CHAPTER-FOUR

RESEARCH METHODOLOGY

CHAPTER – FOUR

RESEARCH METHODOLOGY

DETAILED CONTENT

CHAPTER – FOUR

RESEARCH METHODOLOGY

4.0 : INTRODUCTION:

Mobile commerce is having an exponential growth year after year which is due to its customer -centric approach. Big colourful screens, anywhere-any time connectivity of smartphones, high speed processors, better screen resolutions, access to high-speed internet at very low cost, availability of local smartphone brands at cheaper rate, mobile Apps revolution, convenience in shopping, safer mobile wallets, growing social media trends and changes in the work and life style patterns, all have contributed to its growth. Many activities, such as buying tickets and boarding passes, transit schedule updates, payment, money transfers, and digital content purchases, can all be done on a mobile device. Mobile banking, contactless payments, in-app payments, location-based services, mobile marketing, discounts and loyalty cards, securities trading and the downloading of digital content such as music, games, and video clips are all examples of services that can be availed through mobile devices. It is quite useful for location-based services like finding local hotels, monitoring weather, traffic and also helps in location-based marketing.

This medium provides flexibility and convenience, transparency, enhances user experience, helps in customization and personalisation, better decision making from wider choice, better customer engagement, time saving, speedy and effective communication, Merchants can reach to larger user base, push notification provides instant alerts, sales and other promotional offers. Through Google analytics, data on consumer behaviour can also be collected to know their buying habits, cart abandonment rates, session duration, cost per conversation etc. Latest trends like chatbots, voice search, single click option etc have made mobile commerce as a preferred choice for consumers.

Because of the expanding importance of this mode of commerce, researchers have attempted to perform a study to uncover elements that lead to m-Commerce adoption. The information was gathered from four major cities in Gujarat: Vadodara, Ahmedabad, Surat, and Rajkot. This chapter covers the full research methodology used in this study, as well as the methodologies used to analyse data and derive conclusions from it. The research study was conducted among selected m-Commerce users from four main districts of Gujarat, mainly, Vadodara, Ahmedabad, Surat and Rajkot to find out how selected variables facilitates or hinders the adoption of m-Commerce. The variables selected include perceived cost, personalisation, privacy, security, Trust, Risk, perceived behavioural control, social norms, perceived ease of use, perceived usefulness and attitude. The main focus is to know how these drivers contribute towards m-Commerce adoption. The findings of the research study would be useful to m-Commerce merchants in designing suitable marketing strategy. It would also be useful to smart phone manufactures to adopt customer friendly design and also to app developers to design user friendly interfaces.

4.1 : KEY TERMS OF THE RESEARCH STUDY:

The crucial terms covered in the research study include, Mobile Commerce, Perceived Cost, Personalisation, Privacy, Trust, Risk, Perceived Usefulness, Perceived Ease of Use, Perceived Behavioural Control, Attitude, Subjective/ Social Norms, and Behaviour Intention. The key terms are explained in brief as follows.

4.1.1 : Mobile Commerce:

Mobile commerce is defined as "any transaction, involving the transfer of ownership or rights to the use of goods and services, which is initiated and/or completed by using mobile access to computer-mediated networks with the help of an electronic device" (Tiwari and Buse, 2007)[1]. Wu and Wang (2005)[2] defined it as "A transaction with or without monetary value implemented via a wireless communication network that includes mobile banking, retail shopping, investing and other web services".

4.1.2 : Perceived Cost:

Perceived cost in the framework of m-Commerce denotes an individual's perception about using m-Commerce services as expensive and it consists of initial fees, cost of the device, cost to download the application, subscription and communication fees and potential upgrade costs (Zhang et al., 2012)[3].

4.1.3 : Personalisation:

Gartner (2017)[4] defined personalisation as "a process that creates a relevant, individualized interaction between two parties designed to enhance the experience of the recipient." The act of modifying an experience or communication based on information a firm has learnt about its prospects and customers is known as personalization. It is the act of designing a product or services to meet an individual's requirement.

4.1.4 : Privacy:

Privacy denotes the consumers' perceptions regarding sharing of personal data in an unauthorized manner, unwanted interactions and constant chasing of shopping behaviour of e-tailors (Limbu et al., 2011)[5]. Information privacy is "the individuals' right or desire to have some influence over their personal information concerning its collection, use, and transfer by entities engaged in e-commerce" (Belanger and Crossler 2011)[6].

4.1.5 : Trust:

Trust is defined as a "confidence between the parties that the other party is reliable and that the parties will act with a level of integrity when dealing with each other" (Morgan and Hunt, 1994)[7]. Rousseau et. al. (1998)[8] defined it as "a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behaviour of another".

4.1.6 : Perceived Risk:

The subjective belief of suffering a loss in pursuit of a desirable outcome is known as perceived risk (Featherman and Pavlou, 2003)[9], and it is an important component of buyer-seller relationships.

4.1.7 : Perceived usefulness:

It is defined as “the extent to which individuals believe that using the new technology will enhance their task performance.” Perceived usefulness is the customers’ willingness to adopt new technology to improve their performance and efficiency in carrying out a particular task (Davis, 1989)[10].

4.1.8 : Perceived Ease of Use:

"The degree to which an individual believes that using a specific technology will be devoid of effort," Davis (1989)[10] defined perceived ease of use.

4.1.9 : Subjective norms/ Social Norms:

Subjective norm or social norm is the “perceived social pressure to engage or not to engage in a behaviour. A person’s subjective norm is determined by his or her perception that salient social referents think he/she should or should not perform a particular behaviour” (Fishbein et al., 1980)[11].

4.1.10 : Perceived Behavioural Control (PBC):

Perceived Behavioural Control is the “individual perceptions of how easy or difficult it is to perform a specific behaviour.” According to Pederson (2005)[12], PBC is “an image of a person’s constraints both internal and external on behaviour which is further reflected in the individual’s intention to use the services of m-Commerce”.

4.1.11 : Attitude:

Attitudes can be defined as “the positive or negative feelings a person has towards performing a target behaviour, if a person perceives that the outcome from performing a behaviour is positive, then he or she will have a positive attitude towards performing the behaviour and vice versa” (Chew, 2006)[13].

4.1.12 : Adoption Intention/ Behavioural Intention

The strength of one's purpose to undertake a specific behaviour is characterised as behavioural intention. The combination of (a) a person's attitude toward completing the behaviour and (b) his or her subjective norm determines a person's intention to perform a behaviour. (Sadi and Noordin, 2011)[14]. In this research, adoption intention is the intention to adopt m-Commerce services.

