Chapter 4
Research Methodology

4.1 Introduction

In this chapter, the author discusses the theory of the methodology and the research design employed in the present study. The chapter discusses the methodology used in the research and procedures of data collection utilised to test the proposed model. The chapter begins with discussing research process, research design, research objectives and research questions. The mid-section discusses the research model, scaling and defines the explanatory and dependent variables in the study. The procedures adopted for sample selection and data collection are also discussed. The last section gives the description of analytical techniques used for testing the hypotheses and to answer the research questions.

4.2 Research Process

In the early phase of this research, several interviews were conducted. The purpose of conducting the personal interviews was to gain broad insights related to consumer’s likeliness or acceptance of the idea of halal certification for food products. Some of the earliest interviews were unstructured and were not documented. The only purpose of such interviews was to acquaint author with what general consumers would think about halal certification for packaged food. Later on, many, semi-structured interviews were conducted on the general topic of halal certification and the selective parts of the conversations were penned down.

After reviewing the relevant literature, both dependent and independent variables were operationalized. Apart from demographic variables, seven established scales were used to compose the research instrument. Many statements in the research instrument were rephrased during the piloting of the questionnaire. An online pilot survey (n=70) was conducted to check the reliability (Cronbach’s Alpha) of the scales. In the next step, the final questionnaire was administered in six Muslim
prominent districts of Uttar Pradesh. Total 421 questionnaires were received and the data was screened, analysed using several statistical techniques including but not limited to CFA and SEM. Further, the research process is described in following steps.

- An extant literature review was conducted to understand the factors influencing purchase intention of halal certified products with special attention to halal certified food products.

- Models used in halal purchase intention were identified and were comparatively studied to gain insights and arriving at the proposed model.

- The proposed model was designed for keeping those variables in mind which are most suitable in the Indian context.

- In-depth interviews were conducted for elicitation of TPB variables. A pre-test survey was conducted (n=70) to check the reliability the used scales. Finally, the main survey (n=421=> 350) was conducted in six districts of Uttar Pradesh.

- Measurement Model’s reliability and validity was checked using both first and CFA

- Total 15 hypotheses were presented and tested using SEM

4.3 Research Questions

This research seeks to answer following research questions

RQ1. What are the factors influencing Muslim consumers’ purchase intention for halal certified food products?

RQ2. Is proposed an extended theory of planned behaviour a suitable model for studying Muslim consumers’ purchase intention for halal certified food products in India?
4.4 Research Objectives

The study was guided by following objectives:
1) To identify the key dimensions of purchase intentions of halal certified food products among Muslim consumers.
2) To propose and validate a model for understanding factors influencing the purchase intention for Halal certified food products.
3) To study the role of religiosity and subjective knowledge of halal within the framework of the theory of planned behaviour.
4) To suggest strategies for marketers in developing better marketing communication strategies to promote halal certified products.

4.5 Research Design

Malhotra (2008) suggested that researchers most often have to select from three kinds of research design: exploratory, descriptive, or causal research designs. The descriptive design presents the descriptions of the population under study while causal designs relate dependent and independent variables in cause and effect manner. This study is descriptive and in nature since its goal is to test the model integrated with existing theory and literature. The test of hypotheses is more of confirmatory nature (utilising SEM) rather exploratory where researchers are not sure about the underlying structure of factors (dimensions), and also are not aware of prior relationships among the variables. In this study, the researcher was familiar with the constructs and their underlying dimensions and the relationship between them. However, all these relationships didn’t exist in the single study rather integrated from several previous studies and a comprehensive model was tested employing confirmatory factor analysis and the path analysis by using structural equational modelling in AMOS. The main purpose of this study was to gain insight into untapped areas of halal purchase behaviour by looking into purchase intention of halal certified products and its relationship with attitude towards halal certification, subjective norms, perceived behavioural control, religiosity, and subjective knowledge of halal. Further, the sampling design could be cross-sectional or longitudinal. In longitudinal designs,
respondents are surveyed twice or more over a period of time. This study employs a cross-sectional design as the respondents were surveyed only once so that their opinion can be captured in one snapshot.

