# **CHAPTER 01**

**INTRODUCTION**

## **Introduction to the Chapter**

Chapter 01 targeted on to achieved the background study to get an idea about logistics, transportation, Determinants of Customer Satisfaction in Mobile taxi booking service in Sri Lanka with respect to the Colombo city. Research problem should be identified to conduct the research. Because otherwise final objective of the research will not be achieved. So, identification of the research problem is a key aspect of an academic research. To achieve the research objective what kind of questions should be asked are discussed under this chapter.

## **Background of the Study**

The initiation of traveler transport by taxis that are currently working in Sri Lanka goes back to the history until last piece of 1978. After the open monetary economy policy adopted by the government of Sri Lanka during that period, many changes have occurred in almost all the divisions, including work, merchandise and enterprises. The administration which is involved in procuring taxis can also be named as one such division. Morris Minor was the vehicle that had turned out to be the most frequent as an employing auto around back then. The taxi benefit was worked by sole proprietors and companies that owned vehicles through recruiting drivers.

Taxis were familiarized among the population since it is found to be a littler vehicle which satisfies the transportation needs of the people for a less charge than transporting through high comfortable vehicles. This familiarization demonstrated that taxis could be purchased at a less cost than an auto vehicle due to several reasons.

As we all know, the emergence of smart phone technology has led to extraordinary changes in all aspects of the global society. It is widespread in work and family, education, health and entertainment, as well as in many other areas. Key features of smartphone technology, such as mobility and broad coverage, create five value-added attributes that transcend geographic and temporal barriers. Five value-added attributes are instant connection, customization and localization of products and services, ubiquitous, practical (Rainer, 2013). Thanks to these added-value attributes of smartphone technology, mobile applications are developing rapidly since Apple Inc. first launched the iPhone in 2007. Mobile applications are end-user software, created for operating systems for mobile devices, which expand their capabilities. Mobile device and Mobile apps are typically operated by four mobile operating systems, including Apple App Store, Google Play, Windows Phone Store and BlackBerry App World. Mobile apps are usually offered at the lowest cost or for free.

In the recent years, the number of organized taxi services have increased as a result of the stringent competition among various taxi operators such as Kangaroo cabs, Nano cabs, Budget taxi, Fair taxi, Pick me and Uber etc. In this regard, it is important to understand the behavior of customers during the past decade since the facilities of transportation have undergone tremendous changes in urban areas. Out of all the available modes of transportation, the three wheelers and cabs have become the most popular and frequently used mode of transportation in metropolitan and urban cities in Sri Lanka.

Table 1.1-Overview of the Telecommunication Sector as at end of Dec 2018

|  |  |
| --- | --- |
| Number of System Licenses | 33 |
| Number of Fixed Access Telephone Subscriptions | 2,484,616 |
| Fixed Access Telephone Subscriptions per 100 inhabitants (Dec 2018) | 11.5 |
| Number of Cellular Mobile Telephone Subscriptions (90 days) | 32,528,104 |
| Cellular Mobile Subscription per 100 inhabitants (Dec 2018) | 150 |
| Fixed Narrowband Subscriptions | 63 |
| Fixed Broadband Subscriptions | 1,530,036\* |
| Mobile Broadband Subscriptions | 5,733,062\* |
| Number of Public Pay Phone Booths | 5,091\* |

Source: (Statistics: TRC, 2019)

As a result of the development in technology, the taxi service industry is currently growing at a rapid pace. In the present era, the customers have the facility to book a cab or three-wheeler using mobile applications at any time given the location of the passenger. The pricing strategies of the taxi operators have influenced the demand of the customers in making a choice over a traditional mode of transportation such as auto vehicles, public and private buses etc. Similar to most of the industries, the taxi service industry also has undergone many transformations in internet technology.

The intense competition among the taxi operators have led the customers to book taxies at competitive prices which is affordable. In this regard, the present study briefs about the behavior of customers when booking cabs. The variables such as coupon redemptions, innovativeness and price consciousness can be considered as important factors in formulating business strategies. This study provides ideas and factors for marketing managers and academicians in taxi services industry to gain insights of consumer behavior towards cab services.

## **Problem Statement**

There are lots of online taxi booking companies in Sri Lanka who can give same product and service to the customers in very effective way. But it is very difficult to select best service provider among those, maintaining the cost and service quality.

In Sri Lanka, still Logistics and Transport industry is in a very preliminary stage. Though the transport and logistics industry have a little growth but development of service which provide by mobile taxi booking companies has not seen the paralleled growth. There are lot of drawbacks can identify with in the industry of mobile taxi booking in Sri Lanka. For instance, lack of infrastructures such as vehicles, lack of professionals, and lack of value-added services by those services providers. Therefore, mobile taxi booking firms should address these shortcomings to improve their respective activities. Those companies must not only care and focus on the current customer expectations and satisfaction but also should develop the capability to motivate the customers to repurchase or to maintain long-term relationship with them

In this changing business environment selection of a transport service provider has become a multi-criteria decision problem which involves qualitative and quantitative criteria. In Sri Lanka, people identify the best service provider using their past experience. The main reason for this is relatively few studies have focused on the factors that influence the customer satisfaction in taxi services like Uber and other relevant local taxi services in countries such as India, Indonesia, and Vietnam etc.