4.2 : RATIONALE OF THE RESEARCH STUDY:

The anywhere-any time connectivity of smartphones, low cost of mobile internet, growing social media trends and changes in the work and life style patterns have directed in the growth of m-Commerce. In order to keep up with the current trends business has to increasing focus on providing mobile friendly shopping experience to consumers if they have to retain them for a longer time. This research study was undertaken to identify the major factors that drive people towards adopting m-Commerce in selected cities of Gujarat, namely Vadodara, Ahmedabad, Surat and Rajkot. Given how quickly this mode of commerce is gaining traction, it's critical to understand the elements influencing m-Commerce adoption.

The fundamental drivers for adopting m-Commerce services, according to Pedersen et al. (2002)[15], are still unknown. The research study was focused on Business to Consumer (B2C) transactions conducted through mobile devices. The study has made an earnest attempt to understand the consumers' attitude towards this medium and their intention to adopt it as a medium of commerce. Appropriate model relating to adoption intention was also used to understand the factors that influence consumers to adopt m-Commerce. Based on literature review, certain drivers have selected, namely, perceived cost, personalisation, privacy, trust, risk, perceived behavioural control, social norms, perceived ease of use, perceived usefulness and attitude. The researcher has mainly focused on how these drivers contribute towards m-Commerce adoption. The role of demographic variable on adoption intention was also covered.

4.3 : SCOPE AND COVERAGE OF THE RESEARCH STUDY:

The scope of the study was to know the attitude of consumers towards mobile commerce and their intention to adopt it as medium of commerce. The study was confined to selected cities of Gujarat like Surat, Baroda, Ahmedabad and Rajkot. It also tried to find out the kind of products and services offered through mobile and the expected future services preferred by consumers through this medium. It provides an insight about the demographic profile of mobile commerce users which will help the merchants to customize their offerings to those target segments.

4.4 : OBJECTIVES OF THE RESEARCH STUDY:

- To analyze how different drivers like perceived cost, personalisation, privacy, trust, risk, perceived usefulness, perceived ease of use, social norms and perceived behavioural control affects consumers attitude towards m-Commerce.
- To study how different drivers like perceived cost, personalisation, privacy, trust, risk, perceived usefulness, perceived ease of use, social norms and perceived behavioural control affects adoption intention of m-Commerce.
- To identify the strength of relationship between attitude and behavioural intention of the consumers towards adoption of m-Commerce
- To study the association between selected demographic background variables viz., age, gender, income, occupation, type of family, and marital status of selected m-Commerce consumers with the selected drives namely, perceived cost, personalisation, privacy, trust, risk, perceived usefulness, perceived ease of use, social norms, perceived behavioural control, attitude and adoption intention of m-Commerce.
- To identify the city-wise difference of opinion of selected m-Commerce users in terms of perceived cost, personalisation, privacy, trust, risk, perceived ease of use, perceived usefulness, social norms and perceived behavioural control, attitude and adoption intention from four Selected Cities of Gujarat State

4.5 : RESEARCH QUESTIONS:

The following questions, which were identified based on the literature study, will be posed to help focus on the hypothesis and assist in the creation of methodology for analysing the use and acceptance of m-Commerce:

- To what extent the drives namely, perceived cost, Personalisation, privacy, trust, risk, perceived usefulness, perceived ease of use, social norms and perceived behavioural control influence the attitude towards m-Commerce adoption
- To what extent the drivers like perceived cost, personalisation, privacy, trust, risk, perceived usefulness, perceived ease of use, social norms and perceived behavioural control affects adoption intention of m-Commerce
- To identify what would be the strength of relationship between attitude and behavioural intention of the consumers towards adoption of m-Commerce.
- Does any relationship exist between selected demographic background variables viz., age, gender, income, occupation, type of family and marital status with their intention to adopt M-Commerce?
- Is there any city-wise difference of opinion of selected m-Commerce users in terms of perceived cost, personalisation, privacy, trust, risk, perceived ease of use, perceived usefulness, social norms and perceived behavioural control, attitude and adoption intention from four Selected Cities of Gujarat State?

4.6 : RESEARCH DESIGN OF THE RESEARCH STUDY:

The research study's research design, in terms of rationale, objectives, scope, and coverage, was descriptive. Mobile commerce users were the primary sampling units. To ensure that the sample was representative, it was taken from various markets, shopping malls, office complexes, and residential areas in four Gujarat cities: Surat, Baroda, Ahmedabad, and Rajkot.

4.7 : RESEARCH METHODOLOGY:

Methodological and procedural steps and conceptual aspects of research methodology have been outlined in brief by the researcher in order to provide an overview of the research study's basic terms, rationale, scope and coverage, research design, objectives, hypotheses, model used, and secondary data sources. Additionally, the findings and implications of the research study, together with recommendations and suggestions for future researchers as well as limits of the research study, are provided in this chapter.

4.7.1 : Secondary Data (or) Source of Information:

The Secondary data was sourced from various books, journals, internet and online articles which provide updates on the m-Commerce industry which will give an overview of research and analysis done by previous researchers.

4.7.2 : Collection of the Primary Data

Mobile commerce users in four Gujarat cities, Vadodara, Ahmedabad, Surat and Rajkot, were asked to fill out a questionnaire as part of the primary data collection process. The questionnaire was employed to measure the customer's attitude, their intention and the factors that drive them to engage in mobile commerce. Some questions were related to the demographic profile of the consumers.

4.7.3 : Research Instrument Used in the Research Study:

Primary data was obtained from m-Commerce customers in four cities in Gujarat: Ahmedabad, Surat, Vadodara, and Rajkot. From the primary data collected, 1480 qualifying responses being used for data analysis and interpretation in order to test hypotheses, draw relevant conclusions and provide study recommendations. Structured non-disguised questionnaire was used for collecting primary data. To prevent ambiguity, the questionnaire was designed in a direct and effective manner, with questions focused on the research's principal goal. The questionnaire consisted two parts; first part included the questions for collecting responses for demographic details of the respondents. The demographic details included details regarding age, gender, occupation, family type, marital status and annual income. The second section contains questions about the divers for m-Commerce, as well as attitudes and adoption intentions for m-Commerce applications. The responses were gathered using a five-point Likert scale ranging from "strongly disagree" to "strongly agree" on a scale of one to five.

4.7.4 Sampling Decisions:

4.7.4.1 Representative Sample of the Research Study

Individuals who used various m-Commerce applications were used as representative samples in this study. Using convenience and quota sampling methods, an attempt was made to keep the sampling fairly representative across the demographic variables. A typical sampling unit was a male or female mobile commerce user who lived in the designated cities at the time the primary data was collected.

