E-HAILING APPLICATIONS ADOPTION AND COMPETITIVENESS OF APP-BASED TAXI OPERATORS IN NAIROBI, KENYA

BY

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OCTOBER, 2016

DECLARATION

Declaration by student

This is my original work and has not been presented to any university for any academic award.

Signed ……...…….. Date……..

Juma Jackson Onyango

Reg No: D61/70842/2014

This research project has been submitted with my approval as a University Supervisor.

Signed…….. Date…….

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DEDICATION

This project is dedicated to my spouse and to my beloved parents for their moral support and prayers.

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This project was realised with the assistance of several individuals. First, I am heartily thankful to my project supervisor, for his unwavering guidance, patience, encouragement and support. In addition, I thank my colleagues for their support and advice. I also extend my appreciation to my beloved parents for their prayers, support and encouragement. Finally, my sincere gratitude to my spouse and children for being accommodative, understanding and supportive during the period of study.

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ABSTRACT

The advent of innovations on the Global Positioning System (GPS) has had significant implications on transport systems. The development of E-hailing Applications in the Taxi industry is one of those technological innovations in the recent past. E-hailing refers to the process of sourcing for a taxi or other forms of transport using a mobile application. E-Hail applications services have created more competition in the taxi industry through increased supply and ready availability of cars and drivers in major cities. 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 competiveness 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 analysed 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 behaviours. The analysis of findings show that there exists a positive relationship between between E-hailing Applications adoption and the competiveness of app-based taxi operations.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The inevitable population growth in most cities has led to the need for efforts to enhance easy flow of people and vehicles, and the reduction of self-drivers, and the need to encourage use of public transport (Veloso, Phithakkitnukoon & Bento, 2011). Advanced growth of in technologies related to Global Positioning System (GPS) has had major implications on urban growth and automated transport systems (Mason & Deakin, 2001). The development of E-hailing Applications in the Taxi industry is one of those technological innovations in the recent past.

In the recent months, E-hailing services have grown rapidly as more passengers enrol for the services. There has also been increase in the number operators and the increased coverage for the zones served by the taxi operators. However, challenges relating to policy and regulation have come arisen with this development. One of the critical concerns is on fairness in regulatory treatment between conventional and E-hailing taxi operators. In support for e-hailing services, Veloso et al. (2011) argued that the services dynamically connect customers with speed, dynamic routes and precision on start and end locations. This shows app-based taxi services are flexible in terms of route operation and offer easy accessibility. The App-based Taxi fills a critical gap of providing transportation either as substitute or as complement to both individual drivers and public transport (Rayle et al., 2014).

1.1.1 E-Hailing Applications

An E-Hail Application can be defined as a software program licensed by TNC (Transportation Network Companies) residing on a smartphone or other electronic device and integrated with the TPEP (Taxi Passenger Enhancement Program. Such an application should support; identification of location(s) by both driver and passenger, searching for available taxis in a given area; allows a passenger to book a taxi and the driver to accept such requests; and enable the passenger to pay for the service using the E-hail app.

The term TNCs originates from the California Public Utilities Commission (CPUC), a commission set to provide regulatory framework for Uber, Lfty and SideCar operators in 2012. They define a TNC as "an organisation whether a corporation, partnership, sole proprietor, or other form that provides prearranged transportation services for compensation using an online-enabled application (app) or platform to connect passengers with drivers using their personal vehicles". According to Wikipedia, E-hailing is referred to as “the process of ordering a car, taxi, limousine, or any other form of transportation pick up via virtual devices: computer or mobile device”.

The flow of app-based dispatch system on mobile phones starts when a passenger books a taxi from licensed driver using the E-Hail Application. The App in turn communicates the passenger’s details such as location, name, recent bookings, and available routes among others to driver via GPS. Apps charge a distance-variable fare, and according (Rayle et al., 2014 approximately 80% is retained by the driver and the rest goes to the TNC. The apps allow customers to review taxi services, meaning that drivers now have a stake in keeping passengers happy. They also allow customers to monitor the progress of a taxi, as well as reference its driver by name. In reality what this means is that days when a taxi driver could delay in responding to a call or refuse to take certain jobs are gone since the App-provider and even the customers can monitor them.

1.1.2 Competitiveness

According to Porter (1985) “competition determines the appropriateness of a firm's activities that can contribute to its performance, such as innovations, a cohesive culture, or good implementation”. He argues that competitiveness is about gaining a sustainably strong and profitable position in its market. According to Thompson (2008) “ a company's competitive strategy deals exclusively with the specifics of the management's game plan for competing successfully, its efforts to please customers, its offensive and defensive moves to counter the maneuvers of rivals, its responses to existing market conditions, its plans to strengthen its market position, and its approach to securing a competitive advantage as compared to the rivals”.

A company is therefore considered to be competitive if it is able attract and maintain more customers above the competing forces (Thompson & Strickland, 2010). This is view is also supported by Andrews(1980) who state, "Competitive advantage is an advantage that a firm has over its competitors, allowing it to generate greater sales or margins and/or retains more customers than its competition". According to Porter (1985), "competitive advantage introduces the concept of value chain, general frame work for thinking strategically about the activities involved in any business and assessing their relative cost and role in differentiation".

This study sought to seek to assess the competitiveness brought in the adoption of various E-Hailing Apps and the distinguishing features that differentiate the Apps and their level of usage from one operator to another. Porter (1980) proposed two types of competitive advantage; "cost advantage and differentiation advantage". In conclusion, there are different schools of thought views on competitive advantage competitive advantage. However, most scholars agree that competitiveness resides in cost or differentiation of a product or service.

1.1.3 Factors for Adoption of E-Hail Applications

The taxi industry has undergone drastic changes recently with the introduction of e-hailing systems. Leading industry players, like UBER, have made structural changes that allow individuals to book a taxi using a smartphone from any location with improved lead time for taxi-waiting and journey, and the advantage of passenger not having to hail or wave down taxis in the streets. Research done in Singapore (Liao, 2001) has outlined that taxi that operates with GPS can solve the problems of; disparity in the demand and availability taxi services, imbalance of job segregation based on location proximity of a task, noise interruption for radio-paging systems and long waiting period before confirmation of a taxi can be given.

Convenience, cost, safety and security are some the most important advantages for drivers using E-Hail operations. Most transaction are paid online with no need for hard cash and hence driver needs not worry not being paid and or being easy target for robbers (Natalia

Korol, 2016). Jalloh (2014) reveals that E-hail apps operators have more freedom and flexibility in their duties. The drivers have the choice to access the system a when they desire and can strategically allocate their work schedules when it best suits them. The drivers can also stay away from costly taxi leases by purchasing their own cars. The operators are also spared the stress resulting from office human related challenges as most operations such as bookings is handled by the e-hailing application. (ICTFrame, September 2016).

E-Hail applications services have resulted to greater competition, more supply of taxis and drivers in the market in many cities. Mohd (2015) notes that with the ease of using smartphone application for taxi booking systems, it will help to elevate the rate of occupancy for public transportation. Government and regulators are struggling to find solutions for e-hailing services. E-hailing offers services that conventional taxi drivers could not provide for ages. According to (Rayle et al., 2014), these advantages include fast, flexible and convenient taxi operations.

1.1.4 Challenges for Adoption of E-Hail Applications

It has been noted that the existing applications are proprietary, stand-alone solutions, and disintegrated. There is need for applications that support end-to-end integration for connected drivers, passengers and the vehicles (taxis). There is also need to invest sufficiently on trust and security issues especially in situations where it requires passengers to input all of their credit card data while making payments. Customers' private and confidential data needs protection from un-authorised third parties. There have been ongoing concerns on how customers are treated, the actual behaviour of drivers, ease of use of taxi-App and feature supported by the App. Most developers spend a lot of time designing applications, experience project delays and stagnation, have poor induction programs for the operators and the apps are not user friendly (Judd, 2014).

There are few cases of prices fare being raised due to "Surge pricing" or "primetime pricing" which are costing methods affected by number of taxis (supply) and availability of customers (demand) with factors such as rush hours, events, bad weather etc playing a

critical role (Jalloh, 2014). Safety and security is also a major concern for cities with poor regulatory controls for profiling and enlisting highly motivated and professional taxi operators.

Price wars and the general low prices negatively impact drivers' earnings. In Nairobi for instance, fee remains the same no matter how many times the driver stops, how bad the traffic is, how many people are trying to hail the same taxi, or even if local authorities demand bribes for safe passage. For most operators, traffic or time duration of a ride is not considered when calculating actual cost of the trip. Sometimes drivers have to work longer hours to earn a comparable income. Others challenges include long working hours so as to maximize on profit and the need to maintain cars of high standards (model and general maintenance). The former can expose taxi drivers and even passenger to unnecessary danger and safety concerns, such as lack of concentration and low morale while on duty. Interestingly, most E-Hail operators are competing to offer the least cost service (Jalloh, 2014). The result of this is strained operators and eventually service degradation. There is also the challenge of direct competition from conventional operators' for both passengers and drivers (Rayle, 2014).

1.1.5 Taxi Operators in Nairobi

A taxi is a car that carries ride seeks from one location to another at an agreed cost based on the journey covered. In Nairobi, there several types of taxis; those owned by private individuals and fleet of taxis owned by corporate companies. Just like most taxi-based models, the taxis in Nairobi carry a standard flat fee. It costs an average of 200 Kenya Shillings to start any journey. Fare is for travelling within and between zones into which Nairobi is divided for taxi operators. In Nairobi, a majority of the corporate companies have enlisted the services of select taxi operators for better costing rates and payment methods like use of vouchers. Most taxis in Nairobi are paid for with cash or via M-Pesa.

