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**ASSESSING THE FACTORS INFLUENCING THE USE OF MPESA: A CASE
OF PARATRANSIT SERVICE PROVIDERS IN NAIROBI**

STRATHMORE UNIVERSITY BUSINESS SCHOOL

RESEARCH DISSERTATION BY

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MBA 93145/16

A research dissertation submitted to Strathmore University Business School in partial
fulfilment of the requirements for the degree of Master of Business Administration

May, 2019

DECLARATION

Declaration by student: Irene Gitonga

This research dissertation is my original work and all materials which are not my own have been cited and acknowledged. The work has not been presented for a degree in any other University.

Student ID: MBA/93145

Signed: _____

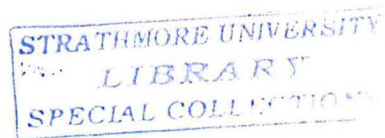
Date: _____

Declaration by the supervisor: Dr. Humphrey Njogu

This research dissertation has been submitted for examination with my approval as University supervisor.

Signed: _____

Date: _____



DEDICATION

This dissertation is dedicated to the Almighty God, in who's strength I depend, to my husband Muratha Kinuthia, for his encouragement to keep going, my mother Dr. M. Gitonga and father, Dr. N. Gitonga, for being my reference point, in the academic journey.

ACKNOWLEDGEMENT

I thank my supervisor Dr. Njogu for his guidance and encouragement. I also thank the Strathmore University Business School community from the facilitators, support staff and classmates who made this an impactful and enjoyable learning experience.

ABSTRACT

While the use of Mpesa is well established across different service industries in Kenya, the preferred mode of payment in the paratransit sector is cash. Smart and integrated ticketing through payments systems such as Mpesa would improve efficiency in the sector. The purpose of this research was to assess the factors influencing the use of Mpesa in the paratransit service industry. The objectives were to assess the technological factors affecting the use of Mpesa by the paratransit service providers; evaluate the effectiveness of the interventions put in place by Safaricom to encourage use of Mpesa; and to determine the impact the paratransit operational environment had on the use of Mpesa. The research focused on paratransit service providers and in particular sought the view of the conductors and office administrators who collect fare from passengers. The study administered questionnaires to respondents and through the use of descriptive statistics, the quantitative data was analysed and presented using mean, standard error and correlation matrix. The key findings were that the Mpesa system is deemed to be useful and easy to use, and that system-up-time levels and support processes for errors and reversals are acceptable. The inference was that an improvement in these technological aspects, would have little to no bearing on the use of Mpesa. On the other hand, interventions by Safaricom had a statistically significant impact on use of Mpesa. These interventions included; 1) Advertising 2) Zero-Rating the cost of Mpesa transactions 3) Introduction of gadgets such as Mpesa Tap to help quicken the speed of collection of fare 4) Lowering commission charges for use of Mpesa 5) Consumer and trade promotions 6) Introduction of the functionality: Mpesa Till which allowed direct payments to the business and 7) Introduction of loan functionality. Finally, environmental factors; including internal and external conditions had a minimal impact on the use of Mpesa by paratransit service providers. The study recommends that mobile money operators such as banks and telecommunication companies seeking to provide or enhance the use of their mobile money payment services in the paratransit sector should deploy a payment system similar to Mpesa and spend more time on interventions that will influence the use of the mobile payment system.

Key words: Public transport industry, Mobile money payments, Innovation adoption, Intervention

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DEFINITION OF TERMS

Paratransit transport system:

Paratransit transport system is defined as an informal public transport system operating not only parallel to the official public transport system but also outside the regulatory framework (World bank, 2002).

Mpesa:

Mpesa is a form of electronic payment system supported by mobile devices such as mobile phone. The first letter “M” stands for the mobile while “pesa” is the swahili name for money.

Safaricom:

The public limited company that provides the “Mpesa” mobile money payment system.

CHAPTER ONE: INTRODUCTION

This chapter provides the background to the study leading to the problem statement. The main objective to the study is provided and specific objectives as well as the research questions listed. The significance of the study is explained and finally the scope within which the research is done is provided.

1.1 Background

Paratransit vehicles such as minibuses, vans, taxis, station wagons, three wheelers and motorcycles, referred to in different local names, are major sources of urban transport in many cities around the world, predominantly but not exclusively in developing economies (Cervero & Golub, 2007). In Kenya, the vans and mini-buses are commonly referred to as “Matatus” and act as the main motorised public transport for the majority of the inhabitants. They operate as privately owned, profit-making businesses (Salon & Allgula, 2012).

The National Transport and Safety Authority Regulations of 2014 require all public service vehicles to be members of a Saving & Credit Co-operative (SACCO) for management purposes before applying for a PSV licence. This in effect semi-formalised the paratransit industry, introducing order and oversight in the sector (Ministry of Transport & Infrastructure, 2014). The Department for Transport (2014) in London, identified four areas that can make public transport easier and more convenient; Improving the quality and availability of information, Smart and integrated ticketing and Improved, reliable connections in journeys that involve multiple modes of transport per commuter and safe, comfortable and easily accessible transport facilities. This study sets out to establish the use of smart and integrated ticketing, as represented by Mpesa, in a bid to make public transport easier and more convenient.

Mobile commerce (M-commerce) is a recent innovation in the payments industry Salmony (2011) positioned for proximity and micro payments which are typically local daily expenses in quick-service oriented industries such as public transportation and fast food restaurants (Ondrus & Pigneur, 2006). According to Muthiora (2015) the pervasiveness of mobile phone usage in Kenya has led to the development of its digi-

tal payments ecosystem and mobile money has become a payment platform for millions of mobile phone subscribers who conveniently access and disburse money digitally. The fourth quarter, sector statistics reported a network of 206,940 agents serving 9,678,063 active mobile money subscribers (Communication Authority of Kenya, 2018). Given an estimated population of 27,814,697 persons between the age of 15 and 64 years as provided by the demographic and social statistics department of United Nations Statistics Division, it can be deduced that 34% of the adult population are active mobile money subscribers. It was also reported that 510,113,138 mobile commerce transactions were made, valued at Kes.1,427,741,584,108. Additionally, the report revealed that 76% of the mobile commerce transactions were through Mpesa (Communication Authority of Kenya, 2018). Usage of mobile money for day-to-day needs is prevalent in Kenya as indicated by the active mobile money subscriber base at 34% of the adult population.

According to Salon and Allgula (2012) the main mode of payment by commuters in Kenya is cash. Despite the innovations taking place in the payments industry, cash has enjoyed long standing success and remains not only relevant but also the dominant mode of payment (Salmony, 2011). Cash as a means of payment, suffers three major disadvantages. Firstly, cash payments are expensive due to financial inefficiencies such as high cost of distributing, managing, processing, handling and recycling (Retail Banking Report, 2010). Secondly, cash is the basis of the underground economy, particularly the drug trade according to Ugwuishiwu, Ugwu, and Inyiamah (2013) and thirdly, cash is unhygienic; 94% of the dollar bills harbour staphylococcus, carrying more germs than a typical household toilet according to Pope, Ender, Woelk, Koroscil, and Koroscil (2002). According to Salmony (2011) these disadvantages motivated for alternative payment solutions which seek to move the economy from cash.

Research has shown that cashless payments have multiple benefits such as cost reduction, better and efficient management of operations as result of the fast, accurate and transparent transactions as well as improved quality and availability of information and receipts customised for the end user (GSMA, 2015). The paratransit sector would benefit from efficiencies that would come from cashless payments which would help

in further formalising the sector and improving investor attractiveness. Whilst Mpesa is widely accepted and used as is the evidence in the Commutation Authority statistics report indicated above, the paratransit sector still uses cash. Baghudana et al. (2016) and Lule et al. (2012) analysed Mpesa from an end-user perspective in trying to understand what influences their use of Mpesa. The operator perspective has also been covered in research, for example Dunn (2015) compared the Mpesa service in Kenya to EKO limited, a financial and technology based company in India, to understand what led to their mobile banking programs' success. This study looked at the less researched area which is the intermediary business perspective, in this case the paratransit service providers, to understand the factors that influence their use of Mpesa.

1.2 Problem statement

According to Berg et al. (2017), investment in transport, infrastructure and improved technology results in the continuous decline of transport costs, which in turn stimulates growth and economic development. In low and middle-income countries in particular, the potential for transport policies to boost sustainable and inclusive growth are large, given the backlog of transport infrastructure investment and the inefficiencies brought about by social costs such as congestion, pollution, accidents and corruption which is facilitated by cash transactions.

In the Nairobi metropolitan, the paratransit sector serves 42% of the daily transportation needs of inhabitants of Nairobi and environs (Nairobi City Council, 2014). Improved efficiency in the sector with initiatives such as smart and integrated ticketing would have ripple effects into the economy (Berg et al. 2017).

Kenya has a robust mobile money payment ecosystem as demonstrated by the high number of mobile payment agents, subscribers and transactions. Several sectors such as banks, physical retail, agriculture and employers have embraced the use of mobile money and in particular Mpesa. However according to Salon and Allgula (2012), the main mode of payment by commuters in public transport is cash. Literature indicates that the use of mobile payments such as Mpesa would benefit the public transport service providers through cost reduction, better management of operations such as

ticketing as well as increased ridership (GSMA, 2015). While there have been several studies done on Mpesa, most are from the end-user perspective such as Baghudana et al. (2016) and Lule et al. (2012) and the operator perspective such as Dunn (2015). There is need to study the intermediary businesses in order to understand all the critical players participating in the mobile money ecosystem. The purpose of this research study was to assess the factors influencing the use of Mpesa by the paratransit service providers.

1.3 Objectives of the research

1.3.1 Main objective

The main objective of this research was to assess the factors influencing the use of Mpesa by the paratransit service providers in Nairobi.

1.3.2 Specific objectives

- i) To assess the technological factors affecting the use of Mpesa by the paratransit service providers
- ii) To evaluate the effectiveness of interventions put in place by Safaricom to encourage use of Mpesa in the paratransit sector
- iii) To establish the relationship between the paratransit operational environment and use of Mpesa

1.3.3 Research questions

- i) How do technological factors affect the use of Mpesa by paratransit service providers?
- ii) How effective are the interventions put in place by Safaricom in encouraging the use of Mpesa in the paratransit sector?
- iii) What is the relationship between the paratransit operational environment and use of Mpesa?