The primary data was acquired from selected mobile commerce users from various segments of society, including students, housewives, employees, and businessmen, in the Gujarat cities of Vadodara, Ahmedabad, Surat, and Rajkot, respectively.

4.7.4.2: Sampling Design:

For this study, the researcher utilised a non-probability sampling design. To obtain representative samples for this research investigation, a convenient cum quota sampling method was used. The mobile commerce users in the four selected cities of Gujarat State, namely Vadodara, Ahmedabad, Surat, and Rajkot, formed the sampling unit.

4.7.4.3: Sampling Method:

The researcher has used quota-cum-convenience methods for collecting the responses from the selected cities.

4.7.4.4 Sampling Frame

Because there was no sampling frame that precisely matched the research study's main goal, the researcher interacted with mobile commerce users from various socioeconomic backgrounds to determine the amount of penetration. The researcher attempted to comprehend the elements that motivate individuals to use this mode of commerce. Published reports from several mobile industry associations were also examined in order to determine the sample size for this study. Using convenience and quota sampling methods, an attempt was made to keep the sampling fairly representative across the demographic variables.

4.7.4.5 Sampling Media:

The primary data was gathered by distributing a structured non-disguised questionnaire to selected mobile commerce users in the Gujarat cities of Vadodara, Ahmedabad, Surat, and Rajkot, respectively.

4.7.4.6: Sample Size Determination:

The growing demand for research has necessitated the development of a quick method for calculating the sample size required to be representative of a given population.

The formula for calculating sample size can be found below.

Formula for determining Sample Size:

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

Were

n = required sample size.

π = According to the Marketing White Book from April 2018, internet penetration in India is predicted to be 60 percent (0.60 percent).

z = If the degree of confidence is 95%, the corresponding z value is 1.96.

D = The permissible interval is established as D = p (sample proportion) – (population proportion) = + or − 0.05, depending on the level of precision and desired precision.

This formula was obtained from a book written by Naresh K. Malhotra and Satyabhushan Dash (2011)[16].

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**

We may calculate the entire sample size based on the total 370 sample size by multiplying 370 by four strata (i.e., 370 x 4 = 1480). The following table (number 4.1) shows the total sample size for four cities.

Because the population sizes in each of the four cities are different, the Stratified Random Sampling method (Proportional Allocation) is utilised, and city-by-city sample allocation is calculated as follows:

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

$$n_1 = \frac{n\,N_1}{N}, \quad n_2 = \frac{n\,N_2}{N}, \quad n_3 = \frac{n\,N_3}{N}, \quad n_4 = \frac{n\,N_4}{N}$$

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 (7214225, 6081322, 4165626, & 3804558).

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

As a result, the sample size was set at 1480 people.

Table Number:4. 1:
Taluka Wise Distribution of Sample Size for calculating total sample size of the proposed research study

Sr. No.	Name of Taluka	* Total Population as per Census of India, 2011	** internet penetration estimated at 60 (0.60) percent	Calculated Sample Size
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 estimated sample size		**21265731**	**12759438**	**1480**

* https://www.census2011.co.in/census/state/districtlist/gujarat.html, Retrieved on 05/09/2018.[17]

** According to the Marketing White Book of April 2018, internet penetration estimated at 60 (0.60) percent in India. Source: Noor Warsia, Business World Marketing White book 2018-19[18]

4.8 : HYPOTHESES OF THE RESEARCH STUDY:

Research gaps uncovered by a comprehensive literature assessment prompted the researcher to put forward and evaluate the following statistical hypotheses:

4.8.1 : Hypotheses-1:

The selected drivers of m-Commerce viz., perceived cost, personalisation, privacy, perceived trust (Arpaci, 2016[19]; Zhang et al,2012[20]; Zhou,2011[21]), perceived risk (Liébana-Cabanillas et al., 2017)[22], perceived usefulness, perceived ease of use (Mclean et al., 2020)[23], social norms and perceived behavioural control has significant impact on consumers' attitude towards m-Commerce applications.

4.8.2: Hypotheses-2:

The selected drivers of m-Commerce viz., perceived cost, personalisation, privacy, perceived trust (Arpaci, 2016[19]; Zhang et al,2012[20]; Zhou,2011[21]), perceived risk (Liébana-Cabanillas et al., 2017)[22], perceived usefulness, perceived ease of use (Mclean et al., 2020)[23], social norms and perceived behavioural control has significant impact on adoption intention of m-Commerce applications.

4.8.3 : Hypotheses-3:

The attitude has a significant and positive impact on m-Commerce users' adoption intention of m-Commerce applications (Khalifa and Shen, 2008)[24].

4.8.4 : Hypotheses-4:

There is no significant association between selected demographic variables of m-Commerce users viz., age, gender, marital status, type of family, occupation and annual income vis-a-vis their perception regarding cost, personalisation, privacy, perceived trust, perceived risk, perceived ease of use, perceived usefulness, social norms, perceived behavioural control, attitude and adoption intention of m-Commerce applications.

4.8.5 : Hypothesis-5:

There is no city-wise difference in the opinion of selected m-Commerce users regarding selected m-Commerce drivers namely, perceived cost, personalisation, privacy, perceived trust, perceived risk, perceived ease of use, perceived usefulness, social norms, and perceived behavioural control with respect to their attitude and the adoption intention towards m-Commerce applications.