Taxis play various roles that pivotal in economic development within the city amidst harsh challenges that they face. They are locate clients at precise locations and are flexible in selection (Veloso et al., 2011). This shows taxi services are flexible in terms of route

operation and easy accessibility. They have become an integral part of our lives, especially when you need to rush somewhere urgently. At such times, public transport can be slow or inconvenient. In addition, some areas are not well served by public transport hence reaching such places may require very long walks. In other areas, options for using personal cars are unattainable due to insecurity to personal vehicle owners, need for shared rides (for groups), lack of parking, traffic congestion and poor road networks. In all these situations, a taxis offer a reliable option to compliment or substitute other available means of transport (Rayle et al., 2014).

Competition between conventional taxis and app-based taxi operators intensified in Kenya following the entrance of Uber, a company that was relatively unheard of 12 months ago. This led to entrance of local app-based taxi operators such as Mondo Ride, Taxify, Dandia, Mara Moja, Little Cabs and most recently Teke Taxi.

1.2 Research Problem

The adoption of e-haling applications is currently underway by most taxi operators, either as licensed individual operators or as a fleet of taxis (Keong, 2015). This is driven by technology and opportunities offered, combined with appropriate consideration of human factors relating to taxi operators that include trust, safety and security, cost, time and availability.

While studying factors influencing Malaysian drivers' intention to adopt apps, it is suggested that mobile apps providers need to give prominence on the factors influencing the adoption of e-hailing apps to so to attract a positive attitude toward usage (Keyon, 2016). In this regard, drivers need to be educated to enable them exploit the potential benefits of e-haling operations. According to (Rayle, 2014) one of the key drivers for adoption of e-hailing apps is ease of payment. Leading providers like Uber, Lyft, and Sidecar allow passengers to conveniently settle payment using their phones. Hergesell (2013) in his research concluded that the most desired competitive feature in different modes of transport related to price and time. Similarly, according to (Rayle, 2014) research by Uber and Lyft indicate that leading determinants for using their services were

wait time (30%) and travel time (30%) as it brings about efficiency due to cost reductions attributed to time savings. The above studies present knowledge on the need to study drivers for App adoption in the Kenyan context.

In Kenya, several operators are now combining efforts to adopt E-hailing despite the previous challenges and resistance from conventional Teke Taxi has already signed up about 20 corporate cab companies including Jimcab, Jatco, Alitex, Virgin, Wote, and Kenatco, where the app links the operators to their corporate clients (Business Daily, September 29, 2016). Teke is targeting corporate taxi firms to enable them retain their customers. Mobile operator Safaricom, in a deal with a technology firm known as Craft Silicon, unveiled the hail-a-taxi app known as Little Cab, in a market largely controlled by Uber (Standard, July 2016). Their leverage is to provide cost-effective e-hailing options. Similary, Taxify (with more 400 drivers from the Kenya Taxi Cab Association) has come up with two price structure to lure customers; fixed fee and per minute billing as per customer choice (Daily Nation, July 2016). These emerging development calls for the understanding of the E-hailng concept and hence this study.

According to Taxi operators in Nairobi survey findings (July, 2013) the main challenges affecting operators are insecurity (37.5%) , traffic congestion (26.5%) and competition (15.6%). Others challenges include inexistence of meterized rides, overcharging rejection by taxi drivers, drivers not being familiar with routes and generally poor service delivery. Combined together, both customers and taxi operators have been exposed to these challenges. E-hailing application, have thus been considered in addressing these challenges and creating competitive advantages and are currently being adopted to compliment or replace conventional taxi operations in the country.

The emergence of e-haling concept draws interest to a gap in the taxi operations not quite met by the conventional taxi operators. Hence this study will seek establish what are the key drivers for adopting e-haling apps, what are the challenges associated with apps adoptions and lastly seek to determine the relationship between the apps adoption and competitiveness of app-based taxi operators.

1.3 Objectives of the Study

The study aimed to achieve the following objectives;

i. To establish the drivers for adoption of app-based taxi operations in Nairobi, Kenya
ii. To establish the challenges of adoption of app-based taxi operations in Nairobi, Kenya
iii. To determine the relationship between E-hailing Applications adoption and the competiveness of app-based taxi operations in Nairobi, Kenya

1.4 Value of the Study

This research sought to underscore the importance of exploiting of the extensive use of smartphones and their potential for supporting app-based services in the transport industry. It will assist the local authorities, transporters and other government stakeholders to invest in the adoption of new, smarter transportation systems.

The study sought to sensitize all players within the industry on the benefits of app-based taxi services especially safety and security, and this will cause market competition to intensify. The healthy competition that will arise out of this among these app-based taxi services will generate a safer, affordable and more robust commercial transport infrastructure.

This research aimed to contribute to future scholarly works on theories related to technology acceptance and drivers of e-hailing applications.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

The reason of review is to study available literature in order to understand better the subject matter. The aim is to provide critical analysis of the key concepts in the topic, relevancy, nature of relationships, if at all any gaps exists and basis for the research work.

2.2 Theoretical Framework

This section sheds light on the theoretical foundation supported by different author's views on app-based taxi operations. According to Wikipedia (2016), "A theoreticals (or conceptual) definition is an abstract concept that defines a term in an academic discipline. Without a falsifiable operational definition, conceptual definitions assume both knowledge and acceptance of the theories that it depends on. A hypothetical construct may serve as a theoretical definition, as can a stipulative definition".

2.2.1 Technology-Organization-Environment Framework (TOE)

This theory according to Tornatzky and Fleischer (1990) states that "the process by which an organization adopts and implements technological innovation is influenced by the technological context, the organizational context, and the environmental context". The framework can be used to make a distinction of the intrinsic qualities the technology itself and the influencing factors relating to the organisation and its working environment (Dedrick & West, 2003).

It consists of three elements; the technological context comprises of already acquired innovations by the organisation and other similar available technologies in the marketplace. Secondly, there is the organizational context that includes organisation capacity and scope. This is influenced by the organisation strategies in areas such as management structure, staffing and management costs. Lastly there is the environment context which is concerned with how business is run amidst the competitive forces in the market.

Exisiting evidences prove that TOE has been widely applied for examining innovation technology adoption by business organization groups (Thong, 1999; Kuan & Chau, 2001; Zhu et al., 2003). Therefore, the present study draws on TOE to identify factors affecting operators' attitude towards App-Based Taxi adoption. The theory will assist in understanding the competitors and level of competitiveness, regulatory concerns and behaviour and attitudes of operators.

2.2.2 Institutional Theory

The theory is used to study organization's innovation adoption level. The theory has laid emphasis on the key role played by organisations environments in influencing its structure and actions (Tornatzky & Fleischer, 1995). Based on prior studies, researchers have identified that organizations adopt IS innovations due to environmental forces. They found that IS is not only used by organization to improve operation efficiency and effectiveness, and even acceptance in the competing markets (Gibbs & Kraemer, 2004, Khalifa & Davison. 2006).

The theory is therefore addresses pressure from the external environments and mostly from similarly related organisations or institutions. This kind of pressure has been found to lead to the adoption of almost similar structures by competing firms. Organizations tend to adopt comparable process, structures and strategies due to three types of external pressures: mimetic, coercive, and normative (DiMaggio & Powell, 1983)

Similar studies proposes a framework that combines relative advantage and complexity in the technology context while in the organizational context, drivers' knowledge are used based on the TOE framework (William Eng Yong Keong 2015). Combining, two or more models enabled achievement of a superior understanding and has provided critical implication in influencing adoption and diffusion of innovation (Oliveira & Martins, 2009).

2.3 Features of E-Hailing Apps

This section discussed the key features inbuilt in standard e-haling applications, and their impact in building a competitive advantage for e-hailing applications.

2.3.1 Booking Options

The desirable feature include user registration requirements, support for multiple languages, free calls (VoIP), choose taxi, booking on future dates, ease of communication, reduced wait time, ease of scheduling and dispatching and maps. While comparing normal taxi and e-hailing wait times, (Rayle, 2014) noted that of the total respondents 35% (waited less than 10mins) for normal taxi and 67% (waited for less than 10 minutes) when using e-hailing. Booking features need to allow for push notification and details on the new booking such as method settling costs, journey and maps, confirming bookings and cancellations. How to book a ride matters a lot to many consumers, and since it is a contributor to more transparent, certain and accountable taxi operations.

2.3.2 Driver Information

Vetted driver information is critical for service delivery. Operators need to provide relevant information for verification such as license and tax number during the registration process. Drivers are encouraged to update their schedules and status information constantly to assist in dispatch services. According to Ackaradejruangsri(2015) some of the critical information that would be helpful to customers included operator's name, vechicle registrations, telephone number and an advance estimated cost. Reports provide reviews on on trip statistics (mileage, earnings, and payroll) are of added advantage to the driver. Similarly, are voice commands that can assist when drivers are engaged on the road.

2.3.3 Tracking

According to Rainer, Turban & Potter 92007) the major characteristic in the smartphone technologies of mobility and broad is a valuable feature. They acknowledge that "ubiquity, convenience, instant connectivity, personalization and localization of product and services"

are have broken the challenges of space and time. As such the drivers and passengers in the evident that that a ride is booked, they are able to track each other precisely, easily and quickly; and most importantly in a real-time manner. The Apps can also track historical data for future reference such as re-bookings and payment details.