4.6 Proposed Research Model and Hypotheses

After conducting a thorough review of literature a research model is proposed. The model is exhibited in Figure 3.1. The current model for the research is based on Ajzen's Theory of Planned Behaviour (TPB), with the addition of two more variables: ‘religiosity’ (Alam & Sayuti, 2011, Lada et al., 2009, and Shari & Arifin, 2010) and ‘subjective knowledge’ of halal (Rahman, Asrarhaghighi & Rahman, 2015).

4.6.1 Research Hypotheses

This research proposes and tests 15 hypotheses grounded on the theory of planned behaviour. Four hypotheses are based on core TPB model; six hypotheses are based on religiosity and its relationship with knowledge and TPB and remaining five hypotheses are based on the relationship of knowledge with TPB variables.

Overall this research assesses the direct influence of independent variables Attitude, subjective norms, perceived behavioural control, knowledge and religiosity on purchase intention of halal certified food products among Indian Muslims. Subsequently, the impact of religiosity and knowledge on all independent variable is also examined. Apart from that impact of religiosity on knowledge is also hypothesised and tested in the analysis.

4.6.1.1 Hypotheses Based On TPB Model

1. Hypothesis H1: the positive attitude of Indian Muslims consumers towards halal certified packaged food products will positively influence their intention to purchase halal certified packaged food products.

2. Hypothesis H2: Positive subjective norms for consuming halal certified packaged food products will positively influence the Indian Muslim consumers’ purchase intention of halal certified packaged food products.
3. Hypothesis H3: Positive PBC (Self-Efficacy) with respect to consumption of halal certified packaged food products will positively influence the Indian Muslim consumer’ purchase intention of halal certified packaged food products.

4. Hypothesis H4: PBC (control) with respect to consumption of halal certified packaged food products will negatively influence the Indian Muslim consumer’ purchase intention of halal certified packaged food products.

4.6.1.2 Hypotheses related to Religiosity

5. Hypothesis H5: Religiosity of Indian Muslim consumers will positively influence their purchase intention of halal certified packaged food products.

6. Hypothesis H5 (a): Religiosity of Indian Muslim consumers will positively influence their Attitude towards halal certified packaged products.

7. Hypothesis H5 (b): Religiosity of Indian Muslim consumers will positively influence their subjective norms for consuming halal certified packaged products.

8. Hypothesis H5 (c): Religiosity of Indian Muslim consumers will positively influence their PBC (Self-efficacy) regarding the purchase of halal certified packaged products.

9. Hypothesis H5 (d): Religiosity of Indian Muslim consumers’ will negatively influence their perception of PBC (control) of halal certified packaged products.

10. Hypothesis H5 (e): Religiosity of Indian Muslim consumers’ will positively influence their subjective knowledge of halal.

4.6.1.3 Hypotheses Related to Subjective Knowledge of Halal

11. Hypothesis H6: Subjective knowledge (halal) of Indian Muslim consumers will be a significant predictor of purchase intention of halal certified packaged food products.

12. Hypothesis H6 (a): Subjective knowledge (of halal) of Indian Muslim consumers will be a significant predictor of their Attitude towards halal certified packaged products.
13. Hypothesis H₆ (b): Subjective knowledge (of halal) of Indian Muslim consumers will be a significant predictor of their subjective norms for consuming halal certified packaged products.

14. Hypothesis H₆ (c): Subjective knowledge (of halal) of Indian Muslim consumers will be a significant predictor of their PBC (Self-efficacy) regarding purchase of halal certified packaged products.

15. Hypothesis H₆ (d): Subjective knowledge (of halal) of Indian Muslim consumers’ will negatively influence their perception of PBC (control) of halal certified packaged products.

4.7 Target Population, Sampling and Data Collection Procedure

4.7.1 Sampling Unit
The sampling unit for the purpose of this research is defined as ‘Muslim individuals above 18 years of age and having exposure to any packaged food products’. However, the definition of the desired respondent appears broad still it is more suitable for some basic reasons. First, the study investigates the general purchase intention for Halal certified packaged food products. Any specific product was not chosen as has been done in some previous studies specifically studies in applied marketing. One of the rationales behind not choosing specific products is the negligible presence of halal certified brands in the Indian market. The second reason for doing research on generic products rather than specific (like exclusively chocolates or noodle) is the novelty of this research in the Indian context. To the author’s best of knowledge no previous researcher in India had studied the purchase intention of halal certified products. Third and last reason being, if any specific product is chosen for research there are many variables which are incredibly product specific for instance in case of chocolates; taste, smoothness, sweetness etc. may matter a lot, nevertheless present research is focussed on ‘Halal certification’ aspect of the packaged food products. The main purpose of the research is to empirically test what are the attitudinal factors which generally impact the purchase intention of halal certified packaged food products.
Figure 4.1 Hypothesised Model for the research