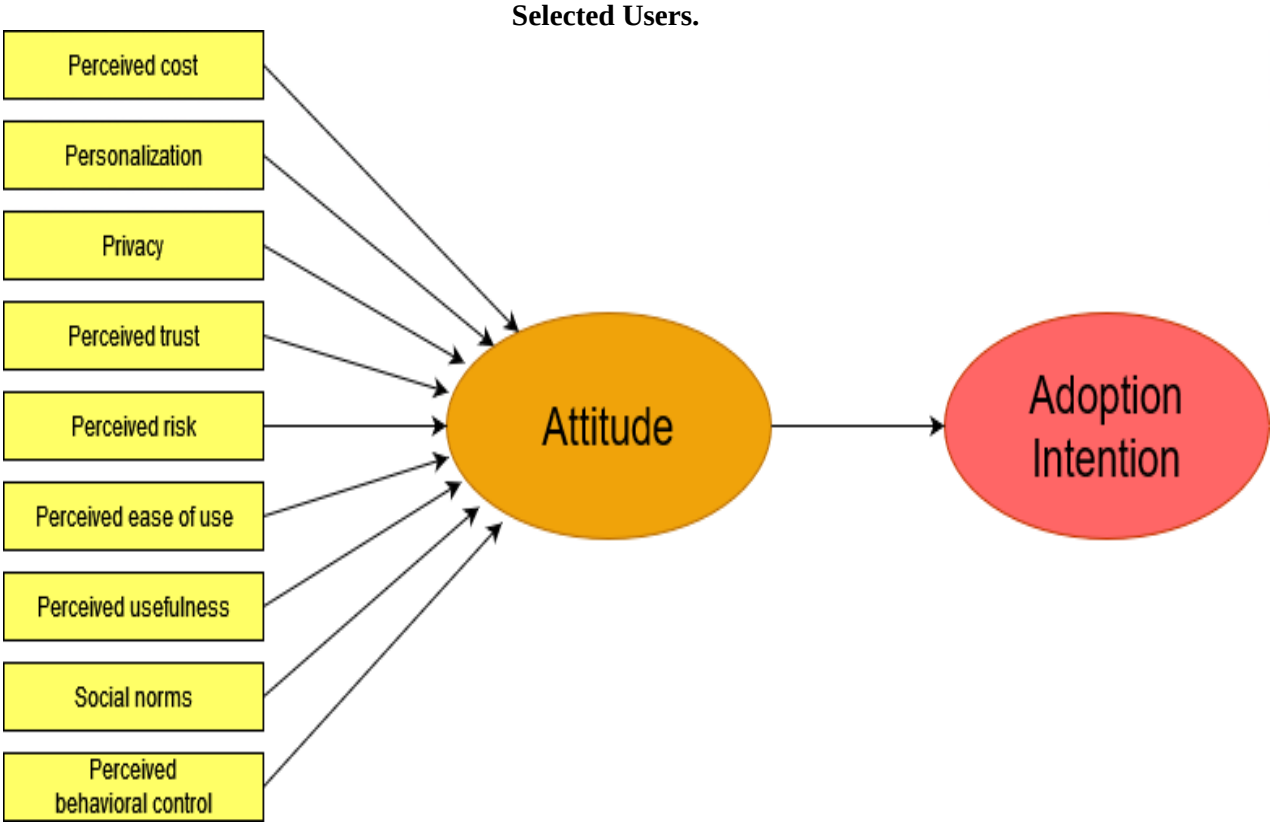
4.9 : CONCEPTUAL MODEL DEVELOPED AND USED IN THIS RESEARCH STUDY:

The researcher's assessment of literature for justification of hypotheses to be tested with the use of structured questionnaire is mostly based on models developed by Ajzen and Fishbein (Fishbein et al., 1980)[11], Davis (1989)[25], and others (Khalifa and Shen, 2008)[24]. The primary premise of Ajzen and Fishbein's theory is that people actively choose whether or not to engage in a certain behaviour, and that they assess and evaluate many criteria before engaging in it (Bauer et.al.2005)[26].

Human behaviour is preceded by intentions, according to the Theory of Reasoned Action (TRA), which are developed based on an individual's attitude toward the behaviour and perceived subjective norms (Khalifa and Shen, 2008)[24]. Individuals' perceptions of the impact of significant persons such as family, fellow-workers, bosses, and the media are captured by subjective norms. Ajzen expanded TRA into Theory of Planned Behaviour (TPB) by incorporating a new concept called "perceived behavioural control" as a predictor of both intention and behaviour. TPB provides for the prediction of actions that people do not have complete control over. Perceived behavioural control reflects both internal (self-efficacy) and external (environmental) limits on behaviour. The TPB has been widely utilised in the context of information technology adoption.

The researcher took a concise look at the available literature and constructed a theoretical model, as shown in Figure Number 4.1, to meet the research objectives. The model included selected drivers such as perceived cost, perceived usefulness, personalisation, perceived ease of use, privacy, social norms, trust, risk, and perceived behavioural control to investigate the impact of consumers' attitudes and intentions toward m-Commerce adoption. The study was conducted among chosen m-Commerce users from selected four Gujarat cities.

Figure Number 4.1:
Conceptual Model Developed and Used to Know the Drivers of m-Commerce Adoption Among Selected Users.



Source: Compiled by the researcher.

4.10 : DRAFTING RESEARCH INSTRUMENT FOR THE STUDY:

Using the gaps in the literature review in the chosen field of study as a guide, a structured questionnaire was developed with the study's primary purpose and research objectives in mind. Structured questions were used to gauge the perceptions of m-Commerce users on a Likert scale of factors affecting perceived costs, personalization, privacy, perceived trust, perceived risk, perceived ease of use, perceived usefulness, social norms, perceived behavioural control, attitude, and adoption intention. Age, gender, marital status, family type, occupation and annual income were some of the demographic factors used in this research study to choose m-Commerce users.

Based on a survey of the relevant literature, the researcher created the structured non-disguised questionnaire [For the questionnaire, please refer to Annexure II). The structured Questionnaire was created with the primary goal of this study in mind, as well as other research goals that were identified after finding gaps in the body of knowledge through a concise evaluation of the literature. The structured non-disguised Questionnaires contained neutrally worded questions, and m-Commerce users were asked to score their perceptions of factors influencing mobile commerce uptake.

Before designing the structured non-disguised questionnaire with relation to selected items that were used to gather responses from mobile commerce users, the researcher conducted a thorough assessment of relevant literature in the subject domain.

It was necessary to conduct pilot research in Vadodara before preparing the final version of the questionnaire. The selected m-Commerce users were given a pre-test, and their feedback was used to enhance and finish the design of the structured non-disguised questionnaire. The structured non-disguised questionnaire's reliability has been shown in Table Number 4.5.

The questionnaire is divided into two sections. The first section includes questions about the demographic profile of respondents. The second section includes questions about m-Commerce motivations, attitudes regarding m-Commerce applications, and intent to embrace m-Commerce applications.

To determine their level of agreement/disagreement, a 5-point Likert scale was employed. An attempt was made to assess the normalcy of the data acquired from 1480 m-Commerce users in the cities of Vadodara, Surat, Rajkot, and Ahmedabad, respectively which is given in Table number 4.4.

Information about the 1480 m-Commerce users who were chosen for the research study is given in Table Number 4.2.

