Chapter 3

Methodology

3.1 INTRODUCTION

This chapter discusses methodology adopted for this research study. This chapter contains 3.2. Research Design, 3.3. Survey instrument 3.4. Pilot Study 3.5. Data Analysis Plan, 3.6 Operational definitions.

3.2 RESEARCH DESIGN

The research design is “the blueprint for fulfilling objectives and answering questions” (Cooper and Schindler, 2003, p. 83). A descriptive research method was adopted for this research study. A descriptive study is defined as “the research is concerned with finding out who, what, where, when, or how much” (Cooper and Schindler, 2003, p. 127). In this research study, the descriptive research will provide an understanding on the relationship between characteristics of smartphone users towards mobile shopping through apps. In order to achieve this, a quantitative survey was carried out with a structured questionnaire.

Quantitative method will “answer questions related to how much, how often, how many, when and who” (Cooper and Schindler, 2014, p. 146). The quantitative is usually adopted to measure consumer behaviour, knowledge, opinions and attitudes. If the goal of the research is to empirically test the existing theory, then quantitative method would be an appropriate approach (Cooper and Schindler, 2014, p. 146). One of the objectives of this research study is to compare existing theories (i.e. UTAUT2 models), so quantitative method would be appropriate. In this study, quantitative survey was carried out.
3.2.1 SAMPLING DESIGN AND DATA COLLECTION PROCEDURE

3.2.1A SAMPLING METHOD

This research uses non-probability sampling method. Nonprobability is a subjective approach wherein the samples are drawn from unknown populations (Cooper and Schindler, 2014, p. 358). According to Sekaran (2003) “under non-probability sampling technique, the elements in the population do not have any probabilities attached to there being chosen as sample subjects and helps research to obtain information in a quick and inexpensive way”. The researcher of this study chose non-probability sampling because probability sampling was not feasible (i.e. there is no proper data on known population). The present study employed purposive sampling technique. When “the sampling is confined to specific types of subjects who can provide the desired information, either because they are the only ones who have it, or conform to some criteria set by the researcher” is called purposive sampling (Sekaran, 2003, p. 277). Majority of mobile app technology adoption studies (such as Groß, 2015a; Hew et al., 2015) used purposive sampling method in order to gather the desired information required for their research objective and to have proper response rate. The reason for selecting the purposive sampling is because, the researcher has set certain criteria that the subjects of the study need to meet. These criteria are, a specific set of people (gender, age, experience, and profession) who own smartphone(s), have installed and used mobile shopping apps at least once are the target respondents of the survey. For instance, in this research people who have experience in shopping through smartphone shopping application can only provide good information for research. The criteria of the respondents chosen for the study are explained further, below,

- The samples must have smartphones, an active user of 2G/3G/4G internet, understanding of mobile shopping app and must have installed and used it at least once through their smartphone.
- The sample must consist of users of specific shopping apps (such as Flipkart, Amazon, HomeShop18, Myntra, PayTm, e-bay, SnapDeal, Jabong and ShopClues).
• The respondent must be from one of the three following professions, I.) Information Technology Employees, II.) Academic Professors, III.) Banking Sector Employees. These professions are chosen based on the existing literature support (Al-Debei and Al-Lozi 2014; Kim et al., 2007, Baabdullah et al., 2014; Chen and Lauffer, 2009; Harris et al., 2016; Son et al., 2012).

3.2.1B SAMPLING UNIT SELECTION

The present study had a distinctive set of respondents as its target sampling units. These respondents were classified based on their previous experience with the mobile shopping app and Profession. The care was taken while selecting the respondents. Those respondents who had smartphone, belonging to one of the three professional categories (i.e. Information Technology, Academic and Bank employees), residing at Bengaluru and have used shopping apps at least once were the prime targets of the study. The study is of cross-sectional in nature, wherein the data collected was a snapshot of one particular frame of time, hence can’t be used for longitudinal inferences (Cooper and Schindler, 2003, p. 128).

From the list of top five Indian metropolitan cities with a high percentage of smartphone shopping app users were identified. According to Google and Forrester Report (2015) report on smartphone shopping app users states that Mumbai, New Delhi, Pune, Hyderabad and Bangalore. Among these five cities, Bengaluru city was chosen. Within Bengaluru, a second round of sample segregation took place in the form of the profession of the respondents. Professionals from the banking sector, information technology sector, and education sector were considered. Next, the chosen samples were filtered for experience with the mobile shopping app. Only those respondents, who have used a mobile shopping app at least once were considered for the final survey. For instance, in this research people who have experience in shopping through smartphone shopping application can only provide good information for research, hence preferred.