2.3.4 Security Features

The People's Republic of China's Ministry of Transportation recently published measures seeking to regulate this emerging industry, and will come into effect on November 1, 2016 (Interim Measures for the Administration of Operation and Services of E-hailing Taxis - August 2016). The Measures contain a data localization requirement under which operators of e-hailing platforms will be required to locate their servers within mainland China. In addition, personal information collected on e-hailing platforms and business data generated during their operations must be stored and used within mainland China, and such information and data must be retained for at least two years. The Measures also require operators of e-hailing platforms to adopt systems for the administration of cybersecurity and technical security measures. In the event of an information leakage, operators of e-hailing platforms must report to the relevant competent authority without delay and take timely and effective remedial measures. E-hailing platform operators that illegally use or disclose passengers' personal information may face a penalty. They may also be subject to civil liability for compensation and criminal sanctions.

2.3.5 Costing Model

Using the Apps, advance-costing models allow passengers to predetermine the cost of their rides. This allows passengers to compare with other available options for competitors in the market. In most cases, the app to determines the cost of the journey and automatically bills a passenger when the ride is completed. The Apps have variables costing models depending on 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. It has been argued that this is only the case when the journey costs above $35 (Uber Case Study, University of New Mexico, 2015).

2.3.6 Payment Methods

Rayle (2014) while investigating the motive for using ride-sourcing using different modes found that the top motives were ease of payment (25%), short wait time (17%) and ease to call hail a taxi (11%). The ability to link passenger's credit card to the App allows for secure and convenient settling of payments. In Kenya, Little Cab allows riders to redeem Bonga points for a cab ride. Besides that, customers are able to pay for cab fare using Mpesa or Visa and MasterCard branded bank cards.

2.3.7 Rating

The Apps offer a better review of services offered since passengers appraise the operators. Poor rating can lead to separation of engagement terms with the App providers. This encourages professional behaviour and respect from both passengers and operators, and foster greater communication between the customers and operators.

2.4 Factors Influencing Apps Adoption

This section discusses the factors that influence the decision to adopt e-hailing applications by taxi operators.

2.4.1 Relative Advantage

It is referred to as “the degree to which an innovation is perceived as being better than the idea it supersedes” (Rogers, 2003). Compared to conventional taxis E-hailing apps have both direct and indirect advantages to taxi drivers, and this includes increase income by getting more customers, save waiting time at the taxi stand, save cost of fuel, create better relationship with passengers, improved service quality and higher passenger satisfaction.

Rayle et al.(2014) while comparing proximity to transit stops and relative transit travel time found that estimated total travel times was higher compared to public means than ride-sourcing, even though some rides would have been faster by public means and that there existed a complementary relationship between the two modes of transit.

2.4.2 Complexity

The relationship between complexity of particular technology and innovation adoption has a negative effect on its adoption (Thong, 1999; Corrocher, 2011; Tornatzky & Klein, 1982). Rogers (1983) states "Complexity is the degree to which an innovation is perceived as relatively difficult to understand and use". For instance, the apps allow taxi drivers identify their passenger contacts, pick-up and drop-off location in advance, map view, message board, etc. Taxi drivers or passengers may perceive difficulty to operate the apps, which will affect their app adoption decision.

An on-going discussion on the impact of app-based dispatch systems for taxi services by past researches keeps on mentioning whether the services react either as another medium of substitution for public transportation or just to complement the existing transport systems.) Exploratory studies set key locations frequented by taxi drivers as variables and found out that all these locations already have other modes of transport (train, plane, ferry and bus). They concluded that based on the result, taxis compliment public transport (Veloso et al., 2011).

2.4.3 Operator Knowledge

Knowledge of innovation is an important variable for innovation adoption based on the past literature studies (Attewll, 1992; Hall & Andriani, 2002; Sharma, 2007). Being knowledgeable about an innovation in organization will motivate its decision to adopt (Thong, 1999; Attewell, 1992). Knowledge can be divided into product knowledge and business knowledge (Hall & Andriani, 2002). Product knowledge relate to technologies and supported features. Business knowledge is concerned with how the technology settings and contexts can be maximized for the benefit of the adopter (Sharma, 2007). An E-hailing

apps is fairly complex and therefore the knowledge about its features, past experiences using others mobile apps will have a positive impact on the taxi drivers' adoption decision.

2.4.4 Customers

Customers are able to exercise pressures toward business organizations when it comes to use of technology (Teo et al.; Son & Benbasat, 2007; Khalifa & Davison, 2007). In past studies of technology innovation adoption that employ institutional theory it has been identified that direct pressures from customers (expectation, demand and encouragement) can influence adoption. Powerful and dominant customers can also indirectly pressure adoption (Teo et al., 2003; Son & Benbasat, 2007).

Veloso et al. (2011) in their research while investigating reasons for customers 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 we concentrated in highly populated areas like the cities.

2.4.5 Competitors

Business organizations tend to take up the actions of competitors that are considered to be alike and are more successful. This is largely influenced by the fear of not wanting to be seen hesitant and uncertain to adopt change; and for fear of losing competitive advantage. The pressure to adopt similar actions heightens as the number of organizations in its environment that have taken the same 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.

2.4.6 Trade Association and Regulators

Pressure can arise from business institutions and external professional groups such professional bodies, trade partners and the media because they subscribe to agreed rules and regulations. To conform to these pressures organisation tend to adopt specific business

practices because they perceive that adoption is an appropriate thing to do (Scott, 2003; Chiravuri & Ambrose, 2002). Through membership and consensus there is increased strengthening these regulations and impact on organizations behaviour (DiMaggio & Powell, 1983).

In the taxi service industry, some taxi association encourage the usage of mobile taxis apps in order to provide better passengers services. Greater normative pressures from the taxi's service trade and associations will have a significantly positive relationship with taxi drivers' attitude towards apps adoption.

2.4.7 Attitude and Behaviour

Ajzen (1991) defines attitude as "Pre-disposition to respond favourably or unfavourably to an object, person, event, institution, or another discriminable aspect of the individual's world". He further states that behavioural intention on the other hand, predicts behaviour based on individual's attitude toward the act and individual social-normative belief. Various studies put forward that attitude towards technology use have a strong link to behavioural intention and thereafter to actual behaviour (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.

2.5 Relationship between E-Hailing Application Adoption and Competitiveness of the Organisation

The introduction of app-based dispatch systems in this era not only is not only beneficial to the taxi operators but also influences the productivity of drivers with enhancement of wait time, precision and efficiency of systems. Introduction of Apps brings the benefit of intelligent transport systems can effectively process complex and large amounts of data (Mason & Deakin, 2001).

When Uber was initially launched (in San Francisco) their motivating factors was to introduce class in their rides (Judd, 2014). However, they later noted that introduce a

reduced wait time for cabs would be a value addition. General findings indicate that most taxi-apps offer competitiveness in building confidence and trust in both drivers and passengers and that customer can are willing to pay more for the price. Apps offer the ability to build a database of preferred drivers, areas of operations and zoning prices, working schedules, telephone contacts, and rates. These features are quite helpful in quick decision making when choosing a taxi operator.

App-based taxi systems enable operators to realize high savings of time, manpower and productivity levels. According to (Liao, 2001) customer service is enhanced when journey time is reduced than normal. App-based operations enhances higher handling capacity since more bookings can be processed over time with the same level of workforce.

Computational capabilities these days have improved incrementally with provisions of technological diversity in taxi services; practically help service providers and drivers to fully utilize taxis without having to wonder around to find the next customers. Operators experienced improved productions due to more bookings, and reduced operational because of less empty rides (Liao, 2001). This research has taken place in Singapore where taxis are key in complementing bus and rail transportation. According to Veloso et al. (2011) to enhance productivity and returns, it is advisable for operators wait for near public stations (airports, train stations, ferry dock or main bus stops). This saves operators from it is not necessary travelling great distances to pick passengers.

2.6 Conceptual Framework

This conceptual framework was used to analyse the E-hailing features that influence the competitive advantage of E-hailing Apps adoption. The independent and dependent variables were identified as show in figure 2.6. The notable Apps features that influence competitive advantage included booking options, driver information, security, costing models, payment methods and rating.

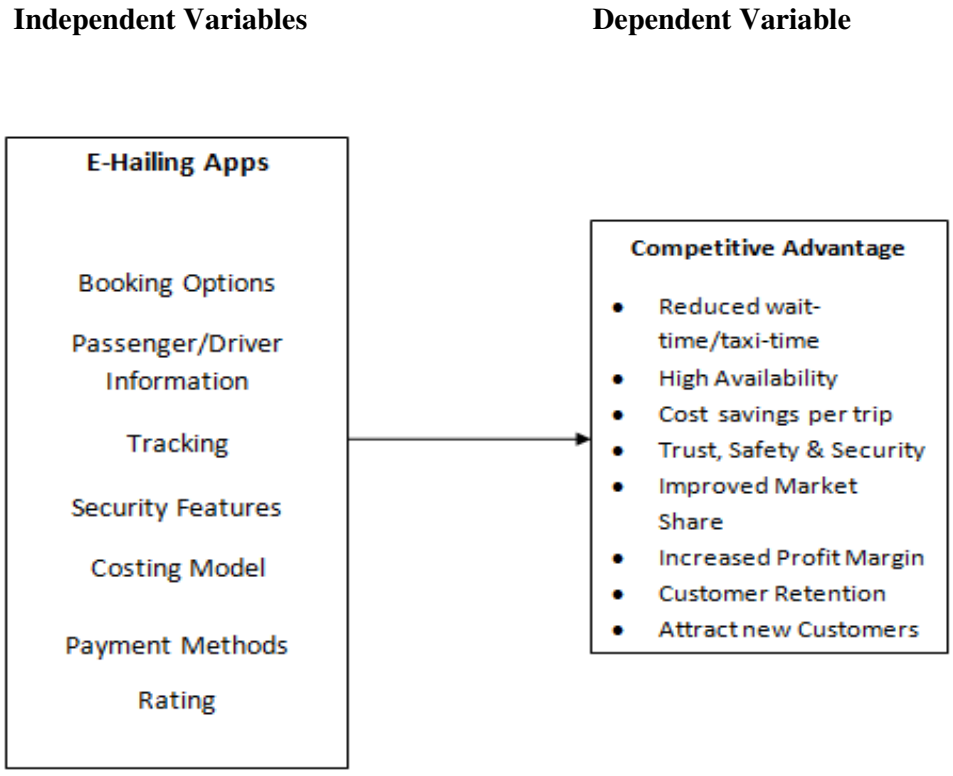

Figure 2.6 Source: Author

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research design and methodology that was used to carry out the research. It presents the research design, the population, sample size and sampling procedure.