(Source Ajzen 1991, Alam and Sayuti, 2011 and Lada et al., 2009)
4.7.2 Sampling Method

The process of sampling is important for detecting; advancing and understanding marketing constructs that need exploration (Kothari 2004, Hair, Black, Babin, & Anderson, 2014). Hair et al (2014) also suggested that sampling procedure should be designed in accordance with research context. Some important matters like the theoretical element, sampling related challenges and advantages and disadvantages of different techniques of sampling etc. should be carefully considered. Researchers have to select from two broad types of sampling methods: Probability vs. non-probability sampling (Sekaran, 2016, Hair et al, 2014 and Kothari, 2004). Availability of suitable sampling frame hinders researchers to peruse probability sampling method. Other challenges mainly arise out of limited resources e.g. time, finance, etc. (McCormack & Hill, 1997). While probability sampling methods (judgemental, convenience, researcher controlled, snowball etc.), which are more convenient, enables collection of data in a larger number of respondents in reasonably short time and at lower budgets (Babin & Zikmund, 2015, and Singh 2007).

This research adopts non-probability sampling method based on the judgement of the researcher and limited by available opportunities and resources. The non-probability sampling method employed in the research deemed to be more suitable in the current situation. The first reason is the exploratory and descriptive nature of the present investigation. As discussed earlier purposive (researcher controlled) sampling method is utilized when the purpose is to explore the idea from the sample (Cooper &Schindler, 2006). Convenience sampling is suitable for preliminary investigations. The second reason for selecting non-probability is the absence of a proper sampling frame and the last reason is the unavailability of specific information about the population in context. Hair et al., (2014) suggested that researchers collecting data through convenience sampling should a considering the uniformity in target sample and select sample based on accessibility. Further, they added that sample should have a comparable characteristic with the overall population under study. Due and diligent care should be employed while collecting data from respondents so that respondent could provide correct information otherwise it will influence adversely.
4.7.3 Data Collection

Data was collected from six districts (Table 4.1) of Uttar Pradesh (U.P.). The state has 71 districts (census, 2001). Roughly, 14 percent of the total population belongs to the followers of Islam. Several districts have large Muslim population, which may go up to 25 percent. A list of districts with a high proportion of Muslim population was prepared (see appendix A1) which included top 20 districts based on the Muslim population. The list was prepared in such a way that it should include districts on the basis of total Muslim population and percentage of Muslims as well. Self-administered structured questionnaires were used to collect the data. Total 421 questionnaires were received from six districts, town Bijnor (n= 68), Moradabad (n=76), Rampur (n=65), Bahraich (n=64), Lucknow (n=69) and Aligarh (n=79). It took roughly three months to collect the data from all districts. The process of data collection started in the first week of February 2017 and ended in the third week of April 2017. The data from questionnaires was fed into the system and screened for missing values and unengaged responses. Total 71 responses were deleted due to missing values, unengaged responses (σ<0.3) and those which did not meet the definition of the sampling unit as defined the study. Table 4.1 shows the number of responses before and after data screening.

<table>
<thead>
<tr>
<th>City</th>
<th>Before Screening</th>
<th>After screening</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lucknow</td>
<td>69</td>
<td>60</td>
</tr>
<tr>
<td>Bahraich</td>
<td>64</td>
<td>53</td>
</tr>
<tr>
<td>Aligarh</td>
<td>79</td>
<td>71</td>
</tr>
<tr>
<td>Moradabad</td>
<td>76</td>
<td>67</td>
</tr>
<tr>
<td>Rampur</td>
<td>65</td>
<td>45</td>
</tr>
<tr>
<td>Bijnor</td>
<td>68</td>
<td>54</td>
</tr>
<tr>
<td>Total</td>
<td>421</td>
<td>350</td>
</tr>
</tbody>
</table>
4.8 Questionnaire Design