Table Number: 4.2:
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
Criteria No. 1 to 9 Perceived Cost on Attitude and m-Commerce Adoption Intention			
Wei et al[27]	2009	1,6	02
Kim et al[28]	2010	2	01
Chong et al.[29]	2012	3	01
Venkatesh, Thong and Xu[30]	2010	8,9	02
Jillbert and Ahmad (2003)[31]	2003	4	01
Haque[32]	2004	5	01
Vrechopoukis et al [33]	2002	7	01
Criteria No. 10 to 14 Personalisation on Attitude and m-Commerce Adoption Intention			
Liang et al.[34]	2004	11	01
Kim and Jun[35]	2008	13	01
Solomon et al.[36]	2006	12	01
Kumar and Benbasat[37]	2006	14	01
Kim, Yoon and Han [38]	2016	10	01
Criteria No. 15 to 17 Privacy on Attitude and m-Commerce Adoption Intention			
Yang [39]	2005	15	01
Chong [40]	2013	16	01
Zhang, Chen, and Lee[41]	2013	17	01
Criteria No. 18 to 26 Perceived Trust on Attitude and m-Commerce Adoption Intention			
Chong et al.[42]	2012	19,25,26	03
Gefen et al.[43]	2003	18	01
Hsu et al.[44]	2014	24	01
McKnight et al.[45]	2002	23	01
Jarvenpaa et al.[46]	2000	21	01
Kao[47]	2009	22	01
Cao et al.[48]	2018	20	01
Criteria No. 27 to 33 Perceived Risk on Attitude and m-Commerce Adoption Intention			
Wu and Wang[49]	2005	28	01
Featherman and Pavlou[50]	2003	31	01
Luarn and Lin[51]	2005	32	01
Siau et al.[52]	2004	29,33	02
Jarvenpaa et al.[46]	2000	27	01
Islam et.al.[53]	2010	30	01
Criteria No. 34 to 38 Perceived Ease of Use on Attitude and m-Commerce Adoption Intention			
Wu and Wang[49]	2005	35	01
Moore and Benbasat[54]	1991	38	01
Bhattacherjee[55]	2001	34	01
Taylor and Todd[56]	1995	36	01
Venkatesh and Davis[57]	2000	37	01
Criteria No. 39 to 45 Perceived Usefulness on Attitude and m-Commerce Adoption Intention			
Wu and Wang[49]	2005	39, 41	02
Nysveen et al.[58]	2005	43	01
Chen and Chong[59]	2013	40	01
Chong et.al.[42]	2012	42	01
Wei.et al.[60]	2009	44, 45	02

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
Criteria No. 46 to 53 Social Norms on Attitude and m-Commerce Adoption Intention			
Fishbein et al.[61]	1977	50	01
Venkatesh and Morris[62]	2000	47	01
Taylor and Todd[56]	1995	46, 48	02
Venkatesh and Davis[57]	2000	49	01
Roehrich[63]	2004	51	01
Chong et.al.[42]	2012	52,53	02
Criteria No. 54 to 61 Perceived Behavioural Control on Attitude and m-Commerce Adoption Intention			
Pedersen[64]	2005	54,55,56,60	04
Lee and Wong[65]	2006	57,58	02
Zhang et al.[66]	2012	59,61	02
Criteria No. 62 to 70 Attitude on m-Commerce Adoption Intention			
Yang[39]	2005	63,65, 68	03
Oh et al[67]	2014	62	01
Lee and Park[68]	2006	66,67	02
Hung et al[70]	2003	69	01
Wei et al[27]	2009	70	01
Pedersen[64]	2005	64	01
Criteria No. 71 to 81 Adoption intention of m-Commerce			
Venkatesh and Davis[57]	2000	79	01
Lee and Park[68]	2006	81	01
Yang [39]	2010	80	01
Chong et al.[42]	2012	71,74	02
Wang & Li [71]	2012	72	01
Zhang, Chen and Lee[70]	2013	73	01
Wu and Wang[49]	2005	75,77	02
Wei et al[27]	2011	76	01
Lee and Park[68]	2006	78	01

4.11 : ASSESSING NORMALITY OF THE DISTRIBUTION OF DATA:

An attempt was made to assess the normalcy of data obtained from the cities of Vadodara, Surat, Rajkot, and Ahmedabad in Gujarat State, respectively. The normality of the data was evaluated using the Kolmogorov-Smirnov test (Table Number 4.3) because the sample size was greater than 100 (1480 responses were collected). The test's results are presented in Table 4.4, and they were judged to be significant at the 0.01 level of significance. As a result, the data gathered for this investigation were not normally distributed.

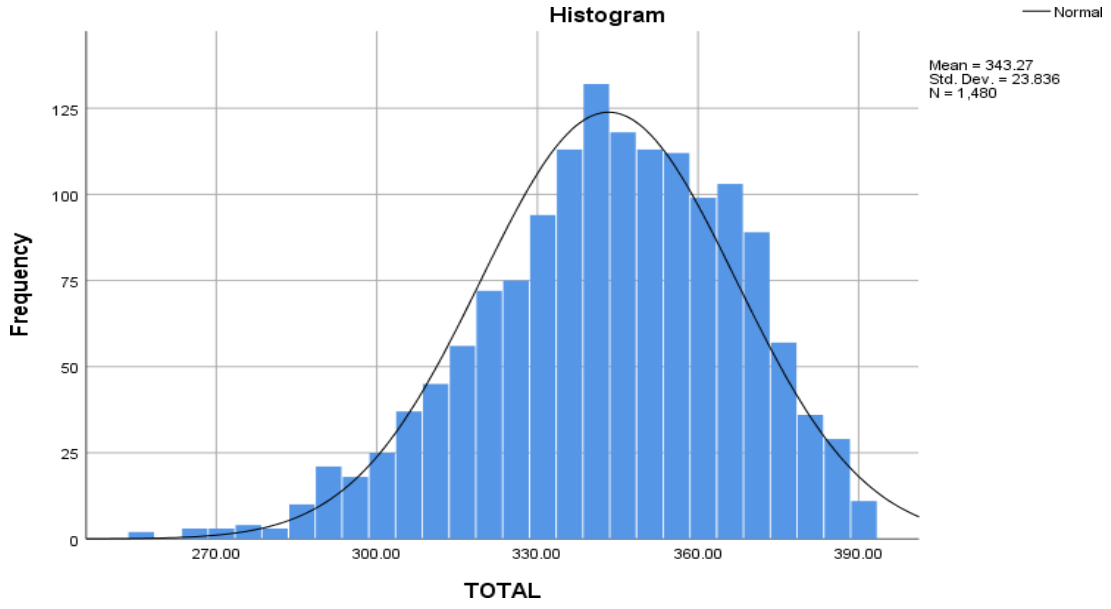
TABLE NUMBER: 4.3:
KOLMOGOROV-SMIRNOV TEST OF NORMALITY

Sr. No.	Factors	Statistic	DF	P-Value
01	Perceived Cost	0.183	1480	.000[c]
02	Personalisation	0.164	1480	.000[c]
03	Privacy	0.289	1480	.000[c]
04	Perceived Trust	0.248	1480	.000[c]
05	Perceived Risk	0.175	1480	.000[c]
06	Perceived Ease of Use	0.179	1480	.000[c]
07	Perceived Usefulness	0.164	1480	.000[c]
08	Social Norms	0.205	1480	.000[c]
09	Perceived Behavioural Control	0.279	1480	.000[c]
10	Attitude	0.089	1480	.000[c]
11	Adoption Intention	0.208	1480	.000[c]
Note: c. Lilliefors Significance Correction.				