3.2 Research Design

This research problem studied using descriptive survey. According to Saunders, Lewis & Thornhill (2003); “descriptive research portrays an accurate profile of persons, events, or situations”. Descriptive surveys was aimed at establishing the factors for adoption of app-based taxis operations among taxi operators, the challenges faced during adoption and the relationship between E-hailing Applications and the competiveness of taxi operations in Nairobi, Kenya. The descriptive design was chosen to help generalize the findings of a larger population of App-based taxi operators in Nairobi, Kenya.

3.3 Population

The target population for this research comprised of comprised of 36 corporate taxi operators taxi providers in Nairobi.

3.4 Sample

A selective sample size comprising of 20 providers was taken from the shared population of app-based taxi providers. A snowball sample was used to target 30 operators from each of the provider.

3.5 Data Collection

The study collected primary data using a semi-structured questionnaire. The respondents were taxi operators. The questionnaire was divided into four sections to specifically focus on the research objectives relating to: demographics of the taxi operators, factors influencing the adoption of the e-hailing apps, the challenges relating to e-hailing apps and the competitiveness of e-hailing apps adoption among operators.

3.6 Data Analysis

The questionnaires received were edited for completeness and consistency. The questionnaire was coded to allow for statistical analysis. According to Mugenda (1999); "data must be cleaned, coded and properly analyzed in order to obtain a meaningful report". The Statistical Package for Social Science (SPSS) was used to analyse and interpret the collected data as appropriate.

Tables and charts were used to summarize responses for further analysis and facilitate comparison. Analysis were done for the demographics, the drivers for App adoption, challenges for app adoption and the key features that determine the competitiveness of the Apps.

CHAPTER FOUR: DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 Introduction

This chapter discusses the interpretation and presentation of the findings obtained from the field as per the key objectives of the study.

From a target sample size of 600 respondents, 487 respondents provided feedback that presented a satisfactory at 81.17% response rate. According to Mugenda and Mugenda (2003); "a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent". Descriptive statistics was used to discuss the findings of the study.

4.2 Demographics

This section covers the operators' gender, age group, years of service, level of education, e-hail app used and type of taxi operated. he results are presented in the table below.

4.2.1 Gender of the Respondents

The respondents were asked to state their gender and the results were analyzed as a percentage. The results are shown in Table 4.2.1

Gender Composition	Percentage
Male	74.62%
Female	25.38%

Table 4.2.1 Source. (Author, 2016)

The respondents were predominantly male. Specifically of those who successfully filled in questionnaires, 74.62% were males and 25.38% were females.

4.2.2: Age of the Respondents

The respondents were as asked to state their age bracket and the results analyzed based on frequency and percentage of the response. The results are shown in table 4.2.2

Age Bracket	Frequency	Percentage
25 Years or Less	57	11.70
26-30	111	22.79
31-35	88	18.06
41-45	66	13.55
46-50	49	10.06
51-55	37	7.59
56-60	41	8.41
Over 60 Years	38	7.80

Table 4.2.2 Source: (Author, 2016)

A majority of the respondents were between the age of 26-30, 31-35 and 4145 at 22.79%, 18.06% and 13.55%. The age of other respondents range from 25 years or less, 46-50, 56-60, over 60 years and 51-55 at 11.7%, 10.06%,8.41%,7.8% and 7.59% respectively. Evidently, a majority of the operator were young and vibrant youths who can withstand the demand of the taxi operations and are technologically perceptive.

4.2.3 Years in the Taxi Service Industry

The study sought to establish for how long the respondents had served in the taxi industry and the results analyzed based on frequency and percentage of the response. The results are shown in Table 4.2.3.

Years in the Organization	Frequency	Percentage
Less than 1 year	114	24.05
1-5 years	119	25.10
6-10 years	88	18.56
11-15 years	34	7.17
16-20 years	76	16.03

>20 years	43	9.07

Table 4.2.3 Source: (Author, 2016)

A majority of the respondents joined the sector in the last 5 years. Many indicated that they had joined in less than 1 year and 1-5 years at 24.05% and 25.10% respectively. The rest of the respondents had worked in the field for 6-10 years, 16-20 years, more than 20 years and 11-15 years at 18.56%, 16.03%, 9.07% and 7.17% respectively. The high number of respondents who have worked for less than 5 years can be attributed to the fact that it is within this period that the E-Hailing Apps were introduced in the market.

4.2.4 Level of Education

The study also sought to establish the highest level of education of the respondents and the results analyzed based on frequency and percentage of the response. The results are shown in Table 4.2.4.

Level of Education	Frequency	Percentage
Primary	95	19.4
Secondary	188	38.7
Certificate	110	22.5
Diploma	47	9.7
Others qualifications	47	9.7

Table 4.2.4 Source: (Author, 2016)

From the responses by the respondents, majority of the respondents, 38.7%, had a secondary school education while 22.5% had a certificate. 19.4% attained a primary education level while 9.7% attained a diploma in a certain field. The results also show that 9.7% of the respondents had attained other levels of academic qualification.

4.2.5: E-Hail App

The study sought to establish the e-hailing applications adopted by the respondents and the results analyzed based on frequency and percentage of the response. The results are shown in Table 4.2.5

E-Hail App	Frequency	Percentage
Uber Taxi	186	38.2
Easy Taxi	22	4.5
Taxify	41	8.4
Little Cab	38	7.8
Mondo Ride	62	12.7
Pewin Cabs	53	10.9
Maramoja	29	5.9
Teke Teke	33	6.8
Waytaxi	23	4.8

Table 4.2.5 Source: (Author, 2016)

A majority of the respondents indicated that their taxis employed the Uber Taxi App, Mondo Ride App and Pewn Cabs at 38.2%, 12.7% and 10.9%. Taxify, Litte Cab and Teke Teke followed as the next popular E-Hailing Apps at 8.4%, 7.8% and 6.8% respectively. The least popular E-Hailing Apps used among the respondents are Maramoja, Way Taxi and Easy Taxi at 5.9%, 4.8% and 4.5 % respectively.

4.2.6 Kind of Taxi

The study sought to establish the kind of taxi operated by the respondents and the results analyzed based on frequency and percentage of the response. The results are shown in Table 4.2.6

Kind of Taxi	Percentage
Individual	23%
Corporate	77%

Table 4.2.6 Source: (Author, 2016)

25.38 % of the respondents indicated that they are individual taxis not employed by any corporation. However, a majority of the respondents, 74.62%, were under a corporation. The results are as expected since most corporations have the financial capacity to integrate E-Hailing platforms unlike individual taxis.

4.3 Factors Driving the Use of E-Hailing Applications

This section is concerned with the first objective of the study of establishing the drivers for the adoption of app-based taxi operations. Each of the drivers was measured using the following scale; No extent (1), Small Extent(2), Moderate(3),Great Extent(4), Very Great Extent(5). The results were then tabulated using mean score and standard deviation as shown in table 4.3

Statements	Mean	Std. Deviation
The need to attract more customers	4.77	0.494
To cut down and save on fuel costs	4.04	1.607
To enhance better relationship with customers	4.14	0.465
The desire to improve service quality	3.16	1.723
To attract higher passenger satisfaction	3.08	1.549
To build and identify customers contacts	4.11	1.358
The need to save waiting time at the taxi stand.	4.49	1.446
To create easy communication with customers	4.75	1.316
To assist in identify pick-up and drop-off locations in advance	4.23	0.589
The ability to track and map view of trips	4.75	1.705

To keep up with the technologies competitors are using.	4.84	0.704
Pressure from customers who want to use E-hailing Apps	4.50	1.700
Large pressure placed to adopt mobile apps by industry sources (e.g., industry or trade associations).	4.77	1.494
Knowledge or experience about e-hailing apps features	3.04	0.607
The positive attitude and behaviour exhibited regarding Apps adoption.	4.14	1.465
Mobile Apps are trustworthy, safe and secure	4.16	0.723
Mobile Apps allow me to schedule my working hours conveniently	4.08	1.549
Easy and accurate billing/payment methods	4.11	0.358

Table 4.3 Source: (Author, 2016)

A majority of the respondents indicated that to keep up with the technologies competitors are using is a driver propelling them to adopt E-Hailing Application to a very great extent as shown by (M=4.84, SD=0.704), and that the need to attract more customers and the large pressure placed to adopt mobile apps by industry sources (e.g., industry or trade associations) influence the adoption of E-Hailing Application to a very great extent as shown by a mean of (M=4.77, SD=0.494) and (M=4.77, SD=1.494) respectively. In addition, the need to create easy communication with customers ,the ability to track and map view of trips pressure from customers who want to use E-hailing Apps and the need to save waiting time at the taxi stand were indicated a majority of the respondents as to have influenced them to a very great extent to adopt E-Hailing Applications as shown by a mean score of (M=4.75, SD=1.316),(M4.75, SD=0.705), (M=4.50, SD=0.700) and (M=4.49, SD=1.446) respectively.