A structured questionnaire was used for collecting data from respondents. The questionnaire is divided into three sections. The first section introduces the respondents about the survey, gives the definition of halal certification and finally, two pictures of halal certified products with halal logo are also shown. One picture is of halal certified chocolate and another picture is of halal certified noodle. ‘Halal logo’ is zoomed for clear visibility. Both examples (chocolate and Noodle) are taken from Malaysia. The second part consists of research variables in the order: Purchase intention (7 items), Attitude (6 items), Subjective knowledge of halal (6 items), Subjective Norms (5 items), PBC-control (4 items), PC-self efficacy (4 items), and Religiosity (7 items). The third part consists of demographic variables.

4.8.1 Purchase Intention

This construct was measured using seven items (statements) each on a seven-point Likert scale from strongly agree (7) to Strongly Disagree (1) following seven questions were asked to measure purchase intention. Respondents were asked “If Halal Certified Packaged Food Products are available in Indian Market what will your opinion regarding their purchase” then following statements were asked to be rated on a seven point Likert scale: 1) “If these products were available in the shops, I would buy them” 2) “I think I would frequently buy these products” 3) “Among packaged food products, I will prefer buying those which are certified as halal” 4) “I will make an effort to buy these products” 5) “I will buy these products even if they are slightly expensive” 6) “I will recommend others to buy these products” 7) “I will consider buying these products even if brand is not so popular”.

The statements for measuring purchase intention are formulated using two main sources, firstly guidance provided by Ajzen (2002) and second scales used by various other authors (Ajzen, 1991, 2002, Venkatesh & Davis, 2000, and Kim, 2014) who have conducted research based on theory of planned behaviour.
4.8.2 Attitude

This construct was measured using six items on a seven-point Likert scale ranged from strongly agree (7) to Strongly Disagree (1). Respondents were asked, “What is your opinion of Halal Certification?”, and were provided with six statements: 1) “It is a good idea” 2) “It is a wise idea” 3) “It is a practical idea” 4) “It is beneficial for consumers like me” 5) “It is necessary for consumers like me” 6) “It is helpful for consumers like me”. It is important to note that the phrase “halal certification” is not used in either of six statements to minimize the bias arising out of word halal. To clarify this, consider this example: the statement “It is a good idea” could have been asked like halal certification is a good idea and so on. But to minimize the biased author have purposely did not include the word halal in either of the statements rather one broad question was asked (“What is your opinion of Halal Certification?”) before presenting the statements related to attitude scale.

Following sources, Scales items were chosen guidance suggested by Ajzen (1991, 2002). Further, these items were earlier used by Ajzen and Fishbein (1980). Many researchers used above items e.g. Chung, Stoel, Xu, & Ren (2012), Shakona (2013) and Taylor and Todd (1995). Lada, Tanakinjal & Amin (2009) used two items 1) choosing halal products is a good idea and 2) I like to choose halal products to measure attitude in the context of halal food purchase intention.

4.8.3 Subjective Norms

This construct was measured using five items on a seven-point Likert scale ranged from strongly approve (7) to strongly disapprove (1). The statement included: 1) “My family members would ........ certified halal Products” 2) “Friends who are important to me would ........ certified halal Products” 3) “Co-workers who are important to me would ........ certified halal Products” 4) “People with religious knowledge who are important to me would ........ certified halal Products” 5) “Overall most people who are important to me would ........ certified halal Products”. Above items have been used by other researchers in previous studies. For example, Lada, Tanakinjal & Amin (2009) used three items (item no. 1, 2 and 5) in halal purchase intention context. Two items (item no. 3 and 5) are taken from
Shakona (2013) who investigated travellers’ intention to use Shariah-compliant hotels Shakona (2013). Other researchers have also used one or more of these items to measure subjective norms in the context of food purchase (Cook, Kerr, & Moore, 2002, Yadav and Pathak, 2016, 2017).

