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FACTORS AFFECTING ADOPTION OF E-HAILING SERVICE

(Evidence from Addis Ababa E-hailing service users)

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A Research Paper Submitted to the School of Commerce Departments of Marketing Management, Addis Ababa University in partial fulfillment of the Requirement for the Master of Arts in Marketing Management.

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ADDIS ABABA UNIVERSITY
SCHOOL OF COMMERCE

DEPARTMENT OF MARKETING MANAGEMENT

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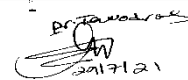
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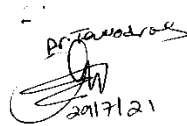
Declaration

I stated that I had completed my thesis on the topic entitle “Factors Affecting Adoption of E-hailing Service. Evidence from Addis Ababa E-hailing service users”. This work is unique and was submitted for the prize of Masters of Arts in Marketing Management.

TinebebHailu

Statement of Certification

This is to confirm that Tinebeb Hailu completed her research work on the topic of Factors Influencing the Adoption of E-hailing Services: Evidence from Addis Ababa Transportation Users. Her research is her own unique work, and it qualifies her for a Masters of Art in Marketing Management award.



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Abstract

This study conducted to examine factors that affecting the adoption of E-Hailing application to call taxi. The study has a purpose to evaluate the positive relationship between performance expectancy, physical securities, social influences, E-Hailing application and facilitating with the adoption of E-Hailing taxi service. In addition to this, the stud developed five hypotheses that is, Performance expectancy, Physical security, Social Influence, Application easiness and Facilitating conditions have positive and significant effect on the adoption of E-Hailing Service. To examine these, the study distributed 323 questionnaires for passengers or users of E-Hailing taxi service using convenience sampling technique. The collected data inserted in SPSS and coded. A multiple regression analysis conducted and obtained a summary of findings that all the predictor performance expectancy, social influence, application easiness to use, facilitating conditions and physical Security were accepted ($P\text{-value} < 0.05$). Regarding this, the study recommended, there is need for encouraging the physical security of e-hailing application because passengers are feel uncertainty regardless of their safety while traveling with the unknown drivers , The study recommends that service provider should deploy E-hailing application, which is more user friendly and require few stapes to use in order to serve senior citizen better hence they are less educated and unable to operate the application easily and service providers make their driver reachable at all place in Addis Ababa this helps passengers to save their time and increase efficiency of searching taxi.

Key Words: Performance Expectancy, Physical security, Social Influence, Application Easiness, Facilitating condition and E-hailing.

CHAPTER ONE

INTRODUCTION AND BACKGROUND OF THE STUDY

1.1 Introduction

This research endeavored to examine factors that affecting the Adoption of E-hailing service in Addis Ababa service user. The research deals here back ground of the study, statement of the problem, basic research questions, objective of the study and hypotheses test. Related to this, it contestably demonstrated significance of the study, scope of the study, limitation of the study, major operational terms and the frame work of the study. So regarding this, the detail work of the study presented as follows.

1.2 Background of the Study

Urbanization development in Ethiopia escalated after the introduction of new marketing structure since 1991. The country economy system changed from the command system to free marketing system, which led to open the introduction of various growths in the economy especially in Addis Ababa. This attracts many people in Addis Ababa. The excepted population growth in most cities has encouraged the requirement of efforts to develop simple flow of people and vehicles, and the minimization of self-drivers, and the inquiry to increase use of public transport Veloso, Phithakkitnukoon& Bento,(2011). To minimize these challenges in urban, it is necessary to employ effective urban transportation system that reduce poorness and increase economic growth. So to bring this growth, it is not necessarily depending on the traditional mode of transport system. Digital innovation in transportation system has been emerged with the invention of internet. Digitalization has been changed the way of business doing in transportation system to cope up the dynamism needs of users. This somewhat new approach that highly depends on information technology to empower users and other profit and non-profit organizations with ways of sharing excess capacity in goods, knowledge and services

The crucial growth of technologies like Global Positioning System (GPS) has created indispensable implications on urban growth and automated transport systems Mason &Deakin, (2001). So the growth of E-hailing Application in the transportation especially in Taxi industry is one of technological innovation in the recent past. In our daily activity, transportation is crucial tool to facilitate our daily needs, which are not fulfilled without moving from place to place. The

choices of transport mode depend on several factors like the purpose of trips, social and demographic characteristics, and availability of transport. Due to the existence of poor service quality in public and normal taxi, currently people prefer transportation system which deliver the same level of service as a private car that provide like comfort, safety, minimum travel time and many N.thilakarathne, P.jayatne(2019).

In supporting of e-hailing services, Veloso, Phithakkitnukoon& Bento, (2011) logically stated that the services providers communicate to passengers with speed, dynamic routes and precision on start and end locations since App- based taxi service has been minimize the challenges of transportation system to both individual and public transport Rayle(2014).

Previously people inquire taxi service traditional way by hailing from the street. This gradually evolved into the call center taxi service that passengers call taxi using this center. Now a day thanks to the growth of technology, to hail taxi service passengers depends on their smartphones that loaded application. So regarding this, the idea of adopting application to manage a taxi service is an important milestone. Pursuant to Kemp (2017) research report, about 3 billion passengers applied cell phone in 2020 with the growth of portable innovation and applications. Many organization are applied the opportunity to create integration with users via mobile based E-hailing application, Zhang, (2017).

Thus, E-hailing means passengers informing a service providers or any other mode of transportation by up loading application in mobile device. Here, “E” here means to “electronic”- hail states the traditional service of indicating an approaching taxi cab to stop, Eapjmm, (2018).

Currently, taxi services are available on hands of users since they employ E-hailing technology. This app enables users to get 24/7 services so passengers can manipulate easily, give certification of location and destination, identify the vehicle that users need and wait the driver respond. This supports passengers easily to aware the cost and the arrival time of the driver. Users achieve alert of the nearby driver once the driver receive the request via Google map, N thilakarathne, P jayatne (2019).

Now a day in Addis Ababa, Ethiopia this service is in an infancy stage that the service providers are emerging in the market at increasing rate. These are Feres, Ride, Pickpick, Seregela, Taxiye and Hello taxi among much E-hailing service renders. Since E-hailing is at growing stage in

Addis Ababa, Ethiopia, there were shortage of available data to measure factors that affect the adoption, however; the study attempted here to examine factors that affect the adoption of E-hailing in Addis Ababa, Ethiopia.

1.3 Statement of the Problem

It is obvious that anybody can observe high transportation shortage to give appropriate service for users during peak time. This problem aggravated due to increase in population of Addis Ababa, poor taxi service system, lack of attention by government etc. Besides this, the number of transport dealers could not be cope up with the number of users. According to Juma, (2016) indicates that a taxi is a vehicle that transport ride inquirer from one area to the other and the service provider obtained benefit depend on the journey covered. A taxi mode of transportation system becomes an indispensable part of people lives, mainly when people have to move some place desperately. In the case of such situations, public transport becomes inconvenient Rayle, (2014).

E-hailing technology based transport service is the recent innovation package that apply portable technologies to use a transportation service. Today in developed country, most of people have been employed E-hailing taxi service in their everyday life. Previously, users hail taxi on roads, which have low comfort and efficiency especially during heavy traffic jams, Fang and Zuo-Jun, (2018). However; today the evolving of e-hailing technology has changed the way taxi call service due to the emerging of e-hailing tech, which enables passengers to book or call a taxi by touching of their cell phones from anywhere Mohamed, (2014); Kah Boon,(2018). Currently a new mode of e-hailing taxi services are emerging in Addis Ababa to render effective and convenient services that prefer to conventional type of taxi service. Report in Addis Ababa posited that there were 8 million individuals that employed public transport system. Out of 900,000 vehicles in the nation 60% are found in Addis Ababa, which created irresistible street traffic jam.

According to the vehicle authority, 69.7% of transportation demand of the public was accommodated by the government before the fiscal year 2016. Considering this, e-hailing application platform was accustomed to address these, Addis fortune, (2016). In addition to this, another studies that conducted in China by Peng(2014), which addressed the adoption of e-

hailing service posited factors that affecting the user adoption of call taxi app. The author applied a survey tool via internet by the aim of making the involvement of people's on the adoption mechanism of call-taxi-application. Accordingly, the result stated that the perceived ease use, perceived usefulness, compatibility, subjective norm, and perceived risk are a key factor which affects user adoption toward Call-taxi-application. Furthermore, the study output disclosed that perceived playfulness is not a consistent powerful predictor of users' adoption behavior.

Other researcher, Athapol Ruangkanjanases, which dealt about, the "Adoption of E-hailing Applications" conduct a comparative study between male and female to explore those factors that affect adoption of E-hailing service". The researcher disclosed that the relative advantage of the application of e-hailing taxi request that is, easiness use of the system had an impact towards the adoption of e-hailing application on both sexes while other researcher, Hermana's Haba and OmkarDastane, (2018) indicated social influence and physical security prejudiced only the male users t to adopt e-hailing applications. In addition to this, a study conducted on Malaysia that perceived usefulness, subjective norms, perceived risk, perceived playfulness, performance expectancy, effort expectancy, social influence and facilitating conditions were among the factors that affect the consumer adoption of E-Hailing Applications.

Thus, when this study observed regarding the E-hailing service still at infant stage in Addis Ababa, Ethiopia. Some researchers conducted factors that affect the adoption of e-hailing application to call taxi in Addis Ababa, Ethiopia. For example, Yodit Bekele (2019) addressed factors that are affecting customers' satisfaction of application- based taxi service to examine consumers' satisfaction. In addition to her, MetasebiaYeneneh (2020) was also held a study that factors affect the adoption of e-hailing .The authors described that performance expectancy, effort expectancy, social influence, facilitating condition, perceived credibility and price saving orientation had influence on passenger's adoption of e-hailing application in Addis Ababa, Ethiopia. Even if, studies that accompanied previously disclosed several factors that affect the adoption of E-hailing service, the adoption- diffusion rate of e-hailing in Ethiopia is not at expected level.

As per exhibited in the studies several factor influence the passengers' adoption behavior of e-hailing services. Since the e-hailing services is relatively new to Ethiopia transportation industry companies engaged in the same business need to uncover the determinant factors of affecting

customers' adoption of the technology. Hence, this study aims to identify the determinant factors affecting the adoption of e-hailing service in Addis Ababa E-hailing service users and tries to explain the relationship between and among the determinant variables and e-hailing services.

1.4 Research Questions

The research question of the study:-

- ❖ How does performance expectancy contribute to adoption of E-hailing service?
- ❖ How physical securities contribute to the adoption of e-hailing service?
- ❖ Is social influences are affect adoption of e-hailing service?
- ❖ Is application easiness accelerating the adoption of e-hailing service?
- ❖ How does facilitating condition related to adoption of e-hailing services?

1.5 Research Objectives

1.5.1 General Objective

This study, leading questions were developed to study factors that affect the adoption of E-hailing service in Addis Ababa, Ethiopia.

1.5.2 Specific Objectives

- ❖ To evaluate performance expectancy to adoption of E-hailing service.
- ❖ To examine the effect of physical securities on adoption of e-hailing service.
- ❖ To determine social influences affect the adoption of e-hailing service.
- ❖ To assess the effect of application easiness on adoption of e-hailing service.
- ❖ To describe facilitating condition on adoption of e-hailing services.

1.6 Significance of the Study

- To have a better understanding between the main factor performance expectancy, physical security, social influence, application easiness, facilitating conditions towards Adoptions of E-hailing services in Addis Ababa.

- It helps for companies on the sector to plan strategically the ways they can market their service by knowing what the significant factors to take into consideration are.
- Finally, give insight to researchers and students about the problem and stimulate further investigation on the issue.

1.7 Scope of the Study

This study conducted to achieve the research objective to which those factors that affect the adoption of E-hailing service in Addis Ababa. The research addressed on those customers who employed e-hailing service by installing the application. Regarding this, the study focused in Addis Ababa as area scope. In addition to this, a research had applied a literature that related to e-hailing service. As a methodological scope, the study employed a convenience sampling technique.

Thus, this study attempted to analyses those factors that is, the independent variables, which emphasized performance expectancy, physical security, social influence, application easiness, facilitating conditions and the dependent variable the Adoptions of E-hailing.

1.8 Limitations of the Study

The major limitation of this study was limited to the city of Addis Ababa and customers who had been experiencing an application based taxi service or e-hailing service. The study limited by the scope of the study and availability of related literature on the topic.

1.9 Definitions of terms

Mobile phone application taxi:

A taxi service provided through a mobile application request button on mobile phone immediately or booking it for a later use of date and time.

E-hailing application:

It is the process of ordering a car, taxi or any other form of transportation pick up via virtual device computer or mobile device,” Wikipedia.

Innovation Diffusion Theory (IDT):

Diffusion of innovations is the process which innovations are communicated through specific channels over time among the member of a social system. Combining all the characteristics, innovations that are perceived with greater relative advantages, compatibility, trial-ability and less complexity are more likely to be adopted faster.” Everett M. Rogers, Diffusion of Innovations, New York: The Free Press, (2003.)

Technology Acceptance Model (TAM):

“It is an information technology model which was developed to study individual’s acceptance of the technology”, Igi-global.com. (2015).