Therefore, it is very important to carry out research study regarding to the mobile taxi booking app selection in the aspect of Sri Lanka. This research is targeted on determine the factors that affect to the mobile taxi booking app selection in Sri Lanka with respect to the Colombo.

## **Objective of the Research**

The main objective of this research is to identify the factors affecting to the customer satisfaction towards the mobile taxi booking service industry in Sri Lanka. When selecting a service provider there are lot of criteria and sub criteria and it depend on person to person.

Further, the following secondary objective is formulated,

* To study the overall customer satisfaction of the mobile taxi booking service industry in Sri Lanka.

## **Research Questions**

Though there many taxi booking apps most of the consumer used book taxies via only selected booking app. And only urban area community is widely using these apps for book the taxies. Though Sri Lanka carried huge taxi booking community, there is less study on booking app usage behavior and adoption. Therefore, this study was carried out to find out the determinants which are affect to the customers when they are selecting a taxi booking service provider. Taxi service providers must not only care and focus on the current customer expectations and satisfaction but also should develop the capability to motivate the customers to repurchase or to maintain long-term relationship with them (Chin, Sze Hui, Lin, Keng Soh, & Wong, Wai Peng, 2013).

The following research questions are intended to address in this study.

* What are the positively and negatively correlated factors that are affecting to the customer satisfaction in mobile taxi booking industry in Sri Lanka?
* What is the current overall satisfaction level in mobile taxi booking industry in Sri Lanka?

## **Significance of the Research**

This study is significant in different aspects. First it is scientifically significant since this area of the study has not been very much focused on the academics in related to the field of logistics and transport. Still there is lack of research and surveys conducted for the mobile taxi booking industry in Sri Lanka.

Secondly this study has a higher significance to the mobile taxi booking service providers and their customers who are gain services from them. Hence there are several companies in Sri Lanka which profit oriented mind set where as they go for customer-oriented strategy. They should more focus on fulfilling customer expectations and satisfaction. That led the companies to the more profitable and sustainable in the long run. Identified factors can be used to develop a model, which will enable people to mitigate the selection of incompetent service providers. Apart from that this research will helpful for future researchers since there are no any research articles on this topic to refer in Sri Lanka.

## **Outline of the Paper**

Chapter 01 is consisting of background of the study, problem statement, objective of the study, research questions, significant of the study and outline of the paper.

Chapter 02 which is literature review, explains what is transport, How we can measure the service quality, Customer Satisfaction, Global studies based on service quality, Service provider selection criteria, empirical study based on paste literature.

Chapter 03 research methodology consists of research methodology, sample design, data collection, conceptualization, dimensions and items of the questionnaire, data analysis and model development.

Chapter 04 consists of analysis of demographic factors and model development.

Chapter 05 consists conclusion, recommendation, limitation of the study and further research.

## **Chapter Summary**

From the chapter 01 researcher describes about background of the study, problem statement, objective of the study, research questions, significant of the study and a summary outline of the whole research. Objective of the study is to identify the factors affecting to the customer satisfaction towards the mobile taxi booking service industry in Sri Lanka.

# **CHAPTER 02: LITERATURE REVIEW**

## **Introduction to the chapter**

Literature review is one of the most significant chapters in the research. In this empirical study, literatures have been used in various purposes. It could be considered as a comprehensive guide as well as foundation to conduct the empirical research on “Factors affecting of customer satisfaction in mobile taxi booking service in Sri Lanka with respect to the Colombo City.” Literature review has presented under several sub topics. First sub topic briefly explains the mobile taxi booking industry. It is essential to give a clear idea of mobile taxi booking industry. Under second sub topic, it describes mobile taxi booking service-related studies. It will help to address the current global trends in mobile taxi booking service by reviewing the global studies. Further it analyzes mobile taxi booking related studies with respect to Sri Lanka. Next sub topics briefly explain mobile taxi booking service quality and customer satisfaction in taxi industry respectively. Finally, it explains similar studies related to customer satisfaction in mobile taxi booking service.