1.4 Significance of the study

This study will provide scholars with practical information about the factors affecting the use of a technology such as Mpesa by the paratransit service providers and other similar intermediary businesses in Nairobi. Additionally, the management of Safaricom and other mobile money payment operators such as banks and other telecommunication companies will better understand what factors influence use of mobile money payment solutions by businesses and how the business operational environment impacts on the use of the mobile money payment solution. Moreover, management will have an opportunity to assess the impact of the interventions put in place to encourage the use of Mpesa to understand what works from the perspective of the intermediary businesses. This study will also provide useful information to the Ministry of Transport and Infrastructure on the factors that if changed through policy will stabilise the operational environment of the paratransit sector thus encourage the use of mobile money solutions such as Mpesa, which in turn will allow the sector to enjoy the benefits of cashless payments.

1.5 Scope of the study

This study targeted conductors and office administrators responsible for collecting fare from passengers. The study was geographically limited to Nairobi and considered respondents receiving payments both from commuter service operations and long distance service operations, originating from Nairobi.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

In this chapter a review of relevant literature is discussed in line with the research objectives. An in-depth analysis of public transport industry in Kenya is done, critically examining the operations environment including the incentives motivating the various players in the industry. An analysis of the mobile payment solutions rolled out in the public transport sector in various cities around the world is also done, followed by an analysis of the use of cash seeking to establish from relevant literature the reason cash persists. The chapter closes by linking the current study to previous studies thereby outlining the research gap that this study explores.

2.2 Theoretical framework

2.2.1 Technology acceptance model

The antecedents of the Technology Acceptance Model (TAM) posited that although the use of computer technology would generate significant performance gains, end-users are often unwilling to use these systems (Davis, Bagozzi & Warshaw, 1989). The two factors affecting the acceptance of technology were noted to be (1) the perceived usefulness of the technology, a major factor and (2) the perceived ease of use, a significant secondary factor. "Users may be willing to tolerate a difficult interface in order to access functionality that is very important, while no amount of ease of use will be able to compensate for a system that doesn't do a useful task" (Davis, Bagozzi, and Warshaw, 1989).

TAM has been tested by various researchers and the framework has held true suggesting that the model is robust (Venkatesh & Davis, 1996, Venkatesh & Morris, 2000). The model has been successfully applied to predict technology adoption, particularly in mobile commerce (Teo & Pok, 2003).

The practical implication from TAM has been that organisations, through system designers attempt to build systems that are easy to use while at the same time provide functionality that the users will need to accomplish their task Venkatesh (2000) to en-

sure a higher rate of end-user acceptance. For this reason, TAM was used as a basis for this study, to analyse the perceived usefulness and ease of use of the Mpesa technology, by the paratransit service providers.

2.2.2 Intervention theory

According to Leeuw and Vaessen (2009) the intervention theory provides an overall framework for making sense of potential processes of change induced by an intervention. It addresses the question of when when it is appropriate to intervene and it is desirable not to do so. It also examines the effectiveness of different types of intervention.

To articulate the link between interventions and outcomes, Leeuw and Vaessen (2009) suggested the following pieces of evidence: an intervention's existing logical framework as a starting point for mapping causal assumptions linked to objectives; insights provided by and expectations harboured by stakeholders such as policy makers, staff etc. on how the interventions will affect the target group; evidence on past experiences of similar interventions including those implemented by other organisations; and literature on mechanisms and processes of change in certain contexts, for particular problems.

The intervention theory is significant to this study as it will link the expectations harboured by Safaricom when putting in place interventions that will encourage target groups such as the paratransit service provider to use Mpesa in their collection of fare.

2.2.3 Technology-organisational-environmental framework

To study the adoption of general technological innovations, Tornatzky and Fleischer (1990) developed the Technology-Organizational-Environmental (TOE) framework which identified three aspects of a firm's context that influence the process by which it adopts and implements technological innovations: technological context, organisational context, and environmental context. The technological context focuses on the technology itself, and its relevance to the organisation. The organisational context is defined in terms of the resources available to support the acceptance of the innovation. The criteria includes internal operational issues like the firm size and scope;

managerial, peer and individual influence. The environmental context represents the setting in which the firm conducts business. The criteria includes the characteristics on the industry itself, the firm's competitors, end-user readiness and interactions with the government.

The TOE framework is in line with the contingency theory which postulates that there is no best way to structure work or an organisation because different environments place differing requirements on an organisation. The environments are characterised by uncertainty and rapid changes in market conditions or technologies which present unique constraints as well as opportunities (Lawrence & Lorsch, 1986). The contingency theory thus espouses the belief that an efficient organisation must adopt to its environment as opposed to taking a static or 'best way' approach, as put forward by the scientific management theories. According to Scott (2015), an optimum course of action is contingent on both the external and internal conditions in which an organisation is inserted and therefore these conditions must be considered in the operationalisation of successful technologies within an organisation.

A number of empirical studies have used the TOE framework to investigate the acceptance of new technologies. Zhu, Kraemer and Xu (2003) for example, studied 3,100 firms to understand not only influences of technology competence on electronic business adoption, but also influences of organisational factors, environmental context, consumer readiness, trading partner readiness, and competitive pressure, on electronic business adoption. Chau and Poon (2003) observed that initiatives involving the creation of mobile payment options, particularly centred on the transport industry, were often frustrated by multiple challenges put forward by the various stakeholders involved in the paratransit industry. Among the most notable of these challenges was the bringing together of stakeholders in such a manner as to ensure that all involved clearly perceive the direct benefit resulting from the system. Whereas the efficiency gains as presented by the developers of such systems formed the rallying point around which stakeholders were gathered, these benefits alone were often proven unsuccessful in determining adoption and sustained use of the mobile payment system. Unlike predecessor systems, Octopus mobile payment system involving contactless smart-

phones, was implemented successfully across Hong Kong serves approximately 11 million passengers per day. They concluded that the main reason behind the success of the system has been the involvement of all stakeholders and the creation of buy-in from operators before creation of the system.

The significance of the TOE framework to this study is the proposition that the adoption of a technology is influenced by other factors over and above the technology itself. According to the framework, the paratransit service providers could reject the use of Mpesa based on organisational and environmental conditions, regardless of how efficient the Mpesa technology was in the collection of fare.

2.3 Empirical literature

The empirical literature addresses the three key themes of the study: the technological factors affecting the use of Mpesa by the paratransit service providers, the effectiveness of interventions put in place by Safaricom to encourage use of Mpesa in the paratransit industry and the relationship between the paratransit operational environment and use of Mpesa. These are discussed in turn in the below.

2.3.1 Technological factors affecting the use of Mpesa

Across many empirical tests of adoption of technology, Venkatesh and Davis (2000) found that, perceived usefulness and ease of use consistently emerged as strong determinants of adoption and usage intention of a technology. Perceived usefulness differs from one industry to the next and in the paratransit industry, a technology is perceived to be useful if it improves efficiency, increases management oversight and improves accountability.

a) Improved efficiency

Cities around the world are adopting various mobile payment solutions in the public transport sector to the benefit of service providers whose operations are more efficient as a result of fast, accurate and transparent transactions. The commuter has also benefited from improved quality of service at a lower cost. Services such as electronic receipts, trip planners and disruption alerts are now available to commuters (GSMA,

2015). For a mobile money payment system such as Mpesa to be perceived as useful for fare collection by the paratransit service providers, then it must improve business efficiencies as a result of fast, accurate and transparent transactions. To achieve this the Mpesa menu must be simple to use and easy to learn. The system must be up and running almost always and any system issues be quickly resolved and error in amounts paid be reversed immediately.

b) Increased management oversight

The mode of operation for the paratransit business is influenced by the ownership structure of the vehicles. The ownership structure is largely either individual, where the owner operates one or several vehicles, or ownership via organisational units, where several vehicles are typically operated within one holding unit (McCormick et al. 2011). For many individual owners, the paratransit business is the only or major source of income. In Kenya, owners, drivers and conductors support their families and even extended families with earnings from the “Matatu” business. Individual owners dedicate full time attention to the business (Kioy, 2011). Ownership through organisational units is comprised of individuals who view the paratransit business as an alternative source of income. In a study of fourteen African cities, Kumar and Barret, (2008) found that most paratransit vehicle owners are government officials, businessmen or professionals for whom the income from the paratransit business supplements their regular income from employment or other businesses. Finn et al. (2011) noted that the owners of paratransit vehicles in Ghana invest in the sector, but have limited expertise in the transport service business and are also not involved on a full-time basis. For a mobile money payment system such as Mpesa to be perceived as useful as a fare collection by the paratransit service providers, then it must increase management’s oversight on the business operations e.g. monitoring collections, driver movements, traffic conditions and provide easy-to-access reports.

c) Improved accountability

Source of financing for the vehicles is another element that influences the mode of operation of paratransit vehicles. In his study of four Sub-Saharan African cities Bul-

tyneck (2001), found that paratransit owners did not seek bank financing because the interest rates were too high and the loan repayment periods too short. According to Kumar and Barret (2008), the accounting records typically maintained did not meet the minimum standards required by banks to offer financing facilities and banks were largely uncertain of the consistency of the revenue streams. Owners therefore source financing from alternative sources which price in the risk by charging a premium interest rate. There is therefore a need for a rather quick return on investment. McCormick et al. (2011) noted that the “matatu” industry in Nairobi has a governing norm of “target setting” that ensures quick return on investment in a semi-regulated environment. Here, the owner sets a target amount of income to be delivered by the crew at the end of each working day, anything over and above this amount is retained by the crew. The attraction to the target setting system, which seems to be firmly entrenched, is motivated by the highly competitive industry, unregulated fares, lack of full-time owner-manager involvement in the business and to some extent, the owners’ lack of understanding of the paratransit business (McCormick et al. 2011).

For a mobile money payment system such as Mpesa to be perceived as useful as a fare collection alternative to cash by the paratransit service providers, then it must improve accountability to ensure owners fulfil their need for quick return on investment.

2.3.2 Effectiveness of interventions by Safaricom to encourage use of Mpesa

Intervention theory is used extensively in social and medical practices including health care, child protection, law enforcement as well as business studies. In health-care for example, Burns and Groove (2010) point out that intervention theory directs the implementation of specific nursing interventions and provides theoretical explanations of how and why the intervention is effective in addressing a particular patient care problem. Safaricom’s annual published reports indicate various initiatives put in place to enhance the usage of Mpesa. Initiatives such as zero-rating charges for transactions below Kes.100 was intended to drive access by all subscribers. Marketing and promotion activities such as advertisements and rewards were intended to drive education and trial respectively. Introduction of tools such as virtual payment tills or

business accounts that allow direct deposit of money into the business account as opposed to different individuals driving transparency.

