Chapter -3
Research Methodology

3.1 Introduction
Smartphone applications are definitely the future to all the spheres. It is an extremely innovative and impressive technology which has started facilitating large proportion of population in their personalized needs and wants. It presents with new challenges and opportunities for the business community, economy, government and consumers.

The focus of this research is to check out the consumer behaviour of smartphone application users of Gujarat. The literature review highlighted gaps in the research relating to consumer behaviour of smartphone application users in Indian context specially targeting state of Gujarat. This study aims to fill up the same gaps and investigate consumer behaviour of smartphone application users, which includes Awareness of Smartphone apps, Adoption of Smartphone apps, Usage pattern of Smartphone apps, Preference of Smartphone apps, Innovation in Smartphone apps and Impact of Smartphone apps. Now that this focal point has been laid out clearly, this chapter deals with research methodology employed in this research thesis.

Research involves formulating the problem to be investigated, selecting a suitable research design, choosing and applying appropriate procedures for data collection, and analysing and communicating the process and findings through a written report. Research methodology is a way to systematically solve the research problem.

3.2 Objectives of Research
This research studies the Consumer behaviour of Smartphone application users of Gujarat. Therefore, research objectives identified through in-depth study of academic literature dedicated to Smartphone application field are as follows:
1. To study awareness level about Smartphone applications.
2. To study factors influencing awareness level of Smartphone applications by the users.
3. To study the motives behind adoption of Smartphone applications by customers.
4. To identify and analyze factors influencing wide adoption of Smartphone applications by customers.
5. To study the usage pattern of the Smartphone users.
6. To identify which category is maximum preferred category of the Smartphone users.
7. To identify satisfaction level of customers in the usage of Smartphone applications.

3.3 Statement of Hypotheses

Research objectives identified requires to be tested through following hypotheses in order to achieve results:

H1₀: Preference for Smart phone operating system is independent of demographic factors.
H1₁: Preference for Smart phone operating system is dependent on demographic factors.

H2₀: Preference for Smart phone operating system is independent of awareness of smartphone applications.
H2₁: Preference for Smart phone operating system is dependent on awareness of smartphone applications.

H3₀: Awareness of smart phone application is independent of demographic factors.
H3₁: Awareness of smart phone application is dependent on demographic factors.

H4₀: Influencing Factor for Using/downloading smart phone application is independent of demographic factors.
H4₁: Influencing Factor for Using/downloading smart phone application is dependent on demographic factors.

H5₀: Preference for payment method is independent of demographic factors.
H5₁: Preference for payment method is dependent on demographic factors.
H6\(_0\): Correlation between adoption and satisfaction of smartphone applications is not significant.
H6\(_1\): Correlation between adoption and satisfaction of smartphone applications is significant.

H7\(_0\): There is no significant difference between daily users and non-daily users in factor affecting adoption of smartphone application.
H7\(_1\): There is significant difference between daily users and non-daily users in factor affecting adoption of smartphone application.

H8\(_0\): There is no significant difference between daily users and non-daily users in factor affecting satisfaction of smartphone application.
H8\(_1\): There is significant difference between daily users and non-daily users in factor affecting satisfaction of smartphone application.

H9\(_0\): There is no significant difference between factor affecting adoption of smartphone and demographic factors of respondents.
H9\(_1\): There is significant difference between factor affecting adoption of smartphone and demographic factors of respondents.

H10\(_0\): There is no significant difference between factor affecting satisfaction of smartphone and demographic factors of respondents.
H10\(_1\): There is significant difference between factor affecting satisfaction of smartphone and demographic factors of respondents.

### 3.4 Research Approach

#### 3.4.1 Inductive versus Deductive

There are two types of research approaches\(^1\): inductive and deductive. Deductive research is the process of delivering a conclusion from a known premise or something known as true. Inductive research is the systematic process of establishing a general proposition based on observation or particular facts.

Inductive approach typically moves from specific observations to broader generalisations and theories. The researchers may begin with specific observation and measures, to detect patterns and regularities, and then formulate some tentative hypothesis that they can explore. They might end up by developing some general conclusions or theories. In contrast, a Deductive approach commonly works from more general to more specific. Researchers might begin by examining theories related to their topic of interest. Then, they narrow down those

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theories to more specific research questions or hypotheses for testing and try to answer questions or confirm hypotheses through a number of research methods, mainly in quantitative order to generalise the findings. The researcher has undertaken both inductive and deductive attitude providing a deeper insight, than would be possible with merely any one amongst them.

3.4.2 Qualitative versus Quantitative
Between the two major research methods – qualitative and quantitative, for this research, widely the quantitative approach is used. Only for the purpose of understanding the innovative research topic the study uses qualitative approach. Qualitative approach was useful to understand factors relating to complex relationship between: consumer and smartphone application. Researcher has taken base of different reliable models to test the technology innovations.

3.5 Research Design
3.5.1 Research Method
Research methods applied for this study are both Exploratory and Descriptive methods. The study opt for exploratory research method due to little empirical research and prior knowledge of existence of the relation between smartphone application and consumer behaviour. Exploratory method involved survey of literature on smartphone application and consumer behaviour. Descriptive research studies are concerned with describing the characteristics of a particular individual, or of a group. It is useful to obtain information concerning the status of the phenomena to describe, “What exists” with respect to variables or conditions in a situation. This research deals with describing the characteristics of consumers who use smartphone application and their Awareness of smartphone application, Adoption of smartphone application, Usage pattern of smartphone application, Preference of smartphone application and satisfaction been derived from Smartphone application. Hence, descriptive research method is most appropriate for the given study.