The histogram of m-Commerce users is shown below. The numbers on the vertical axis represent the frequency of cases, while the values on the horizontal axis represent the midpoints of value ranges for qualities that were awarded a total score by m-Commerce users. It may be deduced from the histogram (Graph Number 4.1) that the data were negatively skewed.

The fundamental data acquired are quite close to the normal distribution, as evidenced by the table of descriptive statistics and the graph of Q-Q Plot (Graph Number 4.2).

Graph Number: 4.1:
Histogram Showing Distribution of Data



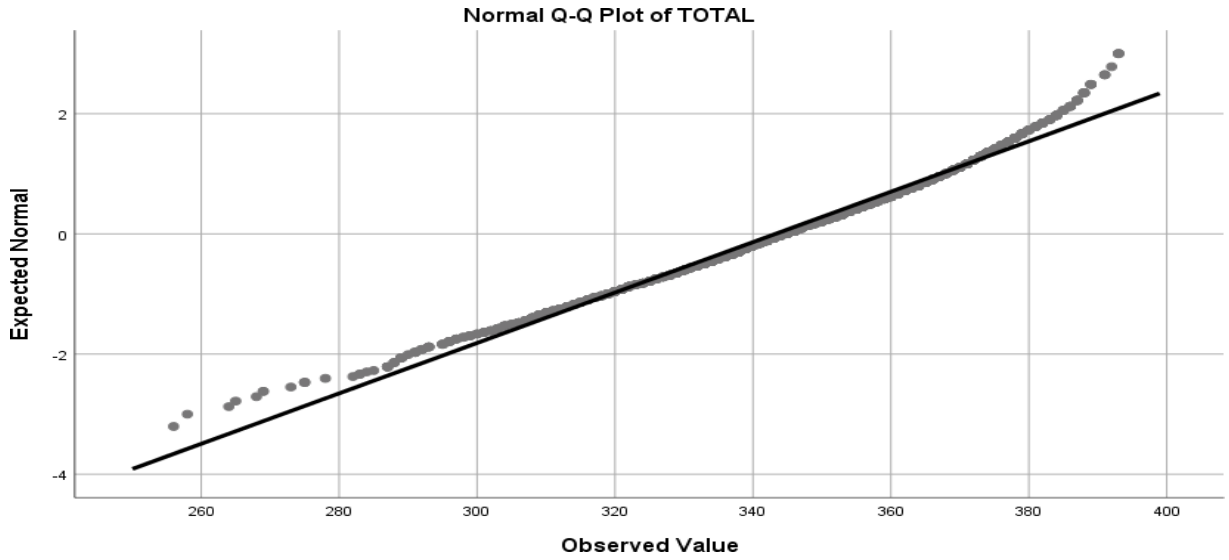
The obtained primary data had a skewness of -0.449 and a kurtosis of -0.019. Table Number 4.4 shows the skewness and kurtosis values. If the observed distribution was perfectly normal, the skewness and kurtosis values would be 0. Positive skewness values showed a positive skew, whereas positive kurtosis values indicated a peaked distribution.

A negative skewness number suggested negative skew, while a negative kurtosis value showed a flatter distribution. With a negative skewness of -0.449, the above distribution is not normally distributed, and the kurtosis value of -0019 makes the distribution flatter.

Table Number: 4.4:
Descriptive Values for Normality Test of m-Commerce Users

Particulars		Statistic	Std. Error
Mean		343.2743	.61960
95% Confidence Interval for Mean	Lower Bound	342.0589	
	Upper Bound	344.4897	
5% Trimmed Mean		344.0203	
Median		345.0000	
Variance		568.171	
Std. Deviation		23.83633	
Minimum		256.00	
Maximum		393.00	
Range		137.00	
Interquartile Range		33.00	
Skewness		-.449	.064
Kurtosis		-.019	.127

Graph Number: 4.2:
Q-Q Plot of the Normality of the Distribution of Data of m-Commerce Users



4.12 RELIABILITY TEST OF THE STRUCTURED NON-DISGUISED QUESTIONNAIRE:

The degree of cohesion among the scale items (Malhotra, 2007[72]; Nunnally, 1981[73]) and validity (Malhotra, 2007[72]; Parasuraman, Berry, & Zeithaml., 1991[74]) of the structured questionnaire are reflected in the reliability of a scale as evaluated by coefficient alpha. In this study, reliability tests were conducted and a composite score was calculated to determine the strength of the variables under investigation, which included Perceived Cost, Personalisation, Privacy, Perceived Trust, Perceived Risk, Perceived Ease of Use, Perceived Usefulness, Social Norms, Perceived Behavioural Control, Attitude, and Adoption Intention.

Table Number: 4.5:
Reliability of Opinion of Selected m-Commerce Users on Selected Criteria for the Study

Variables	Number of Statements	Total
Perceived Cost	9	0.766
Personalisation	5	0.614
Privacy	3	0.952
Perceived Trust	9	0.795
Perceived Risk	7	0.691
Perceived Ease of Use	5	0.626
Perceived Usefulness	7	0.758
Social Norms	8	0.823
Perceived Behavioural Control	8	0.976
Attitude	9	0.797
Adoption Intention	11	0.875
TOTAL	**81**	0.872

In Table 4.5, a summary of Cronbach's Alpha scores for all 11 sets of m-Commerce user response criteria (Cronbach, 1951)[75] were exhibited. All dimensions of the structured questionnaire related to assessing the variables under investigation were examined, with Cronbach's alpha ranging from 0.614 to 0.976, indicating internal scale reliability and reflecting the degree of cohesion among the selected items/statements (Malhotra, 2007[72] and Nunnally, 1981[73]).

4.13 : DATA ANALYSIS AND INTERPRETATION OF THE RESEARCH STUDY:

The researcher employed adequate statistical tools to evaluate the hypotheses by using proper significance tests and using appropriate statistical software for data analysis and interpretation. Frequency Analysis; Computation of Mean; Chi-Square test, Kruskal Wallis, and Structural Equation Modelling were also used by the researcher to test the significance of the specified statistical hypotheses in order to provide findings and implications of this research study.