<table>
<thead>
<tr>
<th>Scale</th>
<th>No. of items</th>
<th>Supporting Literature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Religiosity</td>
<td>7</td>
<td>Alam, Mohd &amp; Hisham (2011)and Rehman &amp; Shabbir (2010)</td>
</tr>
<tr>
<td>Subjective knowledge of halal</td>
<td>6</td>
<td>Salehudin (2013), Flynn &amp; Goldsmith (1999)</td>
</tr>
</tbody>
</table>

4.8.4 Perceived Behavioural Control
As demonstrated by Ajzen and Sheikh (2002) perceived behavioural control is conceived as a two-dimensional construct (perceived self-efficacy and perceived control). Perceived self-efficacy is measured by four statements based on the guidelines suggested by Ajzen (2002): 1) “I have enough time to choose the best option for purchasing packaged food items”. 2) “I have enough Knowledge to choose the best option for purchasing packaged food items” 3) “I have enough knowledge of ingredients labels for purchasing packaged food items” 4) “I have enough money to choose the best option for purchasing packaged food items”.

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Perceive control was measured using four items based on Vermeir and Verbeke (2006) cited in Bonne et al (2007). Respondents were asked why it is difficult to buy halal certified food products. Each of the four items was measured using a seven-point Likert scale. The items include 1) “Because only a few companies sell these products” 2) “Because it is not available in most of the shops” 3) “Because there are very limited options in halal certified food” 4) “Because of its low availability”.

All of the mentioned items measures perceived control (limitations faced by consumers) manifested as the perceived difficulty to avail the products and problem of limited choice (Ajzen 2002, 2005). Similar items were used by Bonne et al. (2007) to measure control in halal meat purchase context in France. Bonne et al (2007) used following items (“Halal products are readily available”, “There are a lot of choice possibilities in halal products”, “Information on halal labels is clear”, “There is sufficient information available on halal products”) on a five-point Likert scale ranging from “totally disagree” to “totally agree”. However, they adopted these items from Vermeir and Verbeke (2006).

4.8.5 Religiosity

Seven items were used to measure religiosity adopted from Alam, Mohd and Hisham (2011). However, they (Alam et al, 2011) adopted six items from Rehman and Shabbir (2010). Respondents were asked to rate their level of agreement or disagreement on a seven-point Likert scale (1) strongly agree to (7) Strongly Disagree.

1) “I regularly offer prayers five times a day”
2) ”I regularly fast in the month of Ramadan”.
3) “I pay (will pay) Zakat-Fitrah every year If I meet the prescribed criterion”.
4) “I always offer Friday Namaz (Juma Namaz) regularly”.
5) “My religious beliefs lie behind my whole approach to life”.
6) “I regularly recite the Holy Quran”.
7) “I regularly read article and books about my religion”
Some previous researchers like Khan and Azam (2016) and Mukhtar and Butt (2012) have used religiosity scales in studies related to halal purchase intention. Although previous researchers have (Khan & Azam, 2016 and Mukhtar & Butt, 2012) used different religiosity scales but the operationalization is similar and comparable to the religiosity scales used in the present research.

4.8.6 Subjective Knowledge of Halal

Six items were used to measure subjective knowledge of halal as suggested by Flynn & Goldsmith (1999). 1) “I am confident in my knowledge of halal and haram” 2) “I believe that my knowledge about halal and haram is above average”. 3) “I know a lot about of halal slaughtering (zahbiah)”. 4) “I know a lot about which animals are halal” 5) “I know a lot about which animals are Haram” 6) “I have enough knowledge to differentiate between halal and haram stuff”.

Salehudin (2013) has adopted and validated these items in a study investigating switching intention for halal-labelled products in Indonesia. However, he referred these items as Halal literacy. Many other researchers have also used similar items (if not same) e.g. Shari and Arifin (2010), Awan, Siddiquei and Haider (2014). For example, Aziz and Chok (2013) used three items to measure halal awareness adopted from Shari and Arifin (2010). However, these researchers (Awan, Siddiquei & Haider, 2014, Aziz & Chok, 2013, and Shari and Arifin, 2010) called this factor as halal awareness which measures concept amalgamated in both constructs Subjective Knowledge of halal and knowledge related of halal certification and halal certified products. But this conceptualization was not suitable for the present research on Indian Muslims, as halal certified products in India still not available (with exception of one or two products).

