CHAPTER -THREE

RESEARCH METHODOLOGY

DETAILED CONTENT

PARA NUMBER		PARTICULARS	PAGE NUMBER
		EXECUTIVE SUMMARY OF CHAPTER THREE	168
3.0:		A BRIEF ABOUT THE RESEARCH STUDY	169
3.1		KEY TERMS OF THE PROPOSED RESEARCH STUDY	170
	3.1.1	Mobile Commerce	170
	3.1.2	Perceived Usefulness	170
	3.1.3	Perceived Enjoyment	170
	3.1.4	Trust	171
3.2		RATIONALE OF THE RESEARCH STUDY	171
3.3		SCOPE AND COVERAGE OF THE RESEARCH STUDY	171
3.4		RESEARCH PROBLEM OF THE RESEARCH STUDY	172
3.5		RESEARCH QUESTIONS	172
3.6		OBJECTIVES OF THE RESEARCH STUDY	173
3.7		AN ILLUSTRATIVE LIST OF HYPOTHESES OF THE RESEARCH STUDY	174
3.8		RESEARCH DESIGN OF THE RESEARCH STUDY	176
3.9		RESEARCH METHODOLOGY	176
	3.9.1	Sources of Information	176
	3.9.2	Secondary Data	176
	3.9.3	Primary Data	176
	3.9.4	Research Instrument used in the Research Study	176
3.10		SAMPLING DECISIONS	177
	3.10.1	A Representative Sample of the Research Study	177
	3.10.2	Sampling Design	177
	3.10.3	Sampling Method	177
	3.10.4	Sampling Frame	177
	3.10.5	Sample Size Determination	177
	3.10.6	Sampling Media	177
	3.10.7	The Sample Size of the Research Study	177
	3.10.8	Sample Size Determination	177
	3.10.9	Formula for determining Sample Size	178
	3.10.10	Calculation of Sample Size	178

PARA NUMBER		PARTICULARS	PAGE NUMBER
3.11		MODEL USED IN THE RESEARCH STUDY	179
	3.11.1	Instant Connectivity	179
	3.11.2	Mobile Features	180
	3.11.3	Independent Variables	180
	3.11.4	Mediating Variables	180
	3.11.5	Dependent Variables	180
3.12		DRAFTING OF RESEARCH INSTRUMENT OF THE PROPOSED RESEARCH STUDY	181
3.13		TEST OF NORMALITY OF THE DISTRIBUTION:	183
3.14		RELIABILITY OF RESEARCH INSTRUMENT USED FOR MEASUREMENT OF INFLUENCES OF MOBILE APPLICATIONS' QUALITY AND SMARTPHONES' ATTRIBUTES ON SELECTED MOBILE SHOPPERS' SHOPPING INTENTION	183
	3.14.1	Validity Test of the Structured Questionnaire	184
3.15		KMO and Bartlett's test	185
3.16		DATA ANALYSIS & INTERPRETATION OF THE PROPOSED RESEARCH STUDY	185
3.17		SIGNIFICANCE OF THE PROPOSED RESEARCH STUDY	185
3.18		LIMITATIONS OF THE PROPOSED RESEARCH STUDY	186
3.19		SELECTED REFERENCES	186

CHAPTER -THREE

RESEARCH METHODOLOGY

EXECUTIVE SUMMARY OF THE CHAPTER NUMBER THREE:

This chapter is mainly devoted to offer brief explanation on the various procedural aspects followed in the conduct of this research study which is used in the writing and submission of the Ph.D. Thesis called as research methodology. This chapter includes the basic infrastructure on which Ph.D. Thesis is written and organized and consists of various procedural steps and methodological aspects viz., the basic terms of the research study, rationale of the research study; scope and coverage of the research study; research design of the research study; objectives of the research study; research questions of the research study; hypotheses of the research study; sources of secondary data; sampling decisions; conceptual model developed and used in the conduct of this research study; collection, analysis and interpretations of the primary data to offer results of the research study as well as findings and implications of the research study along with set of recommendations and suggestions including limitations of the research study along with directions for future researchers to conduct researches in near future.

The chapter number three also provides details about the drafting of the structured non-disguised questionnaire based on in-depth review of literature required to compose the questionnaire. It has offered details on the reliability and validity of the structured questionnaire based on the primary data collected for the pilot study that was conducted in the Vadodara city of the Gujarat State. It consists of estimation and computation of sample size determination of this this research study. It has also shared information on the normality test that was conducted to identify the distribution of the primary data that were collected in this research study. The researcher has also provided organization of the Ph.D. Thesis in form of Chapterisation scheme followed in writing and submission of the Ph.D. Thesis.

CHAPTER -THREE

RESEARCH METHODOLOGY

3.0: A BRIEF ABOUT THE RESEARCH STUDY:

We are living in the era of information technology. Customers scrutinize various options in the products or services before they are buying or availing with the help of information available online. Smartphones are helping them to make good choices at the fingertip. It was made possible to the m-shoppers only through the magic of smartphones with good Internet data enabled. The smartphones efficiency determines the usage of it for the mobile shopping. Smartphones without any lagging issues, sturdy, solid, good sustainability and reliability increases the chances of using smartphone for mobile shopping.

M-shoppers are having multiple options while it comes to choosing the mobile shopping applications. There are a lot of shopping applications available in the play store & app store. M-shoppers can choose the mobile shopping applications for online shopping. As m-shoppers are going to be spending their hard-earned money, they would like to use the mobile shopping applications that are trustworthy and reliable. Apart from the trust factor, the user friendliness of the mobile shopping applications, the availability of the products, comparing facility, approachability of the sellers, and mobile applications layout all play important role in m-shoppers' choice (Mingyung, et al., 2017)[1].