2.3.3 Impact of the paratransit operational environment on use of Mpesa

According to Scott (2015), an optimum course of action is contingent on both the external and internal conditions in which an organisation is inserted and therefore these conditions must be considered in the operationalisation of successful technologies within an organisation. The paratransit operational environment is constituted by both external and internal conditions. The external conditions include customer readiness, competitive pressure and interactions with the government. The internal conditions include the management influence and employee influence, particularly the customer-facing employees i.e the cash collectors who are the conductors and office administrators.

a) External conditions

In Kenya, the customer is deemed to be ready given the pervasiveness of mobile money usage for day-to-day needs across various sectors, with 34% of the adult population having active mobile money accounts (Communication Authority of Kenya, 2018). However, according to Salon and Allgula (2012) the main mode of payment by commuters in Kenya is cash. Salmony (2011) examined the interests of the key stakeholder groups in the cash business; central banks, national governments, retail banks, official businesses and unofficial businesses or the shadow economy and consumers.

The first key stakeholder are the Central banks. They play a dual and heavily conflicting role in the economy. On one hand, they have the mandate to foster the efficiency of non-cash payment systems however, due to the low volumes and high infrastructural costs of electronic payments (e.g. Point of sale terminals, networks, computer systems and fraud management) most central banks have not been able to justify a significant move from cash to electronic payments. The second key stakeholder are that national governments who are heavy beneficiaries of the cash economy in that cash in circulation does not earn interest hence saves the banking system a significant amount annually (Van, 2007). National governments also benefit from cash through

seigniorage (Salmony, 2011). The third key stakeholders are the retail banks. Although they suffer a high cost of cash they are able to pass on these costs to customers and merchants through charging them cash withdrawal and deposit fees, issuance and counting services and all-night money deposit services. Banks also have a non-monetary interest in cash because a critical component of their model is customer relationship, which is often based on customers personally visiting their branch for cash deposits or withdrawals (Salmony, 2011). The fourth key stakeholder group is official businesses, in particular retail businesses which are cash rich and prefer cash because of the time taken at the check-out machine, where time taken for cash payment is significantly less than most of the non-cash payment instruments (Polasik et al. 2011). The fifth key stakeholder group is the shadow economy which is cash based due to the anonymity quality cash holds. 71% of Norway's cash is largely used for illegal purposes (Humphrey, Kaloudis and Owre, 2000).

In a study that sought to compare the perceived advantages of the various retail payment options available to German consumers; cash, debit card, credit card, and e-commerce, found that cash was preferred by a significant margin in all but one criteria; cash scored highly for security against loss, acceptance, cost, speed, anonymity, keep control of spending, familiarity, use abroad and rebates. Cash scored poorly for e-commerce (Bundesbank, 2009). In his discussions, Salmony (2011) suggests that success in displacing cash can be achieved in one of three ways. First, the alternatives should satisfy the criteria set by the stakeholders better than cash does in order to motivate a switch. However the criteria set out is tough therefore substitution remains at best a slow evolution. The second route suggested is to pursue online or mobile payments, where cash is not the competitor. Online payment has achieved considerable success as the economies move from physical to virtual, where electronic payment instruments have become more successful and dominate the payment methods. Mobile payments have been considerably successful in economies where the competing banking infrastructure was still in development. The third route suggested is to have an electronic payment system that is integrated in the problem resolution process and not just addressing the isolated step of payment. An example provided to explain this concept is a self-scanner in the supermarket where items are recognised as they are

put in the customer's trolley and when shopping is completed, the customer simply wheels the trolley out to the car park, having passed a contactless scanner which reads the items and deducts the total from a pre-registered credit card (Salmony, 2011)

The other external condition considered when operationalising technologies is interactions with government e.g. through policies, legislation, regulation e.t.c. These interactions have the potential to boost sustainable and inclusive growth in the paratransit sector by eliminating the inefficiencies brought about by social costs such as congestion, pollution, accidents and corruption which is facilitated by cash transactions (Berg et al. 2017). Unfortunately, the legislation to ban the use of cash in public transportation in Nairobi in favour of alternative non-cash payments, though discussed severally, has not been enacted (Okuttah, 2015).

b) Internal conditions

Management influence on its employees has a direct impact on the adoption and use of a new technology within the organisation. Trade press has shown that low adoption of technology by employees is a major barrier to successful implementation in organisations (Gross, 2005).

2.4 Research gap

Studies by Venkatesh and Davis (2000) have shown that perceived usefulness and ease of use are technological factors affecting the adoption of a use of a technology. There is need to understand from a contextual perspective if the technology, Mpesa is perceived to be useful by paratransit service providers as measured by improved efficiency, increased management oversight and improved accountability.

Literature by Leeuw and Vaessen (2009), address the question of when when it is appropriate to intervene and when it is desirable not to do so, examining the effectiveness of different types of intervention. It is important to examine the effectiveness of different types of interventions put in place by Safaricom to encourage use of Mpesa.

Literature by Scott (2015) concludes that an optimum course of action is contingent on both the external and internal conditions in which an organisation is inserted and

therefore these conditions must be considered in the operationalisation of successful technologies within an organisation. Establishing the relationship between operational environment of the paratransit industry and use of Mpesa will enable us determine what, beyond the technology itself impacts on adoption and use of Mpesa.

2.7 Conceptual framework

A conceptual framework is an analytical tool used to organise and visualise ideas. Figure 2.1 provides the conceptual framework for this study with dependent and independent variables. Based on literature review there are various factors that influencing the use of Mpesa by the paratransit service providers in Nairobi. Technological factors such as perceived usefulness and ease of use of a technology impact the adoption of a technology. Interventions put in place by the organisation providing the technology also impact of the adoption of the technology. Finally, outside of technological factors, the operational environment with varied external and internal conditions will also have an impact on the adoption of a technology such as Mpesa. These factors are independent and have a direct impact on the dependent variable which is use of Mpesa by paratransit service providers.

The dependent variable is the variable being tested and measured. In this study, the use of Mpesa by paratransit service providers is measured by improved efficiency, increased management oversight and improved accountability is the dependent variable.

Conceptual framework

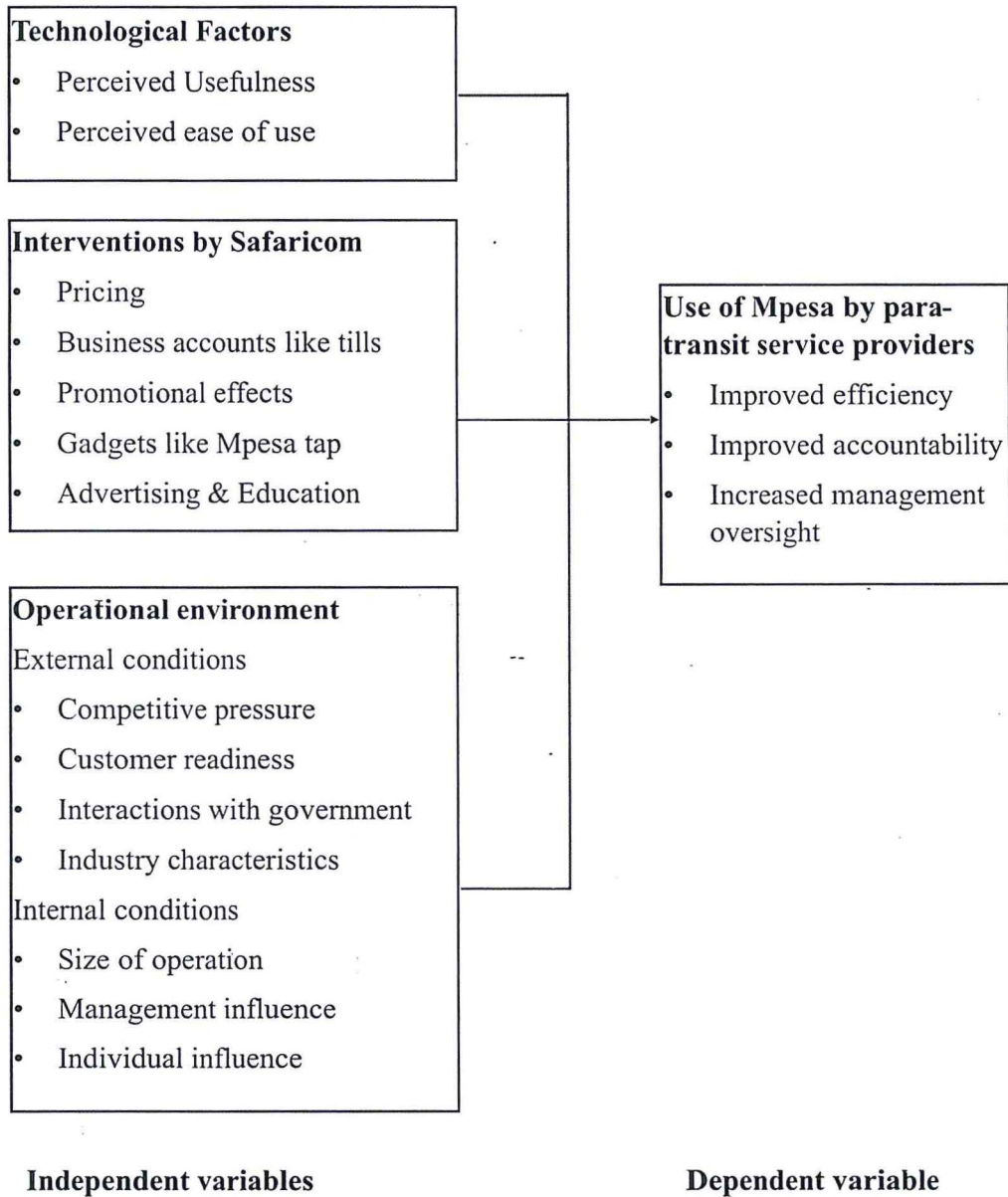


Figure 2.1 Conceptual framework

Table 2.1 Operationalisation of variables

Variable	Indicators	Measurement scale
Technological factors	<ul style="list-style-type: none"> • Simplicity of use • Ease of learning • Ease of reversals • System up-time • Quick resolution of system issues 	Interval scale
Interventions by Safari-com	<ul style="list-style-type: none"> • Pricing • Business accounts like tills • Promotional effects • Advertising and education • Gadgets like Mpesa tap 	Interval scale
Operational environment	<p>External conditions</p> <ul style="list-style-type: none"> • Competitive pressure • Customer readiness • Interactions with government • Industry characteristics <p>Internal conditions</p> <ul style="list-style-type: none"> • Size of operation • Management influence • Individual influence 	Interval scale

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines and discusses the research methodology that was employed to meet the research objective. The chapter provides insight on the study population, data collection instruments and procedures, method of data analysis, data validity and reliability and closes with ethical considerations.