Further, the present study assumes that knowledge about halal certification and halal certified food products among Indian consumers is not sufficient. In fact in the present survey, respondents are asked if halal certified products are made available in India, what will be their opinion.
The concept of halal awareness used by previous researchers is more suitable in countries where halal certified products/brand are already established like Malaysia, Indonesia and Pakistan etc.

4.9 Questionnaire Pre-Test

All the scales employed in the study are taken from other studies based on the theory of planned behaviour. In previous studies, these scales have exhibited sufficient reliability. However, none of the previous research on this matter has been conducted in Indian context thus in the present study it was desirable to conduct a pre-test before launching the main survey. First, the questionnaire was piloted for comprehension among respondents the researchers contacted more than a dozen of individuals and asked about their feedback on the comprehension of questionnaire statements. The wording of some items was adjusted based on the suggestions provided by the respondents. Finally, a data was gathered from 70 individuals for the purpose of the pre-test. Reliability of each construct was calculated and was found sufficient (Cronbach’s alpha > .7). Table 4.3 provides reliability statistics for the constructs used in the pretest. As all the constructs show an acceptable level of reliability, the same questionnaire was used in collecting data for the final survey.

4.10 Data Analysis

Data were analysed in three steps: in the first step, data were screened for missing values and unengaged responses, in second step measurement model and structural model, were examined and in third step test of means using t-test and ANOVA was conducted. Total 421 questionnaires were received and only 350 were found useful for further analysis after screening for missing values and unengaged responses. The reliability and validity of the measurement model were assessed using both first generation criteria and second generation criteria (Steckstor, 2011). The first generation criteria refer to following conditions: item to total correlation ≥ .5, Cronbach’s alpha ≥ .7, EFA factor loading ≥ .4 and explained variance ≥ 50%.
The second generation criteria included following condition: EVA ≥ .5, factor reliability ≥ .7, Fornell-Larcker criteria and various model fit indices. The hypotheses were tested by conducting structural equation modelling. The structural model was assessed using several fit indices criteria. CFA was used using AMOS to determine the correlation among latent constructs. In the third stage, the proposed model was tested through SEM using AMOS. Three statistical techniques were used: (1) ANOVA was used to test the differences among different demographic groups with respect to the antecedents of halal purchase intention (2) CFA was used, (3) SEM was used to estimate interrelated dependence relationships. Before using these techniques, reliability and validity of the questionnaire was checked.

4.10.1 Reliability

A measure can be consistent (reliable) and at the same time not accurate (valid) and vice versa. The reliability and validity analysis showed that the items of the questionnaire are a reliable and valid measurement tool. There are many methods of techniques for evaluating scale reliability such as test-retest and internal consistency. Out of these, internal consistency method is one of the most commonly applied methods in the area of social sciences (Malhotra, 2008). Cronbach’s alpha is a widely used technique to establish the internal consistency of scale. Churchill (1979) has suggested that Cronbach’s alpha is one of the best and most acknowledged scales to measure the reliability of a construct. Nunnally and Bernstein (1994) suggested that alpha value of 0.70 is the criterion for establishing internal consistency of the scale, while for new scale this value can be 0.60. Good reliability indicates careful wording, content and format of the instrument. Necessary steps were taken to ensure that. The questionnaire’s reliability was tested by using Cronbach’s alpha. The coefficient of alpha was computed separately for all the dimensions. A value of Cronbach’s alpha of 0.60 or more has been used as a criterion for a reliable scale (Hair et al, 2014) indicating that the items in each set are positively correlated to one another (Sekaran, 2003).
4.10.2. Validity

Validity means the extent to which any instrument measures what it is intended to measure. Validity is concerned with how well the concept is defined by the measures while reliability relates to the consistency of measures. The three utmost common types of validity considered in social science research are convergent-validity, discriminant-validity and nomological-validity (Hair et al, 2014). Convergent-validity refers to the extent to which two sub-concepts of one broad concept are correlated. On the other hand, discriminant-validity establishes that even though two sub-concepts are related, they are distinct from their own (Hair et al, 2014). Further, nomological-validity stands for the theoretical grounding of the measure. It the level or thresholds that the summated scale can accurately predicts the concepts in a theoretically based model (Hair et al, 2014). Construct Validity checks the degree to which the scale items measure the same construct. In this study, correlation analysis was done to establish construct validity. Correlational analysis checks the degree to which two items measuring the same concept are correlated. High correlation shows that the scale is able to measure the same concept it is supposed to measure (Hair et al, 2014). It is recommended that inter-item correlation should be above 0.30 (Robinson, Shaver, & Wrightsman, 1991).