An attempt has been made in this chapter to discuss in brief the various procedural aspects of the research methodology in lieu of research conducted has been discussed in this chapter. The researcher had selected the four major cities in the State of Gujarat viz., Vadodara, Ahmedabad, Surat and Rajkot. An effort has been made by the researcher to explain in brief the research process followed in conduct of this research study and the methods adopted to infer the information from the data analysis of the primary data collected from the smartphone users across the selected cities in the State of Gujarat.

This research study was designed & conducted to find out the relationships or association or linkages of the selected attributes of the smartphone and the quality of mobile shopping applications in m-shoppers' shopping and or buying behavior, among the smartphone users in the selected cities viz., Vadodara, Ahmedabad, Surat and Rajkot in the State of Gujarat.

The findings of the research study would be useful for both Smartphone manufacturers and the developers of the mobile shopping applications. Smartphone manufacturers can produce and suitably customize its design and features of the smartphones as per the valuable input feedback and suggestions received from the m-shoppers. Mobile applications developers can design the mobile shopping applications considering the expectations of the m-shoppers with related to its perceived usefulness, perceived enjoyment, Price Perception and trust.

In this research study, an attempt was made to examine the expectation & experience of Smartphone users 'with reference to attributes of Smartphones and shopping applications that leads to mobile shopping using smartphones and plays crucial role in influencing their m-shopping intentions, and further continuation of m-shopping and recommendation to other mobile shoppers in near future.

3.1: KEY TERMS OF THE PROPOSED RESEARCH STUDY:

The key terms of the proposed research study have been explained in brief as follows.

3.1.1: Mobile Commerce:

The catchy word m-commerce or mobile commerce was initially coined in the year 1997 by Kevin Duffey at the inauguration of the Global Mobile Commerce Forum, to indicate that the delivery of electronic commerce capacities directly into the customer's hand, anywhere, via the technology of wireless. Several prefer to consider Mobile Commerce as meaning a retail outlet in the customer's pocket. Kevin Duffey (1997)[2] brought in a new terminology called as "Mobile Commerce" at the forum of "Global Mobile Commerce" and he has given explanation about mobile commerce as "the delivery of electronic commerce capabilities directly into the consumers' hand, anywhere, via wireless technology". From then, there are numerous authors tried to explain or define mobile commerce. As per Phillip E. Copeland (2016)[3] "Mobile commerce included all activities containing a commercial transaction conducted through communication networks that interface with wireless devices". Samples of mobile commerce included "mobile banking", "mobile ticketing", "mobile coupons", "mobile purchase of goods and services".

3.1.2: Perceived Usefulness:

Perceived usefulness has been described as the extent to which a person believes that using a particular system which would improve his or her job performance. Davis (1989)[4] had described "a system high in perceived usefulness as one for which a user understands in the existence of a positive user-performance relationship. The user perceives the system to be an effective way of performing the tasks" (Davis, 1989)[4].

3.1.3: Perceived Ease of Use:

Perceived enjoyment is the engagement of the M-shoppers into m-shopping with much interest, which is inspired by smartphone features and ease of use. Perceived enjoyment can be defined as "the level of satisfaction that consumers feel during online purchase on a particular website, in terms of the ability to bring them happiness, while excluding the performance that they will experience. The more enjoyable the online shopping process at a particular website, the more likely consumers will purchase on that website" (Carr et al, 2001)[5].

3.1.4: Trust:

M-shoppers trust in e-Commerce businesses usually comes from their benevolence and credibility. "Credibility is defined as whether a person believes that the other party is honest, competent and reliable" (Han & Windsor, 2011)[6]. The more smartphone users' trust the e-retailer, the more likelihood is that the smartphone users would reveal privacy and personal data. As per Cou-Chen Wu, Yves Huang & Chia-Lin Hsu (2014)[7], "benevolence is a person's belief that other persons are genuinely interested in the other partner's welfare and have intention and motives beneficial to the other party even under adverse conditions for which a commitment was not made" (Cou-Chen, et al., 2014)

3.2: RATIONALE OF THE RESEARCH STUDY:

Online purchasing or shopping through mobile applications (apps.) is becoming very common and convenient to the customers. Mobile shopping applications help the customers to choose and buy or shop the products and or services considering his or her needs and wants. Considering the increase in the in range of product assortment of smartphones and its sales, and the purchasing or shopping of smartphones is being done using mobile shopping applications, there is a need to analyze how the attribute of the smartphone and quality of the mobile apps affect the shopping intention of the customers.

Through this research study, an attempt has been made by the researcher to study influences of smartphone applications and the attributes or features of the Smart phones on Smart phone users' who use it for online shopping herewith to be referred in this research study as Mobile Shoppers, to analyze how it is affecting perceived usefulness, perceived enjoyment, trust, convenience & Price sensitivity of m-shoppers' while making shopping using mobile applications downloaded in the Smartphone. Thus, an attempt in this research study was made to examine influences of mobile phone applications & it's attributes on m-shoppers' shopping intention among selected M-Shoppers' being residents of the selected cities Viz., Ahmedabad, Vadodara, Surat and Rajkot in the State of Gujarat.