## **Taxi Industry**

### **Transportation**

According to (Onderwater & Kishoon, 2017) it has mentioned that transportation is a derived demand originated due to economic and social activities. According to (Thalagala & Kalukottege, 2015) it has defined transportation as carrying passengers or goods from one place to another by modes such as land, air or water. In early period of time people have used non-motorized modes such as walking, animal riding, cycling and etc. in order to full fill their needs. However, with the rapid development of transport infrastructure these practices were changed. With that evolution transportation pattern in Sri Lanka also has changed. At present the road transportation in Sri Lanka is highly based on motorized modes such as cars, vans, buses, motorbikes, three-wheelers and etc. Furthermore (Chandrakumara, 2015) has divided transportation in Sri Lanka into five categories. Those categories are public bus transport services, railway transport, hired vehicle transportation, Private vehicle transportation and finally comes the non-motorized transportation which comes in means of cycling and walking.

### **Taxi Service**

During the past 10 years, the facilities of transportation in urban areas have encountered vast changes. Taxis can be identified as the private and customized vehicles which are used by passengers to transport from one destination to another. Thereby the taxis are considered as a key mode of transportation in urban areas of countries. According to (Kumar & Namavaram, 2016) passengers of the modern era prefers taxis in facilitating their transportation requirements due to many reasons such as on time availability and high flexibility in changing routes.

According to (Gwilliam, 2005) demand of taxis vary from one country to another based on the time of the day. Peak demand for taxis can be noticed during evenings, late nights or public holidays when public transportation is limited.

The demand for taxi services have been emerged in the modern world due to the verified security of taxi service passengers acquired through global positioning system (GPS) (Hanif & Sagar) . In addition, passengers select taxi service over other mode of transportation since they there have the option to travel to any place at any time of the day despite the gender barriers

## **Taxi Service-Related Studies**

### **Taxi Service-Related Studies in Global**

As a result of the rapid development of technology, the modern customers have the facility to book a cab or three wheeler using mobile applications at any time given the location of the passenger (Chen, 2014).

Moreover, the taxi industry around the world has grown similarly along with global taxi services such as Uber. (Harding, 2016) explains that three wheelers are mostly used in transportation that take place in urban areas before the popularity for cabs and cars. Anyway due to well-planned and systemized aspects of taxi services, there is high growth encountered globally around many countries.

According to (Aarhaug, 2016) most of the tourists in Qatar use taxis for their outings to fulfill their entertainment and retail needs. Also (Dachyar & Rusydina, 2015) states in their research that Taxi has been raised very fast in tourist desirability areas in Indonesia. In countries like Singapore, Hong Kong, Hangzhou quality of taxi services is a key area to focus due to intensive competition among taxi service providers (Zhi & Xiao, 2011) proving above has mentioned that in those countries, taxi service providers compete in the market in areas of safety, cleanliness and comfort, knowledge of routes, fare meters and convenient booking methods to provide a superior serviced to their customers.

As explained by (Lin, 2014) in urban and municipal cities across the world, taxis have been identified as a nuisance as they cause heavy traffic jams and expressively contaminated the air resulting in environmental pollution. Therefore, most of the countries have focused on controlling the quantity of taxis imported, have taken actions to control the prices within taxi services and have limited issuing licenses and tenders (Gwilliam, 2005)

In addition, (Gwilliam, 2005) states that the taxi service industry is covered by many regulations such as vehicles safety and emission control and vehicle cleanliness, driver’s eccentric and route knowledge, safe driving skills. (Dempsey, Shapiro, & Benjamin, 1987) predict in his research that the burden will be passed on to the passengers if the taxi service continuously gets bounded by rigorously rules and regulation.

However, in business cities the traffic is mainly created by the idling taxi drivers moving around in the city looking a passenger and by Passengers who can stand on the road waiting for a taxi (da Silva & Balassiano, 2011). Researchers proposes that it is imperative to use map or app to find both passenger and idling taxi drivers, which will empty taxi location and eliminate the traffic jam and the pollution created.

### **Taxi Service in Sri Lanka**

High Proportion of Sri Lankan transportation system is dominated by the taxi service providers. In the Sri Lankan context taxis have been evolved since 1980s and presently, the industry comprises more than 300, 000 three-wheelers and cabs (Kumarage, Bandara, & Munasinghe, 2010) have described that vehicles are becoming a popular mode of transportation due to their availability, provision of door to door service, ease in contacting and perception of being “affordable”

However, taxis in Sri Lanka are mostly individually operated with most owned by the operator and others hired on a monthly or daily basis. Inability of school leavers to find a job, the attraction of a self-employed job, status of driving a vehicle and relatively easy work are the major attractions that foster entry to the industry (Dharmartne & Ameratunga, 2004). Even though the industry is attractive the incomes are comparatively low compared to other jobs these young individuals can engage in.

Barriers exist to enter the market from unionized parking places and drivers but no formal barriers can be identified in the Sri Lankan context. The fact that this industry being highly un-regulated has led to the entry of large number of individual operators in the market.

On other hand, (Akalanka et.al, 2016) claims that the public have a negative perception on this industry due to the traffic congestions created, sound and air pollution involved, price irregularities and mostly due to the associated illegal activities conducted by the taxi drivers. However, according to the Daily Mirror (2016) article author explained that these perceptions were addressed by Uber and Pick me by introducing mobile apps which assured more security and regularity in fares.