Moreover, the ease with which E-Hail Apps assist in identify pick-up and drop-off locations in advance, the fact the mobile Apps are trustworthy, safe and secure, how they

enhance better relationship with customers , the positive attitude and behavior exhibited regarding Apps adoption, the ability of the APP to build and identify customers contacts, the easy and accurate billing/payment methods and the perception that mobile Apps allow the drivers to schedule their working hours conveniently were also indicated by a majority of the respondents to influenced them to a very great extent to adopt E-Hailing Applications as shown by a mean score (M=4.23, SD=0.589) ,(M=4.16, SD=0.723) , (M=4.14, SD=0.465) , (M=4.14, SD=1.465),(M=4.11, SD=1.358), (M=4.11, SD=0.358) and (M=4.08, SD=1.549) respectively.

A majority of the respondents indicated that cutting down and save on fuel costs, the desire to improve service quality, to attract higher passenger satisfaction and knowledge or experience about e-hailing apps features influenced to a moderate extent the adoption of the E-Hailing Apps as shown by a mean score of (M=4.04, SD=1.607), (M=3.16, SD=1.723), (M=3.08, SD=1.549) and (M=3.04, SD=0.607) respectively.

4.4 Factor Analysis

This was conducted as part of the drivers of e-haling application. 18 statements were considered in this study as they related to the constructs, which the researcher intended to measure. Factor analysis using Principal Component Analysis (PCA) was conducted to reduce the data and to develop the convergent validity of meaningful constructs. In order to determine the number of factors to be used, the variance co-variance of the variables were computed. Then, the eigen value and eigen vectors were evaluated for the variance covariance matrix and the data was transformed into factors.

4.4.1 KMO Test

The Kaiser-Meye-Olkin (KMO) measure of sampling adequacy and the Barlett‟s test of sphericity results are displayed in table 4.4.1.1 below

Table 4.4.1.1 KMO Test

Test	Statistic	P-value
KMO Measure of Sampling Adequacy	0.731	-
Bartlett‟s Test of Sphericity	19.281	0.00

The KMO statistic varies between 0 and 1. A value of 0 indicates that the sum of partial correlation is large relative to the sum of the correlations, indicating diffusion in the pattern of correlations (hence, factor analysis is likely to be inappropriate). A value close to 1 indicates that patterns of correlations are relatively compact, and so factor analysis should yield distinct and reliable factors. (Ahadzie et al. 2010) recommends accepting values greater than 0.5 as acceptable. Furthermore, values between 0.5 and 0.7 are mediocre, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great and values above 0.9 are superb. For these data the value is 0.733, which falls in the range of being good hence the researcher was confident that factor analysis was appropriate for this data.

Table 4.4.1.2 Communalities

	Initial	Extraction
The need to attract more customers	1.000	.987
To cut down and save on fuel costs	1.000	.817
To enhance better relationship with customers	1.000	.851
The desire to improve service quality	1.000	.958
To attract higher passenger satisfaction	1.000	.837
To build and identify customers contacts	1.000	.966
The need to save waiting time at the taxi stand.	1.000	.686
To create easy communication with customers	1.000	.865

To assist in indentify pick-up and drop-off locations in advance	1.000	.801
The ability to track and map view of trips	1.000	.652
To keep up with the technologies competitors are using.	1.000	.983
Pressure from customers who want to use E-hailing Apps	1.000	.916
Large pressure placed to adopt mobile apps by industry sources	1.000	.691
Knowledge or experience about e-hailing apps features	1.000	.789
The positive attitude and behaviour exhibited regarding Apps adoption.	1.000	.851
Mobile Apps are trustworthy, safe and secure	1.000	.925
Mobile Apps allow me to schedule my working hours conveniently	1.000	.854
Easy and accurate billing/payment methods	1.000	.923

The above table 4.4.1.2 helps the researcher to estimate the communalities for each variance. This is the proportion of variance that each item has in common with other factors. For example "Need to attract more customers" has 98.7% communality or shared relationship with other factors. This value has the greatest communality with others, while "The ability to track and map view of trips "has the least communality with others of 65.2%.

Table 4.4.1.3 Total Variance Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.795	43.525	43.525	7.795	43.525	43.525
2	5.420	24.635	68.16	5.420	24.635	68.16
3	3.730	12.401	80.561	3.730	12.401	80.561
4	1.211	6.775	87.336	1.211	6.775	87.336
5	.931	3.939	91.275			
6	.702	1.421	92.696			
7	.645	0.919	93.615			

8	.543	0.91	94.525			
9	.521	0.896	95.421			
10	.511	0.799	96.22			
11	.421	0.729	96.949			
12	.412	0.721	97.67			
13	.401	0.623	98.293			
14	.369	0.561	98.854			
15	.312	0.425	99.279			
16	.300	0.361	99.64			
17	.253	0.264	99.904			
18	.201	0.096	100			

In the above table 4.4.1.3, the researcher used Kaiser Normalization Criterion, which allows for the extraction of components that have an Eigen value greater than 1. The principal component analysis was used and four (4) factors were extracted. As the table above shows, these four factors explain 87.336% of the total variation. Factor 1 contributed the highest variation of 43.525%. The contributions decrease as one move from factor one to the other up to factor four which had the least variation of 6.775%.

Table 4.4.1.4 Component Matrix[a]

	Component			
	1	2	3	4
The need to attract more customers	.602	.122	.688	.045
To cut down and save on fuel costs	.756	.319	-.168	.204
To enhance better relationship with customers	.603	.320	.698	-.216
The desire to improve service quality	.701	.630	.014	-.037
To attract higher passenger satisfaction	.709	.558	.124	-.057
To build and identify customers contacts	.064	.566	.636	-.563
The need to save waiting time at the taxi stand.	-.011	-.409	.359	.706
To create easy communication with customers	-.477	.121	.755	.064
To assist in identify pick-up and drop-off	.240	.763	-.352	.369

locations in advance				
The ability to track and map view of trips	-.173	.679	-.098	.235
To keep up with the technologies competitors are using.	-.235	.695	-.027	.135
Pressure from customers who want to use E-hailing Apps	.009	.030	.047	.812
Large pressure placed to adopt mobile apps by industry sources	-.480	-.019	.336	.514
Knowledge or experience about e-hailing apps features	-.272	.406	.175	.361
The positive attitude and behaviour exhibited regarding Apps adoption.	.352	-.561	.635	.623
Mobile Apps are trustworthy, safe and secure	-.168	.177	.312	.821
Mobile Apps allow me to schedule my working hours conveniently	.721	.450	.567	.030
Easy and accurate billing/payment methods	.329	.567	.043	.075

The initial component matrix was rotated using Varimax (Variance Maximization) with Kaiser Normalization. The above results allowed the researcher to identify what variables fall under each of the four major extracted factors. Each of the 18 variables was looked at and placed to one of the four factors depending on the percentage of variability; it explained the total variability of each factor. A variable is said to belong to a factor to which it explains more variation than any other factor. From the above table 4.16, the individual variables constituting the four factors extracted are summarized and identified below;

Factor 1: Relative Advantage

It was established that the relative advantage influence up to 43.525% of the total variability. This concurs with (Rayle et al.,2014) whose result shown that estimated total

travel times were consistently greater for transit than ride-sourcing. The following variables are all predominantly influenced by Relative advantage that affect adoption of app-based taxi operations in Nairobi, Kenya. To cut down and save on fuel costs, the desire to improve service quality, to attract higher passenger satisfaction and bile Apps allow me to schedule my working hours conveniently.

Factor 2: Complexity

According to (Thong, 1999; Corrocher, 2011; Tornatzky & Klein, 1982) the relationship between complexity of particular technology and innovation adoption has a negative effect on its adoption. From the findings it was observed that the complexity influence up to 24.635% of the total variability. The following variables are all predominantly influenced by complexity that affect adoption of app-based taxi operations in Nairobi, Kenya. To assist in indentify pick-up and drop-off locations in advance, The ability to track and map view of trips, To keep up with the technologies competitors are using, Easy and accurate billing/payment methods and Knowledge or experience about e-hailing apps features. This finding conforms to that of (Rogers, 1983) that taxi service is often used as a bridge between public transportation modalities.

Factor 3: Customers

The result indicated that the customers influence up to 12.401% of the total variability. This is in line with (Veloso et al., 2011) that taxi trips are predominantly distributed in highly populated areas. Customers that affect adoption of app-based taxi operations in Nairobi, Kenya predominantly influence all the following variables. The need to attract more customers, to enhance better relationship with customers, to build and identify customers contacts and to create easy communication with customers.

Factor 4: Attitude and Behaviours

From the findings, it was noted that the attitude and behaviours influence up to 5.783% of the total variability. The following variables are all predominantly influenced by attitude and behaviours that affect adoption of app-based taxi operations in Nairobi, Kenya. The

need to save waiting time at the taxi stand, pressure from customers who want to use E-hailing Apps, large pressure placed to adopt mobile apps by industry sources, the positive attitude and behaviour exhibited regarding Apps adoption and Mobile Apps are trustworthy, safe and secure. This finding is in line with (Ajzen, 1991) that there is a significantly relationship between taxis' drivers attitude towards e-hailing apps adoption and their intention to adopt it.

4.5 Challenges of Adoption of E-Hail App

The sought to determine the extent to which drivers are faced with each of the following challenges of adoption of E-Hailing Taxi operations. Using the following scale; No extent (1), Small Extent(2), Moderate(3), Great Extent(4), Very Great Extent(5). The results are in table 4.5.