1.10 Organizations of the Study

The study had structured in five chapters. The first chapter dealt with the introduction including background of the study, statements of the problems, research questions, and objectives of the study, significance of the study, scope of the study, limitations of the study and organizations of the study. The second chapter presented the related review literatures. The third chapter addressed research methodology and design use in the study. It described the type and design of the research; the population and sampling techniques of the study; data collection instrument and producers used to collect data and the methods of data analysis. Following this, the fourth chapter focused on data analysis, presentation and interpretations. Finally, the fifth chapter emphasized about summary of findings, conclusion and recommendation.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter deals about the literature review of the study. It emphasizes theoretical issues and concepts which shed light to context and objective of the study. The salient objective of this chapter comprises of theoretical literature review, empirical evidences and conceptual framework.

2.2 Theoretical Reviews

2.2.1 Definition of service

Marketing involves the exchange of value added products or services between the buyers and sellers. So this can be examined as products and services marketing. An organization or a person can sell other factors like Events, Experiences, Persons, Places, Properties, Organizations, Information and ideas; all this can be seen as goods and services. Services are intangible goods that experienced through a direct contact between service renders and customers, Philip Kotler. Furthermore, a service has no physical existence that one individual offer to the other and does not entail ownership of anything since a service is not inventoried. This requires service marketing involves value and deliver benefits for users for specific times and place to create necessary change Kotler, Armstrong, Saunders and Wong. Related to this concept, a service is a function that comprise of a continuous of more or less intangible activities that usually but not necessarily often explained between customers and service provider employees or physical resources or goods or system of work of service renderer since it delivered due to the need of customers Christopher Lovelock Gronroos (2007). When we analysis business activities, organizations render products for sale to customers however; mostly they are intending to render a mix of products and services where services create a high extent of the total value of the goods.

2.2.2 Transportation Services

Here let's examine a transportation services since the study intends to evaluate one of the transportation model that is, a taxi transportation system in Addis Ababa, Ethiopia. Transportation is the simplest way of conveying of humans, animals and products from one place

to the other. This can be seen as the function of transport refers the travelling of things from one point to the other. The transport channel comprised air, land (rail and road), water, cable, pipeline and space. So transportation system divided into infrastructure, vehicles and operations. Transport helps trade between people that help for the progress of urbanization, (Wikipedia).

Transport has an important role in economic growth in the global land scape because it is directly related to economic development. The commerce of transportation is a means to economic in the production of products and services. It enhances value in economic activities, increase economic of scale. If the transportation system has cost optimization, it is increases economic opportunities and facilitate the mobility of users from one area to the other and this expand the means of people earnings, (World Bank, 2001).

In general, transportation is a crucial tool for the social and economic activities development. Considering this, the quality and price of transportation services have a great impact on the day to day activities of human being since it has influence on the quantity and quality of various economic products to be produced and consumed

Regarding this, the quality and price of transportation services can be significantly affected the day to day activities of human being by impacting the quantity and the quality of various economic goods to be produced and consumed, Morlok(1978). From the point view of users and products, the function of transport observed as the conveying of passengers from place to place comprising products where generate value to both producer and consumer, Gubbins, (1996).

2.2.3 Taxi Services

Taxi services are one of the transportation systems especially in cities that facilitate transport services from place to place and rendered door to door personal transport system. Users can have taxi service in three ways: either from taxi stands where taxis wait for passengers at specified places or can also hails a voyaging taxi on the street. In these two types of taxi services, there is vagueness about waiting time and the charge of the service that users may encounter. The third

type of taxi service is a system that entails smart phone application or contacting a call center for an immediate or a later uses. This is the recent innovation in transportation service system.

2.2.4 Digital transformation

The invention of internet technology has opened the door for the digital business dramatically and this has resulted in digital transformation. Digital transformation renders worth to users and encouraged the emerging of new business innovation. The digital innovation creates people globally to join together virtually. A digital technology caters to expand the day to day communication of service providers with uses. So the top model of digitalization refers the customer service models that facilitate to deliver the right service to users. Currently, younger generation requires suitable way of service rendering system so the frequent contact of customers with the service providers increases the innovation for the online societies who entail for digital changes,(Berman, 2012).

Digital transformation is created synchronization with conventional way of doing business. It refers the combination of analogue materials to conduct conventional way of business (Routhier Perry, 2014). The digital business model involves customers to be linked with the application technologies to transact business (Tapscott, 1996). The growth of digitalization business influences organization to reform them to deliver of goods and services to users that changes the aim and initiation of organization to adjust.

2.2.5 Definition of E-hailing

As the word indicates E- means electronics whereas hail refers the conventional way of calling taxi or car to get services, Eapjmm, (2018).

2.2.6 Features of E-Hailing Apps

Under this the study attempted to discuss the key features inbuilt in standard e-hailing applications.

2.2.6.1 Booking Options

Booking options have given alternative features such as passengers' registration requirements, multi languages system, free calls (VoIP), choose car or taxi, registering of future dates, easiness in communication , easiness of programming and dispatching and maps.

Author (Rayle, 2014) studied that 35% of respondents were waited less than 10 minutes for normal taxi and the other 67% of them applying E-hailing application system. Booking has modules that let customers for push notification to engage new booking such as method settling costs, journey and maps, notifying bookings and cancellations.

2.2.6.2 Driver Information

Appropriate driver information has an important contribution for service delivery of E-hailing. A Service dealer requires rendering relevant information for confirmation such as license and tax number during registration activities. So drivers are initiated to appraise their application and status information frequently to cater in dispatch services. Regarding to Ackaradejruangsri(2015), information would support to customers and contain service provider's name, vehicle registrations, telephone number and an advance estimated cost.

2.2.6.3 Tracking

When we examined the feature of smartphone technologies, it has a value added propositions. It is adaptable "ubiquity, convenience, instant connectivity, personalization and localization of product and services" to easily break the challenges of space and time. Here the drivers and passengers have evident that a ride is booked, they are able to track each other precisely, easily and quickly, and most salient in a real- time manner (Rainer, Turban & Potter, 2007). The application in smart phone or computer can give historical data for future tracking and bench mark such as re-bookings and payment details.

2.2.6.4 Security Features

Security is one of a key factor in digital business to keep users personal information when passengers apply E-hailing application system. According to China's Ministry of Transpiration recently proclaimed that to control the E-hailing services or evolving E-hailing business model that achieved on August 2016. The rule entail a data localization requirement to which that

service provider of E-hailing system will be contained to locate their servers inland. In addition to this, the regulation suggested that personal information of passengers on the E-hailing system and business generated during their activities must be stored and used inland of China and must be retained at least for two years. The decree involves service provider of E-hailing service system to apply systems for administration of cyber security and technical security. During the phenomenon of information leakage, operators of e-hailing platforms must inform to the relevant competent authority without delay and take timely and effective remedial measures. Related to this, the regulation stated that any personal information of passengers that used illegally or disclosed by service information providers may subject to a penalty and to civil liability for compensation and criminal sanctions.

2.2.6.5 Costing Model

The other model that involves in the E-hailing business model is costing system. This model assists passengers to easily prior to see the cost of their rides due to the existing of Apps and harmonized cost or payment model. The Apps can easily generate the payment of the journey and deliver e-bill for passengers when their ride is completed, (Uber Case Study, University of New Mexico, 2015). The E-hailing apps have a various costing model reliant to factors affecting supply and demand for service. For instance, Uber charges by distance (for speeds over 11 miles per hour) which is claimed to be lower and cost effective than ordinary taxi.

2.2.6.6 Payment Methods

The ability of the E-hailing system to link passengers' credit card to the App supports for secure and convenient settling of payments. According to the study of Rayel (2014) the motive of passengers to apply ride-sourcing using different modes found that 25% which were top motives, short wait time (17%) and simplicity to call hail a taxi (11%)

2.2.6.7 Rating

In the case of rating model, E-hailing apps renders well organized services to the passengers to easily examine the service providers or operators. An effective rating can provide a segregation engagement terms with the App providers. This improves professional behavior and respect from both passengers and service providers to develop high communication between customers and operators.

2.3. Innovation Diffusion Theory

This a model that deals a normal distribution curves of how innovation can be injected in the market and possessed by buyers Everett Rogers (1976). Innovation means something that taken as new by a person or social system. The model involves five categories of adopters that each part has different set of needs, product standards and reactions to new innovation, Rogers, (2003).Furthermore, the researcher more deals about relative advantage, compatibility, complexity, trial ability and observability which are prior factors of diffusion of large-scale innovation. From these characteristics, relative advantage, compatibility and complexity has correlation with the adoption of technological innovation Chen, Gillenson and Sherrell (2004).

2.4. Technology Acceptance Model (TAM)

In the era of globalization due to the evolving of internet technology. Organizations endeavor to compete in the various markets with the application of advanced and effective technologies. The development of technology based commerce has created challenges for conventional organization to possess new technology due to the influence of local culture. Culture inappropriateness and imported of improper technology are an obstacles to the successful adoption of new technology Hakanson (2000) and Calantone et al., (2006). Technology Acceptance Model (TAM) was first delivered by Fred Davis in 1986 during his doctorate proposition. The supports to evaluate the usefulness of technology. According to this model, technology can be examined from two perspectives that is, perceived usefulness (PU) and perceived ease of use (PEOU). This model is also projected by (Davis, Bagozzi, &Warshaw, 1989). The model is highly recognized to evaluate technology adoption in different circumstances. It is an information model concept that helps to evaluate computer acceptance across wide range of consumer computing technologies. The model has been employed in several IS researches and has provided appropriate information to determine technology acceptance model (McCoy, Everard, & Jones, 2005).

Furthermore, perceived usefulness refers the extent to which passengers or users believe that to employ a system that will enhance their performance, Davis (1989). Related to this, Davis et

al.(1989) examined observation that guarantee information system. By adding a few arrangements have been made to the Tam to provide TAM 2,Venkatesh& Davis, (2000).

The amended TAM (TAM2) provides detail information how the new model is indispensable. It addressed pre-usage, one month post-execution and multi month post implementation. It has benefits that help to conceptualized users' psychological examination of the coping between significant objectives at work, result in to perform work assignments and perception of users, Venkatesh and Davis, (2000). Perceived ease of use refers easiness of customers to operate the system and free from any tiresome(McCoy et al., 2005).

2.5. Unified Theory of Acceptance and Use of Technology

This theory possessed the theories of adoption model which integrated the Unified Theory of Acceptance and Use of Technology. The theory anticipated four dimensions that is, performance, expectancy, effort expectancy, social influence and facilitating conditions, which are played a great role in user adoption and usage behavior, Venkatesh, Morris, Davis, G. B. and Davis F. D. (2003).Furthermore, the dimension that incorporated in this theory are also affected by the moderate variables of gender, age, experience and voluntariness of use Venkatesh et al.(2003)

Four concepts of UTAUT:

❖ Performance expectancy:

Performance expectancy means the degree to which users believe that the model will cater to increase working performance if it applied in the system. This concept has similarity to perceived usefulness in TAM, extrinsic motivational in the theory of motivation, relative advantage in diffusion of innovation theory, job-fit Model of PC utilization and Outcome Expectations Social Cognition Theory (SCT)

❖ Effort expectancy:

The other factor which deals about the system to use effectively by users is, effort expectancy. This has similarity to perceived easiness to use the application in TAM and complexity in Innovation theory.

❖ **Social influence dimension in UTAUT:**

This also elaborated as the extent to which users perceived that people who are crucial to him or her think he or she should use this system. This means users can easily adopt the technology.

❖ **Facilitating conditions:**

This defined as “the degree to which an individual believes existing organization or technical infrastructure will support the use of the system in the UTAUT”.

2.6. Factors for Adoption of E-Hail Applications

There are factors to use E-hailing applications in the business environment of taxi service. These are easiness of the application, structural reformation of service provider to accommodate the system, application of GPS, etc. The transportation business environment in Addis Ababa has changed dramatically in recent years especially with the emerging of e-hailing application system. The leader in this industry, like UBER, has performed various structural changes to accommodate this system and run the business effectively and efficiently. The structural change allows passengers to book a taxi using a smartphone from anywhere 24/7 with a minimum lead time for waiting taxi and journey. This enables passengers not to hail or wave taxi in the street.

According to a research in Singapore by (Liao, 2001) has disclosed that taxi operates with GPS can elucidate challenges of; inequality in the demand and accessibility taxi services, unevenness of job segregation based on location nearness of a task, noise interruption for radio-paging systems and long waiting time before validation of taxi can be provided. The salient feature of e-hailing is its convenience, cost, safety and security modules. Most transaction conducted using online with no need of hard cash transfer and so driver is not bothered not being paid and or being easy target for robbers (Natalia Korol, 2016).

Besides this, E-hail apps operators have more freedom and flexibility to operate (Jalloh, 2014). This enables the driver to have options to access the system easily and to allocate strategically his/her work schedules when it use effectively. Here again the drivers benefit that away from costly taxi lease by having their own cars. The service providers are also released from the stress since most manual handled operations are replaced by the e-hailing application (ICTFrame, September 2016). E-hail applications have created a greater competition, more supply of taxis

and drivers in the market in many cities. According to author, Mohd (2015), ease employing of smartphone application for taxi call system will assist to escalate the rate of occupancy for public transportation. E-hailing renders services that traditional taxi operators could not delivered. So pursuant to Rayle (2014), these advantages include fast, flexible and convenient for taxi operations.