Cohen (1988) recommended that correlations ranging 0.10 to 0.29 should be considered small, correlation ranging from 0.30 to 0.49 should be considered medium and correlations above 0.50 should be considered large. It is the degree to which multiple methods of measuring a variable provide the same results (O’Leary-Kelly and Vokurka, 1998).

Fornell and Larcker (1981) suggested that to establish convergent validity, the loading should be significant and AVE for each dimension should be greater than 0.50. It means the scale possess convergent validity.
Table 4.3 Reliability (Cronbach’s Alpha) of pre-test

<table>
<thead>
<tr>
<th>Construct</th>
<th>Cronbach’s Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>.89</td>
</tr>
<tr>
<td>Subjective Norms</td>
<td>.76</td>
</tr>
<tr>
<td>PBC (control)</td>
<td>.91</td>
</tr>
<tr>
<td>PBC (self-efficacy)</td>
<td>.87</td>
</tr>
<tr>
<td>Purchase Intention</td>
<td>.83</td>
</tr>
<tr>
<td>Religiosity</td>
<td>.77</td>
</tr>
<tr>
<td>Subjective knowledge</td>
<td>.76</td>
</tr>
</tbody>
</table>

4.10.3. Exploratory Factor Analysis (EFA)

In this study, EFA was employed for construct validation. There are two types of analysis in EFA – Principal Component Analysis (PCA) and Principal Factor Analysis (PFA). In this study, EFA with maximum likelihood estimation was used to check whether items of each construct load on a single construct. According to Hair et al. (2014), factor loading greater than 0.30 is considered to meet the minimal level; loading of 0.40 is considered important while loadings greater than 0.50 or greater are considered very significant. Kaiser-Meyer-Olkin (KMO) and Bartlett’s test of Sphericity were used to determine if data are likely to factor well (Malhotra, 2008). KMO specifies the degree of inter-correlations among the variables and hence the appropriateness of factor analysis. Bartlett’s test of Sphericity also measures the presence of correlations among variables. It shows that the correlation matrix obtained during EFA has significant correlations among at least some of the items.
4.10.4. ANOVA and t-test

Analysis of Variance (ANOVA) and the t-test help in understanding the structure and strength of the relationship among groups and their means. For two groups t-test is conducted and for more than two groups ANOVA is conducted. In context of present research for comparing the mean difference for significant TPB variables purchase intention, attitude, and subjective norms were conducted among demographic variables like gender, age education, income and employment. For gender, as there are only two groups t-tests were conducted. While for other demographic variables which have more than two groups one way ANOVA was conducted.

4.10.5. Confirmatory Factor Analysis

There are two main types of factor analysis used in social science research: Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). EFA is used to reveal the underlying structure of a large set of variables establishing links between variables that are unknown. CFA determines if the number of factors and loadings of measured variables on them conforms to what is expected on the basis of pre-established theory. CFA tests how good or bad the measured variables represent a smaller number of the construct (Albright and Park, 2009). It helps the researcher to test a prior factor structure based on established theory or questionnaire. The measurement model tests model fit through several steps. First, the model is specified by the researcher. The researcher first sets assumed a relationship between variables based on past research. Then the other step is to check model identification. The model is called as under identified if the number of parameters not known which are to be assessed is smaller than the available pieces of information provided. Likewise, the model is called as over identified if the number of parameters not known which are to be assessed is greater than the available pieces of information provided.

Then in model estimation, it is checked if the covariance matrix is close to sample’s covariance matrix or not. There are different functions for determining how much related is implied covariance matrix to the sample covariance matrix. There are various estimation methods. Out of these methods, Maximum Likelihood Estimation
MLE) is the most widely used (Albright and Park, 2009). Therefore in this study, MLE was applied to appreciate the overall model fit with many ‘Goodness of fit’ indices. After model estimation, model evaluation takes place. After getting the values of parameter estimation, the ‘model fit’ should be evaluated and compared with the suggested fit indices (Hair et al, 2014).