3.2.1C REGION OF THE STUDY

Bengaluru city was chosen as an area of the study because it is one of the top five metro cities in India, where the mobile shopping is carried out in large number as per the joint report of Google and Forrester research (2015). Bengaluru is a metropolitan city.
which is a capital of Karnataka state in southern India. It is India’s largest Information Technology (IT) exporters and also called as “Silicon Valley of India”. It is the fourth largest contributor of Gross Domestic Product (GDP) for India. It has a mix of various cultures in its population, where people come to work, education, business, etc. from different parts of India and speak many different languages. In conclusion, it can be considered that the Bengaluru city has a diversified society (heterogeneous society). The major reasons for targeting information technology (IT), Academic Professors (ACAD) and banking professionals (BANK) is based on assumptions that they will have an i.) Basic knowledge in English (i.e. the majority of the interviews that are conducted in Bengaluru city for professional job recruitment are in English language), ii.) Will have some minimum income (i.e. profession working in IT, BANK and ACAD will have a decent income through which they can afford to buy smartphone and use internet technology). Nevertheless, the respondents who do not have smartphones and previous m-shopping app experience were eliminated from the final survey.

3.2.1D SAMPLING SIZE DETERMINATION AND DATA COLLECTION

The present study utilizes a non-probability sampling method, as such methods do not have any specific formula when it comes to sample size determination. This is a tricky situation, since the researcher wants to use the outcome of the study for generalization purpose in varying contexts. To achieve this, an alternative method of sample size determination was achieved with the help of the lower bound sample size formula. This method is appropriate when the researcher wants to carry out structural equation modelling (SEM) analysis in a sample that is of unknown size. This formula was proposed by Cohen (1988), which was further refined by Westland (2010). Cohen (1988) and Westland (2010) framed a formula for the minimum sample size to carry out SEM analysis. As per Cohen (1988) and Westland (2010) formula for 16 variables (PE, EE, ISI, ESI, FC, HAB, HM, PV, PINNO, TRST, PR, MSE, FLO, INVLAPP, INVELE, BI and USE), for 74 items and for probability level of 0.05 the minimum sample size obtained was 89.

A self-administered Likert scale questionnaire was prepared and distributed through booklet form. A total of 800 questionnaires were distributed of which only 600 responded, in which, only 572 was usable. The data of 572 samples were collected from
IT employees, Academic professors and Bank employees of Bengaluru city in south India. The data were collected from the time period of September 2015 to April 2016. The error function formula and lower bound sample size formula was shown in next page.

Error function formula:

\[
erf(x) = \frac{2}{\sqrt{\pi}} \int_0^x e^{-t^2} dt.
\]

Lower bound sample size formula for a structural equation model:

\[
n = \max(n_1, n_2)
\]

where:

\[
n_1 = \left[ 50 \left( \frac{j}{k} \right)^2 - 450 \left( \frac{j}{k} \right) + 1100 \right]
\]

\[
n_2 = \left[ \frac{1}{2H} \left( A \left( \frac{\pi}{6} - B + D \right) + H + \sqrt{ \left( A \left( \frac{\pi}{6} - B + D \right) + H \right)^2 + 4AH \left( \frac{\pi}{6} + \sqrt{A + 2B - C - 2D} \right) } \right) \right]^2
\]

\[
A = 1 - \rho^2
\]

\[
B = \rho \arcsin \left( \frac{\rho}{2} \right)
\]

\[
C = \rho \arcsin (\rho)
\]

\[
D = \frac{A}{\sqrt{3 - A}}
\]

\[
H = \left( \frac{\delta}{z_{1-\alpha/2} - z_{1-\beta}} \right)^2
\]

Sources: Cohen (1988) and Westland (2010)

where \( j \) is the number of observed variables, \( k \) is the number of latent variables, \( \rho \) is the estimated Gini correlation for a bivariate normal random vector, \( \delta \) is the anticipated effect size, \( \alpha \) is the Sidak-corrected Type I error rate, \( \beta \) is the Type II error rate, and \( z \) is a standard normal score.

3.3 SURVEY INSTRUMENT

The measuring instrument of this study consists of five parts.

a.) The first part consist of description of mobile shopping apps with images and five questions related to smartphone and mobile shopping app usage such as [(i) Are you a
smartphone user?, (ii) which brand of smartphone are you using?, (iii) Do you use mobile internet data (2G/3G/4G) regularly?, (iv) Have you ever shopped through mobile apps (Amazon, Flipkart, Snap deal, e-Bay etc.)?, and (v) have you installed the mobile shopping apps on your smartphone?] and mobile shopping app usage experience was also asked.

b.) The second part consist of demographic profile wherein question on gender, age, profession, income and qualification were asked.

c.) The third part consists of questions about personal involvement level towards the product (electronic gadgets and apparels), the ten items of personal involvement level towards electronic gadgets (INVELE) and the ten items of personal involvement level towards apparel products (INVAPP) were adapted and modified from Zaichkowsky (1994). The revised scale of Zaichkowsky (1994) consists of ten items of which first five items (such as (i) interesting, (ii) appealing (iii) fascinating (iv) exciting and (v) involving (vi) important, (vii) relevant, (viii) valuable, (ix) means a lot to me, and (x) needed). A five-point Likert scale was used to measure all the items. Likert scales were used because they are more “reliable and provide a greater volume of data than many other scales” (Cooper and Schindler, 2003, p. 128). Wherein “1” is considered as strongly disagree, “2” is considered as disagree, “3” considered as neutral, “4” considered as agree and “5” considered as strongly agree.