2.7. Challenges for Adoption of E-Hail Applications

The conventional method of taxi hailing is proprietary, stand-alone solutions, and disintegrated system so there is need of application aided system that backed end –to –end integrations between drivers, passengers and vehicles (taxi). However, there are also challenges to adopt E-hailing application to request taxi service that related to security issue to prevent users' personal data to be stolen by the third party. And the other aspect is also, the e-hailing application is not customer friendly that passengers easily manipulate (Judd, 2014).

The other challenges factor to apply e-hailing applications are prices allocation due to “Surge pricing” or “primetime pricing” which are costing methods that impacted by the number of taxis and availability of customers. These factors comprised rush hours; events, bad weather etc. have great roles (Jalloh, 2014). Interestingly, most E-Hail operators are competing to offer the least cost service (Jalloh, 2014). The outputs of this make stress to operators and eventually service degradation.

2.7.1 Relative Advantage

Relative advantage means the extent or the degree to which an innovation is supposed as being better than the idea it replaced (Rogers, 2003). Compared to traditional system of calling taxi, E-hailing apps have both direct and indirect significances to taxi drivers, and this comprises enhanced income by receiving more customers, save waiting duration at the taxi stand, save cost of fuel, make to have good relationship with users, improved service quality and higher passengers satisfaction.

Pursuant to Rayle et al.(2014) while equating proximity to transit stops and relative transit travel time found that estimated total travel duration was higher compared to public mode of transport however; some rides would have been quicker by public mode of transport and that there existed a complementary relationship between the two modes of transit.

2.7.2 Complexity

The association between complexity of particular technology and innovation acceptance has a contrary effect on its adoption (Thong, 1999; Corrocher, 2011; Tornatzky & Klein, 1982). Complexity elaborated by Rogers (1983) as, it is the degree to which an innovation accepted as relatively difficult to understand and use. For example, the apps let taxi drivers recognize their passenger contacts, pick-up and drop-off location in advance, map view, message board, etc.

2.7.3 Operator Knowledge

Knowledge of innovation is an indispensable factor for the innovation acceptance based on the past literature studies (Attewell, 1992; Hall & Andriani, 2002; Sharma, 2007). To be knowledgeable about an innovation in firms will inspire its decision to accept (Thong, 1999; Attewell, 1992). Knowledge can be divided into product knowledge and business knowledge (Hall & Andriani, 2002). Product knowledge links to technologies and supported features. knowledge is recognized creating of how technology settings and contexts can be enhanced for the advantage of the adopter (Sharma, 2007).

An E-hailing apps is objectively complex and therefore the knowledge about its features, previous experiences using others mobile apps will have an affirmative impact on the taxi drivers' adoption decision.

2.7.4 Customers

Customers are capable to practice pressures toward business firms when it comes to apply technology (Teo et al.; Son & Benbasat, 2007; Khalifa & Davison, 2007). Prior researches described that technology innovation acceptance that applies institutional theory it has been recognized that direct pressures from users that is, expectation, demand and encouragement can influence adopt. Powerful and dominant customers can also indirectly pressure adoption (Teo et al., 2003; Son & Benbasat, 2007). According to Veloso (2011) in their research evaluate that reasons for customer hailing taxis found that 30% of trip were transporting students, 24% were for business services and 20% were for leisure activities. These further noted that the calls for taxi were concentrated in highly populated areas like the cities.

2.7.5 Competitors

A business organization intends to receive actions of competitors that are considered to be alike and are more successful. This is highly prejudiced by the anxiety of not interesting to be seen hesitant and uncertain to adopt change; and for fear of losing competitive benefits. The weight to accept similar actions intensifies as the numbers of organizations in its environment that have taken the similar action also increase (Haveman, 1993). This kind of pressures presents a positive influence to an organization (Mackenzie, 2011; Khalifa & Davision, 2006). Pressure from competitors therefore has a significant positive relationship with operators' attitude for Apps adoption.

2.7.6 Attitude and Behavior

Attitude can be interpreted as a pre-disposition to respond favorably or unfavorable to an object, person, event, institution, or another Ajzen (1991) discriminable aspect of the individual's world Ajzen (1991). Furthermore, the authors indicate that behavioral intention on the other hand, predicts behavior based on individual's attitude toward the act and individual social-normative belief. Other different studies states that attitude towards technology use have a strong connection to behavioral intention and thereafter to actual behavior (Davis, 1989; Wong & Teo, 2009; Sumak et al). Thus, there is a significantly relationship between taxis' drivers attitude towards e-hailing apps adoption and their intention to adopt it.

2.8. E-Hailing Applications

E-hailing applications are a software program licensed by Transportation Network Companies (TNC) exists in a smartphone or other electronic device and integrated with the Taxi Passenger Enhancement Program. This program should support, identification of location (s) by both driver and passenger looking for available taxi in a given area; lets a passenger to book a taxi and the driver to accept such inquiries; and enable users to pay for the rendering operation using the E-hail app. Transportation Network Companies located at the California Public Utilities Commission (CPUC) that deliver regulatory framework for Uber, Lyft and Side Card operators in 2012. TNC is an organization of a corporation, partnership, sole proprietor, or other form that engages prearranged transportation services for compensation using an online application platform that assist to communicate passengers with drivers using their personal automobile.

Pursuant to Wikipedia, E-hailing means the process of ordering a car, taxi, and limousine, or any other mode of transportation pick up via virtual devices like computer or mobile device. The stream of app-based delivery system using the apparatus of mobile phones commences when users book a taxi from register using the E- Hail Application. The App characterized by informing passenger's details such as location, name, recent bookings and available routes among others to via GPS. The Apps charge a distance-variable fare, and according (Rayle et al., 2014). Approximately 80% is received by the driver and the rest goes to the TNC. The program enables customers to review taxi services, which refers that drivers now have a stake in keeping passengers happy. This helps customers to evaluate the development of a taxi, as well as reference its cab by name. This means during the time of a taxi driver could delay in response to a call or refuse to accept certain jobs are recorded since the App provider and even the customers can evaluate them.

2.9. Evolution of e-hailing service in Addis Ababa

Addis Ababa is epic center in business since the city attracts not only citizens but other foreigners like diplomats, visitors and transistors passengers. The brand of Ethiopian Airlines has reputation so many transit passengers landed in Addis Ababa. Due to this, taxi transportation system is one of nascent business to commence by applying E-hailing application system. Service providers attracted by these factors to start E-hailing App based taxi call system. Accordingly, Zayride and ETTA were the first E-hailing taxi service providers which were engaged in the market by 2016. They provide taxi services only for those licensed cabs and gradually transformed into private car business. These E-hailing applications provides information platform accessible to facilitate communication between drivers and passengers efficiently and conveniently, Tom Jackson (2016).Following these E-hailing taxi service providers, Ride taxi, Feres, Taxiye, Hello Taxi are also engaged in the business of E-hailing taxi services.

Followings are the basic revenue model the E-hailing taxi service companies use.

2.9.1. Fleet Aggregation model

When we observed the model of E-hailing taxi services in Addis Ababa, Ethiopia, they had similarity with Uber model ride hailing service. The first company that started E-hailing taxi

service in Ethiopia was Zayride, which applied Uber model ride hailing services in Ethiopia. As such for every company initiated rides the taxies pay 15 % commission on fares, Tom Jackson (2016). This model had benefits to service providers since it characterized by small capital expenditure and lower maintenance costs. Passengers request like bookings were done using telephone calls and intended websites. Besides Zayride, the other company which involved in E-hailing taxi service is Ride technology Inc., which applies Zayride model by using ride sourcing. This system enables individual or private owners to register in order to deliver taxi service to passengers. RIDE solely gives attention to private drivers when the first time engages in new market. The company now becomes the largest private driver focused app in Ethiopia. The RIDE Company before implemented E-hailing application, it applied SMS system for the first time to communicate customers automatically with taxi drivers.

RIDE Technology Inc, established and launched the first the first SMS system that support to connect customers automatically with drivers prior to the commencement of e-hailing app to call taxi. This later enhanced in to Application based system. The beginning of app based taxi call has given options for users to easily registered or booking using telephone, SMS, Website and facilitate the payment system via cash Alemayehu (2014). Currently, more than 100,000 passengers have loaded E-hailing application on their smartphone while 10, 000 deployed Zayride E-hailing application on their phone, Google store (2019)

2.9.2. Fully Owned Fleets Management

The other taxi service model is fully owned fleet. According to the model, companies, stake holders of the company hired taxi driver and paid monthly salary. In this model, the E-hailing drivers' application is manipulated only by the companies trained drivers and the company renders a management service of the fleets to the stake holders. A good example of this type of business model in Addis Ababa is Ethiopia Pick-pick technology Inc. Today the company offers 70% loans for individual to buy new cars. In addition to providing their service to individual passengers the company also offer separate corporate account for business clients.

2.3 Review of Empirical Literature.

LifangPeng, Huan Wang, Xuanfang He, DanxiaGuo, Yuchuan Lin (2014) conducted a study on Exploring Factors Affecting the User Adoption of Call-taxi App. The researcher identifies that

perceived ease of use, perceived usefulness, compatibility, subjective norm, and perceived risk are key factors which affects user adoption toward Call-taxi-Application.

Metasebia (2020) conducted a Study that addressed a title, “Analyzing Factors affecting the adoption of E-Hailing Service in Addis Ababa: The research deals with identifying those factors affecting the adoption of E-hailing service in Addis Ababa, Ethiopia. Internet based questionnaire was used to gather the data from 384 respondents who were selected using a convenient sampling technique. The collected data was analyzed using SPSS version 26, employing statistical tools such as reliability, correlation, and multiple regression analysis. The result of the study uncovered that all the six independent variables (Performance expectancy, Effort expectancy, Social influence, Facilitating condition, perceived credibility, and price saving orientation has a positive and significant effect on the adoption of E-hailing service. In accordance the multiple regression analysis result uncovered that 79.5 % of variation in the Adoption of E-hailing service is explained by the combined effect of the six independent variable and the unstated variables represent 20.5 % of the variation. Furthermore, the study indicated that facilitating condition was the strongest predictor of the adoption of E-hailing service while price saving orientation represent the least importance in relation to the adoption of E-hailing application .Also six hypotheses were tested to examine the effect of these variables have on the adoption of E-hailing service. Thus, the outcome chiefly indicates that passengers will adopt E-hailing application if they perceive that E-hailing application is easy to use, allow them to communicate with drivers quickly, is compatible with other technologies, make them feel safe, and increase their prestige among others.

AthapolRuangkanjanases and ChayaneeTechapoolphol conducted a research by applying study applying Diffusion of Innovations Theory and Technology Acceptance Model in examining the factors affecting adoption of e-hailing applications in Thailand. For the research author used a quota sampling to identify how the independent variables subjective norms ,perceived usefulness, perceived ease of use ,complexity ,compatibility ,relative advantage and trust affects the adoption of e-hailing. Furthermore, the researcher wanted to determine which factors influence female and male consumer of e-hailing service. As a result, the study showed that relative advantages and ease of use had an influence towards the adoption of e-hailing applications in both genders, while, social influence and physical security influenced the adoption of e-hailing applications for male users.

A Research By Onyango, Juma Jackson, (2016), Addressed A Title E-Hailing Applications Adoption And Competitiveness Of App-Based Taxi Operators In Nairobi, Kenya: The purpose of the study was therefore to establish the drivers for adoption of e hailing applications and app-based taxi operations, to establish the challenges of adoption of app-based taxi operations and determine the relationship between E-hailing Applications adoption and the competitiveness of app-based taxi operations. This study used descriptive survey research design. The study targeted those app-based taxi providers in Nairobi. The researcher used simple random sampling in selecting samples. Primary data was used in this study, which was collected by means of questionnaires. The data was then analyzed using descriptive statistics. The study established that the need to attract more customers, the need to create easy communication with customers, the need to reduce waiting time at the taxi stand and journey time were among the chief drivers enhancing adoption of E-hailing applications. The four major factors established to influence adoption of app-based taxi operations in Nairobi, Kenya were; relative advantage, complexity, customers and attitude and behaviors. The analysis of findings shows that there exists a positive relationship between E-hailing Applications adoption and the competitiveness of app-based taxi operations.

Lim, K.B.etal,(2018) ,Herman Fassouhaha (2018); conducted research of the adoption e-hailing application from the Malaysian context. The researchers identified perceived usefulness, subjective norms, perceived risk and perceived playfulness, perceived price level, performance expectancy, social influence and facilitating conditions as factors affecting the adoption of E-hailing services from consumer's point of view. The finding indicated that performance expectancy and perceived usefulness has the most influence on the adoption of Ride hailing application.