Table 4.5 Challenges Facing the Adoption of E-Hail Apps

Challenges	Mean	Std. Deviation
Unavailability of E-hailing Apps in the local market	4.29	1.876
Requirement of a lot of mental effort to use the E-hailing App.	4.45	0.288
Frustration during usage of the E-hailing App.	4.25	1.493
A relatively high-level complexity while integration with business operations.	4.18	1.544
Lack of clear understanding how E-hailing Apps can be used to support business services.	3.74	1.790
Difficulties in implementation and maintenance of the E-hailing Apps platform	4.16	1.935

Need for training of operators on usage of E-hailing Apps	4.60	1.469
Need to work longer working to earn enough.	3.36	1.590
Intense price wars, brought by different costing models	4.69	1.604
High costs of implementation of E-hailing Apps	4.74	1.688
Required overall level of knowledge for adopting and using mobile taxi booking apps is high.	3.94	1.659
Lack of supporting legislative and regulatory framework from the government on application of E-hailing Apps.	4.71	1.464
Required overall level of knowledge for adopting and using mobile taxi booking apps is high.	3.74	1.417

Source: (Author, 2016)

A majority of the respondents indicated that among the challenges to adoption of the application were; high costs of implementation of E-hailing Apps, (M=4.74, SD=1.688), and the lack of supporting legislative and regulatory framework from the government on application of E-hailing Apps, (M=4.71, SD=1.464). Intense price wars brought by different costing models, (M=4.69, SD=1.604), the need for training of operators on usage of E-hailing Apps, (M=4.60,SD=1.469), and the requirement of a lot of mental effort to use the E-hailing App (M=4.45, SD=2.288), were also indicated by a majority of the responses to be among the challenges to adoption of the application . These challenges influenced the adoption of E-hailing apps to a very great extent as shown by their respective mean scores.

Unavailability of E-hailing Apps in the local market, frustration during usage of the E-hailing App, a relatively high-level complexity while integration with business operations,

coupled with difficulties in implementation and maintenance of the E-hailing Apps platform were also indicated by a majority of the respondents as challenges that affect the adoption of E-hailing APPS but to a great extent as shown by a mean score of (M=4.29, SD=1.876) , (M=4.25, SD=1.493), (M=4.18, SD=1.544) and (M=4.16, SD=1.935).

Moreover, a majority of the respondents said that the high level of knowledge for adopting and using mobile taxi booking apps (M=3.94, SD=1.659), lack of clear understanding how E-hailing Apps can be used to support business services (M=3.74, SD=1.790) and need to work longer working to earn enough (M=3.36, SD=1.590) were challenges that moderately influenced the adoption of the E-hailing Apps.

4.6 Competitiveness

The study also sought to establish the average taxi wait time, average journey time, the competitive benefits realized with e-haling adoption and the e-haling apps features that make the apps competitive from the respondents.

4.6.1 Waiting Time

Waiting Time	Frequency	Percentage
Less than 15 minutes	96	19.7
15 - 29 minutes	134	27.5
30 - 44 minutes	102	20.9
45 - 59 minutes	86	17.7
60 minutes or more	69	14.2

Table 4.6.1 Source: (Author, 2016)

27.5% of the respondents indicated that the average taxi wait time is 15 - 29 minutes and 20.9% stated that it was between 30 - 44 minutes. A number of the respondents, 19.7%, 17.7% and 14.2%, indicated that their average taxi wait time was less than 15 minutes, 45 - 59 minutes and 60 minutes or more respectively.

The study sought to establish the average taxi journey time for the respondents. The results are presented in the table below.

4.6.2 Journey Time

Journey Time	Frequency	Percentage
Less than 15 minutes	116	23.8
15 - 29 minutes	136	27.9
30 - 44 minutes	102	20.9
45 - 59 minutes	89	18.3
60 minutes or more	44	9.1

Table 4.6.2 Source: (Author, 2016)

27.9% of the respondents indicated that the average taxi wait time is 15 - 29 minutes and 20.9% stated that it was between 30 - 44 minutes. A number of the respondents, 23.8%, 18.3% and 9.1%, indicated that their average taxi wait time was less than 15 minutes, 45 - 59 minutes and 60 minutes or more respectively.

The study also sought to determine the extent to which the respondents have realized each of the following benefits because of adopting E-hailing Apps. Using this scale; Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Agree (5).

4.6.3 Benefits of Adopting E-Hail Apps

Statements	Mean	Std. Deviation
Acquired more customers with the introduction of Apps	3.83	0.226
Most passengers prefer hailing taxis using mobile Apps	4.35	1.438
We are able to retain customers with use of E-hailing Apps.	4.25	0.682

Most of our competitors are currently adopting E-hailing Apps.	3.96	1.653
There is increased cost savings per trip	3.95	0.151
Our Market share has increased with E-hailing Apps adoption	4.67	0.705
The number of trips per day has increased with use of E-hailing Apps	4.42	0.812
There is reduced taxi journey time with use E-hailing Apps	4.41	1.712
Profit margins have improved with the adoption of E-hailing Apps	4.38	0.873
There are fewer incidences of insecurity in our operations with introduction of E-hailing Apps	4.17	1.698
The taxis are readily available, with reduced wait times.	4.03	0.598

Table 4.6.3 Source: (Author, 2016)

A majority of the respondents indicated that market share has increased with E-hailing Apps adoption (M=4.67, SD= 0.705), the number of trips per day has increased with use of E-hailing Apps (M=4.42, SD= 0.812) and that there is reduced taxi journey time with use E-hailing Apps (M=4.41, SD=1.712). These benefits have been enjoyed to a very great extent as a result of adopting E-hailing Apps as shown by the respective mean score. Other benefits that have enjoyed to great extent are that profit margins have improved with the adoption of E-hailing Apps(M=4.38, SD=0.873), more passengers preferring hailing taxis using mobile Apps (M=4.35, SD=1.438), ability to retain customers with use of E-hailing Apps (M=4.25,SD=0.682) and fewer incidences of insecurity in our operations with introduction of E-hailing Apps (M=4.17, SD=1.698). Moreover , the following benefits were enjoyed to a moderate extent as a result of adopting of E-hailing Apps; the taxis were readily available, with reduced wait times (M=4.03, SD= 0.598),competitors are currently adopting E-hailing Apps (M=3.96, SD=1.653) and increased cost savings per trip (M=3.95,

SD=0.151) , acquired more customers with the introduction of Apps (M=3.83, SD=0.226) as shown by their respective mean score.

The study also sought to determine the extent to which the respondents used the apps. Using this scale: None (1) Small (2) Moderate (3) Large (4) Very Large (5)

4.6.4 Competitive Features of E-Hail Apps

Statements	Mean	Std. Deviation
Booking Options (availability, wait time, no calls, ease of use, buzzing options)	4.19	0.951
Passenger Information (names, historical records, payment details, routes and patterns)	4.28	1.882
Tracking (GPS, exact pick-up/drop-off, personalized)	3.73	0.993
Security (confidentiality, integrity, trust, secure, safe)	3.98	1.002
Costing Models (Incentives - Price estimates, discounted trips, peak-pricing, surge-pricing)	4.24	1.726

Table 4.5.4 Source: (Author, 2016)

A majority of the respondents largely sought passenger information (M=4.28, SD=1.882), Costing Models (M=4.24, SD=1.726) and Booking Options (M=4.19, SD=0.951) from E-Hailing Apps. A majority of the respondents largely sought information about Security (M=3.98, SD=1.002) and Tracking information (M=3.73, SD=0.993).

4.7 Discussions of the findings

Accessibility in urban transportation is the key to encourage more people to switch from driving private vehicle to use public transportation. Thus, with the ease of using

smartphone application for taxi booking systems, it will help to elevate the rate of occupancy for public transportation .The goals for E-Hailing Apps adoption is to reduce costs and increase revenue, and enhance the wellbeing of operators and passengers. The Apps in addition, aims offer reduced wait times, reduced journey time, safety, tracking , predictability and certainty to ride seekers. The results are in line with the findings of Rayle et al (2014) ,who determine that the benefits enjoyed by users of E-Hailing Apps include increase income by getting more customers, save waiting time at the taxi stand, save cost of fuel, create better relationship with passengers, improved service quality and higher passenger satisfaction.

The Apps has enabled both drivers and passengers rate each other and this promotes better communication and relationship between the operators and customers. However, there is significant debate whether the E-Hailing Apps are replacing conventional taxi operations or complementing each other. Already concluded surveys suggest that both displacement and complementary are in force in the market as some traditional operators are pushed out the market while others who are technologically adept are joining the industry. The study findings concur with results from Njihia (2016) who determined that the E-Hailing Apps rating provides a better means for appraising operatos performance and such poor rated operators can be dismissed by passengers

One of the benefits of adopting E-Hailing apps is the creation of new employment opportunities with flexible working schedules for operators. The challenge to this benefit is the perceive need for operators to work more hours in order to maximize on returns as well as the infightings with conventional regarding costing models and the legal framework under which App-based taxis operate. Notably, passengers stand to gain most app-based operations due to better services and low prices compared to normal taxis. Competition among E-Hailing Apps operators is also beneficial to passenger mainly because of features supported by their apps. The findings marry with the research in Singapore of Jalloh (2014) that revealed that E-hail apps enjoy freedom and flexibility in their work schedules.

CHAPTER FIVE: SUMMARY OF THE FINDINGS, DISCUSSIONS CONCLUSIONS AND RECOMMENDATIONS

5.1 Overview

This chapter presents the summary of key findings, the conclusion drawn from the findings and recommendations proposed by the study. The conclusions drawn and recommendations proposed focused on addressing the objective of the study.

5.2. Summary of the Findings

The summary is based on the three key objectives of the study that relate to the drivers of e-hailing adoption, the challenges and the relationship between apps adoption and competitiveness of app-based taxi operators. Based on this proposition, theoretical literature was reviewed Institutional Theory and Technology-Organization-Environment framework were reviewed. The study examined several empirical literature relevant to the study area. Based on theories, empirical work, and literature, the conceptual framework of the relationship between independent and dependent variables was drawn.