d.) The fourth part consist of questions about performance expectancy (PE) (three items), effort expectancy (EE) (four items), interpersonal social influence (ISI) (three items), facilitating conditions (FC) (four items), hedonic motivation (HM) (three items), price value (PV) (three items), habit (HAB) (three items) and behavioural intention (BI) (three items) all the items were adapted and modified from Venkatesh et al (2012) and Use Behaviour (USB) (three items) were adapted and slightly modified from Groß (2015).

e.) The fifth part consist of questions about external social influence (ESI) (four items) that were adapted and modified from the studies of (Hsu and Chiu, 2004; Bhattacherjee, 2000; Yul, 2014). Mobile application self-efficacy (MSE) (four items) were adapted and modified from the studies of (Yul, 2014 and Agarwal et al., 2000). Trust (TRST) (six items) were adapted and modified from the studies of (Wei et al., 2009; Chong et al., 2012). Perceived risk (PR) (four items) were adapted and modified from the study
of (Wu and Wang, 2005). Flow (FLO) (three items) were adapted and modified from (Bilgihan et al., 2015; Huang, 2006; Korzan, 2003) and Personal innovativeness (PINNO) (four items) were adapted and modified from the study of Lu et al (2005). The ‘Trialability’ (TRI) construct which was used in an extended UTAUT2 model of Slade et al (2014) was not considered for the current study. This is because, all the respondents of the current research were users of mobile shopping app or have used the mobile shopping app before. Hence this measure becomes invalid for this study. A total of 74 items were adapted and was used for measuring the intended constructs. The research instrument uses five-point Likert scale wherein “1” is considered as strongly disagree, “2” is considered as disagree, “3” considered as neutral, “4” considered as agree and “5” considered as strongly agree. In a scenario like this, a pretesting is highly recommended for the adapted questionnaire (Cooper and Schindler, 2003, p.315). Clear instructions were given using simple and polite language so that respondent can easily understand and answer properly (Cooper and Schindler, 2003, p. 320). Pre-test of the questionnaire was done with 143 samples.

3.4 PILOT STUDY

The measuring instrument was first sent to senior professors of business management department of a private university for rectifying any shortcomings. After verifying the questionnaire with senior professors, a pilot study was conducted to make sure whether the measuring constructs have proper reliability, validity and simple in understanding to further carry out further research. The pilot study’s results showed that both reliability and validity of research instruments were adequate. This prompted the researcher to proceed with the final survey using the research instrument.

3.5 DATA ANALYSIS PLAN

Data will be analysed using Statistical Package for Social Science (SPSS) 22.0, Smart PLS and R programming language softwares. To bring out socio-demographic details SPSS software will be used. To test out reliability, validity and path analysis Smart PLS will be used. The multigroup analysis will be done using R software. The complete details about data analysis are discussed in Chapter 4.
3.6 OPERATIONAL DEFINITIONS

- Performance expectancy is defined as “the degree to which using a mobile shopping app technology will provide benefits to consumers in performing shopping activities”.

- Effort expectancy is defined as “the degree of ease associated with consumers’ use of mobile shopping app technology”.

- Internal social influence is defined as “the extent to which consumers perceive that important others (e.g., family and friends) believe they should use a mobile shopping app technology for shopping”.

- “When consumers adopt mobile shopping app through the influence of mass media reports (such as newspaper, magazines, press board, Print ads, Digital ads, social media ads etc.), expert opinions (expert blogs, experts online forum etc.), and other forms of non-personal information is called External social influence”.

- Facilitating condition is defined as “consumers’ perceptions of the resources (Possession of smartphone) and support (fund for internet data service, shopping app supported device) available to perform shopping through mobile app”.

- Hedonic motivation is defined as “Hedonic motivation is defined as the fun or pleasure derived from using a mobile app for shopping”.

- Habit is defined as “the extent to which people tend to use mobile shopping app automatically for shopping purposes because they possess the knowledge about the shopping apps”.

- Price value is defined as “consumers’ cognitive trade-off between the perceived benefits of shopping through mobile apps and the monetary cost for using them”.

➢ Trust is defined as “whether users are willing to allow their interactions freely with the mobile shopping apps after considering their characteristics in security aspects (such as security on maintaining personal and transactional data’s without any breach).

➢ Perceived risk refers to “certain types of financial, product performance related, social, psychological, physical, and or time related risks associated with consumers when making use of mobile shopping app for transactions”.

➢ Personal innovativeness in information technology (PINNO), which is defined as the “willingness of an individual to try out mobile shopping app technology without any hesitation”.

➢ Mobile self-efficacy is defined as “individual’s feeling of self-efficacy relative to mobile shopping app in specific”.

➢ Flow experience is defined “a state of mind sometimes experienced by people who are deeply involved in app during shopping to such an extent that they are completely and totally immersed in it”.

➢ Involvement towards electronic gadgets is defined as “A person’s perceived relevance of electronic gadgets based on his/her inherent needs, values and interest”.

➢ Involvement towards apparel products is defined as “A person’s perceived relevance of apparel products based on his/her inherent needs, values, and interest”.