Other study by Salman,(2020), "Factors Influencing Passengers' use of E-Hailing Services in Malaysia": The study emphasized that the landscape of transportation services has changed for the better since the introduction of e-hailing companies. In general, e-hailing applications on smartphones can assist users in performing the following tasks; 1) locate taxis available; 2) allow drivers to identify passengers who require taxi services; 3) book a taxi; 4) allow drivers to receive taxi bookings; and 5) make payment online. It is easy to install e-hailing applications on any type of mobile device. Nevertheless, it is crucial to assess the efficiency of e-hailing

applications as they are still new to the market. The efficiency of the system can be evaluated through the factor that contributed to the adoption of e-hailing. Thus, this study aims to investigate the factors that influence the passengers' towards the use of e-hailing services. The independent variables of this research are trustable, comfort, promotion and coupon redemption and fare; and the dependent variable is the passengers' perception. A survey was conducted among e-hailing users in Kuala Lumpur, the capital of Malaysia. With the use of a survey questionnaire, 107 targeted respondents provided valuable feedback. The surveys were carried out by boarding e-hailing passengers' on working days. Therefore, the respondent population corresponds to all types of e-hailing passengers' in the city. The survey consisted of two parts; the first part contains general questions about gender, age, ethnic, employment, gender and frequency of usage. The second part is the major part of the questionnaire which consists of travel attributes. In previous literature, most relevant studies show that factor that influences by understanding the needs and concerns of passengers' when they adopt the e-hailing services.

The passengers to use the e-hailing services were found to be trustable, comfort, promotion and coupon redemption and fare. Therefore, the questionnaire has been built according to those significant factors. The correlation analysis was used to identify the relationship between independent variables and dependent variable. Through the results obtained, the linear regression shows that the trustable, comfort, promotion, and coupon redemption and fare provided a positive significant association with the factor that influences the passengers'. Among the variables studied, comfort shows the most significant factor in passengers' satisfaction towards e-hailing services in Malaysia with Cronbach's Alpha of 0.892. In conclusion, this study shows some important information and provides benefits particularly to e-hailing services company to be more competitive in this industry.

Performance expectance:

Performance Expectancy is the degree to which an individual believes that utilizing a particular system will benefit him in term of service Venkatesh (2003). According to Herman Faso Haba, (2018) a study on adoption of taxi hailing applications among users in Malaysia he suggested that that performance expectancy had a positive relationship with behavioral intention and was the most important construct of predicting human behavior. Since it was the believe that an individual have when utilizing a particular system will benefit him or her in term of service Venkatesh et al, (2003). Regarding this argument, the study set the following hypothesis:

H1: Performance expectancy has a positive and significant effect on adoption of E-hailing

Physical security:

Security in the context of E-hailing application Users is a main concern when conducting mobile e-hailing is related to physical security (AthapolRuangkanjanases) as such travelling by taxi with unknown drivers gives passengers some uncertainty about their safety. Most of the E-hailing applications provide drivers' information such as names, phone numbers, photos and plate numbers. According to them physical security positively influenced male users to use e-hailing application in Malaysia. Therefore, the study will propose the following hypothesis

H2: Physical Security has a positive and significant relationship with adoption of E-hailing.

Social influence:

Social influence is the degree in which an individual perceives that importance of others' opinion in believing he or she should use the new system. Venkatesh (2003). AthapolRuangkanjanases and ChayaneeTechapoolphol,n.d,” Adoption of E-hailing Applications, in Thailand Study conducted by comparing both sexes to investigates the adoption of E-hailing application between female and male users mentioned that social influence is one factors that affect the adoption of E-hailing application, on their study male users are positively influenced Furthermore, the study indicated that social influence has a positive and significant impact on adoption of mobile banking services. In an everyday life setting it may be the family, friends or influential colleagues who may be using the mobile application and influence the consumer intention to adopt the application.

H3: Social Influence has a positive and significant relationship with adoption of E-hailing.

Application easiness:

Application said to be user friendly if it is not complicated, simple & easy to use with intuitive design. If a customer knows the exact time to get picked up ahead of time, how much he/she has to pay, the type of vehicle & its plate number and driver's information just by touching a button, then it can be concluded that the application is convenient & easy as it provides most of the required information at once. Also, the app will be favorable if it works with a minimum or slow internet connection. In addition, availability of call centers will be a backup & serve as an option for those who are less aware of how the app is working.

LifangPeng, Huan Wang, Xuanfang He, DanxiaGuo, Yuchuan Lin (2014) focused on Exploring Factors Affecting the User Adoption of Call-taxi App. The study described that the adoption

behavior of Call-taxi-application depends on many factors. Results showed that perceived ease of use, perceived usefulness, compatibility, subjective norm, and perceived risk are key factors which affect user adoption toward Call-taxi-Application. Thus the following hypothesis proposed.

H4: Application easiness has a positive and significant effect on the adoption of E-hailing.

Facilitating Condition:

Facilitating conditions are defined as the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system (Venkatesh et al., 2003). A research conducted by MetasebiaYeneneh (2020), Factor affect the adoption of E-hailing in Addis Ababa suggested that Facilitating condition and perceived credibility has the highest influence on passenger's adoption of e-hailing application. Thus the following hypothesis proposed.

H5: Facilitating conditions has a positive and significant effect on the adoption of E-hailing.

2.4 Conceptual Framework

Conceptual Framework describes the relationship between the main concepts of the study. It is arranged in a logical structure to aid provide a picture or visual display of how ideas in a study relate to one another Grant &Osanloo,(2014). The Framework displays the independent variables: price, Safety and Security, Comfort, Service provider responsiveness, App easiness, availability and the dependent variable: Consumer Choice of Application Based taxi.

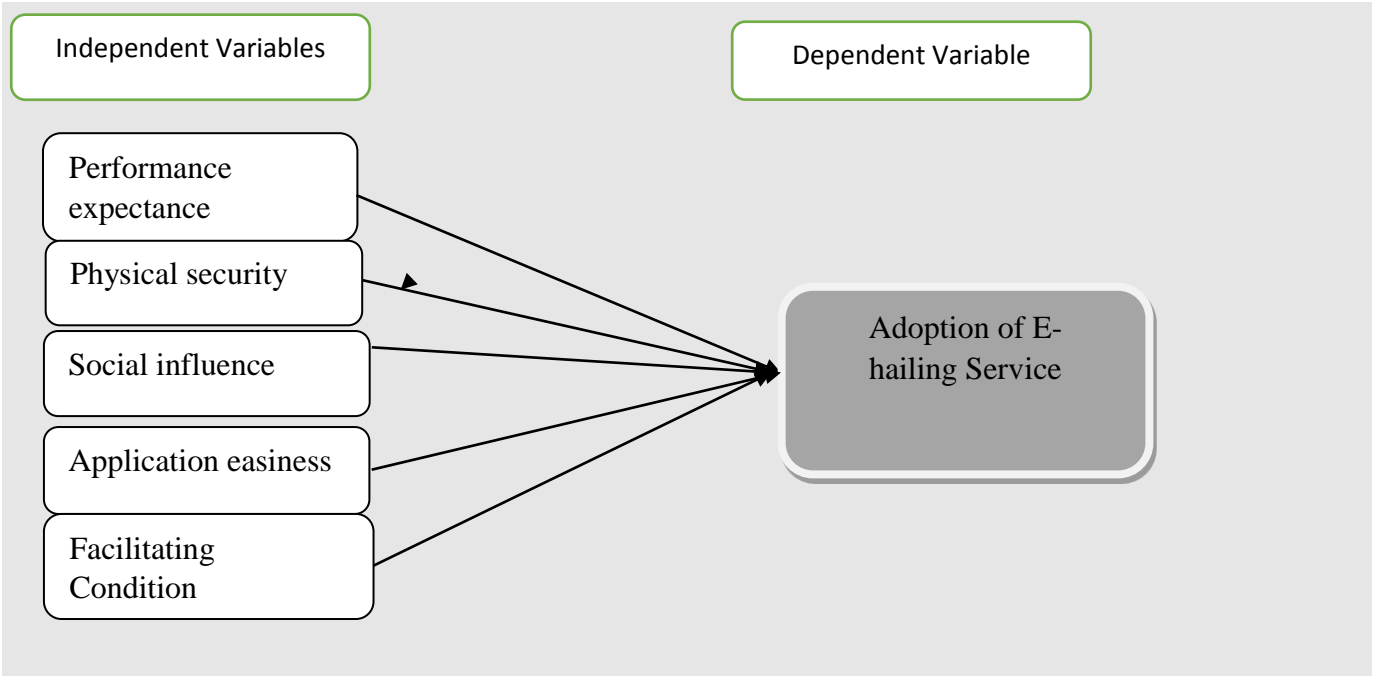


Fig 2.1 Conceptual frame work

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Research Design

The primer aim of this paper is to measure factors that affect the adoption of e-hailing services in Addis Ababa. In order to reach at the objective of this study both a descriptive and explanatory type of research applied. The reason of selecting explanatory research design was that it had relevant not only to disclose how one variable, or was responsible for, change in another variable but also to understand, explain, predict and control relationship between variables (Cooper and Emory, 2006). Therefore explanatory research design was important to examine the impact of independent variables on the dependent variable whereas, the descriptive research supported to examine the features and nature of both independent and dependent variables. Descriptive study involved ranges of the survey which describes the status quo; the correlation study which investigate the relationship between variables (Key, S1997).

3.2 Research Approach

Basically there are two types of research approach the deductive and the inductive approaches. The deductive approach works from the more general to the more specific, the research study might begin with a theory about the topic of interest, the narrow the down to more specific hypotheses that can be tested, narrowing down even further by collecting observations to confirm or not confirm the original theories(Trochim, 1998-2000).

Hence this study had not been developing the theories rather it tasted a given hypothesis it follows deductive quantitative research approach.

3.3 Population and Sample

3.3.1 Target population and Sampling

The target population of the study was both regular and occasional app based taxi users in Addis Ababa since the e-hailing service restricted in the capital city. The users were either men or women aged 18 and more years old and that could operate mobile apparatus that have foundation of education.

Because of the large number of the sample unit, time and cost constraint, the sample was drawn from the target population by using a non-probability sampling technique that is, convenience sampling. The reason that the study employed a convenience sampling technique was its simplicity and convenience to apply easily by customers.

3.3.2 Sample Size

Due to the unknown number of consumer the sample size calculated regarding the estimation method given by (Krejcie and Morgan 1970). The number of customers that applied app-based taxi estimated by adopting a confidence level of 95% ($Z^{\alpha/2}=1.96$), P value of 50% to obtain the largest possible sample size and margin of error (D) of 5%.

$$N = \frac{(Z^{\alpha/2})^2 * P(1-P)}{D^2} = \frac{(1.96)^2 * (0.5)*(1-0.5)}{(0.05)^2} = 384$$

3.4. Data Sources and Types

The data that employed in this paper were both primary and secondary. Primary data is basically the first-hand data and this data is collected for the basic research problem. Whenever any new primary data is collected, existing store of social knowledge is being updated (Hox&Boeije, 2005). On the other hand, the research deployed to collect the materials used by the other researchers is known as secondary data (Hox&Boeije, 2005). Primary data are more than secondary data and they are less time consuming too. In this study, the researcher applied both the primary and secondary data. For primary data, the study targeted to collect data using survey tool from users of e-hailing call taxi and for secondary data, the study searched for most recent and valid articles regarding E-hailing taxi service, internet, etc.

3.5. Data Collection Procedures and Tools

For the sake of data collection the study deployed a Likert scale questionnaires. This provided respondents to suggest their feelings easily. The questioner had close-ended structured type of questions. The responses measured on a five Likert rating scale: Strongly Agree (SA) = 5; Agree (A) = 4; Neutral (N) =3, Disagree (D) = 2; and Strongly Disagree (SD) = 1. To gather the data the researcher used drivers and supported them how to distribute and request respondents to easily delivered their feelings till they reached at their destination during the service time.

Besides this, service providers (call centers) assisted to deliver the questionnaires to users as much as possible. Respondents dedicated their personal time and answered the survey. Besides this, the researcher attempted to communicate them to complete the survey to make it more clearly about the questions. The questionnaire contained many questions and it was long to finish but was very easy to understand.

3.6. Multiple Regression Model

Multiple regressions help to find the effect of factors on the adoption of e-hailing taxi in Addis Ababa. Furthermore, the multiple regression equation employed to describe the relationship between independent variables that is, Performance Expectancy, Physical security, Social influence, Application easiness and Facilitating Condition how much independent variable determines the dependent variables?

Thus, the study acquainted the following mathematical multiple regression model to find the effect of factors on the adoption of e-hailing service.

$$E\text{-hailing} = X1(PE) + X2(PS) + X3(SI) + X4(AE) + X6(FC) + \beta + \varepsilon$$

Where; PE refers performance expectancy, PS indicates physical security, SI shows social influence, AE states application easiness and FC represented facility conditions. β is constant term whereas, ε refers error.

3.7. Data processing and analysis

Data analysis involved the segregation of data, to distinguish its component parts separately or in relation to the whole (Oso and Onen, 2008). The data that gathered from the target samples coded into SPSS V 23 for data analysis. The study deployed a descriptive statistics analysis to observe the nature of the variables and the feature of the demographic information. The result displayed using mean tables, and bar graphs. The frequencies converted into percentage to illustrate the respondents' feeling/opinions. For the purpose of the judgment of the descriptive statistics analysis, the study employed a mean value in the interval of 1.00-1.80 (Strongly Disagree), 1.81-2.60 (Disagree), 2.61-3.40 (Neutral/ to some extent), 3.41-4.20 (Agree), and 4.21-5.00 (strongly Agree).