3.3: SCOPE AND COVERAGE OF THE RESEARCH STUDY:

The scope of the research study was restricted to examine influences of selected smartphone applications & it's selected attributes on m-shoppers' shopping intentions. The research study was confined to selected cities of the Gujarat State Viz., Ahmedabad, Vadodara, Surat and Rajkot. It was aimed at analyzing expectations and experiences of smartphone users or mobile shoppers with special reference to his or her Perceived Usefulness (PU), Perceived Enjoyment (PE), Trust (TR), Convenience & Price (PR) Sensitivity of smartphone & downloaded various shopping applications in smartphones to make involved online shopping using smartphones called as Mobile (M)- Shopping.

3.4: RESEARCH PROBLEM OF THE RESEARCH STUDY:

M-shopping mainly depends upon smartphones and shopping applications installed or downloaded in smartphone, through which m-shopping can take place. The main perspective of the problem of the research study was to identify & examine the influences of these two important elements on Mobile Shoppers' shopping intentions who were conveniently drawn out from the four major selected cities viz., Vadodara, Ahmedabad, Surat and Rajkot of the Gujarat State.

Therefore, the researcher had collected required information and primary data on selected criteria from mobile shoppers viz., information on their selected demographic background variables, problems being faced by them while shopping using mobile apps, and the attributes of the smartphones that influences the shopping intention of these smartphone mobile shoppers.

3.5: RESEARCH QUESTIONS:

The research study had attempted to find the answers of various possible research questions that were identified and selected in form of an outcome of the review of literature that could lead to identification of possible gaps in the area of this selected research study listed out as follows.

- What is the demographic profile of selected smartphone users or mobile shoppers in the selected cities of Gujarat?
- What is their preference for features or attributes of while selecting smartphone?
- Which operating system is felt as user-friendly by smartphone users or mobile shoppers?
- How frequently smartphone users or mobile shoppers shop using his or her Smartphone?
- What is the preferred place of shopping using Smartphone?
- What is the preferred time of shopping of smartphone users or mobile shoppers using Smartphone?
- What is the average time spent on searching and shopping in mobile apps by smartphone users or mobile shoppers?
- What are the various shopping apps downloaded and used by smartphone users or mobile shoppers?
- What is the experience on problems being faced by smartphone users or mobile shoppers while shopping on Smartphone?
- What is the expectation and experience of smartphone users or mobile shoppers on selected criteria viz., Quality of Mobile Applications (MAQ), Perceived Usefulness (PU) Perceived Enjoyment (PE), and Trust (TR)?
- What is the preferred mode of payment of smartphone users or mobile shoppers while making shopping using installed applications in smartphones?

- ❖ What is the overall experience of smartphone users or mobile shoppers in meeting of their expectations of Mobile Shopping Apps?
- ❖ What is the overall experience of smartphone users or mobile shoppers in meeting of their expectations of Smartphone attributes?
- ❖ What is the overall satisfaction of smartphone users or mobile shoppers as a mobile shopper?
- ❖ What are the behavioral Intentions of smartphone users or mobile shoppers for mobile Shopping using mobile apps?

3.6: OBJECTIVES OF THE RESEARCH STUDY:

The research study has its Primary Objective and few other objectives, which are as follows:

The primary objectives of the research study have been listed out as follows.

1. To study and examine the influence of Perceived Quality of Smartphone Applications, such as Appearance, Content Quality, Technical Adequacy, mediated by its Perceived Usefulness, Perceived Enjoyment, Trust, Convenience to Use & Price Sensitivity, on M-Shoppers' Shopping intention.
2. To assess the influence of Perceived Quality of features of Smartphones, mediated by its Perceived Usefulness, Perceived Enjoyment, Trust, Convenience to Use & Price Sensitivity, on M-Shoppers' Shopping Intentions.

The other objectives of the research study too have been listed out as follows.

1. To know the ranked preferences of selected M-Shoppers of selected cities for selected features of smartphone.
2. To know the ranked preferences of selected M-Shoppers of selected cities for operating system of smartphone,
3. To study and assess Perceived Usefulness; Perceived Enjoyment, Trust, Convenience & Price Sensitivity of Smartphone Applications, as Expected and Experienced by M-Shoppers'.
4. To study and assess Perceived Usefulness; Perceived Enjoyment, Trust, Convenience & Price Sensitivity of attribute of Smartphone, as Expected and Experienced by M-Shoppers'
5. To study association or relationships or linkages between selected demographic background variables of selected m-Shoppers' such as Age; Gender; Educational Qualifications; Income; Marital Status, and Occupation Vis-A-Vis Perceived Quality of Smartphone Applications & perceived quality of Mobile Attributes.

3.7: AN ILLUSTRATIVE LIST OF HYPOTHESES OF THE RESEARCH STUDY:

An attempt was made by the researcher to formulate and test various statistical hypotheses based on research gaps that were identified with the help of an in-depth review of literature given as below:

3.7.1: Hypothesis-1

There is no difference in the mean of ranks' preference of the selected m-shoppers of Selected Cities about their preference for selected features of mobile phone.

3.7.2: Hypothesis-2

There is no difference in the mean of ranks' preference of the selected m-shoppers of Selected Cities about their user-friendliness' with selected operating system.

3.7.3: Hypothesis-3

The overall opinion of selected Smartphone users on Perceived ease of Use, of Smartphone has no association with their selected demographic variables such as Age; Gender; Income; Educational Qualifications and Marital Status.

3.7.4: Hypothesis-4

The overall opinion of selected Smartphone users on Price of Smartphone has no association with their selected demographic variables such as Age; Income; Educational Qualifications and Marital Status.

3.7.5: Hypothesis-5

The overall opinion of selected Smartphone users on Perceived Usefulness of Smartphone has no association with their selected demographic variables such as Age; Income; Educational Qualifications and Marital Status.