“Uber” Company has launched mobile app and website for passenger to book a taxi without facing any doubts. The company has mainly focused on professional travelers who use taxi service for significant meeting, appointment, visit to airports and stations. Also “Pick Me” Company has launched mobile app for Sri Lankan people to find their taxis easily. “Pick Me” has already stretched more than 800,000 local users and 30,000 taxi vehicles, and they have been setup 70 per cent three wheels in their operation.

## **Taxi Service Quality Related Studies**

As in other industries the survival of a taxi service provider significantly depends on the extent to which they address their customer requirements. Therefore, customer centric perspective is adopted by most of the taxi drivers to retain their customers loyal whilst achieving a competitive advantage. Accordingly, as earlier literature indicates, taxi drivers and companies should pay attention on improving quality of service and charging fare prices from passengers for their rides (Gustafsson, Johnson, & Roos, 2005).

By improving the quality of the service customer satisfaction can be achieved. Therefore, it is critical to focus on improving the service quality of the taxi services. (Horsu & Yeboah, 2015)did a study that focused on the impact of service quality and customer satisfaction in the minicab taxi services in Ghana and found out that service quality variables especially reliability, influenced the customer satisfaction. Through a similar study conducted by (Techarattanased, 2015)it was revealed that the service quality of Metered taxi services in Bangkok, Thailand was significantly affected by responsiveness aspect of service quality.

In addition, research conducted by (Dachyar & Rusydina, 2015) to identify the link between customer satisfaction and service quality in Jakarta’s taxi industry in Indonesia found that customer satisfaction is greatly affected by 6 factors; company image, perceived value and perceived quality, customer expectations, customer trust and customer complaints. (Horsu & Yeboah, 2015)highlighted with their view point traveler fulfillment is profoundly affected by comfort which was determined by comfortable seating, cleanliness of the vehicle and proper conditioned vehicles, sensible entertainment and Air condition could be impacted to passenger satisfaction. However, researcher’s points out that availability of taxis, well-timed departure at destinations and safety factors can be taken as vehicles having functioning seat belt, drivers driving carefully and having excellent knowledge of route have been enclosed in passenger approximation of satisfaction.

Accordingly, extensive review carried out on the earlier studies reveal that customer satisfaction in taxi industry is determined by numerous factors. Therefore, through this study researcher identifies the factors that consumer perceive to be present in a quality taxi service and how these factors can be used to achieve customer satisfaction.

### **Service Quality Measurements**

(Parasuraman et al., 1988) developed the SERVQUAL model to identify a quality element of a service. Through his studies he explored 10 elements that determine service quality and later they were refined to 5 main components of high-quality service. These components are reliability, assurance, tangibles, empathy and responsiveness which are known as the “RATER”. In each of the components, the consumer’s anticipation and what they perceive of the final outcome determined and measured. Reliability measures the ability in which the services are provided accurately and on schedule while assurance deals with the confidence and competence of the employees in providing the services. Tangibles and Empathy are all about the physical facilities and ability to provide individualized attention to the customers respectively. The last dimension of the RATER —Responsiveness— measures the ability of the firm to assist its clients promptly.

The SERVQUAL model is criticized because of its poor validity and reliability. Syed et. al (1998) argued that despite the enthusiasm in pursuing a research utilizing this model, there were still need of using empirical framework while one issue was raised about the ability of an instrument neither being reliable nor unreliable. Despite the criticism, the RATER is widely recommended and used to determine and establish service quality in different industries and countries due to its simplicity given that the adaptable questionnaire is provided.

According to the scope of the study, several authors used SERVQUAL model to identify the areas where the firms are underperforming as compared with customer expectations. Not only the online taxi booking sector all other service-related industries typically used this model to evaluate their service quality. In 3PL industry, (Chin, Sze Hui, Lin, Keng Soh, & Wong, Wai Peng, 2013), (Juga & Juntunen, 2012) have been referred SERVQUAL model to build their conceptual frame work. Hence in this empirical research (Customer Satisfaction in mobile taxi booking industry in Sri Lanka), author has used this model to build conceptual frame work. This was further explained in the methodology chapter under identification of variables.

Thereby through the SERVQUAL model this study identifies the factors passengers consider in selecting a taxi service. And extensively studies how those factors can be used to achieve customer satisfaction.