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3.5.2 Data Collection Methods

There are two types of methods for data collection – Primary and Secondary. Primary data collection method involves collecting first-hand information through observation, interviews or questionnaires. While, Secondary data collection method includes both – raw data and published sources such as journals, database, transcripts, books, etc.

Primary Data: This study involves both data collection methods. Primary data collection helped to get fresh information directly from the smartphone application users, to study their awareness of smartphone application, adoption of smartphone application, usage pattern of smartphone application, preference of smartphone application and satisfaction from use of smartphone application. Primary data for this research was collected through self-designed structured questionnaire in both the form real and virtual.

Secondary Data: Through smartphone application business is in its emerging stage and a very recent occurrence, the study has also been supported by secondary data which involves scholarly research studies, books, articles, journals, transcripts, white papers, Government and other official websites and various other data from reliable sources. Every secondary source is cited wherever it is used as well as in the bibliography section.

3.5.3 Data Collection Instrument - Questionnaire Design

The questionnaire contains total 11 “Close-ended” and “open-ended” questions (Annexure - I). Questions vary in types such as Dichotomous, Multiple Choice, Likert Scale Rating and Ranking in order to collect desired information. From Q.no.1 to 10 respondents were asked questions regarding smartphone application which can be listed for explanation as follows: regarding operating system, awareness of smartphone apps, influencing factors for downloading smartphone apps, adoption of smartphone apps, preference of smartphone application categories, frequency of use of apps, preference for place/ occasion of using apps, spending willingness on apps, mode of payment and satisfaction derived from smartphone apps respectively. Last part of the questionnaire (question 11) is regarding the demographics of the respondent like Gender, Age group, Monthly Income slab, City, Education, Occupation.
3.5.4 Target Population and Sampling Design

3.5.4.1 Target Population

“Smartphone application users” are considered as target population for this research because it is pre-requisite to have Smartphone for using Smartphone application. Again, the population narrows down to one single state of India, i.e. Gujarat.

3.5.4.2 Sampling Design

According to the target population, the “sampling units” of this study are “smartphone Users of Gujarat State”. Gujarat state has a population of 65.1 million according to 2015 census report⁴. According to renowned agency in web world called DNA agency, nearly 96.38 lakh people are accessing internet on their mobile phones⁵. These figures indicate the large population size. In addition, recent trend indicates that more and more people access internet and smartphone applications.

To obtain a representative sample, convenience sampling method is undertaken in the major cities⁶ of Gujarat i.e. Ahmedabad, Vadodara, Anand, Surat, Rajkot, and Bhavnagar. The sample size of the research is 800 respondents. Total 800 questionnaires were received; out of which 10 questionnaires were discarded due to incomplete and irrelevant responses and final sample size of the study is 790 respondents using smartphone applications. Out of 800 responses, 697 samples were gathered through offline methods like meeting people face to face, and rest 103 samples responded through online channels. In online method, the questionnaire was uploaded on websites like Goggle Docs. The link was shared on social media sites like “Facebook”, and smartphone “communication applications” such as “watsapp” and “hike”, which helped in collection of real – time responses through digital word of mouth.

3.6 Pilot Study

A pilot study was undertaken to validate the effectiveness of research instrument, i.e. self-designed Questionnaire, and to validate the questions to elicit right information to answer the primary research questions. The main objective of conducting a pilot study was to get

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feedback. A sample of 30 respondents, contacted through survey method, was considered as pilot survey for this study. The responses received through pilot study were utilized for making necessary improvements in the questionnaire. Questionnaire was also carefully examined and reviewed by research Guide, professors and research experts. Hence, the pilot study ensured the reliability and validity of the research instrument as well as the research methods and processes.

3.7 Scope of the Study

This study focuses on the influence of Smartphone application users of Gujarat State. Hence, the coverage of this study is limited to a single state of India – i.e. Gujarat. The findings also focus on characteristics and behaviour of consumers of Gujarat alone. It may differ in case of other geographical areas.

The scope of this study is to identify the importance of Smartphone applications from view point of Smartphone Industry. It will also provide necessary changes in order to accelerate number of users of smart phones. Proposed study determines smartphone application’s usage of consumers of Gujarat. Study identifies level of awareness, adoption motives, usage patterns, willingness to pay for smartphone application, mode of payment, preferences and satisfaction of users of smartphone applications. It also incorporates user’s expectation and suggestions for improvement in services offered by the developers of Smartphones applications. In general, “Who” are the users of Smartphone applications across the state, “What” are their activities, “Where” and “How” they are using Smartphone applications is incorporated in this study. Hence, with the help of available literature review and primary data collection the study outlines general behaviour of Smartphone application users of Gujarat.

The “time frame” allotted limits the scope for the study, nevertheless, this study will be helpful to organizations functioning in Gujarat and India and the Government of Gujarat and India to understand how the population of the state uses smartphone applications. In-return it will help them utilize smartphone applications for their marketing efforts. It will also provide a good literature review for other studies carried out in the area of smartphone applications field and consumer behaviour.
The aim of this chapter was to outline the methodology applied in this study. It presented research objectives and hypothesis for testing those objectives. The study is exploratory and descriptive in nature, adopts both inductive & deductive research approaches as well as uses quantitative & qualitative data for the study of variables. The study uses both primary and secondary data collection methods with the help of online and offline methods. Target population for the study is smartphone Users of Gujarat State and sampling units are “Smartphone application users of Gujarat State”. Study uses convenience sampling techniques, to achieve desired sample size. Careful attention has been given to create high reliability and validity in the study. An in-depth data analysis and interpretation will follow in the subsequent chapters.