3.2 Research design

Saunders et al. (2016) define a research design as the general plan towards answering the research questions as derived from the research objectives. The research design in this study was descriptive in nature and sought to describe the current status of the variables providing the answers to the questions who, what, when, where and how. A quantitative approach was taken and quantitative methods applied. Using the quantitative approach allows the measurement and analysis of respondents' data so as to understand the relationship between the variables (Cooper & Schindler, 2008). The benefit of using this method was standardisation, which helped reduce bias when collecting and analysing data, meaning that if the sample size was sufficient, the results would be generalised to a larger population (Rahman, 2016).

3.3 Population and sampling

3.3.1 Target population

A population is an entire group of individuals, events or objects with some common observable characteristics (Saunders et al. 2016). The respondents considered in this study were required to be either conductors, who typically collect cash for commuter service or office administrators who typically collect cash for long-distant passenger service. There are 46,357 public service vehicles in Kenya (National Transport and Safety Authority, 2018) who were associated on a one-to-one ration with the number of public vehicles forming a the study's population at 46,357.

3.3.1 Sample Size

A sample is a set of data that is obtained from a statistical population using specified data collection techniques. To avoid sampling errors a researcher should select a sample that is as large as possible (Saunders et al. 2016). The sample size chosen is a tradeoff between the resources at the disposal of the researcher and the level of accuracy desired (Saunders, Lewis, and Thornhill, 2016). Additionally the size of a sample is influenced by the desired confidence level, the size of the population to be studied and the type of analysis to be carried out on the data collected. When the formula below was applied, at a 95% confidence level and 5% margin of error, the recommended sample size of respondent was 384.

Sample size formula:

$$n = \frac{z^2 \times \hat{p}(1-\hat{p})}{e^2}$$
$$n = \frac{1.96^2 \times 0.5(1-0.5)}{0.05^2} = 384.16$$

Where :

n= population size

p= population proportion

e = margin of error

z = z-score

3.3.2 Sampling Procedures

There was no sampling frame available for the respondents therefore the main matatu termini within Nairobi city were visited and homogenous purposive sampling was used to select respondents, where the criteria was either conductors and office administrators who receive payment from commuters. The list of matatu termini for both commuter service and long distance passenger service originating from Nairobi, available in the Nairobi city council website guided the data collection.

3.4 Data collection

Saunders et al. (2016) define data collection as the transition point in the research process where concepts developed and defined into variables are measured. This study used a questionnaire as the data collection instrument. A questionnaire is a method of data collection where every respondent is asked the same set of questions in a predetermined order. The questionnaire method was chosen because it works well with structured questions that can be analysed and interpreted the same way especially in descriptive research. A drop-and-wait technique was used to administer the questionnaire.

3.6 Research quality

3.6.1 Validity

According to Saunders et al. (2016) the validity of a study can be divided into two; namely internal and external. Internal validity is explained as the study being able to achieve what it set-out to achieve while external validity is defined as the degree to which the results of a study can be generalised to other people, situations and times. The questionnaire used in this study was designed well and tested. This helped improve the validity of the study by ensuring respondents only provided relevant information as required for analysis. The questionnaire covered all the aspects required to answer the research questions.

Saunders et al. (2016) define a pilot test as a survey on a small scale using the proposed instrument of measurement to establish the reliability and validity of the instrument and of the questions in collecting the data required for the research study. The data collection instrument was subjected to pretesting by way of a small scale field survey before it was used for the actual study. Piloting the questionnaire resulted in the revision of some questions and this helped boost the completeness of the responses by the respondents. This trial run helped confirm the length of time required to complete the questionnaire was 10-15minutes. It also confirmed the clarity and comprehension of the questions.

3.6.2 Reliability

According to Saunders et al. (2016) reliability of an instrument is the measure of the degree to which a research instrument yields consistent results or data after repeated trials. In this study, the pilot sampled conductors and office administrators charged with collecting fare, in one bus terminal was selected. The sample was representative of the target population. The process refined the questionnaire and reduced the error rate by respondents. The reliability of the questionnaire was tested using internal consistency method which yielded an internal consistency reliability estimate reported by Cronbach's alpha. A threshold alpha of 0.7 demonstrated reliability of the questionnaire.

3.6 Data Analysis

Data analysis can be defined as the process of evaluating data using analytical and logical reasoning so as to determine every variable in the study. As such it entails the process of gathering data from its various sources, its review and analysis so as to form a deduction. Most of the data gathered in this study was predominantly quantitative leading to the use of descriptive analysis.

All questionnaires returned were organised and the observed variables coded and arranged in a data sheet. Entering of the responses to the variables in the data sheet adopted the Likert-type scale codes used in the questionnaire. The coded data was entered into an excel sheet in a matrix format. Data was analysed on SPSS Version 22 at 95% confidence interval. A correlation analysis was done to check the relationship between the independent variables and the dependent variable. The results are presented in the form of figures and tables. The selection of this type of presentation was informed by the fact that the data collected is categorical and representative of frequencies of occurrence of responses to the respective questions.

3.7 Ethical Considerations

Saunders et al. (2016) define ethics as the standards of behaviour that guide the researcher's conduct in relation to respondents. Ethical considerations were upheld at all stages of this research from the time of seeking access, to data collection and reporting. Permission was obtained from respondent through written consent ahead of administering the questionnaire. The respondents were informed of their right to voluntary participation, confidentiality and anonymity. Their right to refuse to answer all or some of the questions given was respected. In the reporting all information gathered was treated as confidential and only used in meeting the research objectives.

CHAPTER FOUR: PRESENTATION OF FINDINGS

4.1 Introduction

This chapter presents findings derived from the data collected for the purpose of addressing the research objectives. The chapter is divided into four main sections; response rate, descriptive statistics, discussion of objectives and the conclusion.

4.2 Response rate

A drop-and-wait technique was used to collect the data. Out of the 382 questionnaires, only 267 were responded to, representing a 70% response rate. According to Mugenda and Mugenda (2003), a response rate of 50% is considered acceptable for analysis and reporting 60% is good and 70% and above is excellent. The response rate for this study was therefore considered excellent.

4.3 Descriptive statistics

This section provides a summary of the respondents' profile relevant to the forthcoming discussions pertaining to the study objectives. The aspects considered included; age, gender, level of education and the primary job function.

4.3.1 Age

Figure 4.1 presents the age profile of the respondents. 71% of the respondents were aged between 18 to 35 years with the modal age category being 26 to 35 years. This observation indicated that the collection of fare within the paratransit industry in Kenya is predominantly done by the youth.

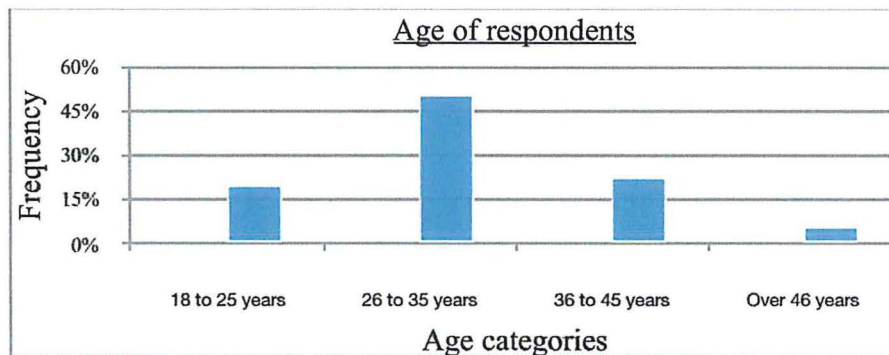


Figure 4.1 Age of the respondents

4.3.2 Gender

Figure 4.2 presents the gender profile of the respondents. 89% were male and 11% female. Based on this observation and as related to the previous section, the collection of fare in the paratransit industry can be summarised as being carried out by middle-aged men.

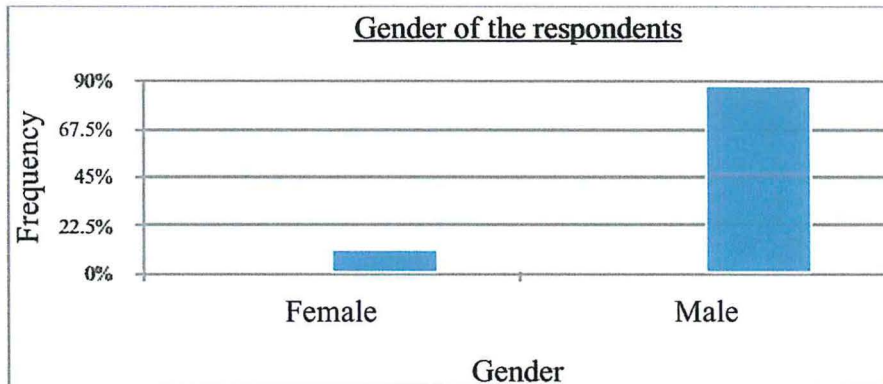


Figure 4.2 Gender of the respondents

4.3.3 Level of education

Figure 4.3 presents the level of education attained by the respondents. 47% of the respondents selected secondary school as their highest level of education. This formed the modal category. 11% selected primary, 7% selected university, 32% of the respondents selected college as their highest level of education. Based on this observation and drawing from the previous sections, the respondents were described as being predominantly middle-aged men with secondary level education being the most common, highest attained education level.

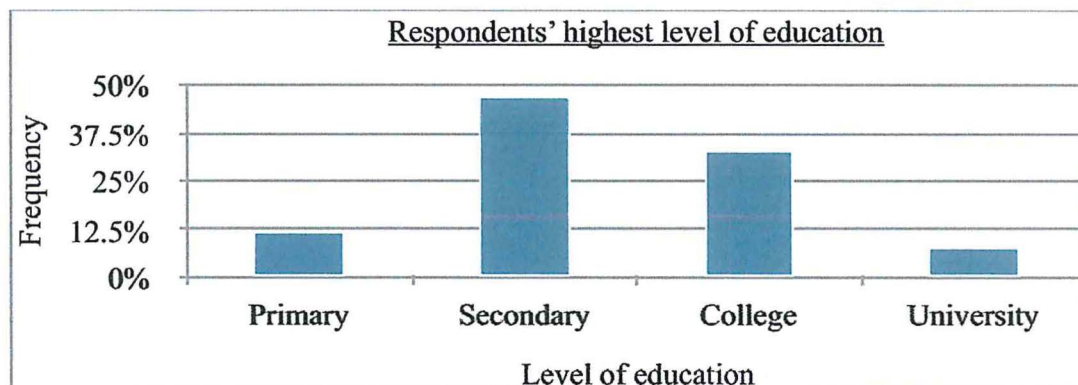


Figure 4.3 Respondents' highest level of education

4.3.4 Primary job function

The research study sought to cover SACCO's providing commuter service and long-distant passenger service. The respondents considered were therefore required to be either conductors, who typically collect cash for commuter service or office administrators who typically collect cash for long-distant passenger service. Figure 4.4 shows that 93% of the respondents were conductors and 7% were office administrators.