3.7.6: Hypothesis-6

The overall opinion of selected Smartphone users on Trust in Smartphone has no association with their selected demographic variables such as Age; Income; Educational Qualifications and Marital Status.

3.7.7: Hypothesis-7

The overall opinion of selected Smartphone users on Perceived Ease of Use of Smartphone Application has no association with their selected demographic variables such as Age; Income; Educational Qualifications and Marital Status.

3.7.8: Hypothesis-8

The overall opinion of selected Smartphone users on Price of shopping in Smartphone Application has no association with their selected demographic variables such as Age; Income; Educational Qualifications and Marital Status.

3.7.9: Hypothesis-9

The overall opinion of selected Smartphone users on Perceived Usefulness of Smartphone Application has no association with their selected demographic variables such as Age; Income; Educational Qualifications and Marital Status.

3.7.10: Hypothesis-10

The overall opinion of selected Smartphone users on Trust in Smartphone Application has no association with their selected demographic variables such as Age; Income; Educational Qualifications and Marital Status.

3.7.11: Hypothesis-11

The overall opinion of selected Smartphone users on Quality of Smartphone Application by selected Smartphone users has no association with their Recommendations to others.

3.7.12: Hypothesis-12

The overall opinion of selected Smartphone users' Quality of Smartphone Application by selected Smartphone users has no association with their Continuance to Purchase.

3.7.13: Hypothesis-13

The overall opinion of selected Smartphone users on Smartphone Attribute, has no association with their Recommendations to others.

3.7.14: Hypothesis-14

The overall opinion of selected Smartphone users on Smartphone Attribute, has no association with their Continuance to Purchase.

3.7.15: Hypothesis-15

There is no significant relationship between user-perceived quality of mobile applications and the continuance intention of mobile shopping mediated by perceived usefulness, perceived enjoyment, trust, and price of mobile applications quality.

3.7.16: Hypothesis-16

There is no significant relationship between mobile attributes and the continuance intention of mobile shopping mediated by perceived usefulness, perceived enjoyment, trust, and price of smartphone.

3.7.17: Hypothesis-17

There is no significant relationship between user-perceived quality of mobile applications and the recommendation of mobile shopping to others mediated by perceived usefulness, perceived enjoyment, trust, and price of mobile applications quality.

3.7.18: Hypothesis-18

There is no significant relationship between mobile attributes and the recommendation of mobile shopping to others mediated by perceived usefulness, perceived enjoyment, trust, and price of smartphone.

3.8: RESEARCH DESIGN OF THE RESEARCH STUDY:

The research design implemented in this research study was exploratory as well as descriptive in nature considering its rationale; objectives, and hypothesis along with the sources of information, sampling decisions, data analysis and interpretation which have offered its results, findings and in the context of identified limitations of this research study.

3.9: RESEARCH METHODOLOGY:

The researcher has made an attempt to outline various methodological steps and conceptual aspects concerning to the research methodology which mainly included viz., rationale of the research study; basic terms of the research study; scope and coverage of the research study; research design, objectives, research questions, and hypotheses of the research study; model used in the research study; sources of secondary data; sampling decisions; drafting of the structured questionnaire; data analysis and interpretation of the research study; results, findings and implications of the research study; conclusions, recommendations, and suggestions of the research study as well as directions for future research and lastly, limitations of the research study have been put forward in concise form as follows.

3.9.1: Sources of Information:

The researcher will make use of both the secondary and primary data for the proposed research study.

3.9.2: Secondary Data:

Secondary data is the information that has been previously gathered and presented in published or electronic form. In this research, an attempt has been made by the researcher to undertake the comprehensive review of earlier researches, Books, Newspapers, published papers, Research Journals; as well as unpublished Reports; and visits of Websites with the help of various search engines.

3.9.3: Primary Data:

The primary data was collected with the help of a Structured Non- Disguised Questionnaire, which was got filled up, from those Smart phone users, who were engaged in m-Shopping with the help of smartphone shopping applications and were residents of selected cities of Gujarat State,

3.9.4: Research Instrument used in the Research Study:

The structured non-disguised questionnaire was used to get the primary data from 1550 m-shoppers from selected four cities of Gujarat, during the year 2018-2019.out of which 1480 responses were considered as qualified for the purpose of data analysis and interpretation and testing of hypotheses to bring out findings and implications of the research study.

3.10: SAMPLING DECISIONS:

The major sampling decisions in the proposed research study would be as follows**.**

3.10.1: A Representative Sample of the Research Study:

The representative samples of this research study shall be those Smart phone users, who have been using Smart phone for mobile shopping applications to buy products and also to avail services online using smart mobile applications online.

3.10.2: Sampling Design:

The researcher proposes to use Non- probability sampling design for the research study.

3.10.3: Sampling Method:

The researcher will use quota-cum-convenience methods of sampling.

3.10.4: Sampling Frame:

An attempt in this research will be made to get contact details about various smartphone users belonging to heterogeneous socio-economic strata which prefer to use the mobile shopping applications offered by selected e-tailors, from selected cities of the State of Gujarat. An attempt would be made to keep the sampling fairly representative across the demographic variables by using convenience and quota sampling methods.

3.10.5: Sample Size Determination:

The population is unexplored since it is not easy to ascertain the exact number of individuals who use a mobile device for shopping. Nevertheless, the researcher has investigated several related studies to figure out the sample size. A sufficient number of representative shoppers will be selected as samples from Selected Cities of the State of Gujarat.