Following this, inference statistics applied a Pearson Correlation analysis to examine the association of the independent variables with the dependent variables. And a multiple regression analysis performed to predict the impacts of independent variables on the dependent variable (e-hailing). This supported to judge the hypotheses either accepted or rejected based on P-value that is, if P-value less than or equal to 0.05 accepted where as if greater than 0.05 rejected.

3.8. Validity and Reliability of the Instruments

3.8.1. Validity

Pursuant to the author (Leedy et al., 2005), validity is the ability of an instrument used to measure what it is designed to measure or investigate.

The researcher entailed a content validation test by checking the features of the secondary data with the initiation of the study, and taking the necessary corrective measurement if there was any disagreement. In addition to this, a pre-test approach will be deployed to check the criterion and construct validity of the research with test scores and literature review employed in the paper.

3.8.2. Reliability

To conduct reliability testing Cronbach's alpha employed that cater to recognize how well the set of the statements to be measured. Accordingly, the study endeavored to have a result of Cronbach's alpha that determines reliability above 60%. Reliability comes to the forefront when variables developed as predictor components in objective models.

3.9. Ethical Consideration

In order to being logical and not violet the ethical principles while conducting the entire study the following principle should work as base for the research processes.

Voluntarily: Voluntary respondents that participated in this study.

Discloser: Researchers has an obligation to provide some information about their study to potential subjects before data collection to help them to decide whether or not they wish to participate in the study (Bhattacharjeeh, A, 2012). With their consent, the information given by the respondent will not be reveal.

Anonymity and Confidentiality: Anonymity of the respondents who participated in the study remains anonymous throughout the entire study.

CHAPTER FOUR

DATA ANALYSIS, DISCUSSION AND INTERPRETATION

4.1. INTRODUCTION

Previous chapter discussed about the research methodology. In this chapter, analysis of the variables discussed and analyzed. The study has a goal of searching the factors affecting the adoption of E-hailing application in Addis Ababa transportation users. In line with this, chapter four presents the analysis and interpretation that are gathered from respondents. The first stage shows the major information resulting from analysis of demographic characteristics through quantitative descriptive statistics. The following steps present the results of inferential investigation which shows the relationship between the independent variable (Performance expectancy, Physical Security, Social influence, Application Easiness and Facilitating Condition) and dependent variable (Adoption of E-hailing service). Generally the chapter shows explanations of the results.

4.2 Response Rate

Data was gathered through face to face surveys. With this respect, a semi-structured questionnaire was taken from 384 (three hundred eighty-four) sampled users of E-hailing applications. However, the researcher has received 323 filled questionnaires.

Out of the total number of sampled respondents 323 completed questionnaires were received, converting into nearly 89% response rate. The response rate is noticed as appropriate since Nulty, (2008) contends that any response rate above 75% is classified as appropriate. The rate of return of questionnaire was computed as follows.

$$\text{Rate of return} = (R / (S-ND)) \times 100$$

Where;

R = number of questionnaires that were returned

S = total number of questionnaires sent out, and

ND = number of questionnaires unable to be delivered

$$\text{Rate of return} = 323 / (384-24) \times 100$$

$$\text{Rate of return} = 89$$

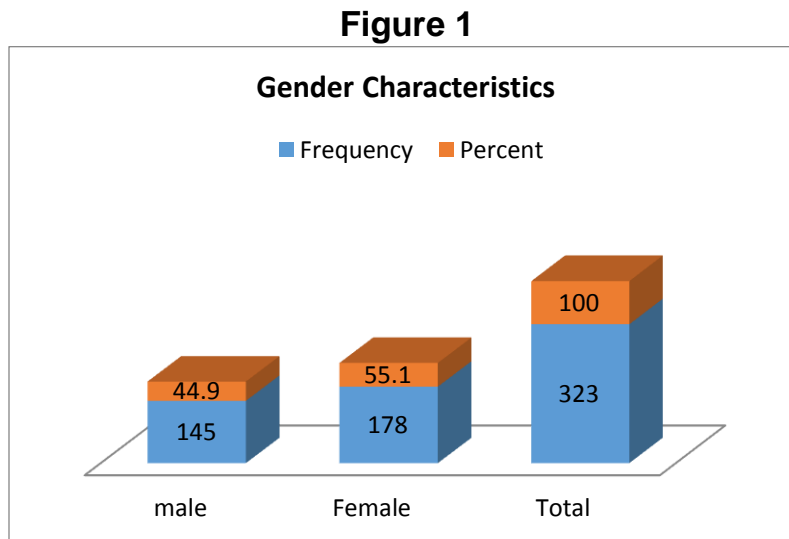
4.3 Descriptive Statistics Analysis

According to Pallant,(2013), descriptive analysis refers the features of sample; check violation of the assumptions underlying the statistical questions and address specific research questions and hypotheses. Beneath this, the study emphasized a descriptive statistics comprised percentage, mean, standard deviation, and range of scoresPallant,(2013).

4.3.1 Descriptive Statistics Analysis for demographic characteristics and other s

Beneath this, the study endeavored the statistics obtained using a descriptive analysis regarding the demographic feature of respondents such as gender, age, educational level, occupation, respondents' usage of application of e-hailing, experience in usage of e-hailing service, methods to request taxi and type of e-hailing possessed by respondents.

4.3.1.1 Gender of the Respondents



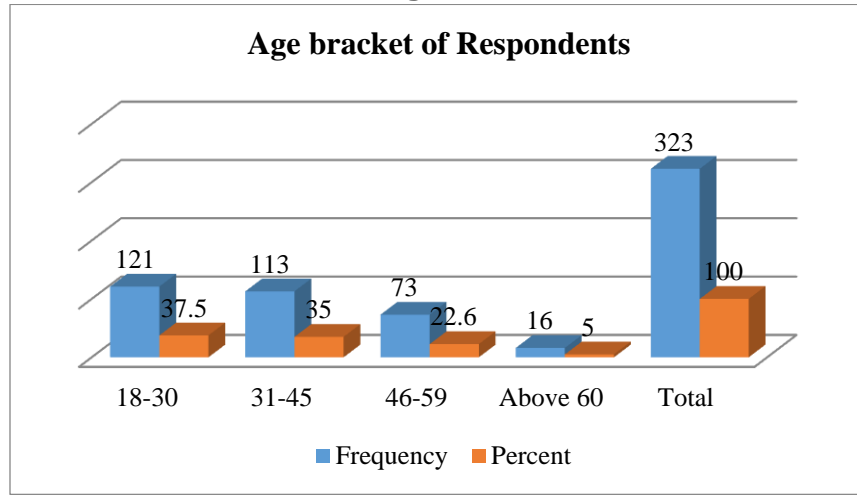
Source: SPSS analysis output, 2021

From the total observation of 323, figure 1 above demonstrated the gender characteristics of respondents. According to the report, it disclosed that the highest figure represented by female 55.1% (178). The rest were male respondents with a figure of 44.9 % (145).

From this analysis the study implies that the dominant respondents are female this is maybe females are more secured and comfortable taking application based taxi then traditional one.

4.3.1.2 Age of the Respondents

Figure 2



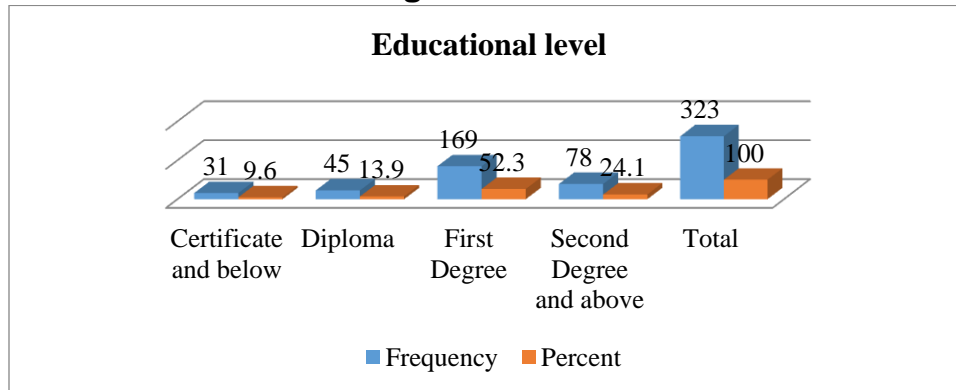
Source: SPSS analysis output, 2021

Figure 2 above stated the age bracket of respondents. The age bracket 18-30 had the highest % and frequency figure that is, 37.5% (121), which were youngsters. Following this, 31-45 age bracket represented by figure 35% (113). Next to this, the age bracket 46-59 had a figure of 22.6%(73). The least age bracket was above 60 years and represented by figure 5 % (16).

From this analysis the study implies that most respondents of this study are youngsters and middle in the age because most of them are early adopter for innovative products than the senior citizen.

4.3.1.3 Educational Background of the Respondent

Figure 3



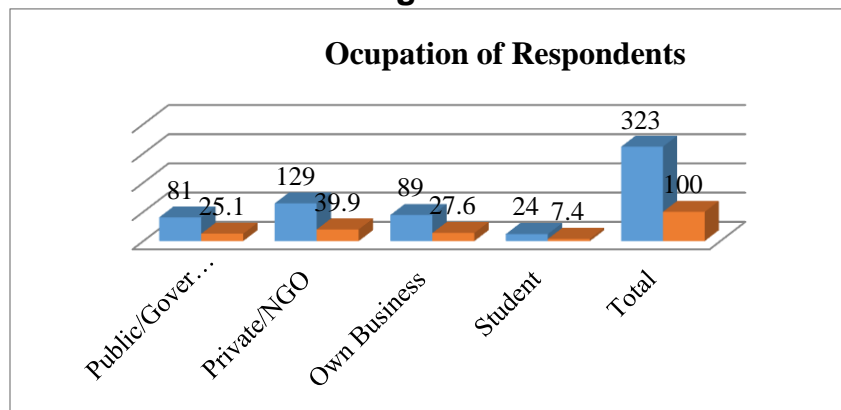
Source: SPSS analysis output, 2021

Figure 3 above indicated educational level of respondents. From the total observation of 323, most of them had “first degree” with a figure of 52.3% (169). Following this, the respondents had “second degree and above” with a figure of 24.1% (78). The rest respondents characterized by “diploma” and “certificate and below” with figures of 13.9% (45) and 9.6%(31) respectively.

This analysis implies that most of respondents for this study have first degree.

4.3.1.4 Occupation of the Respondents

Figure 4



Source: SPSS analysis output, 2021

The above figure 4 showed the occupation of the respondents wherein, 129 (39.9%) of respondents were private/NGO workers, while 89 (27%) respondents were have their own business. Respondents who were work at public/ government institutions, founded 81 (25.1%), and 24 (7.4%) of respondents were students. This analysis states that most of the users of the E-hailing application during the time of the study are private/NGO employees.

4.3 Response of Customer on E-Hailing application usage

4.3.1 Experience of Respondents in using E-hailing service

Table 4.4.1.Experience of using E-hailing application

Experience using E-hailing service (Electronics Taxi application)				
	Frequency	Percent	Valid Percent	Cumulative Percent

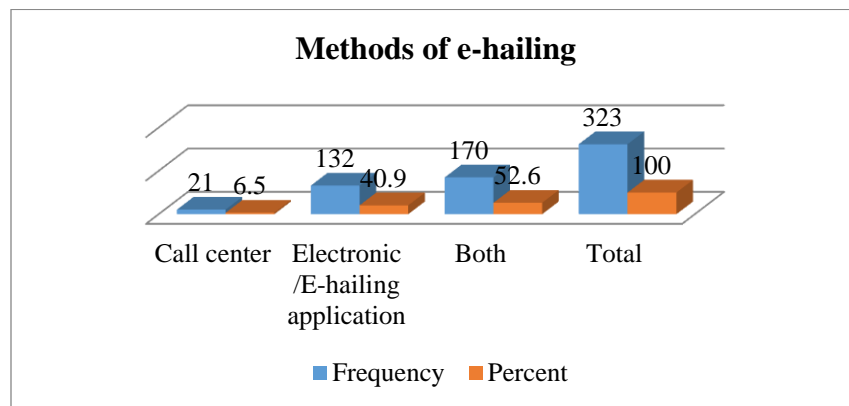
Valid	Yes	323	100.0	100.0	100.0
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Survey Result, April 2021

Table 4.4.1 indicated that all the respondents have experience in using E-hailing application to hail a taxi. Thus, 323 (100%) of the respondents used e-hailing application. From this, the study considers that all respondents are users of e-hailing so they can deliver genuine responses to the questionnaires since they are users of e-hailing application.