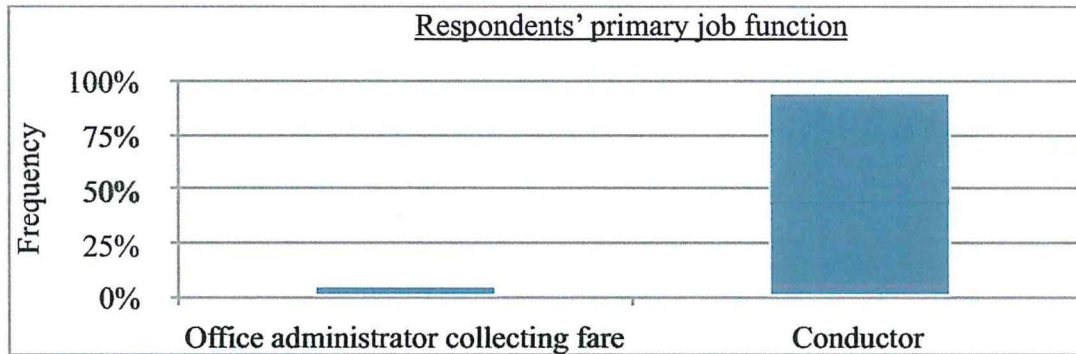


Figure 4.4 Respondents' primary job function

4.4 Analysis of the technological factors affecting the use of Mpesa

The study sought to analyse the technological factors affecting the use of Mpesa by paratransit service providers. Through the use of descriptive statistics, the quantitative data was analysed and presented using mean, standard error and a correlation matrix. This was important since it helped answer the first research question assessing the technological factors that affect the use of Mpesa in the paratransit sector.

Table 4.1 shows how respondents were asked to rate on a scale of 1 – 5 (with 5 being the highest and 1 being the lowest), how easy Mpesa was to use in the work of collecting cash from commuters. Easy to learn how to use Mpesa was rated with a mean of 4.22, Mpesa menu being simple to use was rated with a mean of 4.144, System issues being quickly resolved by Safaricom with a mean on 4.07 and Mpesa system being up and running whenever needed with a mean of 4.00. The average mean and standard deviation were (Average mean 4.11) (Average standard error 0.0512). This clearly indicated that how easy it was to learn how to use Mpesa and Mpesa menu

being simple to use, in that order, were the most important technological actors affecting the use of Mpesa as they were above the average mean.

Table 4.1 Ranking of Technological factors affecting the use of Mpesa

Technological factors affecting use of Mpesa	N statistic	Mean Statistic	Std.Error of Mean
[Its easy to learn how to use Mpesa]	267	4.22	.045
[Mpesa menu is simple to use]	267	4.14	.046
[System issues are quickly resolved by Safaricom]	267	4.07	0.057
[The Mpesa system is up and running when I need to collect fare]	267	4.00	0.057
[Average]		4.11	0.0512

Table 4.2 shows the correlation of technological factors to the benefits derived from use of Mpesa. Respondents were required to answer questions assessing the technological factors that impact use of Mpesa vis-a-vis the benefits anticipated from the full use of system. Responses were coded appropriately and assessed using Spearman's Rank Correlation Coefficient. The benefits derived from the use of Mpesa were assessed on the basis of improved efficiency and accounting benefits, as well as increased management oversight and overall benefits of use of Mpesa. The findings presented in table 4.2 show that a statistical significance was observed for ease of reversal of an error and quick resolution of system issues against improved efficiency and increased management oversight by paratransit service providers. A statistical significance was also observed between quick resolution of system issues and overall benefits of use of Mpesa by paratransit service providers.

Table 4.2 Correlation between technological factors and use of Mpesa

Correlation matrix and respective P-values (Spearman):

Variables	Improved Efficiency	Improved Accounting	Increased Management over-sight	Overall Benefits
[It's easy to learn how to use Mpesa]	0.065 (0.200)	0.025 (0.622)	0.022 (0.664)	0.036 (0.472)
[Incase of an error in amount paid, it is easy to have a reversal made]	0.100 (0.048)	0.042 (0.409)	0.151 (0.003)	0.096 (0.056)
[The Mpesa system is up and running when I need to collect fare]	0.065 (0.195)	0.047 (0.353)	0.092 (0.069)	0.058 (0.250)
[System issues are quickly resolved by Safaricom]	0.123 (0.015)	0.076 (0.133)	0.150 (0.003)	0.131 (0.009)
Overall Technological Factors	0.096	0.061	0.120	0.083

Values in bold are different from 0 with a significance level alpha=0.05

Key: 0.00 - 0.19 very weak 0.20 - 0.39 weak 0.40 - 0.59 moderate 0.60 to 0.79 strong 0.80 to 1.0 very strong

() are the P-values

4.5 Analysis of the effectiveness of interventions put in place by Safaricom

The study also sought to analyse the effectiveness of interventions put in place by Safaricom to encourage the use of Mpesa by paratransit service providers. Through the use of descriptive statistics, the quantitative data was analysed and presented using mean, standard error and a correlation matrix. This was important since it helped answer the second research question about the effectiveness of the interventions put in place by Safaricom to encourage use of Mpesa.

Table 4.3 shows how respondents ranked the interventions put in place by Safaricom to encourage use of Mpesa on a scale of 1 – 5 (with 5 being the highest and 1 being the lowest). Advertising Mpesa on various media to educate users about Mpesa func-

tionality and how to use it was rated with a mean of 4.10. Introduction of gadgets in matatus e.g. Mpesa Tap to help quicken the speed of collecting fare had a mean of 3.96. Lowering the commission charged to the owner or management for use of direct to business payment functionality such as Mpesa till had a mean of 3.96. Mpesa promotions rewarding users with the objective of increase the number of passengers willing to pay fare using Mpesa had a mean of 3.86. Both the interventions that availed direct to business payment functionality like Mpesa till and Zero-Rating all Mpesa transaction for the benefit of commuters had a mean of 3.79. Mpesa trade promotions with the objective of rewarding businesses such a paratransit service providers for use of Mpesa had a mean of 3.78 and Mpesa's loan functionality that allowed commuters to access funds to pay for their fare had a mean of 3.61. The average mean and standard deviation were (Average mean 3.85) (Average standard error 0.0586). This clearly indicated that the interventions that were ranked as being most effective as determined by being above the average mean included the following, in order of priority. Advertising Mpesa on various media to educate users about Mpesa functionality and how to use, Introduction of gadgets in matatus e.g. Mpesa Tap to help quicken the speed of collecting fare, Lowering the commission charged to the owner or management for use of direct to business payment functionality such as Mpesa till and Mpesa promotions rewarding users with the objective of increase the number of passengers willing to pay fare using Mpesa.

Table 4.3 Ranking of interventions by Safaricom to encourage use of Mpesa

Interventions put in place by Safaricom to encourage use of Mpesa	N statistic	Mean Statistic	Std. Error of mean
[Advertising and education in various media on Mpesa, its functionality and how to use it.]	267	4.10	.054
[Introduction of gadgets in matatus e.g. Mpesa Tap to help quicken the speed of collecting fare]	267	3.96	.065
[Lowering the commission charged to the owner or management for use of paybill or till number]	267	3.94	.060
[Mpesa promotions rewarding users help increase the number of passengers willing to pay fare using Mpesa e.g. Kochokocho]	267	3.86	.056
[Mpesa paybill / till number allows direct pay to the owner / management, eliminating the need of end of day reconciliation]	267	3.79	.065
[Zero-rating all Mpesa transactions below Kes.100 has increased the number of passengers paying fare using Mpesa]	267	3.79	.058
[Mpesa trade promotions rewarding business owners / Managers for use of Mpesa for collections]	267	3.78	.061
[Mpesa loan facility i.e. Fuliza, allowing passengers to take access funds to pay for their fare]	267	3.61	.051
[Average]		3.85	0.0586

Table 4.4 shows the correlation that were run to assess the relationship between the interventions put in place by Safaricom to encourage the use of Mpesa vis-a-vis the benefits derived by paratransit service providers from the use of Mpesa. The findings indicate that all the interventions put in place by Safaricom are observed to be statistically significant against improved efficiency and accounting, increased management oversight and overall benefits of use of Mpesa by paratransit service providers.

Table 4.4 Correlation between interventions by Safaricom and use of Mpesa**Correlation matrix and respective P-Values (Spearman):**

Variables	Improved Efficiency	Improved Accounting	Increased Management oversight	Overall Benefits
[Zero-rating all Mpesa transactions below Kes.100 has increased the number of passengers paying fare using Mpesa]	0.331 (<0.0001)	0.420 (<0.0001)	0.375 (<0.0001)	0.404 (<0.0001)
[Mpesa promotions rewarding users help increase the number of passengers willing to pay fare using Mpesa e.g. Kochokocho]	0.381 (<0.0001)	0.425 (<0.0001)	0.382 (<0.0001)	0.419 (<0.0001)
[Mpesa trade promotions rewarding business owners / Managers for use of Mpesa for collections]	0.367 (<0.0001)	0.397 (<0.0001)	0.373 (<0.0001)	0.412 (<0.0001)
[Mpesa paybill / till number allows direct pay to the owner / management, eliminating the need of end of day reconciliation]	0.271 (<0.0001)	0.339 (<0.0001)	0.353 (<0.0001)	0.327 (<0.0001)
[Lowering the commission charge to the owner or management for use of paybill or till number]	0.257 (<0.0001)	0.331 (<0.0001)	0.400 (<0.0001)	0.359 (<0.0001)
[Advertising and education in various media on Mpesa, its functionality and how to use it.]	0.137 (0.007)	0.082 (0.104)	0.165 (0.001)	0.123 (0.015)
[Introduction of gadgets in matatus as well e.g. Mpesa Tap to help quicken the speed of collecting fare]	0.254 (<0.0001)	0.328 (<0.0001)	0.336 (<0.0001)	0.325 (<0.0001)
Interventions	0.357	0.432	0.454	0.448

Values in bold are different from 0 with a significance level $\alpha=0.05$

Key: 0.00 - 0.19 very weak 0.20 - 0.39 weak 0.40 - 0.59 moderate 0.60 to 0.79 strong 0.80 to 1.0 very strong

() are the P-values

4.6 Analysis of the paratransit operational environment and use of Mpesa

The study sought to analyse the relationship between the paratransit operational environment and the use of Mpesa by the service providers. The operational environment was assessed on two fronts; external and internal conditions.