3.10.6: Sampling Media:

The primary data will be collected through personal interviews and/ or online from selected Smart phone users from Selected Cities of the State of Gujarat.

3.10.7: The Sample Size of the Research Study:

The research scholar had to decide the size of the sample that would represent the general public of Gujarat in the four major cities that was selected for the research study.

3.10.8: Sample Size Determination:

The ever-growing demand for research has generated a demand for an effective method of determining the sample size required to be representative of a given population. The formula for determining sample size is given below.

3.10.9: Formula for determining Sample Size:

$n = \pi (1 - \pi) z^2 \div D^2$

Where

n = required sample size.

π = the estimated population proportion based on the Marketing White Book of April 2018 Internet penetration estimated at 60 (0.60) percent in India.

z = suppose the level of confidence is 95 per cent than associated z value is 1.96

D = the level of precision and desired precision is such that the allowable interval is set as D = p (sample proportion) – π (population proportion) = + or – 0.05.

This formula used form Malhotra, Naresh K. and Dash, Satya Bhushan (2011).

3.10.10: Calculation of Sample Size:

$$n = \frac{\pi (1 - \pi) z^2}{D^2}$$

$$n = \frac{0.60 (1 - 0.60) (1.96)^2}{(0.05)^2}$$

$$s = \frac{0.60 (0.40) (3.8416)}{0.0025}$$

$$s = \frac{0.921984}{0.0025} = 369$$ so sample size is **rounded off to 370**

Based on total 370 sample size we can also determine the total sample size, considering four selected cities as four strata, by multiplying 370 with seven strata (i.e. 370 x 4 = 1480) Total Sample size for four selected cities is given in the following table.

As the size of population is different in all selected four cities, the Stratified Random Sampling method (Proportional Allocation) is used and city wise allocation of sample is calculated as follows. Thus, the sample size was fixed as 1480 respondents.

Stratified Random Sampling (Proportional Allocation): $n_i = \frac{n N_i}{N}$

$$n_1 = \frac{n N_1}{N},\ n_2 = \frac{n N_2}{N},\ n_3 = \frac{n N_3}{N},\ n_4 = \frac{n N_4}{N},\ n_5 = \frac{n N_5}{N},\ n_6 = \frac{n N_6}{N},\ n_7 = \frac{n N_7}{N}$$

Where:

n = Total sample size (1480).

n_1, n_2, n_3 **and** n_4 = required total sample size for each group.

N_1, N_2, N_3, and N_4, = Size of population for each group (7,214,225, 6,081,322, 4,165,626, & 3,804,558).

N = Sum total of population of all four group (**21265731**).

By applying formula sample size is calculated as follows: (Figures Rounded Off)

n_1 (Ahmedabad) = $\frac{1480 \times 7214225}{21265731}$ so n_1 is **502** Sample size for Ahmedabad. **(500)**

n_2 (Surat) = $\frac{1480 \times 6081322}{21265731}$ so n_2 is **423** Sample size for Surat. **(425)**

n_3 (Vadodara) = $\frac{1480 \times 4165626}{21265731}$ so n_3 is **289** Sample size for Vadodara. **(290)**

n_4 (Rajkot) = $\frac{1480x\ 3804558}{21265731}$ so n_4 is **264** Sample size for Rajkot. **(265)**

Table Number 3.1: Taluka Wise Distribution of Sample Size for calculating total sample size of the proposed research study

Sr. No.	City	* Total Population as per Census of India, 2011	** According to the Marketing White Book of April 2018 Internet penetration estimated at 60 (0.60) percent in India.**	Calculated Sample Size (Figures Rounded Off)
1	Ahmedabad	72,14,225	4328535	**500**
2	Surat	60,81,322	3648793	**425**
3	Vadodara	41,65,626	2499375	**290**
4	Rajkot	3,804,558	2282735	**265**
Total:-		21265731	12759438	**1480**

* https://www.census2011.co.in/census/state/districtlist/gujarat.html, Retrieved on 05/09/2018.

3.11: MODEL USED IN THE RESEARCH STUDY:

Smartphones have the benefit of their ease of use and portability as they can be taken anywhere and anytime without being disclosed to physical and geographical barriers (Wu and Wang, 2006)[8].

M-shoppers' purpose of buying on mobile, if accompanied by satisfaction, will direct to repurchase. Customers' m-shopping buying decision from a specific mobile application will be seen as a competitive edge, which will have a tremendously positive effect on profit (Tsai et al., 2007)[9].

Mobile attributes are also highlighted in this model which has been which classified as follows:

3.11.1: Instant Connectivity:

Instant Connectivity has been defined as "the level of convenience toward time, and places that one knows when they participate in m-shopping and approachability of conforming and searching for information at the moment" (Ko et al., 2009)[10].

3.11.2: Mobile Features:

Mobile devices have the characteristics such as, "large built-in display and zooming feature, size, weight, notification system and adjustable Brightness and Contrast" (Avvannavar et al., 2008;)[11]. Furthermore, those dimensions present the first factors that smartphone users' notice or deal with at the primary phase of communicating with the mobile application, therefore, they had present exogenous factors that facilitate the forming of the first impression about the mobile application which in turn influences the other internal factors viz., perceived usefulness, perceived enjoyment; and trust respectively as these variables symbolize psychological factors.

Taking all into consideration, the following research model can be reasoned, which consists of three principal variable categories that influence the mobile shopping success equation.