## **Customer Satisfaction**

With the globalization, today companies have to face their toughest competition more than ever before. Therefore, companies should focus on building the strong customer relationships unless firms couldn’t survive in the market. It is timely important that, how companies could achieve the customer satisfaction and improving profits by doing better job of meeting or exceeding the customer expectation. It is clear that, there is no unique definition for customer satisfaction since as the years passes, many authors come up with different definitions. Author is not trying to evaluate all the definitions here, just try to stretch the idea on customer satisfaction. Generally, it is the difference between expected level and performed level. If the service provider’s performance falls that of expectations, the customer is dissatisfied. If the service provider’s performance matches the expectations, customer is satisfied. If the service provider exceeds the expectation, the customer is highly satisfied or delighted (Kotler & Keller, 2009).

In today’s competitive business environment, mangers have greater responsibility to achieve the customer expectations and meeting demands for satisfying customer is also a vital aspect. Customer satisfaction could not be defined by only the quality or the standard of the product or service. It’s all about the relationship between customer and product or service. In marketing management “customer” consider as the king of the business since they can break or make the business. This fact reveals that customer is the most important stakeholder in every business entity. Therefore, in order to retain their customers in longer period of time, firms must think about maintaining strong relationship with customers.

## **Empirical Study**

This section presents various studies that were carried out to test the above theories and models. Their findings, conclusions and recommendations will help to come up with research gaps. A study on customer satisfaction and the service quality in Jakarta’s taxi industry in Indonesia has been conducted by (Dachyar & Rusydina, 2015). It was found that customer satisfaction is greatly affected by 6 factors; company image, perceived value and perceived quality, customer expectations, customer trust and customer complaints. They concluded that company image has the greatest effect on customer satisfaction. The study focused on three taxi companies and not the entire industry.

A study on service quality focused on Metered taxi services service quality in Bangkok, Thailand was conducted by (Techarattanased, 2015) They found that consumer usage behavior was significantly affected by responsiveness aspect of service quality; it was recommended that government agencies should diplomatically restrict the taxi companies from arbitrary taxi fare hiking. This study was conducted with the objective compare client’s service usage, and to find out the consumer behavior of taxi clients in Bangkok.

(Horsu & Yeboah, 2015) has conducted a study that focused on the impact of service quality and customer satisfaction in the minicab taxi services in Ghana and this has identified that service quality variables especially reliability, influenced the customer satisfaction. They also wanted to focus that customers satisfaction is highly influenced by comfort comfortable seat, clean and good conditioned vehicles, reasonable entertainment and enough air circulation.

(Ali & Ratwani, 2017) used empirical methods to establish the causal factors that affected the satisfaction of bank customers in India. The findings of the study showed that customer satisfaction was significantly affected by product attributes, employee characteristics, bank, tangibles, customer communication, and customer convenience. (Agbor, 2011) examined at the link between customer satisfaction and service quality. In this study 3 service institutions were used in Umea (Sweden). the researcher found that service quality and customer satisfaction were significantly related in 2 institutions and they were ICA and Forex. Results from Umea University indicated no significant relationship between service quality and customer satisfaction. It was recommended in order to provide service quality; organization need to improve on service quality dimensions. (Jalal, Warokka, & Haim, 2012) established the significant impact of all the dimensions of service quality on user satisfaction in libraries in Malaysian University. All the dimensions tested greatly affected user satisfaction.

(Peris, 2013) conducted a study to establish factors that determine customer satisfaction in the banking industry in Kenya. He found out quality of service, pricing, relationship and value with the service provider’s staff to significantly determine customer satisfaction, a study of service quality and satisfaction among the Kenyan Public Universities Libraries documented that, libraries that offered better customer’s services were more preferred by library users compared to libraries that offered poor costumers services. In addition, more than 70% of the respondents valued libraries that focused on continuous improvement of service quality and were more likely to visit that library again. (George K. H., 2014) investigated service quality and customer satisfaction in certified public accounting learning institutions in Nairobi. The study concluded that an increase in service quality will lead to higher level of student satisfaction. All the quality dimensions affected customer satisfaction except empathy. It was recommended that training institutions should focus on improving all the five dimensions so as to achieve high customer satisfaction.

## **Chapter Summary**

In this chapter different research papers reviewed. As a result of that different techniques, methods practices used in global context were identified. All of different techniques, tools and findings were summarized in this chapter Most service quality measurements in different foreign settings were identified under the chapter.

According to the literature review, it is clear that the topic has been attractive in the global context but still a requirement for a proper analysis of the Sri Lankan context is missing. Therefore, it is important to do a proper research on developing service provider selection models in mobile taxi service industry, Sri Lanka.

# **CHAPTER 03: METHODOLOGY**

## **Introduction to the Chapter**

In the methodology chapter researcher has presented the methodological aspects of the study. This chapter includes Research Design, Conceptual Framework, Identification of Variables, Questionnaire Design, Measurements, Population and Sample Design, Justification of Sampling Approach, Data Collection Methods and Statistical Methods of Data Analysis.