The finding of the study indicates that the adoption of the E-Hailing Apps by taxis has been driven by among other factors the need to attract more customers and the fact that it has proven to cut down and save on the fuel costs. In addition, the Apps have served to better the relationship with customers and taxi operators who are using it to improve on the quality of service they deliver to their customers thereby enhancing the passenger satisfaction. The findings show that a majority of the respondents indicated that the need to create, maintain and sustain communication with customers has been enhanced by the E-Hailing Apps. Moreover, the ability of the Apps to aid in precisely identifying pick-up and drop-off locations in advance has played a significant role in motivating the taxi operators to integrate the Apps in their operations. The operators and customers both prefer easy and accurate billing/payment methods.

Until recently, the E-hailing Apps in the local market were unavailable and it was expensive to procure such systems and a challenge to the operators. The ease of applying and using the system is a challenge that the developers need to consider and make them more user friendly that require less mental effort and hence lower the frustration during usage of the E-hailing App. Another challenge is the relatively high-level of complexity while integration with business operations since most operators lack a clear understanding how E-hailing Apps can be used to support business services. Corporation have found the financial burden it puts on them to train the operators as a major challenge due to the high costs of implementation of E-hailing Apps.

The findings show that among the competitive advantages enjoyed by the operators of E-Hailing Apps include acquiring more customers with the introduction of Apps, many of the passengers prefer hailing taxis using mobile Apps and the ability to retain customers with use of E-hailing Apps. Moreover, it has increased cost savings per trip and increased the market share of operators who adopt E-hailing Apps. Operators indicated that the number of trips per day has increased with use of E-hailing Apps, there is reduced taxi journey time with use E-hailing Apps and their profit margins have considerably increased. The use of the Apps have gone a long way to ensure there are fewer incidences of insecurity in our operations with introduction of E-hailing Apps and the customers also agree that the Apps have made taxis readily available, with reduced wait times.

The study established that key factor that influences Apps adoption is relative advantage. Other factors include complexity, customers influence and the attitude and behaviours.

5.3 Conclusions

This study has provided a comprehensive review of E-hailing applications adoption and competitiveness of app-based taxi operators in Nairobi, Kenya. Based on the objectives and findings of this study, the study concluded 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. Secondly, the study concluded that high costs of implementation of E-hailing

Apps, different costing models and need for training of operators on usage are the greatest challenges the has barred effective adoption and competitiveness of app-based taxi operators in Nairobi, Kenya. Finally, the study concludes that there exists a positive relationship between E-hailing Applications adoption and the competiveness of app-based taxi operations.

5.4 Limitations of the Study

The study findings were applicable to those taxi operators located in the city of Nairobi. The findings can therefore not be generalized to all taxi operators located others cities in the country who have adopted the E-hailing Apps and are experiencing varied challenges. Time constraint and insufficient budget was also a limitation. This posed a challenge in the bid exhaust all the taxi operators in the city.

5.5 Recommendations

The study established that there is need for encouraging the assimilation of E-Hailing Apps in to streamline the taxi operation in the country. Therefore, most operators and taxi companies are encouraged to integrate E-Hailing Apps in order to reap the benefits that it pose to both the company and the passengers.

The study recommends that developers of the E-Hailing Apps should make them user friendly and cost effective. The integrity of the software should be checked to ensure they are superior in terms of their functionality, usability, efficiency, maintainability and manageability. In addition, the Apps needs to assure information quality with regards to information accuracy, information completeness, information relevance and content of the information.

The study recommends that government and regulators need to find solutions for e-hailing services as the current taxi providers and drivers feel threaten and complain that they have lost their market share and customers due to the fact that competition from e-hailing providers is hard to compete with. This is because E-hailing offers services that

conventional taxi driver could not provide for ages; satisfying demands for fast, flexible and convenient mobility in the urban areas.

5.6 Areas for Further Studies

The study recommends that since E-hailing Apps are a relatively new field of technology more should be done to understand how they affect our society. Future studies should explore the social, political and economic impacts that the technology has caused. Future studies about the factors promoting the adoption, benefits accrued by adopting and challenges involved during the adoption of E-hail Apps should be extended to other cities where taxis have employed the system including Kisumu, Mombasa and Nakuru. The rationale is assess the pros and cons of adopting the various cities and learning about how the challenges have been addressed in other regions.

In addition, future studies should focus on the legal implication that the adoption of the application has raised. Since some of the taxis are unregulated and unlicensed at least not in the traditional fashion in which taxis were registered. Since E-Hail Apps are a relatively nascent field, there is limited knowledge about how the integration of the technology affects the legal environment of the taxi operations and relevant scholastic authorities in the field should critically examine the subject.

REFERENCES

Ackaradejruangsri, Pajaree (2015). Insights on GrabTaxi: An Alternative Ride Service in Thailand, Rev. *Integr. Bus. Econ. Res.* Vol 4(3)

Ahadzie, D. K., Proverbs, D. G., & Ankrah, N. (2010, July). Analyzing Quantitative Data Using Factor Analysis: Reflections From An Empirical Study. In *West Africa Built Environment Research (Waber) Conference* (p. 177).

Andrews, K. (1980). *The concept of Corporate Strategy* (2nd Edition). USA, Dow-Jones Irwin.

Baghudana, Anisha and Leis, Julia. (2015), NAVIGATING NAIROBI: Digital Innovation in Urban Transport and Logistics in Kenya, Tufts University

Balan, R. K., Nguyen, K. X., & Jiang, L. (2011). Real-time trip information service for a large taxi fleet. *Proceedings of the 9th International Conference on Mobile Systems, Applications, and Services – MobiSys.* http://doi.org/10.1145/1999995.2000006

Chan et al. (2016). "Taxi App Market Analysis in Hong Kong," *Journal of Economics, Business and Management*, Vol. 4, No. 3, March 2016 -
http://www.slideshare.net/mSurvey/taxi-operatiors-in-nairobi-survey-findings

Cooper, D.R., & Schindler, P.S. (2003). *Business Research Methods*. (8th ed.). Boston: 15 McGraw-Hill Irwin.

Dedrick, J., and West, J. (2003). "Why firms adopt open source platforms: A grounded theory of innovation and standards adoption". *MIS Quarterly Special Issue on Standard Making: A Critical Research Frontier for Information Systems*, December, 236–257.

DiMaggio, P. J., and Powell, W.W. (1983). “The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields”. *Am Social Rev*, 48(2), 147-160.

Gamil, J. (2015) LTFRB sets workshop on Uber controversy. Retrieved from www.inquirer.net

Gibbs, J.L. and Kraemer, K.L. (2004). “A cross-country investigation of the determinants of scope of ecommerce use: an institutional approach”, *Electronic Markets*, 14(2), 124-37

Hyder, Y. (2014) Uber’s evolution from San Francisco to international disruption. Retrieved from www.tc.umn.edu

ICTFrame (2016). Smartphone Taxi E-Hail Apps: New Convenience or Potential. Retrieved from http://ictframe.com/smartphone-taxi-e-hail-apps-new-convenience-or-potential/, September 2nd, 2016

International Transport Forum's Corporate Partnership Board (2016). App_Based Ride and Taxi Services: Principles for Regulation.

Ipsos, Taxi and Uber Consultation Qualitative Research (Toronto), 2015

Jalloh, M (2014). Taxi Industry: Pros & Cons Of UBER And Other E-Hail Apps. Retrieved fom http://www.investopedia.com/articles/investing/110614/taxi-industry-pros-cons-uber-and-other-ehail-apps.asp

Judd, M (2014), “The race for Nairobi’s taxi market”. Retrieved from http://savannah.vc/2014/03/26/the-race-fornairobis-taxi-market/#.VK0dNivF8gQ

Khalifa, M., and Davison, R.M. (2006). “SME adoption of IT: the case of electronic trading systems”. *IEEE Transactions on Engineering Management*. 53(2), 275-284.

Korol, Natalia (2016). Why You Need a Mobile Application for Drivers. Retrieved from https://taxistartup.com/pt/blog/why-you-need-a-mobile-application-for-drivers/

Kuan, K.K.Y. and Chau, P.Y.K. (2001). "A perception-based model for edi adoption in small businesses using a technology-organization-environment framework", *Information and Management*, 38(8), 507-521.

L. Peng et al.(2014), "Exploring factors affecting the user adoption of call-taxi app," presented at the Australasian Conference on Information Systems (ACIS).

Liao, Z. (2001). Taxi dispatching via global positioning systems. *IEEE Transactions on Engineering Management*, 48(3), 342–347.

Malaysia Economic Monitor (June 2015). Transforming Urban Transport. *The World Bank*.

Mason, J., & Deakin, E. (2001). Information Technology : Implications for Transportation.

Ruby, M. (2016) The Battle of Taxis: Safaricom Launches Little Cab. Retrieved from http://www.kenyanvibe.com/the-battle-of-taxis-safaricom-launches-little-cab

Mondschein, Andrew (2014). Re-Programming Mobility Literature Review

Mugenda, O.M & Mugenda. A.G (1999). Research methods. quantitative and qualitative approaches.(pp. 46 - 48). Nairobi, Kenya: ACTS Press.

Nistal, Patrick and Regidor, Jose (2016). Comparative Study of Uber and Regular Taxi Service Characteristics.