4.6.1 The impact external conditions have on the use of Mpesa

To assess the external environment, respondents were required to answer questions covering industry characteristics, competitive pressure, customer readiness and interactions with the government. Through the use of descriptive statistics, the quantitative data was analysed and presented using mean, standard error and a correlation matrix. This was important since it helped answer the research question about the impact external conditions have on the use of Mpesa in the paratransit sector.

Table 4.5 shows how respondents ranked the impact external conditions had on use of Mpesa on a scale of 1 – 5 (with 5 being the highest and 1 being the lowest). Interactions with government were ranked highest with zero-risk assurance to intermediary businesses such as the paratransit service providers while using payment systems such as Mpesa had a mean of 4.16 and price regulation of cost of Mpesa transactions with a mean of 4.12. Industry characters like requirement of cash for incidentals had a mean of 4.02. Passenger preference to use Mpesa for long-distance travel had a mean of 3.71. Penalties for system outage through the regulator, Communication Authority of Kenya had a mean of 3.33. Competitive / peer pressure had a mean of 3.08 while passenger preference of use of Mpesa for commuter service within Nairobi had a mean of 3.01. The average mean and standard deviation were (Average mean 3.63) (Average standard error 0.06311). This clearly indicated that the external conditions that had the most impact on use of Mpesa, as determined by being above the average mean included the following, in order of priority. Interactions with government to ensure zero-risk assurance to intermediary businesses providers while using payment systems

such as Mpesa, price regulation of cost of Mpesa transactions, industry characters like requirement of cash for incidentals and passenger preference to use Mpesa for long-distance travel.

Table 4.5 Ranking of the impact of external conditions on use of Mpesa

External conditions	N statistic	Mean Statistic	Std. Error of mean
[The government should ensure businesses that use payment systems do so at zero risk to their business e.g. outage, transparency of transactions, access to data and privacy]	267	4.16	.057
[The central bank of Kenya should regulate the pricing of low-value Mpesa transactions to ensure it is nil or minimal]	267	4.12	.051
Industry characteristics [Cash is required for small expenses such as meals, tipping casuals to load luggage or to solicit for passengers etc; therefore accepting fare in cash provides a float, better than Mpesa would, to easily manage these expenses]	267	4.02	.053
[Passengers prefer to use Mpesa (and not cash) to pay for fare for trips from Nairobi to upcountry]	267	3.71	.065
[The Communication Authority of Kenya should penalise payment systems whose service uptime levels are below 99%]	267	3.33	.072
Competitive pressure [Because other matatus (competitors) use Mpesa, I am compelled to use it too]	267	3.08	.068
[Passengers prefer to use Mpesa (and not cash) to pay for fare for short distances within Nairobi]	267	3.01	.076
[Average]		3.63	0.06311

Table 4.6 shows the correlations observed between the impact of external conditions on use of Mpesa vis-a-vis the benefits derived from the use of Mpesa, assessed on the basis of improved efficiency and accounting benefits, as well as increased manage-

ment oversight and overall benefits of use of Mpesa. Competitive pressure is observed to be statistically significant against improved efficiency, increased management efficiency and overall benefits of use of Mpesa. Customer readiness and penalties by regulator for system downtime are observed to be statistically significant with all the measures: Improved efficiency and accountability, as well as increased management efficiency and overall benefits of use of Mpesa.

Table 4.6 Correlation between external condition and use of Mpesa

Correlation matrix and respective P-Values (Spearman):

Variables	Improved Efficiency	Improved Accounting	Increased Management over-sight	Overall Benefits
[Cash is required for small expenses such as meals, tipping casuals to load luggage or to solicit for passengers etc, therefore accepting fare in cash provides a float, better than Mpesa would, to easily manage these expenses]	-0.016 (0.747)	-0.064 (0.208)	-0.008 (0.881)	-0.074 (0.146)
[Because other matatus (competitors) use Mpesa, I am compelled to use it too]	0.128 (0.011)	0.090 (0.074)	0.137 (0.007)	0.115 (0.022)
[Passengers prefer to use Mpesa (and not cash) to pay for fare for short distances within Nairobi]	0.319 (<0.0001)	0.299 (<0.0001)	0.253 (<0.0001)	0.351 (<0.0001)
[Passengers prefer to use Mpesa (and not cash) to pay for fare for trips from Nairobi to upcountry]	0.202 (<0.0001)	0.164 (0.001)	0.127 (0.012)	0.157 (0.002)
Overall Customer Readiness	0.353 (<0.0001)	0.321 (<0.0001)	0.240 (<0.0001)	0.357 (<0.0001)

[The Communication Authority of Kenya should penalise payment systems whose service uptime levels are below 99%]	0.191 (0.0001)	0.156 (0.002)	0.213 (<0.0001)	0.169 (0.001)
[The central bank of Kenya should regulate the pricing of low-value Mpesa transactions to ensure it is nil or minimal]	-0.025 (0.615)	0.017 (0.733)	0.058 (0.251)	-0.030 (0.557)
[The government should ensure users of retail / low-value payment systems such as the matatu industry, do so at zero risk to their business]	-0.001 (0.977)	0.062 (0.220)	0.070 (0.167)	0.016 (0.752)
Interactions with government	0.085 (0.094)	0.121 (0.016)	0.165 (0.001)	0.081 (0.109)
Overall external operational issues	0.232 (<0.0001)	0.223 (<0.0001)	0.221 (0.0001)	0.220 (<0.0001)

Values in bold are different from 0 with a significance level alpha=0.05

Key: 0.00 - 0.19 very weak 0.20 - 0.39 weak 0.40 - 0.59 moderate 0.60 to 0.79 strong 0.80 to 1.0 very strong

() are the P-values

4.6.2 The impact internal conditions have on use of Mpesa

To assess the internal conditions, respondents were required to answer questions regarding the size of operation, management, peer and individual influence. Through the use of descriptive statistics, the quantitative data was analysed and presented using mean, standard error and a correlation matrix. This was important since it helped answer the research question about the impact internal conditions have on the use of Mpesa in the paratransit sector.

Table 4.7 shows how respondents ranked the impact external conditions had on use of Mpesa on a scale of 1 – 5 (with 5 being the highest and 1 being the lowest). The im-

impact use of Mpesa to collect fare had on the amount of wages the conductor or office administrator who collects fare had a mean of 3.55. Management requirement that Mpesa be used to collect fare had a mean of 3.17. The impact of the size of the matatu fleet on use of Mpesa had a mean of 3.08 and lastly peer influence where use of Mpesa by other conductors and office administrators had a mean of 2.95. The average mean and standard deviation were (Average mean 3.63) (Average standard error 0.06311). This clearly indicated the impact use of Mpesa to collect fare had on the amount of wages made and the management requirement to use Mpesa were the most important internal conditions affecting the use of Mpesa as they were above the average mean.

Table 4.7 Ranking of the impact of internal conditions on use of Mpesa

Internal conditions	N statistic	Mean Statistic	Std. Error of mean
[Use of Mpesa to collect fare reduces the amount of wages I make]	267	3.55	.076
[The owner / management requires that I use Mpesa if a customer requests]	267	3.17	.074
[Because there are many matatus in the fleet, use of Mpesa makes it easy for owner / management to monitor operations]	267	3.08	.071
[Other conductors / administrators in the office are using Mpesa to collect fare]	267	2.95	.074
[Average]		3.19	0.0738

Table 4.8 shows the correlations observed between the impact of internal conditions on use of Mpesa vis-a-vis the benefits derived from the use of Mpesa, assessed on the basis of improved efficiency and accounting benefits, as well as increased management oversight and overall. All the internal conditions i.e. the size of operation as measure by number of matatus in the fleet, the management's influence in compelling conductors to use Mpesa, other conductors using Mpesa and personal benefit upon using Mpesa are all observed to be statistically significant against the improved

efficiency and accounting, increased management oversight and overall benefits of use of Mpesa by paratransit service providers.

Table 4.8 Correlation between internal conditions & use of Mpesa

Correlation matrix and respective P-Values (Spearman):

Variables	Improved Efficiency	Improved Accounting	Increased Management Over-sight	Overall Benefits
[Because there are many matatus in the fleet, use of Mpesa makes it easy for owner / management to monitor operations]	0.342 (<0.0001)	0.360 (<0.0001)	0.307 (<0.0001)	0.373 (<0.0001)
[The owner / management requires that I use Mpesa if a customer requests]	0.312 (<0.0001)	0.377 (<0.0001)	0.276 (<0.0001)	0.361 (<0.0001)
[Other conductors / administrators in the office are using Mpesa to collect fare]	0.272 (<0.0001)	0.295 (<0.0001)	0.289 (<0.0001)	0.301 (<0.0001)
[Use of Mpesa to collect fare reduces the amount of wages I make]	-0.016 (0.759)	0.114 (0.024)	0.171 (0.001)	0.091 (0.072)
Overall internal operation issues	0.307 (<0.0001)	0.382 (<0.0001)	0.331 (<0.0001)	0.370 (<0.0001)

Values in bold are different from 0 with a significance level alpha=0.05

Key: 0.00 - 0.19 very weak 0.20 - 0.39 weak 0.40 - 0.59 moderate 0.60 to 0.79 strong 0.80 to 1.0 very strong

() are the P-values

4.7 Conclusion

This chapter presented the research findings. Data was analysed and presented in figures and tables. The next chapter presents the discussions, conclusions and recommendations of this study.

CHAPTER FIVE: DISCUSSION, CONCLUSION, RECOMMENDATIONS

5.1 Introduction

The findings obtained formed the basis on which this chapter provides discussions, conclusions and recommendations in relation to the research objectives and the extent to which the findings agree with the literature reviewed. Future areas of study are also suggested. The study sought to understand the factors that influenced the use of Mpesa by the paratransit service providers in Nairobi. This was in light of the fact that despite the pervasive use of Mpesa across many industries in Kenya, research showed that the main mode of payment within the paratransit industry was cash. The study employed three objectives, the first objective assessed the technological factors affecting the use of Mpesa by the paratransit service providers, the second evaluated the effectiveness of the interventions put in place by Safaricom to encourage use of Mpesa and the third determined the relationship between the paratransit operational environment and use of Mpesa.