3.11.3: Independent Variables:

[A] A Smart Phone User-Perceived Mobile Application's Quality and [B] Mobile Features

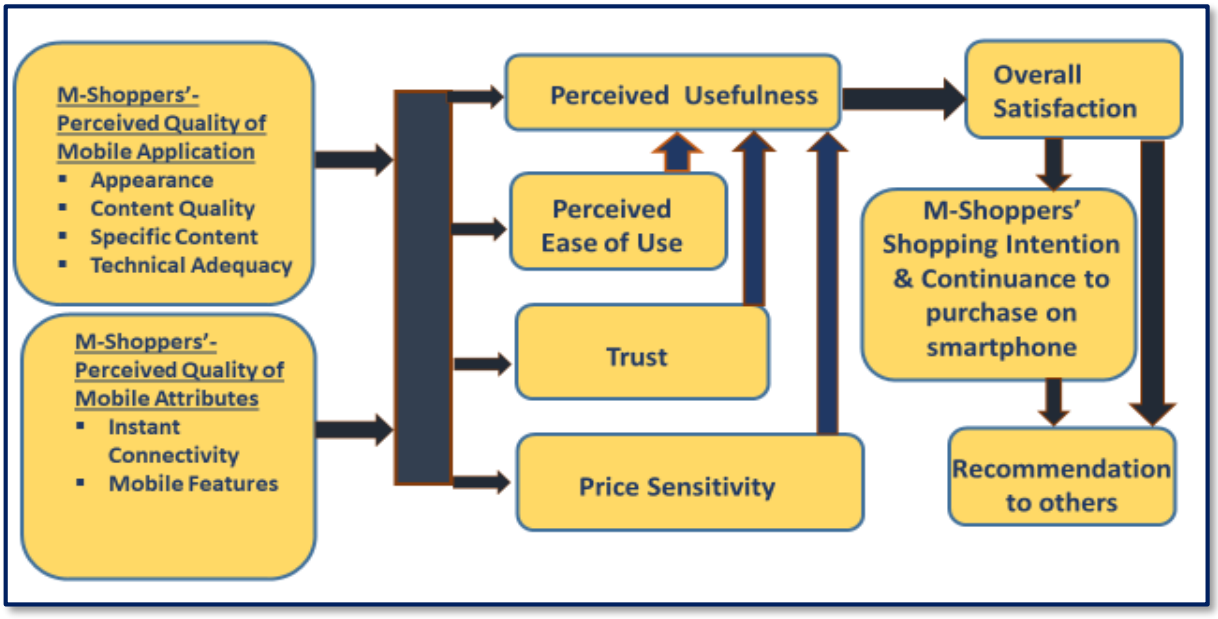
3.11.4: Mediating Variables:

[A] A Smart Phone User-Perceived Usefulness [B] Perceived Enjoyment, and [C] Enhancing Trust.

3.11.5: Dependent Variables:

A Smart Phone User's Intention of Mobile Shopping which will ultimately lead to M-Shoppers' Shopping or Shopping intention (Liao et al., 2006) [12]

Figure Number 3.1: The Proposed Research Model For the Research Study



(Source: Hani Al Dmour, Muhammad Alshurideh, Farah Shishan; 2014) [13]

[Modified & Adapted by the Research Scholar]

3.12: DRAFTING OF RESEARCH INSTRUMENT OF THE PROPOSED RESEARCH STUDY:

The Structured Non- Disguised Questionnaire has been drafted in a direct and effective form to avoid ambiguity. Researcher attempted to offer a brief description of the review of literature that has been consulted while framing the structured non-disguised questionnaire, to ensure all the aspects of the research study, in relation with mobile applications quality and attributes of smartphones in continuance intention of m-shopper's in the selected cities of Gujarat.

The research questionnaire is divided into six parts. The first part of the questionnaire had been designed to collect the demographic profile of the respondents while the second part consisted of the questions related to the smartphones such as the name of the smartphone the user is using & used previously, amount spent on smartphone purchase, the preferences of features in smartphone, and user friendliness of operating system. The third part of the questionnaire had the objective of collecting information of the customers' shopping frequencies, preferred place of shopping, preferred time of shopping, shopping duration, sources of shopping information, reason for downloading mobile applications, number of shopping apps downloaded, preferred number of images of the product and shopping materials. The fourth part of the questionnaire focused on the difficulties while shopping in terms of Internet connectivity, downloading images, and product delivery. The fifth part of the questionnaire mainly aimed at collection data on m-shoppers perceived enjoyment, perceived usefulness, trust, mobile applications quality, smartphones' attributes against the real-life experiences of the smartphone users. The fifth part had the questions for the expectations and experiences of the m-shoppers. A five-point Likert scale was applied defined as 1 = Strongly Disagree;2=Disagree;3=Can't say;4=Agree, and 5 = Strongly Agree in the Question number 21. The 6th part of the questionnaire consisted the overall experience of the m-shoppers as mobile shopping regarding the payment, expectations of mobile shopping apps, expectation of smartphone attributes, and overall satisfaction.

Table Number 3.2: The structured questionnaire consisted of total number of 26 questions designed to collect information and primary data from the female Internet users.