Njihia, M (2016), Taxi businesses fighting Uber operators should adapt or die. Retrieved from http://www.businessdailyafrica.com/Taxi-businesses-fighting-Uber-operators-should-adapt-or-die/1248928-3061930-b7gxftz/index.html

Office of Fair Trading (OFT) (2007), Evaluating the impact of the taxis market study: A report for the OFT by Europe Economics

Oliveira, T. and Martins, M. F. (2010). "Firms patterns of e-business adoption: Evidence for the European union- 27", *The Electronic Journal Information Systems Evaluation,*13(1), 47-56.

Pearce J.A. and Robinson , R (1997), Strategic Management Strategy. *Formulation, Implementation*, Richard D. IriwinInc; USA 3rd Ed.

Pearce, J. A., & Robinson, R. B. (1991), Formulation, implementation, and control of competitive strategy (9th ed.). New York: Irwin.

Porter, M.E. (1980), *Competitive strategy*. New York, Free Press.

Porter, M.E. (1985), *Competitive Advantage: Creating and sustaining superior performance*, New York, Free Press.

Rayle et al. (2014). App-Based, On-Demand Ride Services: Comparing Taxi and Ridesourcing Trips and User Characteristics in San Francisco.

Rayle, L., Shaheen, S., Chan, N., Dai, D., & Cervero, R. (2014). Apps-Based On-Demand Ride Services: Comparing Taxi and Ridesourcing Trips and User Characteristics in San Francisco.

Redmiles , Elissa (2013), Human factors and requirements for a successful mobile platform dynamic taxi-share system in the USA

Darb´era, R (2010). Taxicab regulation and urban residents' use and perception of taxi services: a survey in eight cities. *12th World Conference on Transport Research*, Jul 2010, Lisbonne, Portugal. pp.01536, 2010.

Rogers, B. (2015) The social costs of Uber. *James E. Beasley School of Law*, Temple University, Philadelphia, United States

Santi et al.(2014), Quantifying the benefits of vehicle pooling with share ability networks.

Saunders, M., Lewis, P., & Thornhill, A. (2003*). Research method for business students*, 3rd edition. New York: Prentice Hall.

Scott, W.R. and Christensen, S. (1995). The institutional construction of organizations: International and longitudinal studies, Sage Publications, Thousand Oaks, CA.

Steinmetz, K. (2014). "Taxi Drivers Are Using Apps to Disrupt the disruptors." TIME. http://time.com/3119161/uber-lyft-taxis/

Tao, C. (2007), "Dynamic Taxi-Sharing Service Using Intelligent Transportation System Technologies," *Wireless Communications, Networking and Mobile Computing*.

Thompson A.A., Strictland A.J. III, & Gamble J.E (2008), Crafting and Executing Strategy, the quest for competitive advantage. 17(1), 99-120. McGraw-Hill.

Thong, J. (1999). "An itegrated of model of information systems in small businesses". *Journal of Management Information Systems*, 15(4), 187-214.

Tornatzky, L. and Fleischer, M. (1990). The process of technology innovation, Lexington Books. Lexington, MA

Uber Technologies Inc. (2104). Managing Opportunities and Challenges, Daniels Fund Ethics Initiative University of New Mexico. Retrieved from http://danielsethics.mgt.unm.edu

Veloso, M., Phithakkitnukoon, S., & Bento, C. (2011). Urban Mobility Study using Taxi Traces. *Proceedings of the 2011 International Workshop on Trajectory Data Mining and Analysis* TDMA 11 (2011)., 23–30. http://doi.org/10.1145/2030080.2030086

Yuan, J., Zheng, Y., Zhang, C., Xie, W., Xie, X., Sun, G., & Huang, Y. (2010). T-Drive: Driving directions based on taxi trajectories. *Proceedings of the 18th SIGSPATIAL International Conference on Advances in Geographic Information Systems (GIS '10) (pp.99–108). ACM*. Retrieved from http://portal.acm.org/citation.cfm?doid=1869790.1869807

Yusoff, Mohd, Karim, Norminsham and Daud, Azimah. (2015). Impact Of Satellite-Based Dispatch Systems For Taxi Services In TheUrban Areas: A Literature Review

Zhu, K. and Kraemer, K. (2005). "Post-adoption variations in usage and value of e-business by organizations: Cross-country evidence from the retail industry." *Information Systems Research*, 16(1), 6184.

Zhu, K., Kraemer, K., and Xu, S., (2003). "E-business adoption by European firms: A cross country assessment of facilitators and inhibitors". *European Journal of Information Systems*, 12, 251-268.

APPENDICES

Appendix I: Questionnaire

SECTIONA: DEMOGRAPHICS

1. Gender

   [ ] Male [ ] Female

2. Which of the following age groups do you fit into?

   [ ] 25 Years or Less

   [ ] 26 - 30

   [ ] 31 - 35

   [ ] 36 - 40

   [ ] 41 - 45

   [ ] 46 - 50

   [ ] 51 - 55

   [ ] 56 - 60

   [ ] Over 60 Years

3. How many years do you have in the taxi service industry

   [ ] Less than 1 year

   [ ] 1 – 5 years

   [ ] 6 – 10 years

   [ ] 11 – 15 years

   [ ] 16 – 20 years

   [ ] >20 years

4. Please indicate level of education attained

Primary [ ] Secondary [ ]

Certificate [ ] Diploma [ ]

Others qualifications_____ _____

5. Which E-Hail App do you use?

   [ ] Uber Tax

   [ ] Easy Taxi

   [ ] Taxify

   [ ] Little Cab

   [ ] Mondo Ride

   [ ] Pewin Cabs

   [ ] Maramoja

   [ ] Teke Teke

   [ ] Waytaxi

   [ ] Others (please specify) _____

6. What type of taxi do you ride?

   [ ] Individual [ ] Corporate

SECTION B: DRIVERS FOR ADOPTION

Indicate the extent to which each of the following drivers made you use E-Hailing Applications for operations. Use the following scale;

No extent (1), Small Extent(2), Moderate(3), Great Extent(4), Very Great Extent(5)

	No Extent	Small Extent	Moderate	Great Extent	Very Great Extent
The need to attract more customers					
To cut down and save on fuel costs					
To enhance better relationship with customers					
The desire to improve service quality					
To attract higher passenger satisfaction					
To build and identify customers contacts					
The need to save waiting time at the taxi stand.					
To create easy communication with customers					
To assist in indentify pick-up and drop-off locations in advance					
The ability to track and map view of trips					
To keep up with the technologies competitors are using.					
Pressure from customers who want to use E-hailing Apps					
Large pressure placed to adopt mobile apps by industry sources (e.g., industry or trade associations).					
Knowledge or experience about e-hailing apps features					

The positive attitude and behaviour exhibited regarding Apps adoption.					
Mobile Apps are trustworthy, safe and secure					
Mobile Apps allow me to schedule my working hours conveniently					
Easy and accurate billing/payment methods					
Others (please specify and rate) _____ _____ _____					

SECTION C: CHALLENGES

Please indicate the extent to which you are faced with each of the following challenges of adoption of E-Hailing Taxi operations. Use the following scale;

No extent (1), Small Extent(2), Moderate(3), Great Extent(4), Very Great Extent(5)

`	No Extent	Small Extent	Moderate	Great Extent	Very Great Extent
Unavailability of E-hailing Apps in the local market					
Requirement of a lot of mental effort to use the E-hailing App.					
Frustration during usage of the E-hailing App.					
A relatively high-level complexity while integration with business operations.					
Lack of clear understanding how E-hailing Apps can be used to support business services.					
Difficulties in implementation and maintenance of the E-hailing Apps platform					
Need for training of operators on usage of E-hailing Apps					
Need to work longer working to earn enough.					
Intense price wars, brought by different costing models					

High costs of implementation of E-hailing Apps					
Required overall level of knowledge for adopting and using mobile taxi booking apps is high.					
Lack of supporting legislative and regulatory framework from the government on application of E-hailing Apps.					
Others (please specify and rate) _____ _____ _____					

SECTION D: COMPETITIVENESS

1. What is your average taxi wait time
   - [ ] Less than 15 minutes
   - [ ] 15 - 29 minutes
   - [ ] 30 - 44 minutes
   - [ ] 45 - 59 minutes
   - [ ] 60 minutes or more
2. What is your average taxi journey time?
   - [ ] Less than 15 minutes
   - [ ] 15 - 29 minutes
   - [ ] 30 - 44 minutes
   - [ ] 45 - 59 minutes
   - [ ] 60 minutes or more

3. To what extent have you realized each of the following benefits as a result of adopting E-hailing Apps. Indicate using this scale;
   Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4), Strongly Agree (5)

	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
Acquired more customers with the introduction of Apps					
Most passengers prefer hailing taxis using mobile Apps					
We are able to retain customers with use of E-hailing Apps.					
Most of our competitors are currently adopting E-hailing Apps.					
There is increased cost savings per trip					
Our Market share has increased with E-hailing Apps adoption					
The number of trips per day has increased with use of E-hailing Apps					
There is reduced taxi journey time with use E-hailing Apps					
Profit margins have improved with the adoption of E-hailing Apps					
There are fewer incidences of insecurity in our operations with					

introduction of E-hailing Apps					
The taxis are readily available, with reduced wait times.					

4. To what extent do you use each of the following E-hailing Apps features. Indicate using this scale

   None (1) Small (2) Moderate (3) Large (4) Very Large (5)

	None	Small	Moderate	Large	Very Large
Booking Options (availability, wait time, no calls, ease of use, buzzing options)					
Passenger Information (names, historical records, payment details, routes and patterns)					
Tracking (GPS, exact pick-up/drop-off, personalized)					
Security (confidentiality, integrity, trust, secure, safe)					
Costing Models (Incentives - Price estimates, discounted					

trips, peak-pricing, surge-pricing)					
Payment Methods (Debit/Credit/Cash/MPESA)					
Rating (Driver/Passenger – ethics and professionalism)					