4.3.2 Methods used by respondents to hail /request for a taxi

Figure 5



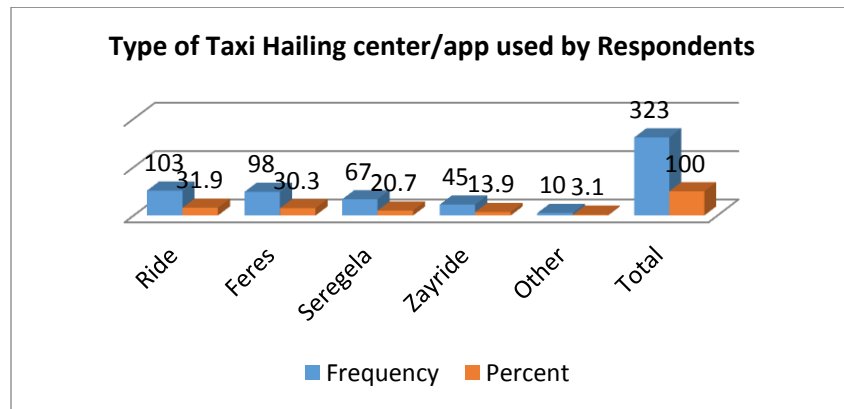
Source: SPSS analysis output, 2021

Figure 5 inferred the methods used by respondents to request a taxi from an e-hailing service provider. The results depicted that 170 (52.6 %) respondents utilized call center and e-hailing application to hail a taxi from the service providers, while 132 (40.9%) of the respondents utilized e-hailing applications to call a taxi from service provider. Finally, 21(6.5%) of the respondents used the call center to request for a taxi.

This study emphasizes that most of respondents apply both a call center and application of e-hailing to use taxi. However; from these, most respondents apply application based call instead of call center to call a taxi.

4.3.3 Types of E-hailing service provider used by users

Figure 6



Source: SPSS analysis output, 2021

Figure 6 above showed that 103 (31.9%) of the respondents used “ride-application” to hail for a taxi. On the other hand, 98 (30.3 %) of the respondents used “Feres-application” to e-hailing service provider. And then, 67(20.7) of respondents used “Seregela-applications”. Finally 45(13.9%) and 10(3.1%) respondents used “Zayride-applications” to hail taxis from service providers.

This analysis shows that most of the respondents are using and has installed the Ride and Feres-hailing application to hail for a taxi. This is may be due to the fact that getting first mover advantage from Ride side on the other hands a promotional advantage from Feres service provider side.

4.4 Descriptive statistics analysis for Independent and Dependent variables

Below here the research possessed a descriptive statistics analysis to observe feature of independent variables (performance expectancy, physical security, social influence, application easiness and facilitating condition) and the dependent variable that is, the adoption of e-hailing. For the sake of easy understanding, the study adopted aggregate mean value of each independent and dependent variable.

Table 4.5.1. Descriptive Statistics Analysis

Variables	N	Minimum	Maximum	Mean	Std. Deviation
IV1 Performance	323	1	5	3.50	.970

Expectancy						
IV2	Physical Security	323	1	5	3.48	.935
IV3	Social Influence	323	1	5	3.34	1.043
IV4	Application Easiness	323	1	5	3.58	.957
IV5	Facilitating conditions	323	1	5	3.51	.939
DV	E-hailing Adoption	323	1	5	3.46	.961
Valid N (listwise)		323				

Source: SPSS output, 2021

The study sought above in Table 4.5.1 a descriptive analysis of independent and dependent variables. According to the report mentioned, from the total observation of 323, “Application easiness” had the highest mean value (M=3.58) with variation of 95.70%. This means the result fell in the decision criterion of 3.41-4.20, which referred “Agree” that is, satisfactory by most respondents. Following this, a variable “Facilitating conditions” represented by a mean value (M= 3.51) with variation of 93.90%, which found in the criterion of 3.41-4.20. This means again “agree” that supported by most respondents as satisfactory.

Again next to this a variable, performance expectancy had a mean value (M=3.50) with variability of 97.0%. This means again “Agree” which fell between the criterion of 3.41-4.20, that is, satisfactory. From the given independent variables, “physical security” had a least mean value (M= 3.48) with variation of 93.5%, again this indicated most respondents replied “agree” or satisfactory. The dependent variable, e-hailing Adoption had a mean value of (M=3.46) that fell in the criterion of 3.41-4.20 that is, “agree” or replied satisfactory by most respondents.

According to the analysis, the study indicates that the result between independent variables has no significant difference. Facilitating condition which refers the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system enhances the adoption of e-hailing service that passengers use this app. The other aspect is physical security which involves conducting of mobile e-hailing related to physical security as such travelling by taxi with unknown drivers gives passengers some uncertainty about the safety (Athapol Ruangjanases).

This also has positive contribution to adopt e-hailing by passengers. Besides these, social influence, which is the degree in which an individual perceives importance of others’ opinion in

believing to apply the new system, is also enhanced the adoption of e-hailing service in Addis Ababa.

The other factor application easiness to manipulate easily by the passengers is also satisfactory to adopt e-hailing service in Addis Ababa to call taxi easily. Application easiness refers users friendly in which that the app is not complicated, instead simple and easy to use with intuitive design. The other factor is facilitating condition that indicates the degree to which a passenger believes that an organizational and technical infrastructure exists to support the use of the system Venkatesh (2003), which contributes the adoption of e-hailing service in Addis Ababa. In addition to this, e-hailing service in Addis Ababa is, in satisfactory level that passengers apply easily and experiences gradually its efficient usage.

4.5 Pearson Correlation Analysis

This title comprised to examine the relationship between the independent variables (Performance expectancy, physical security, social influence, application easiness and facilitating conditions) with the adoption of E-hailing service. Pursuant to this, the following table disclosed the correlation matrix analysis.

Table 4.6.1. Correlations Analysis

Variables		Performance Expectancy	Physical Security	Social Influence	Application Easiness	Facilitating conditions	E-hailing Adoption
E-hailing Adoption	Pearson Correlation	.754**	.713**	.676**	.744**	.664**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	
	N	323	323	323	323	323	323

** . Correlation is significant at the 0.01 level (2-tailed).

Source: SPSS Analysis output, 2021

Additional analysis was conducted using correlation matrix to examine the association of independent variables, performance expectancy, physical security, social influence, application easiness, and facilitating conditions with the dependent variable (E-hailing Adoption) in Table 4.6.1. The results of the correlation matrix depicted there were significant positive relationship between the performance expectancy, physical security, social influence, application easiness, facilitating conditions and e-hailing adoption to call taxi with coefficient factors .754**,.713**,.676**,.744** and .664** at P-values .000<0.05.

4.6 Regression Analysis

Multiple regression analysis indicates a statistical instrument that helps to predict a dependent variable from multiple independent variables (Harlow, 2005; Stevens, 2009). The goal of multiple regressions is to evaluate which, if any, of predictor variables can significantly influence or predict the dependent variable. Currently, most social studies applied this regression analysis (Stevens, 2009).

Thus, the study prior to conduct a regression analysis, it endeavored to examine the assumption test or diagnosis test since most statistical evaluation depends on certain assumption about the variables used to ensure that the analysis is as accurate and true as possible, and this confirm validation (Osborne & Waters, 2002; Stevens, 2009).

Accordingly, the study performed the following diagnosis examination to prove the existence of the assumptions of multiple regressions.

4.6.1 Diagnostic Analysis

The assumptions of linearity, normality, independence (serial auto correlation), multicollinearity, and homoscedasticity contained here under the subtitle of diagnostic analysis.

4.6.1.1 Multicollinearity test Analysis

The study sought collinearity test which indicates the assumption that the independent variables are uncorrelated highly (Darlington, 1968; Keith, 2006). So the researcher can make inferences about the causes and effects of variables reliably. Multicollinearity occurs when several independent variables correlate at high levels with one another, or when one independent variable is a near linear combination of other independent variables (Keith, 2006).

So the study employed variance inflation factor (VIF) to examine the collinearity test. The inflation factor VIF less than 10 had no possibility of multicollinearity problem, multicollinearity, Marquardt (1970) stated that applying the variance inflation factor (VIF) (p. 600). In addition to this, the study used Montgomery and Peck (1983) rules, which referred that for the condition number (CN) to measure multicollinearity, if $CN < 100$ indicated none of multicollinearity, if the CN fell between $100 < CN < 1,000$, it indicated a moderate to strong multicollinearity, whereas if $CN > 1000$ the multicollinearity had serious problem.

Let's here observe variance inflation factor (VIF) in the table.

Table:4.6.1.1.1 Multicollinearity Analysis

Collinearity Statistics					
	Tolerance	VIF	model	Eigenvalue	Condition Index
Performance Expectancy	.206	4.858	1	.051	10.789
Physical Security	.285	3.513	2	.029	14.308
Social Influence	.392	2.553	3	.019	17.825
Application Easiness	.271	5.840	4	.026	12.025
Facilitating conditions	.260	3.841	5	.008	11.686

a. Dependent Variable: E-hailing Adoption

Source: SPSS output, 2021

The study indicated above on table 4.6.1.1.1 variance inflation factors (VIF), which had results less 10, so the assumption met and there were no collinearity problems among the independent variables, Marquardt (1970). Furthermore, the study applied condition index test to examine the collinearity problems among the independent variables. All scores listed were less than 100 (CN<100), which satisfied Montgomery and Peck (1983) that is, none of multicollinearity problem.

4.6.1.2 Autocorrelation test Analysis

The other test is autocorrelation test which indicates the values of the residuals are independent. The observation or individual data points examined to measure independent variables uncorrelated. The study tests this using the Durbin-Watson statistic.

A serial autocorrelation is common in much of the economic and business research. To detect autocorrelation, one can use many tests, but the most widely used is Durbin S. Shahabuddin-Watson (D) test, which tests the hypothesis of whether correlation between error terms exists or not (Koutsoyiannis, 1973)

Table:4.6.1.1.2 Multicollinearity Autocorrelation Analysis

Model Summary ^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.823 ^a	.677	.672	.551	1.875

a. Predictors: (Constant), Facilitating conditions, Social Influence, Physical Security, Performance Expectancy, Application Easiness

b. Dependent Variable: E-hailing Adoption

Source: SPSS output, 2021

The study above in table 4.6.1.1.2 acknowledged that the value of Durbin-Watson had a figure of 1.88, which fell in the bracket of 1.5- 2.9, so there was no autocorrelation of the independent variables.

4.6.1.3 Test of homoscedasticity Analysis

The study addressed the variance of the residual was constant, which stated the assumption the variation in the residuals exhibited similar at each points across the model. This means the spread of the residuals should be fairly constant each point of the predictor variables. The assumption of homoscedasticity posited equal variance of errors across all levels of the independent variables (Osborne & Waters, 2002). This means that researchers assume that errors are spread out consistently between the variables (Keith, 2006).

Similar to Field (2013), which applied a pictorial test of homoscedasticity, the study also employed a similar approach.

The study below applied visual inspection on Figure 1 below here, which exhibited the residual points, which had not exhibited a cone shape instead they characterized by fairly constant

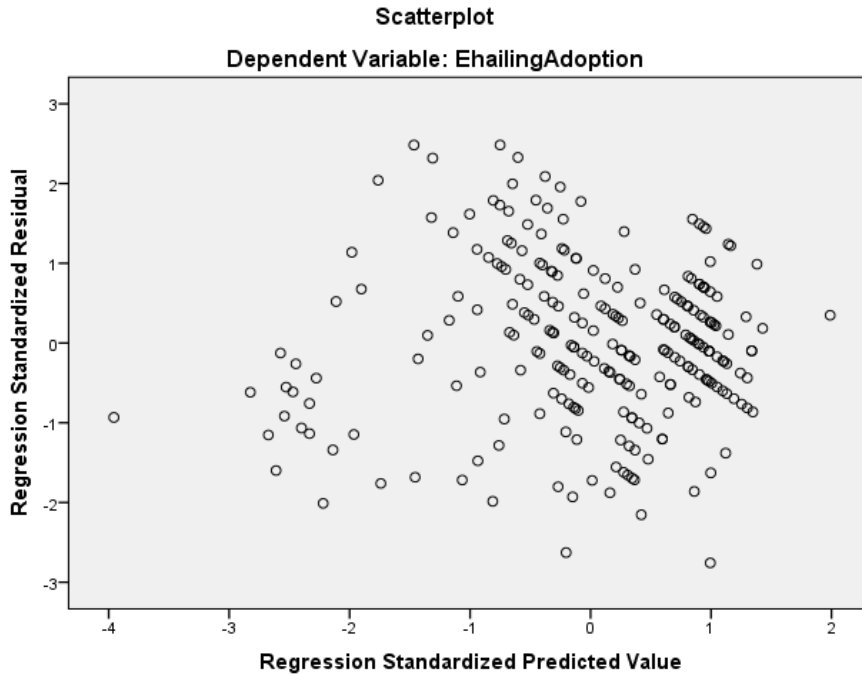


Figure 1

Source:SPSS output,2021

4.6.1.4 Test of Normality Analysis

The other indispensable assumption test exhibited by value of the residuals is normally distributed. Multiple regressions assume that variables have normal distributions (Darlington, 1968; Osborne & Waters, 2002). This means that errors are normally distributed, and that a plot of the values of the residuals will approximate a normal curve (Keith, 2006). So according to the test possessed by Field (2013: 185) described that over-reliant on tests such as Kolmogorov- Smirnov and Shapiro-Wilk, might incur non normality so better also to observe pictorial figure of normality, so the study applied this method.