## **Research Design**

This type of research design falls into the category of the causal research. The main objective of a causal research is to determine the extent and nature of cause-and-effect relationship between variables. The main objective of this research is to identify the **Factors affecting Customer Satisfaction in Mobile Taxi Booking Service in Sri Lanka with respect to the Colombo City**. After the conducting this research the research objective must be achieved. Therefore, two research questions are needed be answer.

* **Question 01:** What are the positively and negatively correlated factors that are affecting to the customer satisfaction in mobile taxi booking industry in Sri Lanka?
* **Question 02:** What is the current overall satisfaction level in mobile taxi booking industry in Sri Lanka?

Apart from the main objective, hypothesis testing for dependent variable and independent variables have been conducted. Overall satisfaction of current customers considered as dependent variable and factors which are affecting to selecting a mobile taxi booking service considered as the independent variables.

## **Conceptual Framework**

The framework of this research is constructed mainly based on the literature that has been reviewed in chapter 02. Figure 3.1 shows the conceptual frame work which holds together the concept, relationship and context of the research. Below conceptual framework based on top 5 main factors which have found on this research paper. Each and every main criterion has its own sub factors.

Reliability

Tangible

Empathy

Responsiveness

Assurance

Customer Satisfaction

Figure 3.1-Conceptual Framework

## **Identification of Variables**

The main objective of this research is to identify the factors affecting to **Factors affecting Customer Satisfaction in Mobile Taxi Booking Service in Sri Lanka with respect to the Colombo City**. According to that topic author identified particular dependent and independent variables.

### **Dependent Variable**

Overall Satisfaction of existing customers in Sri Lanka with respect to the Colombo City is identified as the dependent variable. Satisfaction is measured as an objective in this research and also the impact on the dependent variable i.e. Overall satisfaction with the changes in independent variables will also be analyzed.

### **Independent Variables**

Factors have been identified through the intensive literature review. There are 5 most crucial factors when selecting a mobile taxi booking service. Further description is available in the Chapter 02- Literature Review. A brief description for each factor is shown in the below,

**Tangible:** Tangibles refers to the physical evidence of the mobile taxi booking service which includes the appearance and condition of transport facilities personnel and material.

**Reliability:** Reliability has been defined as the ability of employees‟ to performing the promised services dependably and accurately.

**Responsiveness:** Responsiveness is defined as the willingness of employees‟ to help customers and provide prompt service.

**Assurance:** Knowledge and courtesy of employees and their ability to inspire trust and confidence in the firm.

**Empathy:** It refers to the courtesy of employees and their ability to convey trust and confidence.

### **Independent Variables: Demographics**

Demographics refer to quantifiable statistical attributes of a given population. In this research they are of the sample of respondents from which the data were collected. Following demographic factors are used in this study

1. Respondents Gender and Age
2. Respondents Occupation and Income
3. Respondents Daily Transportation methods

## **Questionnaire Design**

In order to collect the primary data required for the study, a survey questionnaire was constructed. There are five factors have been identified as the **Factors affecting Customer Satisfaction in Mobile Taxi Booking Service in Sri Lanka with respect to the Colombo City**. 29 items were constructed among these 6 factors. Properly structured questions were included in the questionnaire asking the respondents to select an answer from a set of responses. Questionnaire was developed in English language and simple wording was used so that each respondent would be able to answer.

Questionnaire consists of three segments which are as follows and the questionnaire is presented in Appendix

**Section 01**

Section 01 of the questionnaire is related to the respondent's demographic data. This segment was observed these factors for instance respondent’s Age, Income and Current transportation methods.

**Section 02**

This part of the questionnaire consists of the questions regarding the Factors affecting Customer Satisfaction in Mobile Taxi Booking Service in Sri Lanka with respect to the Colombo City. Questionnaires were constructed among these five factors. Each factor has been further divided into 29 latent variables since single question might lead to the weird answers. Thus, multi-dimensional questions were constructed to get the reasonable response to the questions overall.

**Section 03**

Third and final segment relates to the overall satisfaction of existing customers. This segment also provides a small idea about future needs of customers for mobile taxi booking service.

## **Measurement**

Different types of scaling methods were applied in measuring different questions in the questionnaire. Nominal scaling method was used in the screener question where a set of two responses were given to the respondent to choose from, namely 'Yes' and 'No'. Similarly, questions on demographic data were given a particular set of responses according to the question. Some questions in Segment 01 were used nominal scaling method while others were used interval scaling method. Respondents were asked to select the most appropriate response for them in respect of each enquiry.

Table 3.1-Nominal Scale method used questions

|  |  |
| --- | --- |
| Question | Responses |
| What is your Gender | Male  Female |
| Occupation | Student  Employed  Self Employed  Unemployed  Retired |
| How Often do you use taxi | Daily  Once a week  Once a month  Other |

Table 3.2-Interval Scaling Used Questions

|  |  |
| --- | --- |
| Question | Responses |
| Number of times use taxi service per month over public transportation | Less than 10%  10%-25%  26%-50%  51% and above |
| Monthly Income Level | Less than 10000  10000-30000  31000-60000  61000-90000  100000 and above |

Scaling method used in Segment 02 of the questionnaire was Five-Point-Likert-Type-Scale. Liket scale is bipolar scaling method used for decide on either positive or negative feedback. Neutral is marked when the answer is undecided. Most preferred answers will be assigned five while least preferred answer will be one.