5.2 Discussion of the findings

5.2.1 Technological factors affecting the use of Mpesa

The study assessed the influence of the technological factors; perceived usefulness and ease of use on the use of Mpesa in the paratransit industry. The correlation between improved efficiency in use of Mpesa was statistically significant against the variable ease of reversal ($R = 0.1, p = 0.048$) and quick resolution of system issue ($R = 0.123, p = 0.015$). The correlation between increased management oversight as a result of use of Mpesa was significantly significant against the variable ease of reversal ($R = 0.151, p = 0.003$) and quick resolution of system issue ($R = 0.15, p = 0.003$). The correlation between the overall benefit of use of Mpesa (improved efficiency and accounting, as well as increased management oversight) was significantly significant against the variable quick resolution of system issues ($R = 0.131, p = 0.009$). This therefore indicated that the two key factors that affected the use of Mpesa by paratransit service providers are ease of reversal and quick resolution of system issues. These findings are in agreement with Technology Acceptance model (TAM) which found

that functionality and ease of use of a system increased the users ability to accomplish their task (Venkatesh, 2000).

In assessing the aggregated effect of technological factors, it was observed that there was a positive but weak correlation ($R = 0.083$), with the overall perceived benefits of using Mpesa. The inference therefore was that an improvement in these technology aspects, would have little to no bearing on the use of Mpesa. This finding corroborates previous research studies such as Venkatesh (2000) that ease of use of a system that provides functionality may not necessarily translate into widespread adoption of the system. This therefore implies that other factors come into play in the paratransit industry when the payment decision is being made.

5.2.2 Effectiveness of the interventions put in place by Safaricom

The study sought to understand the effectiveness the interventions put in place by Safaricom had on the use of Mpesa in the paratransit industry. The interventions included; 1) Advertising 2) Zero-Rating Mpesa transactions below Kes.100, the typical limit for daily transit charges 3) Introduction of gadgets such as Mpesa Tap to help quicken the speed of collection of fare 4) Lowering commission charges to the paratransit business for use of Mpesa 5) Consumer and trade promotions 6) Introduction of the functionality: Mpesa Till which allowed direct payments to the business and 7) Introduction of loan functionality.

The correlation between the benefit - improved efficiency, was statistically significant against all the variables; advertising ($R = 0.137$, $p = 0.001$), Zero-Rating Mpesa transactions below Kes.100, the typical limit for daily transit charges ($R = 0.331$, $p = 0.007$), introduction of gadgets such as Mpesa Tap to help quicken the speed of collection of fare ($R = 0.254$, $p = 0.0001$), lowering commission charges ($R = 0.257$, $p = 0.0001$), Consumer promotions ($R = 0.381$, $p = 0.0001$), trade promotions ($R = 0.367$, $p = 0.0001$), introduction of the Mpesa Till functionality which allowed direct payments to the business ($R = 0.271$, $p = 0.0001$), and introduction of loan functionality ($R = 0.381$, $p = 0.0001$). This therefore indicated that all the variables affected the use of Mpesa by paratransit service providers.

The correlation between the benefit - improved accounting, was statistically significant against all the variables except advertising; Zero-Rating Mpesa transactions below Kes.100, the typical limit for daily transit charges ($R = 0.420$, $p = 0.001$), introduction of gadgets such as Mpesa Tap to help quicken the speed of collection of fare ($R = 0.328$, $p = 0.0001$), lowering commission charges ($R = 0.331$, $p = 0.0001$), Consumer promotions ($R = 0.425$, $p = 0.0001$), trade promotions ($R = 0.397$, $p = 0.0001$), introduction of the Mpesa Till functionality which allowed direct payments to the business ($R = 0.339$, $p = 0.0001$), and introduction of loan functionality ($R = 0.425$, $p = 0.0001$). This therefore indicated that all the variables, except advertising, affected the use of Mpesa by paratransit service providers.

The correlation between the benefit - increased management oversight, was statistically significant against all the variables; advertising ($R = 0.165$, $p = 0.001$), Zero-Rating Mpesa transactions below Kes.100, the typical limit for daily transit charges ($R = 0.375$, $p = 0.001$), introduction of gadgets such as Mpesa Tap to help quicken the speed of collection of fare ($R = 0.336$, $p = 0.0001$), lowering commission charges ($R = 0.400$, $p = 0.0001$), Consumer promotions ($R = 0.382$, $p = 0.0001$), trade promotions ($R = 0.373$, $p = 0.0001$), introduction of the Mpesa Till functionality which allowed direct payments to the business ($R = 0.353$, $p = 0.0001$), and introduction of loan functionality ($R = 0.382$, $p = 0.0001$). This therefore indicated that all the variables affected the use of Mpesa by paratransit service providers.

The correlation between the overall benefits was statistically significant against all the variables; advertising ($R = 0.404$, $p = 0.007$), Zero-Rating Mpesa transactions below Kes.100, the typical limit for daily transit charges ($R = 0.404$, $p = 0.001$), introduction of gadgets such as Mpesa Tap to help quicken the speed of collection of fare ($R = 0.325$, $p = 0.0001$), lowering commission charges ($R = 0.359$, $p = 0.0001$), Consumer promotions ($R = 0.419$, $p = 0.0001$), trade promotions ($R = 0.412$, $p = 0.0001$), introduction of the Mpesa Till functionality which allowed direct payments to the business ($R = 0.327$, $p = 0.0001$), and introduction of loan functionality ($R = 0.419$, $p = 0.0001$). This therefore indicated that all the variables affected the use of Mpesa by paratransit service providers.

In assessing the aggregated effect of interventions put in place by Safaricom, it was observed that there was a positive, moderate correlation ($R = 0.448$) with the overall perceived benefits of using Mpesa. This indicated that interventions by Safaricom contributed significantly in the use of Mpesa in the paratransit industry. Of all the perceived benefits from the use of Mpesa, improved management oversight was deemed most important with a moderate correlation ($R = 0.454$), followed by improved accounting ($R = 0.432$) and lastly improved efficiency ($R = 0.357$). This therefore indicated that enhancements that increased management oversight would provide the highest influence in the use of Mpesa in the paratransit industry.

5.2.3 Establishing the role the paratransit operational environment had on use of Mpesa

The study sought to establish the role the operational environment had on the use of Mpesa by paratransit service providers. The operational environment was assessed on two fronts; external and internal conditions.

a) External conditions

The study sought to understand the impact of external conditions had on the use of Mpesa in the paratransit industry. External conditions included factors such as industry characteristics, competitive pressure, customer readiness and interactions with government.

The correlation between the benefit - improved efficiency, was statistically significant against the variables; competitive pressure ($R = 0.128$, $p = 0.011$) and customer readiness ($R = 0.353$, $p = 0.001$). This therefore indicated that the external conditions variables that affected the use of Mpesa by paratransit service providers included competitive pressure and customer readiness.

The correlation between the benefit - improved accounting, was statistically significant against the variables; customer readiness ($R = 0.321$, $p = 0.001$) and interactions with government ($R = 0.121$, $p = 0.016$). This therefore indicated that the external conditions variables that affected the use of Mpesa by paratransit service providers included customer readiness and interactions with government.

The correlation between the benefit - increased management oversight, was statistically significant against the variables; competitive pressure ($R = 0.137$, $p = 0.007$), customer readiness ($R = 0.240$, $p = 0.0001$) and interactions with government ($R = 0.165$, $p = 0.001$). This therefore indicated that the external conditions variables that affected the use of Mpesa by paratransit service providers included competitive pressure, customer readiness and interactions with government.

The correlation between the overall benefits was statistically significant against the variables; competitive pressure ($R = 0.115$, $p = 0.022$) and customer readiness ($R = 0.357$, $p = 0.0001$). This therefore indicated that overall, the external conditions variables that affected the use of Mpesa by paratransit service providers included competitive pressure and customer readiness.

In assessing the aggregated effect that external conditions had on use of Mpesa, it was observed that there was a positive, weak correlation ($R = 0.220$) with the overall perceived benefits of using Mpesa. The inference therefore is that change in the external conditions would have minimal impact on the use of Mpesa by paratransit service providers. This finding is in keeping with Polasik et al.. (2011) who observed that for businesses with a large cashflow, cash remains the preferred payment method. Humphrey (2000) further observed, in a study conducted in Germany, that cash remains preferable in the making of payments in most sectors with the exception of e-commerce.

b) Internal operational environment

In assessing the impact internal conditions of the organisation had on use of Mpesa in the paratransit industry, the study tested for the following variables; size of operation i.e. number of vehicles in one fleet, management influence, peer influence i.e. other conductors and administrators collecting fare and personal gain in wages i.e. increase or reduction in pay.

The correlation between the benefit - improved efficiency, was statistically significant against all the variables except personal pain in wages; size of operation ($R = 0.342$, $p = 0.0001$), management influence ($R = 0.312$, $p = 0.0001$), peer influence ($R = 0.272$,

$p = 0.0001$). This therefore indicated that the internal conditions variables that affected the use of Mpesa by paratransit service providers included size of operation, management and peer influence.

The correlation between the benefit - improved accounting, was statistically significant against all the variables; size of operation ($R = 0.360$, $p = 0.0001$), management influence ($R = 0.377$, $p = 0.0001$), peer influence ($R = 0.295$, $p = 0.0001$) and personal gain in wages ($R = 0.114$, $p = 0.024$). This therefore indicated that all the internal conditions variables affected the use of Mpesa by paratransit service providers.

The correlation between the benefit - improved management oversight, was statistically significant against all the variables; size of operation ($R = 0.307$, $p = 0.0001$), management influence ($R = 0.276$, $p = 0.0001$), peer influence ($R = 0.289$, $p = 0.0001$) and personal gain in wages ($R = 0.171$, $p = 0.001$). This therefore indicated that all the internal conditions variables affected the use of Mpesa by paratransit service providers.

The correlation between the overall benefits was statistically significant against all the variables except personal gain in wages; size of operation ($R = 0.373$, $p = 0.0001$), management influence ($R = 0.361$, $p = 0.0001$), peer influence ($R = 0.301$, $p = 0.0001$). This therefore indicated that the internal conditions variables that affected the use of Mpesa by paratransit service providers are size of operation, management and peer influence.

In assessing the aggregated effect that internal conditions had on use of Mpesa, it was observed that there was a positive, weak correlation ($R = 0.370$) with the overall perceived benefits of using Mpesa. The inference therefore is that change in the internal conditions would have minimal impact on the use of Mpesa by paratransit service providers. Scott (2015) observed that it is important to consider both external and internal conditions of an organisation before the implementation of technological solutions. This study confirmed that while there is a relationship between both external and internal conditions in the use of Mpesa, internal conditions played a more significant role than external conditions in influencing the use of Mpesa by paratransit service providers in Nairobi.

5.3 Conclusions

The study sought to understand the factors that influenced the use of Mpesa by the paratransit service providers in Nairobi. From the findings discussed above and with regards to the first objective, the aggregated effect of technological factors i.e. perceived usefulness and ease of use, had a positive but weak correlation ($R = 0.083$), with the overall perceived benefits of using Mpesa. It can be concluded that among middle-aged men, with secondary school level education, the Mpesa system is deemed to be easy to use, and that system-up-time levels and support processes for errors and reversals are acceptable. The inference therefore was that an improvement in these technological aspects, would have little to no bearing on the use of Mpesa.