List of Selected References of Selected Criteria Used in Drafting of Structured Questionnaire			
Name of Author and Research Article	**Conduct of the Time Period of Research Study**	**Number of Criteria used in the Questionnaire.**	**Total Number of Criteria Items**
General information regarding age group, gender, marital status and type of family [Q-1 T0 Q-4]			
Criteria No. 12 to 13, 16, 17, 19 to 20, 28 to 34, 39, 42 to 48 Perceived Usefulness of Smartphone attribute and mobile application			
Lewis et al.,	2003	12,13,16,17,19,	5
Lu et al.,	2005	20,28,29,30,31,32	6
Taylor and Strutton,	2010	33,34,39,42	4
Liu and Forsythe,	2011	43,44,45	3
Sujeong Choi	2018	46,47,48	3
Criteria No. 1 to 4 Demographic details of smartphone users			
Henry Assael	2005	1, 2, 3, 4	4
Criteria No. 11,18,21-26,35,40,41. Perceived Enjoyment of Smartphone attribute and mobile application			
Pankaj Yadav	20015	11,18,21,22,23,24	6
Felix T.S. Chan and Alain Yee-Loong Chong	2013	25,26,35,40,41	5
Criteria No. 36-38, 51, 55-60Trust of Smartphone attribute and mobile application			
Juxt Consult Online research & Advisory (2008)	2008	36,37,38,51,55,56,57,58,59,60	10
Criteria No. 2-9, 27 Mobile Attribute of Smartphone attribute and mobile application			
Tao Zhang, Pei-Luen Patrick Rau, and Jia Zhou	2010	2,3,4,5,6,	5
Taylor, D.G. and Strutton, D. (2010)	2010	7,8,9,27	4
Criteria No. 1, 14-15, 49-50, 52 Mobile Application quality of Smartphone attribute and mobile application			
Hawley, K. Try	2011	1,14,15	3
Hsiang-Ming Lee and Tsai Chen	2014	49,50,52	3

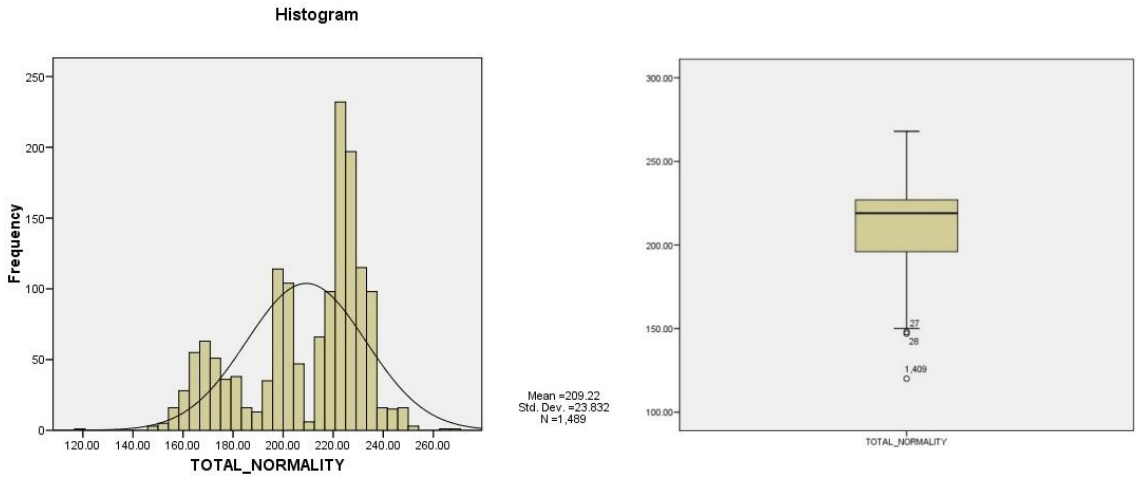
Source: Review of Literature

3.13: TEST OF NORMALITY OF THE DISTRIBUTION:

The assumption of normality is a prerequisite for many inferential statistical techniques and the researcher has used histogram; box plot and value of skewness and kurtosis to determine the shape of the distribution given as follows.

Graph Number 3.1: Histogram **Graph Number 3.2: Boxplot**

Histogram **Boxplot**



The analysis about the average opinion of selected buyers of Smartphones on selected dimensions showed a negative skew with the value of -0.715 and -0.534 of kurtosis , which indicates a flatter distribution. The normality is also supported by the shape of the curve of the histogram for the average opinion of selected buyers of Smartphones on selected dimensions as well as the median value positioned in the center of the box plot which indicated that distribution can be assumed to be normal with negative skewness of -0.715.

3.14: RELIABILITY OF RESEARCH INSTRUMENT USED FOR MEASUREMENT OF INFLUENCES OF MOBILE APPLICATIONS' QUALITY AND SMARTPHONES' ATTRIBUTES ON SELECTED MOBILE SHOPPERS' SHOPPING INTENTION:

Reliability refers to the extent to which a scale produces consistent results if repeated measurements are made on the characteristics. A popular approach of Coefficient Alpha or Cronbach's Alpha is used, which is the average of all possible split – half coefficients resulting from different ways of splitting the scale items. This coefficient varies from 0 to 1, and average of 0.6 or less generally indicates unsatisfactory internal consistency reliability.

Table Number 3.3: Table Showing Summary of Indicators and Reliability Alpha Score:

Sr. No.	Grouped Indicator Items	Cronbach Reliability Alpha Coefficient
01	Mobile Application Quality (MAQ)	**0.925**
02	Mobile Attributes (MA)	**0. 843**
03	Perceived Usefulness (PU)	**0. 885**
04	Perceived Enjoyment (PE)	**0. 812**
05	Trust (TR)	**0. 847**
06	Price (PR)	**0. 656**
07	Overall	**0.943**

All dimensions of the questionnaire related with measuring influences of mobile applications' quality and smartphones' attributes on selected mobile shoppers' shopping intention were tested and the Cronbach's alpha ranged from 0.656 to 0.925 which really shows Internal reliability of the scale. The reliability of a scale as measured by coefficient alpha reflects the degree of cohesiveness among the scale items (Naresh K. Malhotra, 2007; Jum C. Nunnally, 1981, and Puay Cheng Lim & Nelson K. H. Tang, 2000)[14,15,16].