This assumption can be tested by looking at the P-P plot for the model. The closer the dots lie to the diagonal line, the closer to normal the residuals are distributed. Regarding this, the residual points were almost closer to the diagonal line which referred normality.

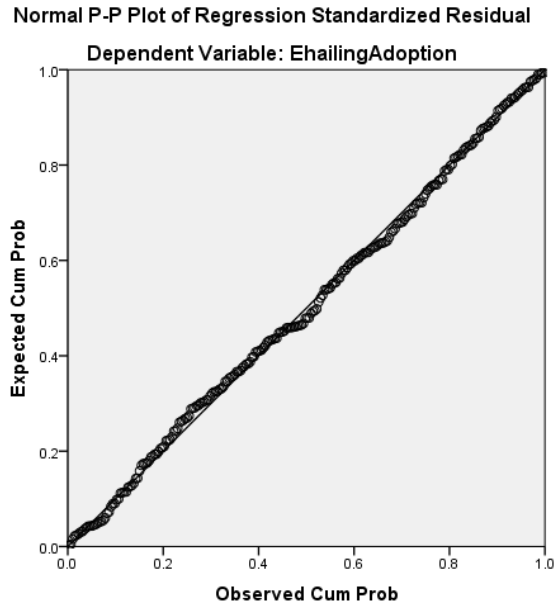


Figure 2

Source: SPSS output, 2021

4.6.1.5 Test of Outliers Analysis

The other multiple regression assumption tests are outliers which are checking there are no influential cases that biasing the model of the study. This can be tested by applying the Cook's Distance values. Any values greater than 1 are significant outliers, which can influence on the model and should therefore be removed. Here the study examined all Cook values were below one so in this case, no such instances have occurred. (Annex 1).

4.7 Reliability Test Analysis

The study sought reliability test analysis by conducting a pretest approach that the researcher distributes fifty sheets of questionnaires for selected respondents prior to distribute the whole questionnaires to the selected respondents. Thus, to assess the reliability coefficients using statistics analysis, the study applied Cronbach's alpha using SPSS software. According to authors, Fornell and Larcker, (1981); Nunnally, 1978; Pallat, (2011), Cronbach's alpha recommended that the cut-off point of 0.7

Table 4.7.1. Reliability Statistics

Variables	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Performance Expectancy	.920	.922	6
Physical Security	.897	.897	4
Social Influence	.860	.862	3
Application Easiness	.888	.889	5
Facilitating Condition	.860	.865	4
E-Hailing Adoption	.803	.808	3

Source: SPSS Analysis output, 2021

Above Table 4.7.1 described reliability statistics using Cronbach's α for the given items conducted in this study was above the minimum cut-off point, thus, the items were preserved and regarded reasonable for the present study.

4.8 Multiple Regression analysis

Table 4.8.1. Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.823 ^a	.677	.672	.551

a. Predictors: (Constant), Facilitating conditions, Social Influence, Physical Security, Performance Expectancy, Application Easiness

b. Dependent Variable: E-hailing Adoption

Source: SPSS Analysis output, 2021

Table 4.8.1 above posited a model summary section of regression analysis. The Model summary provided an overview of the results. R square and Adjusted R square had values, which were .677 and .672, respectively. This indicated the predictor variables explained approximately 67.7% of the variance of e-hailing adoption. In addition to this, whenever, the predictor variables changed by 1%, it had effect on e-hailing adoption 67.7%.

Table 4.8.2. ANOVA^a

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	201.548	5	40.310	132.964	.000 ^b
Residual	96.102	317	.303		

Total	297.650	322
a. Dependent Variable: E-hailing Adoption		
b. Predictors: (Constant), Facilitating conditions, Social Influence, Physical Security, Performance Expectancy, Application Easiness		

Table 4.8.2 above indicated the model used in this study presented a linear relationship that made it possible to have a wide variety of statistical tests for variable and assumption; the F-test is used to assess the significance of the whole model, with P-Value $0.000 < 0.05$ and $F=132.96$.

Table 4.8.3. Regression Analysis

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.330	.128		2.583	.010
Performance Expectancy	.231	.070	.233	3.306	.001
Physical Security	.209	.062	.106	3.780	.001
Social Influence	.223	.047	.242	4.750	.000
Application Easiness	.220	.077	.025	4.265	.002
Facilitating conditions	.362	.064	.354	5.656	.000

a. Dependent Variable: e-hailing Adoption

Source: SPSS output, 2021

Table 4.8.3 above portrayed a regression analysis. Based on the regressed result between the independent variables and e-hailing adoption, performance expectancy had a positive significant effect on the adoption of e-hailing taxi (.231 and $P=.001 < .05$). This had a probability t-statistics 3.306. According to the result the hypothesis:H1: Performance expectancy has a positive and significant effect on adoption of E-hailing was accepted since it satisfied the criterion.

Next to this, Physical security had a positive relation with coefficient of .209 and had significant impact on the adoption of e-hailing taxi ($P=.001 < .05$). Thus, the study exhibited the hypothesis:H2: Physical Security has a positive and significant effect on the adoption of E-hailing was rejected. Following this the study indicated that Social Influence had a positive and significant impact on the adoption of e-hailing taxi (.223 coefficient and $P=.000 < .05$). This had a maximum t- statistics value 4.750. Accordingly, the hypothesis: H3: Social Influence has a positive and significant effect on the adoption of E-hailing was accepted.

The other factor Application easiness for passengers had positive and significant impact on e-hailing adoption with vale of .220 and P-value=.002<.05, due to this, the hypothesis, H4: Application easiness has a positive and significant effect on adoption of E-hailingwasalso accepted. Regarding to facilitating condition factor, the study sought that it had a positive and a significant impacts on the adoption of e-hailing taxi so the hypothesis: H5: Facilitating conditions has a positive and significant effect on adoption of E-hailing was accepted.

The mathematical model of the regression seen below here:

$$E\text{-hailing Adoption} = X1(PE) + X2(PS) + X3(SI) + X4(AE) + X6(FC) + \beta + \varepsilon$$

$$E\text{-Hailing Adoption} = .231(PE) + .209(PS) + .223(SI) + .220(AE) + .362(FC) + .330 + \varepsilon$$

4.9 Hypothesis Testing

As the hypothesis indicates that there is a significant difference on the outcome variable that is caused by the Independent variable. The obtained results are presented in table 4.9

Table 4.9. Summary of hypothesis testing

Hypothesis	Results	Reason
H1: Performance expectancy has a positive and significant effect on adoption of E-hailing	Accepted	$\beta=0.231,$ $p=0.001$
H2: Physical Security has a positive and significant effect on adoption of E-hailing.	Accepted	$\beta=0.209,$ $p=0.001$
H3: Social Influence has a positive and significant relationship with adoption of E-hailing.	Accepted	$\beta=0.223,$ $p=0.000$
H4: Application easiness will have a positive and significant relationship with adoption of E-hailing.	Accepted	$\beta=0.220,$ $p=0.002$
H5: Facilitating conditions will have a positive and significant relationship with adoption of E-hailing	Accepted	$\beta=0.362,$ $p=0.000$

Research Implication:

This study offers empirical suggestion of factors that affect the adoption of e-hailing taxi service in Addis Ababa. The study provides critical factors that affect passengers to adopt app based taxi service when opting to use technology in providing services to their customers. So the followings are described the implication of the study.

Regarding the above results, the study sights its implication as per the empirical review points. It has similar result with Metasebia Yenenh (2020). Factors like performance expectance, social influence, and facilitating condition have positive impact on adoption of e-hailing service in Addis Ababa, which is similar to Metasebia Yenenh (2020) findings. According to the author (Venkatesh et al, 2003), performance expectance refers the extent to which passengers believe that utilizing app or system benefit them.

Other study by HermanFassouhaha (2018);lim,K.B.etal,(2018) conducted research of the adoption e-hailing application from the Malaysian context. The researchers identified perceived usefulness, subjective norms, perceived risk and perceived playfulness, perceived price level, performance expectancy, social influence and facilitating conditions as factors affecting the adoption of E-hailing services from consumer's point of view. The finding indicated that performance expectancy and perceived playfulness has the most influence on the adoption of Ride hailing application. Similarly, this study performance expectance has a positive effect on the adoption of e-hailing taxi service in Addis Ababa.

Furthermore, a study by (AthapolRuangkanjanases) regarding physical security, which refers in the context of E-hailing application Users, is a main concern when conducting mobile e-hailing is related to physical security. Most of the E-hailing applications provide drivers' information such as names, phone numbers, photos and plate numbers. According to them physical security positively influenced male users to use e-hailing application in Malaysia. Therefore, this result has similar result.

Other study by "AthapolRuangkanjanases and ChayaneeTechapoolphol," about the effect of social influence on the adoption of e-hailing taxi service in Thailand, social influence is one factors that affect the adoption of E-hailing application, so it indicated that social influence has a positive and significant impact on adoption using the mobile application and influence the

consumer intention to adopt the application. So the result has similar to this study that is, social influence, which is the degree in which passengers perceive that importance of others 'opinion in believing them to use the new system, Venkatesh et al., (2003).

In the case of application easiness which refers friendly use of app for e-hailing, simple and easy to apply by passengers, this study has got significance to the adoption of e-hailing taxi service in Addis Ababa which is also similar to LifangPeng, Huan Wang, Xuanfang He, DanxiaGuo, Yuchuan Lin (2014) which emphasizes application easiness has a positive and significant effect on the adoption of E-hailing.

Besides this, the study sights other factor like facilitating condition that has positive effect on the adoption of e-hailing taxi service in Addis Ababa. It has similarity with other research conducted by (Venkatesh et al., 2003) and MetasebiaYeneneh (2020). Facilitating conditions indicate the extent to which passengers believe that service provider and technical infrastructure exists to support the use of the system (Venkatesh et al., 2003). According to MetasebiaYeneneh (2020), Factor affect the adoption of E-hailing in Addis Ababa suggested that Facilitating condition and perceived credibility has the highest influence on passenger's adoption of e-hailing application.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary of Findings

The study endeavored to examine factors that affect the adoption of e-hailing taxi service in Addis Ababa, Ethiopia. A total observation of 323 respondents was adopted to conduct the necessary series processes to achieve the goal of the research. The respondents were passengers that employed E-hailing taxi service in Addis Ababa.

Thus, the findings of the study comprised key elements of demographic feature of respondents, a descriptive statistics analysis for both independent variables (performance expectancy, physical security, social influence, and application easiness and facilitating condition) and dependent variable (adoption of e-hailing). Furthermore, a correlation analysis is also conducted to observe the association of the independent variables with the dependent variable, and finally a multiple regression analysis result contained to measure the hypotheses test.

Summary results of Demographic features of Respondents:

- ❖ Gender of respondents dominated by females 55.1 %(178), and males 44.9 %(145).

The Age bracket of respondents:

- ❖ 37.5 %(121) of respondents were in the age bracket of 18-30 years,
- ❖ 35% (113) of respondents were in the age bracket of 31-45 years, and the rest 15% (16) were above 60 years old

Occupation of Respondents:

- ❖ 39.9% (129) of respondents were worked in private/NGO, and the rest had their own value 27.6% (89).

Experience of using Hailing App:

- ❖ All respondents (100%) 323, were applied this apps.

Methods used by respondents to hailing /Request Service:

- ❖ E-hailing App users were 40.9% (132). Both (Call center and Hailing App) users were 52.6 % (170), and the rest 65% (21) were employed call center only.

Types of e-hailing service provider used by users:

- ❖ Ride users were 31.9%(103),Feres users had a figure of 30.3 %(98), and Sergela users were 20.7 %(67) and the rest 13.9 %(45) were used Zayride.

Summary results of Descriptive Analysis for independent variables:

- ❖ The highest mean value achieved by Application Easiness with a mean value 3.58 and variation 95.7%. This referred the ability of passengers' friendly used e-hailing to call taxi from service providers was satisfactory.
- ❖ Following this, facilitating condition had a mean value 3.51 and variation 93.9%. This indicated technical infrastructure to support the passengers to use the system was satisfactory.
- ❖ The next variable, performance expectancy had a mean value of 3.50 with a standard deviation of 97.0%. This means the extent to which passengers believe toutilize a particular system will benefit them in term of service. In addition to this, physical security had a mean value 3.48 and variation 93.5%. Both were satisfactory.
- ❖ From the least value represented by social influence factor which had a mean value of 3.34 and variation 1.04. This indicated the degree in which passengers perceive the importance of others' opinion in believing he or she should use the new system. This was to some extent satisfactory.
- ❖ The dependent variable, the adoption of e-hailing had a mean value 3.46 and variation 96.1%. The adoption of e-hailing system was satisfactory.
- ❖ Summarized result of Correlation analysis:

The study sought that the independent variables performance expectancy, physical security, social influence, application easiness and facilitating conditions had a significant positive correlation (.754**, .713**, .676**, .744** and .664** and P-value =0.000<0.05) with the adoption of e-hailing. From the whole independent variable, performance expectancy and application easiness had a strong correlation coefficient (.754**) and (.744**) respectively.