The demographics of m-Commerce users in the Gujarati cities of Vadodara, Ahmedabad, Surat, and Rajkot were analysed using data collected from a variety of sources.

4.14 : FINDINGS AND IMPLICATIONS OF THE RESEARCH STUDY:

The researcher has sought to present findings through the use of numerous statistical tools and methodologies to infer conclusions and to produce relevant strategic business, economic, and management applications of this research study. The use of correlation demonstrated that there is relationship between the perceived cost, personalisation, privacy, trust, risk, perceived ease of use, perceived usefulness with the attitude. Social norms; perceived control and attitude and it has also related with the adoption intention of users.

The Chi-Square Test was used to assess the relationship between chosen demographic factors of mobile commerce users and their responses to selected m-Commerce adoption drivers.

The results of the research study were also based on the Kruskal-Wallis Test, which was utilised to uncover disparities in the replies of selected m-Commerce users in Gujarat by city.

The statement dimensions were reduced using factor analysis, and the relationships between the variables were predicted using Structural Equation Modelling (SEM) using AMOS. The researcher has also attempted to come up with some legitimate implications based on the outcomes of the research investigation.

4.15 : RECOMMENDATIONS AND SUGGESTIONS OF THE RESEARCH STUDY:

The researcher through this study has tried to analyse and identify the factors that are capable to give enough justification to consumers' adoption decision towards m-Commerce. The conceptual model framed and tested in this study would provide a better understanding of online consumers' buying behaviour. From the inputs received from this study, m-Commerce service providers would be able to strategize and reengineer their business process to match with customers' requirements. M-Commerce merchants can develop proper policies and procedures that would help consumers to use m-Commerce services effectively and efficiently.

In this section, the researcher has attempted to provide an overview of the complete PhD thesis. The study's recommendations, ideas, and limits, as well as the directions for future research, have been presented by the researcher. Following the analysis of the collected primary data, hypotheses testing and development of Structural Equation Modelling (SEM), researchers recommended that although mobile is a powerful business tool today, its user interface, small screen size and operating system must be optimised before the content is delivered. Small screen size creates problem when customers are looking for exclusive visuals about the products they want to buy. Even though users opined that internet and m-Commerce transactions are not costly and they do have the resources to adopt, but felt that m-Commerce burden them psychologically, may be due to privacy and risk related issues. The m-Commerce service provider should focus on these aspects and try to create trust and confidence among the users.

Most of the companies are slowly moving towards m-Commerce due to vaster audience base, helps to strengthen their brand, also helps to keep up with competitors, better conversion and sales. Technological advancement and changes in buying habits of consumers definitely leads to mobile centric approach while doing business. Merchants are also satisfied due to Wider Audience base, Enhanced User Experience, Direct communication, easily adapt as per the customer's needs. It also helps in increasing customer interactions and also to improve the number of transactions. The rise of mobile has also led to new trends in marketing like mobile content marketing. Reaching customers at right time through geo tracking and programmatic advertising. Also, mobile analytics may help you learn a lot about your customers' buying habits by following their data from the moment they discover a product to the time they buy it.

The study revealed the majority of the people spent more than half an hour for mobile shopping and late evening shopping from home is preferred for m-Commerce, the m-Commerce merchants can think of providing some limited time offers to encash this opportunity. Even though no users have shown any dissatisfaction towards this medium, 32 percent users have remained neutral regarding their overall experience with m-Commerce. In a highly competitive society like ours, 32 percent is not a negligible number. m-Commerce service providers should take immediate steps to improve user experience with this buying platform. Many factors had contributed to better consumer experiences like personalised offers, Easy comparison of product, variety of payment option, brand visibility, convenient checkouts, updates through push notification, better instore experiences with mobile optimisation, bar code or QR code scanner for better product information, Customer Support facility with the help of chatbot and messenger apps, Variety of Payment Methods like credit card, PayPal, or cryptocurrency which they could easily be integrated into the mobile store.

4.16 : LIMITATIONS OF THE RESEARCH STUDY:

- Research was conducted primarily among urban m-Commerce users in the four selected cities of Gujarat, Vadodara, Surat, Rajkot, and Ahmedabad; therefore, it would be improper to extrapolate the findings to the total population of the Gujarat State.
- It is possible that despite the researcher's best efforts to collect primary data through a predesigned questionnaire that minimises ambiguity, the responses collected may result in skewed and erroneous data information that influences analysis and findings of the research study.
- In this study, all of the measures of constructs were collected at the same time. Because of this, people's attitudes toward mobile commerce may change over time as a result of increased experience and advancements in mobile technology. In addition, it was difficult to determine a suitable sample size due to the rapid growth in the number of users. This means that long-term study on the factors that drive mobile commerce adoption should be conducted.
- Aside from regional limitations, the outcomes of the research study are hampered by a small sample size. Furthermore, the convenience sampling method was used in this study, which has the potential to under- or over-represent the population, resulting in skewed results.
- Since the study's resources, both in terms of time and money, were limited, the outcomes were influenced to some extent.
- The "Neutral" response category in the surveying samples may prevent the genuine facts and figures from being revealed.
- There are a variety of approaches for measuring mobile commerce users' attitudes and adoption intentions, as well as a variety of models and assessment procedures. Experts' opinions may differ in this area.
- The study was conducted from the point of view of the target audience. In addition, it can be applied to merchants.

4.17 : DIRECTIONS FOR FUTURE RESEARCH

This research was focusing on B2C consumer adoption of m-Commerce and the researcher was focusing on consumer perspective, future research can have a two- way study and study can also be undertaken in B2B m-Commerce adoption. This study was focusing on adoption intention, which can further be extended to know the actual adoption and continuance intention of m-Commerce. The research study can be undertaken in different context and can be with new constructs like perceived entertainment, which is not covered in this research study. As this is a one-time study, it fails to capture the changes in user reaction over time, longitudinal study can be undertaken to get better insights in the user reaction in a rapidly growing platform like m-Commerce. The moderating role of Gender, Education and income can also can be incorporated to know the adoption intention in the future research studies.