Respondents were asked to specify their level of agreement with the statements given in Segment 02 by ticking the most applicable cage designed according to the Likert-Type-Scale which is as follows;

1- Strongly Disagree

2- Somewhat Disagree

3- Neutral

4- Somewhat Agree

5- Strongly Agree

Same scaling method was used in designing the measurement for the sole question in Segment 03 which was relating to the overall satisfaction level about current online taxi service providers. Respondents were asked to rate their satisfaction regarding the overall quality of service provided by existing online taxi booking service providers throughout the experience by ticking the most applicable response from the responses given which are as follows;

1- Strongly Dissatisfied

2- Somewhat Dissatisfied

3- Neutral

4- Somewhat Satisfied

5- Strongly Satisfied

## **Sample Design**

### **Target Population and Sample**

The passengers in Colombo city who use mobile taxi services is the population of this study. From this population a sample of passengers who use mobile taxi service is selected as the focal group. Thus, the passengers who use mobile taxi booking app amount to be inferential therefore according to a similar study carried out by (Kumar & Namavaram, 2016) a sample of 250 was used to conduct the study.

Table 3.3-Sampling Numbers

|  |  |
| --- | --- |
| **Divisions** | **Number of Consumers** |
| Colombo 01-03 | 50 |
| Colombo 04-06 | 50 |
| Colombo 07-09 | 50 |
| Colombo 10-12 | 50 |
| Colombo 13-15 | 50 |

### **Sampling Method**

Convenient sampling method was used as a part of this examination which has contributed to conduct the research in an unbiased manner. The sampling techniques also have enabled to obtain singular thoughts from passenger randomly to give a superior value to the research.

## **Data Collection**

### **Primary Data**

The research is based on primary data collected through the structured questionnaire which was distributed among 250 respondents in the selected sample. Total numbers of 195 questionnaires were returned back. Ten questionnaires were rejected since those questionnaires had huge amount of missing data. Further, in order to reach out to more respondents while attempting to breach the geographical restriction, a web-based survey was conducted using the same questionnaire. Through web-based questionnaire 18 responses were collected.

### **Secondary Data**

Secondary data were used immensely for the conceptualization of the study. Secondary data was collected from various sources such as scholarly articles, journals, reports and web pages based on mobile taxi booking service provider selection factors to get a broader idea on the theoretical framework of this particular research. Apart of that, secondary data were also helpful in areas such as determining the sample size, construction of questionnaire, scaling questions and also in analyzing data.

### **Reliability and Validity**

Prior to make decisions based on the data, the pilot survey was conducted to check the validity of the data collected. To check and measure the reliability commonly used the value of Cronbach’s alpha. Cronbach’s alpha is an index of the reliability and is generally used as a measure of reliability of a set of questions in a survey instrument. Alpha co-efficient ranges in value from 0-1 and it may be used to describe the reliability of the factors. Higher score of value indicates the higher reliability. The level of alpha indicates an acceptable level of reliability has usually been 0.6 or higher.

Table 3.4-Cronbach's Alpha Values

|  |  |
| --- | --- |
| Cronbach’s Alpha | Internal consistency |
| α ≥ 0.9 | Excellent (High-Stakes testing) |
| 0.7 ≤ α < 0.9 | Good (Low-Stakes testing) |
| 0.6 ≤ α < 0.7 | Acceptable |
| 0.5 ≤ α < 0.6 | Poor |
| α < 0.5 | Unacceptable |

Source: (George & Mallery, 2003)

Cronbach’s alpha can be written as a function of number of test items and the average inter co-relation among the items. Cronbach’s alpha can be interpreted as below.

Equation 1-Cronbach's alpha

N = Number of items

C-bar is average inter-item covariance among the item

V-bar is equal to average variance.

## **Statistical methods of Data Analysis**

Data gathered using the questionnaire survey were fed into SPSS 25.0 (a statistical software tool) in order to generate a comprehensive analysis of the study which is discussed in the next chapter. Following statistical data analysis methods were used in analyzing the data set obtained.

### **Descriptive Analysis**

Descriptive statics is the analytical tool that helps summarize and show the data in a meaningful way. Descriptive statistic is more important since raw data visualization would be very hard and critical. Statistics such as frequency distributions, measures of central tendency, measure of spread are used in this analysis. Measures of central tendency (mean, median. mode) and measures of spread (range, absolute deviation, variance, standard deviation.). Univariate analysis is commonly used in the descriptive stage of the research. For data presenting tables and graphs were used.

