table 3.3 shows that the Cronbach’s alpha of the measures of the planned variables are well above acceptable thresholds.
Table 3.3: Cronbach’s alpha values

<table>
<thead>
<tr>
<th>Construct</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perceived Usefulness</td>
<td>0.738</td>
</tr>
<tr>
<td>Perceived Ease of Use</td>
<td>0.883</td>
</tr>
<tr>
<td>Perceived Enjoyment</td>
<td>0.847</td>
</tr>
<tr>
<td>Perceived Complexity</td>
<td>0.802</td>
</tr>
<tr>
<td>Perceived Price Level</td>
<td>0.748</td>
</tr>
<tr>
<td>Social Influence</td>
<td>0.779</td>
</tr>
<tr>
<td>Perceived System Quality</td>
<td>0.878</td>
</tr>
</tbody>
</table>

First the validity of the scales applied here was measured by content validity. “This is a subjective but systematic evaluation of how well the content of a scale represents the measurement task at hand” (Malhotra, 2011). Malhotra (2011) also added that it is determined by the judgment of the researcher, who compiled the questionnaire with various scales, which logically appeared to accurately reflect what they were supposed to measure. The researcher tests whether the scale items adequately cover the full domain of the construct being measured. As suggested by Brahma (2009) and Hinkin (1998) when the theoretical background is strong, deductive method can be used for item generation. According to Straub (1989) verifying a content-valid instrument is tough because the universe pool of the items is almost infinite. Brahma (2009) said that unfortunately there is no rigorous method to assess content validity.

by deductive process. First, they developed five items scale from the literature and then it was content validated by scholars who were experienced in that field. In this research, constructs were generated from literature and were content validated through experienced managers.

Convergent validity is a significant factor of construct validity, which is present when the indicators of the same construct have a high proportion of variance in common (Bagozzi and Phillips, 1982). All items should be related to each other for multi-item measures of a single construct. For testing the convergent validity Exploratory Factor Analysis (EFA) represented by Principal Components Analysis (PCA) with Varimax rotation were performed. The result of factor analysis is shown in findings section (Chapter-IV). Interestingly the items related to ‘Job Search’ and ‘Improvement of performance’ has made separate factor, though these two were added within the ‘perceived usefulness’ construct. The possible reason of this result has been discussed in next chapter (Chapter –IV). As these two items creates separate factor with a high load, we have revised our research model which is shown in figure 3.2 in next page. Rest all the items have taken high load on their respective construct. The result is shown in table Annex 4.5 in ANNEXURE-IV. Discriminant validity can be shown if items are loaded highly in a specific factor and do not take high load on other factors (Straub 1989; Hair et al. 2003). From table Annex 4.5 in ANNEXURE-IV, it can be concluded that all the items take high load on their respective constructs and weak loading on other constructs, hence discriminant validity is proved.
3.11 Conducting the Survey and Coding the Results

3.11.1 Conducting the Survey

For the main study survey period was 4th July, 2012 to 20th August 2012. The questionnaire thus prepared was administered on a sample of 500, consisting of students, housewives, Working class (govt./ PSU sector and private sector both) and self-employed. Out of circulated 500 questionnaires, 357 completely filled questionnaires were received, which was under the recommended item-to-response ratio.

3.11.2 Ethical Considerations

Each survey contained a cover letter explaining the purpose of the study, indicating that participation was voluntary and that responses would be treated confidentially. In addition, participants were free to withdraw at any time.
Table 3.5: Analysis of respondents.

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Student</th>
<th>Working in Govt/ PSU sector</th>
<th>Working in Private Sector</th>
<th>Housewife</th>
<th>Self Employed</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondents</td>
<td>82</td>
<td>87</td>
<td>40</td>
<td>80</td>
<td>68</td>
<td>357</td>
</tr>
<tr>
<td>% of Respondents</td>
<td>23</td>
<td>24.4</td>
<td>11.2</td>
<td>22.4</td>
<td>19</td>
<td>100</td>
</tr>
</tbody>
</table>

As the distribution of questionnaire was personalized and the topic of the study was very interesting so people were generally motivated to take interest in this academic study. The response rate was 71%.

3.11.3 Coding the Results

The responses of the respondents on the Questionnaire were scored by assigning the following weights depending upon the respondents’ favorableness towards the given point of view. As recommended by Parasuraman (2000), the items were presented in a randomly mixed order.

1. For the Questions number 10, 11, and 12 the coding was reversed because the agreement responses were not in favor of the concept of IPTV system.
   - Strongly Agree – 1
   - Agree -2
   - Neither Agree nor Disagree- 3
   - Disagree-4
   - Strongly Disagree -5
2. For other Questions, the coding was done as follows for these questions showed a favorable attitude towards IPTV system.

Strongly Agree – 5
Agree -4
Neither Agree nor Disagree- 3
Disagree-2
Strongly Disagree -1

3.12 Factor Analysis:

Factor analysis was performed to identify the structure of a set of variables in the survey data. An exploratory factor analysis was used for extraction and interpretation of the factors. Factor analysis is a statistical tool to decide a minimum number of unobservable common factors by studying the covariance among a set of observed variables (Malhotra, 2011). It tries to bring inter-correlated variables under more general fundamental variables. According to Rietveld & Van Hout (1993, cited in kootstra, 2004), more particularly, the objective of factor analysis is to reduce “the dimensionality of the original space and to give an interpretation to the new space, spanned by a reduced number of new dimensions which are supposed to underlie the old ones”. Thus, factor analysis provides not only the possibility of deriving a clear picture of the data, but also the possibility of applying the output in subsequent analyses (Field, 2000). The factor structure was labelled subjectively, by inference from the nature of the grouped items, which is exhibited in next chapter. For conducting factor analysis there should be at least four or five times as many observations (sample size) as there are items (Hair et al. 2003; Hinkin 1998; Field, 2009). This study has maintains the ratio. The result of factor analysis is exhibited in findings section.

In summary, the following factor extraction rules were implemented:

- Factor extraction method: Principal Component Analysis
- Number of factors to retain: Eingenvalue>1 and Scree plotting
- Rotation method: Varimax
3.13 Multiple Regression Analysis:

In next step of the study a multiple regression analysis is performed in order to assess the influence of identified factors on dependent variables. This analysis was performed on the basis of collected data from responders. “The objective of multiple regression analysis is to use the independent variables whose values are known to predict the single dependent value selected by the researcher” (Hair et al., 2003). Multiple regression is a statistical technique that allows us to predict someone’s score on one variable on the basis of their scores on several other variables. In the regression analysis, Intention to Use IPTV is used as a dependent variable and other factors used as the independent variables.

One common problem that exists when applying multiple regressions is multicollinearity. When using more than five independent variables, two or more of them may be highly correlated to one another, this condition called multicollinearity (Tabachnick and Fidell 2007). Multicollinearity was measured through variance inflation factor (VIF) which indicates that the variables are reasonably free of the problem. Hypotheses were tested through multiple regression analysis.

3.14 Summary

This chapter has given an overview of the detailed methodology followed to carry out the research study. The analysis of responses collected through the circulation of final questionnaire is dealt with in the next chapter.