4.18 : CHAPTERISATION SCHEME OF THE PHD THESIS:

4.18.1 : Chapter Number I: ICT Sector in India: An Overview:

The first chapter entitled "Information and Communication Technology Sector: An Overview", has started with a brief introduction of the Information and Communication Sector (ICT sector) in India which is categorized into Information Technology (IT) Sector and Telecommunication sector. In the segment discussing the IT sector, the researcher has given an overview of the IT sector, discussed the market size and revenue of the IT-BPM (Business Process Management) sector in India, also discussed Industry 4.0 which is about digital transformation through state-of-the-art next-generation technology like Blockchain, Artificial intelligence (AI), Machine Learning, Cloud computing and robotics and also the Government initiative to promote IT-BPM sector in India. In the Telecommunication sector, the researcher has discussed the Telecom market in India, which consists of wireline, wireless and broadband subscribers. The researcher has also discussed the Internet penetration in India and also discussed in detail mobile internet users in the country and also Government initiative to promote the Telecom market in India. A brief overview of The National Telecom Policy 2018 was also mentioned in the chapter. The role of ICT in economic and social development was also discussed in detail. Challenges faced are also included in this chapter. Application of ICT in different functional areas like Governance, Healthcare, Education, Agriculture, Manufacturing, Retailing, Banking, Finance and Insurance and in protecting the environment are elaborated with examples. The researcher has also discussed the Evolution of e-commerce due to the internet revolution in India, the market size of e-commerce companies, major players, e-commerce models, government initiatives, advantages, disadvantages, trends in e-commerce and the gradual shift from e-commerce to m-Commerce are discussed in detail.

4.18.2 : Chapter Number 2: M-Commerce:

The second chapter titled “mobile commerce: An Overview” has given an overview of m-Commerce. The chapter started with a brief introduction followed by concept and attributes, history and growth of m-Commerce. The researcher has tried to differentiate the term m-Commerce from e-commerce. Components of m-Commerce, as well as m-Commerce service classification, are also discussed in the unit. Application of m-Commerce in different functional areas like banking, ticketing, advertising, payment, health, auction, entertainment and retailing are also deliberated. m-Commerce value chain, members involved in the value chain and their respective roles are also elaborated here. The researcher has also mentioned the essential features and the role of mobile apps in promoting m-Commerce. The benefits and barriers of m-Commerce were also conferred. The researcher has concluded the chapter by including the latest trends in m-Commerce that have bolstered its dominance in the Indian market.

4.18.3 : Chapter Number 3: Review of Literature:

The third unit titled “Review of Literature” has tried to give a concise Literature Review of the impact of selected drivers namely perceived cost, perceived usefulness, Personalisation, perceived ease of use, privacy, perceived behavioural control, trust, Risk and social norms on attitude and the effect of attitude on purchase intention and also a model was developed to know the drivers of m-Commerce adoption. The unit has started with the theoretical foundation behind the adoption behaviour of Information System (IS) research. The researcher has discussed widely used models of ICT adoption viz, Technology Acceptance Model (Davis, 1989), Theory of Reasoned Action (Fishbein and Ajzen, 1975), and Theory of Planned Behaviour (Ajzen, 1985) and discussed briefly about United Theory of Acceptance and Use of Technology(UTAUT). Then the researcher has discussed prior research studies related to mobile services and the studies related to Technology Acceptance Model (TAM). The researcher has also reviewed the literature available in the area of m-Commerce concerning selected drivers of m-Commerce VIZ., perceived cost, perceived usefulness, Personalisation, perceived ease of use, privacy, perceived behavioural control, trust, social norms, Risk, attitude and adoption intention. Earlier Ph.D. Theses and Dissertations as well as research articles; research papers; empirical studies; research reports and results of empirical field surveys undertaken by other researchers in India and around the world have all been used to try and conceive the study's model. The researcher has analysed Reference Books and publications of the proceedings of seminars, conferences, and workshops relevant to the research topic. As a result, the researcher has executed a thorough literature analysis in order to define and select the research study's objectives.

4.18.4 : Chapter Number Four: Research Methodology:

The "Research Methodology" chapter in this research study goes into great detail on the many steps taken to complete this investigation. Methodological and procedural steps and conceptual aspects of the research methodology of this study have been outlined in brief by the researcher, which have mainly included: the basic terms, rationale; scope and coverage; research design; objectives, hypotheses, model, sources of secondary data, and sampling decisions. It has explained how to collect data and how to analyse and interpret it using statistical tools and techniques.

4.18.5 : Chapter Number Five: Data Analysis and Interpretation of the Research Study:

The outcomes of the research study based on analysis and interpretation of the obtained primary data from selected m-Commerce users from the selected four cities of Gujarat State are presented in Chapter 5, 'Data Analysis and Interpretation.' It has provided factual data and analysis on a number of topics, including a profile of selected m-Commerce users, a response regarding the friendliest mobile operating system, frequency of shopping via mobile, preferred location for shopping via mobile phones, average time spent shopping, source of information for online shopping, and the types of products they purchased via smart phone, all of which will assist service providers in identifying their target market. The reason for downloading mobile shopping apps, as well as overall awareness, download, and usage of m-Commerce apps, were also investigated by the researcher. The researcher has analysed Perceived Cost, Personalization, Privacy, Perceived Risk, Perceived Utility and Ease of Use, Social Norms, Perceived Behavioural Control, Attitude, and Adoption Intention of m-Commerce consumers. The overall satisfaction of selected respondents with m-Commerce was also discussed. The data analysis results were provided as percentages, averages, and frequency distributions, all of which were accompanied by graphical representations. The data was analysed by the researcher using the statistical software SPSS-25 version.

4.18.6 : Chapter Number Six: Findings and Implications of the Research Study:

The results of Testing of Hypotheses were provided in Chapter Six, titled "Findings and Implications of the Research Study," using various statistical methods and techniques to bring out business with managerial strategic implications of this research study. The researcher presented the research study's findings and conclusions based on inferences drawn from data analysis using Correlation, Chi-Square, Kruskal-Wallis Test, Factor Analysis, and Structural Equation Modelling (SEM).

4.18.7 : Chapter Number Seven: Conclusions, Recommendations and Suggestions of the Research Study:

The PhD Thesis is presented in shortened form in Chapter 7. It has offered the research study's recommendations, ideas, limits, and future directions. It includes the researcher's annotations in the form of conclusions, ideas, and recommendations. The researcher also presented her concluding observations based on the results and conclusions from the main data, which were obtained from a total of 1480 m-Commerce users conveniently drawn from four cities in Gujarat, namely Ahmedabad, Surat, Vadodara, and Rajkot.

An attempt has also been made to recommend some key areas where m-Commerce system developers and m-Commerce merchants can improve in terms of providing user-friendly value-added features and high-quality services to increase adoption rates. Several recommendations have been presented based on the researcher's learning, understanding, and empirical evidence systematically deduced from this research investigation, as well as some valuable suggestions that have evolved during the research study's conduct.

The various secondary sources of data and information used in the conduct of this research study are listed in the 'Selected References' section at the end, and the 'Appendix' section provides supporting annexure.

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