3.14.1: Validity Test of the Structured Questionnaire:

In our empirical research study while undertaking the pilot study the structured questionnaire was given to selected m-shoppers of selected cities of Gujarat, who had used smartphone m-shopping applications for mobile shopping, and their valuable feedback /opinion on smartphone attributes & smartphone shopping were collected for analysis. The questionnaire had total number of 26 questions (Total 85 criteria), which consists of Demographic variables (06 criteria Q. No. 01 to 06); General variables of hospital information relating to patients' medical treatment (14 criteria grouped under Q. No. 07 to Q. No. 20); variables related to measurement of expectation and actual experience of mobile phone users (60 criteria under Q. No. 21), and overall satisfaction (05 criteria under Q. No. 22 to Q. No. 26).Mean Scores of Overall satisfaction were calculated and analyzed which is given below:

Table Number 3.4: Table Showing Comparison of Mean Scores of Extent of Mobile Shoppers' Satisfaction / Dissatisfaction from Mobile Applications Quality and Mobile Attributes

Rating Scale 1 (Highly Dissatisfied) to 5 (Highly Satisfied)						
A	**B**	**C**	**D**	**E**	**F**	**G**
Mobile Shoppers' Satisfaction with respect to (Q-21 - 1 to 60)	**Mean Score**	**Mobile Shoppers' Satisfaction with respect to(Q-23 and 24)**	**Mean Score**	**Average Score of Satisfaction (E = A + B / 2)**	**Mobile Shoppers' Overall Satisfaction with respect (Q-25)**	**Mean Difference (G= E-F)**
Overall Average Satisfaction with Mobile Applications Quality	3.70	Overall Satisfaction with Mobile Applications Quality	3.92	3.81	3.92	-0.11
Overall Average Satisfaction with Mobile Attributes	3.67	Overall Satisfaction with Mobile Attributes	3.92	3.79	3.92	-0.13
Overall Average	**3.68**		**3.92**	**3.80**	**3.92**	-0.12

The researcher has measured convergent validity by comparing mean scores of scale with other measures of the same construct. It becomes clear from above given table number 3.4 , that the means of same construct were measured and less variation (-0.12) was observed in the given question categories and average satisfaction score was found to be as similar. Majority of the respondents were found placed between Strongly Agree to Agree (3.92). It supports the strength of linkage between the statements of question number 21, 23-24 and 25 thus fulfills the condition of convergent validity.

3.15: KMO and Bartlett's test:

To measure the suitability of the data for factor analysis the adequacy of the data is evaluated on the basis of the results of Kaiser – Meyaer – Oklin (KMO) measures of sampling adequacy and Bartlett's test of sphericity (homogeneity of variance). This exercise is done for all the group of data in which factor analysis is applied.

Table Number 3.5: Result of KMO & Bartlett test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		**0.823**
Bartlett's Test of Sphericity	**Approx. Chi-Square**	**15010.835**
	Df	**276**
	Sig.	**0.00**

In case of Mobile Application Quality (MAQ) and Perceived Usefulness (PU) the results showed that the KMO measure of sampling adequacy was 0.818, which indicated that the present data were suitable for Factor Analysis. Similarly, Bartlett's Test of sphericity (0.00) was significant ($p<.05$), indicating sufficient correlation exist between the criteria to proceed with the Factor Analysis.

3.16: DATA ANALYSIS & INTERPRETATION OF THE PROPOSED RESEARCH STUDY:

The researcher had proposed to make use of suitable statistical tools to test the formulated hypotheses by application of suitable tests of significance and use of appropriate statistical software for the purpose of data analysis and interpretation. Primary data collected by following the exploratory and descriptive research design was analyzed using basic statistical tools. Frequency Analysis was carried out to know the profile of the selected m-shoppers selected from four cities of Gujarat state of India.

3.17: SIGNIFICANCE OF THE PROPOSED RESEARCH STUDY:

The area of the significance of this research study includes not only marketing theory, and its application, but also extends to the discipline of M-shoppers intention specifically to identify the m-shoppers' intention and accordingly developing the applications.

The study shall focus on the Smartphone users to lay an emphasis on how these Smart phones are attracting m-Shoppers to use m-shopping applications for m-shopping. E-Marketers have begun to adopt tools & techniques to materialize m-shopping through of applications of Smart phone and attributes of mobile phones respectively. This research study will attempt to develop detailed insight on how mobile phone applications & mobile attributes can be helpful in co-creating value chain and value networks to Smart phone users and business firms. Smartphones being the emerging alternative of shopping is increasingly found becoming popular suitably adopted by Smart phone users and companies. some of the business as a source of business creation, the research study would attempt to assess how far Smart phone applications are successful in increasing Trust, Convenience, Price Sensitivity, Perceived Usefulness & Perceived Enjoyment for Smart phone users. The research study shall also contribute to the m-shoppers' m-Shopping and or shopping intention concerning e-business literature as well as e-marketing and m-commerce practices.

3.18: LIMITATIONS OF THE PROPOSED RESEARCH STUDY:

- It is difficult to get the factual information of m-shoppers as it keeps on fluctuating with the passage of time which would affect determination of sample size.
- The research study would be restricted to only selected cities of the State of the Gujarat.
- There are different methods to measure Mobile Application Quality & Attributes and there are number of models developed for m-shoppers' shopping intention. In this regards, views of experts may differ from one another.

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