- ❖ Summary of Multiple Regression Analysis to test Hypothesis

For the first hypothesis, H1: Performance expectancy has a positive and significant effect on adoption of E-hailing the study accepted with $P\text{-Value}=.001<0.05$. This means performance expectancy had a positive impact on e-hailing that passengers believe to use e-hailing to call taxi.

For the second hypothesis, H2: Physical Security has a positive and significant effect on the adoption of E-hailing, the study accepted with $P\text{-value} .001<.05$. Physical security, which means passengers feel secured while using the service and had significant impact on e-hailing adoption for passengers.

The other hypothesis, H3: Social Influence has a positive and significant effect on the adoption of E-hailing had a $P\text{-Value} .000<.05$, thus, the research accepted which means passengers believe opinion of others to employ e-hailing app to request taxi service significantly.

Moreover, the hypothesis, H4: Application easiness has a positive and significant effect on adoption of E-hailing had a $P\text{-value}$ was accepted since it had a $P\text{-value} 0.002<.05$, which referred significant impact on e-hailing adoption by passengers. This referred it was friendly to use for passengers and became not complicated, to use simply & easily.

The last hypothesis, H5: Facilitating conditions has a positive and significant effect on adoption of E-hailing was accepted with $P\text{-value} .000<.05$. This stated that passengers can believe the service provider and technical infrastructure exists to support the use of the system significantly.

5.2 Conclusions

The study delivered a substantial review of the adoption of E-hailing application to call taxi service. A total observation of 323 respondents were comprised to give their feelings using five Likert scale to comprehend factors that impacts the adoption of E-hailing app system in Addis Ababa. All the respondents were passengers or users of E-hailing taxi app system to get service transport.

Regarding the specific objectives of the study the following conclusions were given:

For the first objective, “there is a positive relationship between performance expectancy and e-hailing adoption in Addis Ababa”. Performance expectancy which refers the degree to which a passenger believes that utilizing a particular system will benefit him/her during the journey to the destination in term of service Venkatesh(2003), the study obtained a significant positive

correlation with E-hailing in Addis Ababa. This means passengers were benefited from the performance of e-Hailing services.

For the second objective, “there is a positive relationship between physical securities and the adoption of E-hailing adoption”. The study sought a significant positive relationship between physical securities with E-hailing app adoption in Addis Ababa. This refers passengers’ access the E-hailing applications with secured style that keep their own data from theft.

The other factor that observed by the study was, physical security, which indicated the Security context of E-hailing application for passengers in Addis Ababa are also a main concern. Travelling by taxi with unknown drivers gives passengers some uncertainty about their safety. Most of the E-hailing applications provide drivers’ information such as names, phone numbers, photos and plate numbers so these were very important for passengers in Addis Ababa that employed e-hailing application.

For the third objective, “there is a positive relationship between social influences and E-hailing application adoption”. In the case of social influence factor, the study again considered that passengers had positive significant relationship to adopt e-hailing in Addis Ababa. Most of the time other people opinion influenced passengers to commence this type of service by accepting other people opinion. The other indispensable determinant factor is, e-hailing application easiness that easily applicable by passengers. This also had a positive significant association for passengers to adopt e-hailing service to call taxi. So most passengers were believed that the application was friendly, not complicated to use.

Social influence means the extent in which passengers perceives salient features about E-hailing application system in Addis Ababa. This means passengers accepted the indispensability of E-hailing application taxi service in Addis Ababa. Regarding this, the study obtained a significant positive relationship with E-hailing application system in Addis Ababa.

The other indispensable determinant factor is, e-hailing application easiness that easily applicable by passengers. This also had a positive significant association for passengers to adopt e-hailing service to call taxi. So most passengers were believed that the application was friendly, not complicated to use.

The last objective, “there is a positive relationship between facilitating condition of passenger with the adoption of E-hailing service in Addis Ababa”. Here the research focused that the variable facilitating condition had also a positive significant relationship with the adoption of e-hailing by most passengers in Addis Ababa. Facilitating conditions are defined as the degree to which passengers believe that the service provider’s and technical infrastructure exists to support the use of the system (Venkatesh et al., 2003). So here the service providers’ infrastructure such as bookings, cost system, location identification, driver’s information etc. has been delivered to passengers effectively.

5.3 Recommendations

Based on the summary of findings and conclusions the study proposed the following recommendations:

- The study recommended that Passengers are concerned about their safety when going privately with unknown drivers, thus E-hailing firm service providers should focus more on security issues. As a result, before conducting business with a driver, providers should know his or her contact details and learn about their backgrounds. If at all possible, service providers should also implement the most recent e-hailing version or upgrade to the most recent version that can easily link with security offices or police stations to detect theft and other crimes.
- The study recommends that service provider should deploy effective E-hailing App which passengers easily to use with a short steps and that have local language module because the study reveal from the finding that most of users of the services are both youngster and middle age this shows that the current application is not simple enough for senior citizen. In addition to this, to expand the service, it is better also target other passengers or users like elderly, to have the service easily and to use the e-hailing app simply.
- Because social influence has a good and large impact on e-hailing application adoption, service providers should implement various referral schemes. By allowing family members or friends who has positively impact their reference group, this referral will enhance the use of the e-hailing service.

- To evaluate the day to day e-hailing service and to maximize the quality, the service providers should create a feedback platform and daily update their service. In addition to this, if there is a service interruption, the service providers should prepare appropriate a friendly plat form that will support passengers, drivers which easily manipulate by them that creates harmony with the existing network platform.
- To make their services more accessible, service providers make their drivers readily available in Addis Ababa. This saves clients time and improves the efficiency of taxi searches. Further, enterprises in the sector should expand to other cities in the country, particularly those surrounding Addis Ababa, where the majority of recreational facilities and resorts are located; this would help providers improve their market share and profit.

5.4 Areas of Future Studies

The use of E-hailing app system is a new approach to request taxi in Addis Ababa and a new ways of life style for passengers. So there should further study regarding the challenges to use this system like the perception, affordability of the service, and also the reason behind the brand preference of customers/travelers in picking a particular e-hailing service provider hence the results that the type of service provider chooses shows Ride users were 31.9%(103) and Feres users had a figure of 30.3 %(98) respectively as compare to other providers and from the finding majority of the respondents are youngster and middle aged who adopted e-haling services early, further research should conduct the reason behind this is. Furthermore this research conducted on passenger application any researcher who are interested can conduct a on the driver application of e-hailing.

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APPENDIX 1: Element and reference for questionnaire

Measurement	Element	cite
Performance expectancy (PE)	PE1. E-haling is a more convenient way to take a taxi than previous methods.	Ramon and Santiago (2019); Viktoriia Vinnik(2017);Venkatesh, Morris, Davis, and Davis (2003)
	PE2. Using an e-hailing app, I can discover a nearby available vehicle much faster than hailing one on the street.	
	PE3. E-haling Application allows me to reach destination faster.	
	PE4. The e-haling application is ideal for my requirements.	
	PE5. I realize that using the E-haling application saves my time.	
Physical Security (PS)	PS1. Because I disclose my location through message or E-mail, I feel safe while using the E-haling Service.	Ramon and Santiago (2019); Viktoriia Vinnik(2017);Venkates(2003))
	PS2. E-haling Application provides me booking transparency information that gives me more confidence.	
	PS3. I believe that privacy concerns, such as drivers knowing my phone number, will have no impact on my decision to utilize an E-hailing service.	
	PS4.Since every trip is recorded, I feel safe going by E-haling.	
Social Influence (SI)	SI1. Because it represents my social status, I utilize the E-haling application.	Venkatesh et al. (2003) Ramon and Santiago (2019);
	SI2. People close to me believe that I should use this smartphone app.	

	SI3. My decision to use an E-hailing is influenced by friends and relatives.	
Application Easiness(AE)	AE1. Using the E-haling service is simple for me.	Athapol ruangkanjanases and Chayanne techapoolpho,n.d)
	AE2. E-haling application needs only a few steps.	
	AE3. The e-haling application menu is simple to navigate.	
	AE4. Because I found the App to be user friendly, I can hail a taxi without having manuals.	
	AE5. On the app interface, I can quickly access vital information such as the driver's name, plate number, and driver's phone number.	
Facilitating Conditions (FC)	FC1. E-hailing applications, in my opinion, are harmonious with other technologies such as the internet.	Venkates(2003) Vinnik Shuo Mei(2013)
	FC2. I think I have the smartphone required to use an e-hailing service.	
	FC3. In case of service failure there is a dedicated platform is available for support.	
	FC4. I believe I have a necessary knowledge to use E-haling service.	
Adoption of E-Hailing (AEH)	AEH1. To hail a cab, I will always try to use an electronic taxi application.	Metasebia Yenenh(2020)
	AEH2I intend to continue to utilize the E-hailing service on a regular basis.	
	AEH3. In the future, I intend to continue utilizing the E-hailing service.	

Questionnaire

Dear Respondents,

This questioner is prepared to gather data for the study ‘Factor affecting the adoption of E-hailing (Electronics taxi Application) service in Addis Ababa Ethiopia’. I shall request you to spend a few minutes to fill this questionnaire. Your participation in the survey is voluntarily and anonymously and it will be used for academic purposes.

Department Marketing Management, Addis Ababa University School of commerce,

Thank you for your valuable participation

Tinebeb Hailu

Note: E-hailing, also known as electronic taxi application, is the process of requesting a car, taxi, or other mode of transportation via virtual devices such as a computer or mobile phone.

SECTION – 1: Demographic character. Please tick (√) to the answer for each of the following questions.

1. Gender

1. Male

2. Female

2. Age

1. 18-30 years 2. 31-45 years

3. 45-59 years 4. Above 60 years

3. Educational level

1. Certificate and below

2. Diploma

3. First Degree

4. Second Degree and Above

4. Occupation

1. Public /Government institution 2. NGO

3. Own Business

4. Student

SECTION - 2: Specific question. Please tick (√) to the response for each of the following questions.

1. Do you have Experience using E-hailing service (Electronic Taxi Application)?

1 Yes 2 No

2. Which methods do you use to request a taxi from E-hailing service providers?

1. Call center 2. E-hailing Application 3. Both

3. Type of Taxi Hailing App you use?

1. Ride 2. Feres 3. Seregela 4. Zayride 5. Other

SECTION - 3: General Point of view: Please select an appropriate response to indicate how much you agree or disagree with each of the statements below. **Please indicate the best response based on the following scale.. 1= strongly disagree 2= disagree 3= neutral 4= agree 5= strongly agree**

Performance Expectancy: (PE) please makes a circle for your appropriate answer.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
PE1. E-haling is a more convenient way to take a taxi than previous methods.	1	2	3	4	5
PE2. Using an e-hailing app, I can discover a nearby available vehicle much faster than hailing one on the street.	1	2	3	4	5
PE3. E-haling Application allows me to reach destination faster.	1	2	3	4	5
PE4. The e-haling application is ideal for my requirements.	1	2	3	4	5
PE5. I realize that using the E-haling application saves my time.	1	2	3	4	5

Physical Security (PS) Please makes a circle for your appropriate answer.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
PS1. Because I disclose my location through message or E-mail, I feel safe while using the E-haling Service.	1	2	3	4	5
PS2. E-haling Application provides me booking transparency information that gives me more confidence.	1	2	3	4	5
PS3. I believe that privacy concerns, such as drivers knowing my phone number, will have no impact on my decision to utilize an E-hailing service.	1	2	3	4	5
PS4. Since every trip is recorded, I feel safe going by E-haling.	1	2	3	4	5

Social Influence (SI) Please makes a circle for your appropriate answer.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
SI1. Because it represents my social status, I utilize the E-haling application.	1	2	3	4	5
SI2. People close to me believe that I should use this smartphone app.	1	2	3	4	5
SI3. My decision to use an E-hailing is influenced by friends and relatives.	1	2	3	4	5

Application Easiness(AE) Please makes a circle for your appropriate answer.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
AE1. Using the E-hailing service is simple for me.	1	2	3	4	5
AE2. E-hailing application needs only a few steps.	1	2	3	4	5
AE3. The e-hailing application menu is simple to navigate.	1	2	3	4	5
AE4. Because I found the App to be user friendly, I can hail a taxi without having manuals.	1	2	3	4	5
AE5. On the app interface, I can quickly access vital information such as the driver's name, plate number, and driver's phone number.	1	2	3	4	5

Facilitating Conditions (FC) Please makes a circle for your appropriate answer.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
FC1. E-hailing applications, in my opinion, are harmonious with other technologies such as the internet.	1	2	3	4	5
FC2. I think I have the smartphone required to use an e-hailing service.	1	2	3	4	5
FC3. In case of service failure there is a dedicated platform is available for support.	1	2	3	4	5
FC4. I believe I have a necessary	1	2	3	4	5

knowledge to use E-hailing service.					
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Adoption of E-Hailing (AEH) please makes a circle for your appropriate answer

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
AEH1.To hail a cab, I will always try to use an electronic taxi application.	1	2	3	4	5
AEH2I. intend to continue to utilize the E-hailing service on a regular basis.	1	2	3	4	5
AEH3. In the future, I intend to continue utilizing the E-hailing service.	1	2	3	4	5

Thank you for taking part in the research.