### **Factor Analysis**

This is a statistical tool which is used to find factors among observed variables. Typically, when the number of variables is high, factor analysis is performed to reduce the number of variables in the factor group. Variables with similar characteristics are grouped under one factor. Factor analysis can produce a small number of factors from a large number of variables, explaining the variance observed in the largest number of variables. Multi-dimensional variables have been analyzed in this factor analysis. There are few basic steps.

• Step 1: Selecting and Measuring a set of variables in a given domain

• Step 2: Factor Extraction

• Step 3: Factor Rotation to increase interpretability

• Step 4: Compute values for each factor and measure the reliability for each factor

There are two types of factor analysis are available which are exploratory factor analysis and confirmatory factor analysis. In this study exploratory factor analysis has been carried out. Exploratory factor analysis is a statistical method used to uncover the underlying structure of comparatively large set of variables. Exploratory factor analysis is a method within the factor analysis whose deceiving goal is to identify the underlying relationships between measured variables (Norris, Megan, Lecavalier, & Luc, 2009). It commonly used by studies when developing a scale and serves to recognize set of latent constructs underlying the battery of measured variables (Faiber, Leandre, Wegener, Duane, & MarCallum, 1999).

Factor analysis can provide many advantages. The reduction in the number of variables and the identification of the relevant variables of the group can be given as an example of the advantages in the factorial analysis. The basic step of factor analysis is to generate a correlation matrix for all the variables and, secondly, to extract the factors from the correlation matrix according to the relative efficiency of the variables. Third, factor rotation is done to maximize the relationship between the variables. Finally, calculate the value of each factor.

Descriptive statistics, Bartlett’s & Kaiser-Meyer-Olkin (KMO) test, Communalities, Total Variance, and Rotated Component Matrix is computed and analyzed using SPSS 25.0 software. The Bartlett’s test compares the observed correlation matrix to the identity matrix. In other words, it checks if there is a particular redundancy between the variables that can be able to summarize with a small number of factors. If the variables are perfectly correlated, only one factor is sufficient.

The Bartlett’s test checks if the observed correlation matrix R= (rij) (p x p) deviates significantly from the identity matrix.

Ho: Correlation matrix is an identity matrix.

H1: Correlation matrix is not an identity matrix.

The Bartlett's test statistic indicates to what extent deviate from the reference situation

|R| = 1. It uses the following formula.

**Equation 2-Bartlett's test statistic**

The KMO index compares the values of correlations between variables. The overall KMO index is computed as follows.

**Equation 3-KMO Index**

KMO value measured the sampling adequacy. Normally KMO should be greater than 0.5 is to accept the factor analysis. Higher KMO values are good because higher correlations between pairs of variables. 0.5 is barely accepted value. Value between 0.7-0.8 is in acceptable level. Value of above 0.9 is superb.

Proportion of variance affected for common factors of a variable can be identified through Communalities. Communality scores range from 0 to 1. Value one means common factors can explain all the variables. Value zero means common factors can’t explain any variance.

Total variance explained in the initial solution table. Eigenvalue is the total variance described by each factor. Eigenvalues that is less than one does not have enough total variance explained to represent a unique factor. Eigen values that are less than one is excluded from the analysis.

### **Chi-Square Test of Independence**

Chi-square test is conducted in order to determine whether there is a significant association between two categorical variables in a given population. Data collected from the questionnaire survey in this study are of data yielded in categorical manner which implies that Chi-square test of independence is viable test for this particular survey.

The first step of Chi-square test procedure is to state the hypotheses. In order test the hypothesis, first, an alternative hypothesis and a null hypothesis must be constructed.

Ha: alternative hypothesis state dependent; dependency exists between two variables

Hb: null hypothesis state independent; dependency does not exist between two variables

Once hypotheses are constructed, the next step involves testing of hypotheses using Chi-square test for independence using sample data available. This particular test concludes whether there is a significant relationship between the two variables in the particular hypothesis or not. It is important to state a significance level for this test beforehand which according to most researchers, is usually 0.5. Same significance level has been used in this study when conducting the Chi-square test. Chi-square random variable (X2) is defined by the equation below.

Equation 4-Chi-Square random variable

X2 = Chi-square random variable

Or,c = the observed frequency count at level r of Variable A and level c of Variable B

Er,c = the expected frequency count at level r of Variable A and level c of Variable B

Significant variables can be identified by analyzing the results of Chi-square test of independence. These significant variables can be used to further analysis.

## **Chapter Summary**

Under the research methodology the has discussed about the methods that have used to achieve research objectives. In the sample design explained about the population of the research study and under data collection methods that have used to collect data have been described. Furthermore, how to identify the significant service provider evaluation criteria, what is factor analysis, how to perform the factor analysis and how to conduct a hypothesis testing using chi square test were analyzed in this chapter.