Assessing whether the proposed model under examination fits the data well is one of the most important actions in CFA as well as SEM (Yuan, 2005). There are different fit indices which reveal various aspects of model fit. Therefore it is important to report a variety of indices. McDonald and Ho (2002) in a review reported that the most commonly reported fit indices are CFI, NFI, GFI, and NNFI. Kline (2010) and Hayduk, Cummings, Boadu, Pazderka-Robinson, and Boulianne (2007) stated that chi-square value, as well as the degrees of freedom related p-value, should be always be reported. GFI and CFI values >.95 indicate good fit while values >.90 constitute acceptable fit (Medsker et al, 1994). For RMSEA, the values < 0.05 mean good fit, 0.05 to 0.08 mean acceptable fit while values between .08 to .10 represent marginal fit and >.10 poor fit (Brown and Cudeck, 1992). The recommended value of fit indices are given in table 4.5

4.10.6. Structural equation modelling
SEM is an advanced multivariate statistical process in which the researcher can hypothesize and test a theoretical model and the associated relationships. It takes into consideration the measurement errors and direct and indirect effects of variables on one another. An exogenous construct is an independent construct which is not affected by any other construct in the model. While endogenous construct is a dependent variable which is affected by other constructs in the model (Hair et al, 2014). A latent construct is one which can be measured by one or more variables. The latent constructs were identified based on literature review. Each construct had a minimum of 4 items (PBC-SE and PBC-Control) and a maximum of 7 (Purchase intention and Religiosity) items. The assessment of model fit is an important point in SEM. There are a number of fit indices such as RMSEA, GFI, AGFI, CFI and NFI. RMSEA is the most commonly reported indices introduced by Steiger and Lind.
(1980, cited in Steiger, 1990). AMOS user’s guide (2011) suggested that RMSEA of about 0.05 or less indicate a close fit. CFI evaluates the fit of a user-specified solution in relation to a more restricted, nested baseline model where covariance among all input indicators are fixed to zero or no relationship among variables is posited (Brown, 2006). CFI ranges from 0 and 1. Zero indicates poor fit while 1 indicates good fit.

**Table 4.4 First generation criteria for the Assessment of EFA, Reliability, Validity**

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Cut-off Value</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Item-to-total-correlation</td>
<td>≥.5</td>
<td>Bearden et al. (1989)</td>
</tr>
<tr>
<td>Cronbach’s</td>
<td>≥.7</td>
<td>Nunnally and Bernstein (1994)</td>
</tr>
<tr>
<td>Factor Loading</td>
<td>≥.4</td>
<td>Sekaran &amp; Bougie (2016)</td>
</tr>
<tr>
<td>Explained variance</td>
<td>≥50 %</td>
<td>Hair et al (2014)</td>
</tr>
<tr>
<td>KMO</td>
<td>≥0.60</td>
<td>Hair et al (2014)</td>
</tr>
</tbody>
</table>

**Table 4.5 Second generation criteria for reliability, validity and Model-Fit**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Cut-off Value</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indicator reliability (IR)</td>
<td>≥.4</td>
<td>Bagozzi and Baumgartner (1994)</td>
</tr>
<tr>
<td>Factor reliability (FR)</td>
<td>≥.6</td>
<td>Bagozzi and Yi (1988, p.88)</td>
</tr>
<tr>
<td>Average variance extracted (AVE)</td>
<td>≥.5</td>
<td>Fornell and Larcker (1981)</td>
</tr>
<tr>
<td>Fornell-Larcker-criterion</td>
<td>AVE &gt; squared correlations of the factor with other factors</td>
<td>Fornell and Larcker (1981)</td>
</tr>
<tr>
<td>RMSEA</td>
<td>≤.06</td>
<td>Hu and Bentler (1999)</td>
</tr>
<tr>
<td></td>
<td>≤.05 - .08</td>
<td>Browne and Cudeck (1993)</td>
</tr>
<tr>
<td>Chi²/df-ratio</td>
<td>≤3</td>
<td>Hair et al. (2014)</td>
</tr>
<tr>
<td>CFI</td>
<td>≥.9</td>
<td>Hair et al. (2014)</td>
</tr>
</tbody>
</table>