On the second objective, it was observed that the interventions put in place by Safaricom contributed significantly in the use of Mpesa in the paratransit industry with a positive, moderate correlation ($R = 0.448$) against the overall perceived benefits of use of Mpesa. Of all the perceived benefits from the use of Mpesa, the benefit improved management oversight was most impacted by the overall interventions put in place by Safaricom with a moderate correlation ($R = 0.454$), followed by improved accounting ($R = 0.432$) and lastly improved efficiency ($R = 0.357$). This therefore indicated that interventions by Safaricom had an impact on use of Mpesa. These interventions are: 1) Advertising 2) Zero-Rating Mpesa transactions below Kes.100, the typical limit for daily transit charges 3) Introduction of gadgets such as Mpesa Tap to help quicken the speed of collection of fare 4) Lowering commission charges to the paratransit business for use of Mpesa 5) Consumer and trade promotions 6) Introduction of the functionality: Mpesa Till which allowed direct payments to the business and 7) Introduction of loan functionality.

On the third objective it was observed that the aggregated effect that external conditions had on use of Mpesa had a positive but weak correlation ($R = 0.220$) with the overall perceived benefits of using Mpesa. It can be concluded therefore that change in the external conditions i.e. industry characteristics, competitive pressure, customer readiness and interactions with government would have minimal impact on the use of Mpesa by paratransit service providers. Additionally, it was observed that the aggreg-

ated effect that internal conditions had on use of Mpesa, also had a positive but weak correlation ($R = 0.370$) with the overall perceived benefits of using Mpesa. The conclusion therefore was that internal conditions i.e. size of operation, management influence, peer influence and personal gain in wages, would have minimal impact on the use of Mpesa by paratransit service providers.

5.4 Recommendations

The following are the recommendations based on the findings of this study:

1. Mobile money operators such as banks and telecommunication companies seeking to provide or enhance the use of their mobile money payment services in the paratransit sector should deploy a system similar to Mpesa as it is perceived to be useful, easy to use, and that system-up-time levels and support processes for errors and reversals are acceptable in Nairobi.
2. Interventions by Safaricom contributed significantly to Mpesa use in the paratransit industry. Mobile money operators seeking to provide or enhance or compete effectively with their mobile money payment service, in the paratransit sector should invest behind interventions such as 1) Advertising 2) Zero-Rating transactions below Kes.100, the typical limit for daily transit charges 3) Introduction of gadgets such as Mpesa Tap to help quicken the speed of collection of fare 4) Lowering commission charges to the paratransit business for use of the mobile money payment system 5) Consumer and trade promotions 6) Introduction of functionality that allows direct payments to the business and 7) Introduction of loan functionality.
3. Environmental factors; including internal and external conditions have a minimal impact on the use of Mpesa by paratransit service providers. Mobile money operators seeking to provide or enhance or compete effectively with their mobile money payment service, in the paratransit sector should not rely on regulation to influence use of their mobile payment service by paratransit service providers.

5.5 Suggestions for further study

Further study should be carried out to;

1. Understand how technological factors i.e. perceived usefulness and ease of use, affect paratransit service providers outside of Nairobi county e.g. the upcountry markets.
2. Rate and therefore prioritise the most effective interventions based on the impact the intervention has on use of Mpesa versus the cost of deployment of the intervention. This will help mobile money operators optimise the cost per use.
3. Understand the challenges - outside of environment factors that paratransit service providers experience in the use of mobile money payment systems such as Mpesa

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APPENDIX I: LETTER OF INTRODUCTION



Strathmore Business School

11th February 2019

To Whom It May Concern

Dear Sir/ Madam

RE: FACILITATION OF RESEARCH – IRENE GITONGA

This is to introduce Irene Gitonga who is a Master of Business Administration student at Strathmore Business School, admission number MBA/93145/16. As part of our MBA Program, Irene is expected to do applied research and undertake a project. This is in partial fulfilment of the requirements of the MBA course. To this effect, she would like to request for appropriate data from your organization.

Irene is undertaking a research paper on **“Assessing the Factors Influencing the Willingness to use Mpesa: A Case of Paratransit Service Providers in Nairobi.”** The information obtained from your organization shall be treated confidentially and shall be used for academic purposes only.

Our MBA seeks to establish links with industry, and one of these ways is by directing our research to areas that would be of direct use to industry. We would be glad to share our findings with you after the research, and we trust that you will find them of great interest and of practical value to your organization.

We appreciate your support and shall be willing to provide any further information if required.

Yours sincerely,

Caroline Tiara
Manager - MBA, MPPM, MCOM Programs



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APPENDIX II: PARTICIPANT INFORMATION AND CONSENT FORM

ASSESSING THE FACTORS INFLUENCING THE USE OF MPESA: A CASE OF PARATRANSIT SERVICE PROVIDERS IN NAIROBI

Investigator: Irene Gitonga

Institution: Strathmore University Business School

Purpose of the research

This study seeks to assess the factors influencing the use of Mpesa, specifically focusing on paratransit or “Matatu” service providers. Information from the study will provide scholars, management in technology developing organisations and the Ministry of Transport and Infrastructure with practical information about the factors affecting the use of a technology such as Mpesa by matatu service providers. This will in turn allow interventions to be put in place that will help the sector enjoy the benefits of cashless payments.

Participation

Taking part in this study is entirely optional and the decision rests solely with you. If you decide to take part, you will be asked to complete a questionnaire. If you are not able to answer all the questions successfully the first time, you may be asked to sit through another informational session after which you may be asked to answer the questions a second time. You are free to decline to take part in the study and can withdraw from this study at any time without giving any reasons.

Target group for the research

- Conductors who collect fare from passengers in Matatus
- Office administrators who collect fare from passengers before the board matatus

What will your participation involve?

Your participation will only involve filling a questionnaire which should take about 10 to 15 minutes to complete. You will be approached and requested to take part in the study. If you are satisfied that you fully understand the goals behind this study, you will be asked to sign the information consent form (this form) and then given questionnaire which should take about 10 to 15 minutes to complete.

Risks and dangers

There are no foreseeable risks, nor dangers in participating in this study. All the information you provide will be treated as confidential and will not be used in any way without your express permission.

Benefits

There are no direct benefits to you in participating. However, this study could provide useful information of factors that influence the use of Mpesa in the "Matatu" industry that may help in improving policies and regulations within the ministry of Transport and Infrastructure.

Is participation voluntary?

Participation in this research is completely voluntary. You can discontinue participation at any time without penalty. You may also skip any question that you do not feel comfortable answering.

Confidentiality

All research records will be stored in securely locked cabinets. That information may be transcribed into our database but this will be sufficiently encrypted and password protected. Only the people who are closely concerned with this study will have access to your information. All your information will be kept confidential.

Publishing of results

The findings of this research are expected to be published in accordance with the guidelines provided by Strathmore University Business School. However, your name or your company will not be used and no information that discloses your identity will be released or published.

Who do I contact in case of problems, concerns or queries?

If you have questions, concerns or complaints about the study at any stage, please contact:

Irene Gitonga
Research Student,
Strathmore University Business School
Email: irene.gitonga@gmail.com

Dr. Humphrey Njogu
Supervising Lecturer,
Strathmore University
Email: hjogu@strathmore.edu

If you want to ask someone independent anything about this research please contact:

The Secretary–Strathmore University Institutional Ethics Review Board,
P. O. BOX 59857, 00200, Nairobi,
Tel: +254 703 034 375
Email: ethicsreview@strathmore.edu

Storage of information on the completed questionnaire

- I AGREE to have my completed questionnaire stored for data analysis

- I DON'T AGREE to have my completed questionnaire stored for data analysis

Declaration by participant:

I hereby consent to take part in this study.

Participants' name: _____

Signature: _____

Date: _____

Consent form administered and explained by:

Investigator's name: _____

Signature: _____

Date: _____

APPENDIX III: QUESTIONNAIRE

This questionnaire is part of a study **ASSESSING THE FACTORS INFLUENCING THE USE OF MPESA: A CASE OF PARATRANSIT SERVICE PROVIDERS IN NAIROBI**. You have been selected to take part in the survey. The survey will take 15 minutes to complete. The responses which are entirely voluntary will be kept confidential and will only be used for purposes of this study. Thank you in advance for taking time to fill in the questionnaire.

Section 1: Background Information

Instructions: For each question, please indicate your answer with a tick (✓) on ONE checkbox

1. What is your age?

- 18 to 25 years
- 26 to 35 years
- 36 to 45 years
- Over 46 years

2. What is your gender?

- Female
- Male

3. What is the highest level of education you have completed?

- Primary
- Secondary
- Tertiary
- Bachelor's degree

4. How would you describe your primary job function?

- Conductor
- Administrator who collects fare in the office

5. What is the name of the SACCO you are currently working in?

Section 2: Technological factors affecting the use of Mpesa

6. On a scale of 1 to 5, please indicate the extent to which use of Mpesa has helped you in your daily work, for each of the following aspects,

Key:

1. Strongly Disagree
2. Disagree
3. Neither Agree nor Disagree
4. Agree
5. Strongly Agree

Perceived Usefulness	1	2	3	4	5
Increase in the speed of collecting fare per passenger					
Improved the complexity of managing "change"					
Improved security of fare collected against being stolen or accidentally lost					
Reduced the number of passengers who unfairly enjoy the service free of charge					
Complicates the end of day reconciliations with the owner / management					

7. On a scale of 1 to 5 please rate how easy Mpesa is to use, for your work of collecting fare from passengers

Key:

1. Strongly Disagree
2. Disagree
3. Neither Agree nor Disagree
4. Agree
5. Strongly Agree

Perceived ease-of-use	1	2	3	4	5
Mpesa menu is simple to use					
Its easy to learn how to use Mpesa					
Incase of an error in amount paid, it is easy to have a reversal made					

Perceived ease-of-use	1	2	3	4	5
The Mpesa system is up and running when I need to collect fare					
System issues are quickly resolved by Safaricom					

Section 3: Effectiveness of interventions put in place by Safaricom to encourage use of Mpesa by paratransit service providers

8. On a scale of 1 to 5 please rate to what extent the following activities by Safaricom have increased your use of Mpesa in your work of collecting fare.

Key:

1. Strongly Disagree
2. Disagree
3. Neither Agree nor Disagree
4. Agree
5. Strongly Disagree

Interventions by Safaricom	1	2	3	4	5
Zero-rating all Mpesa transactions below Kes.100 has increased the number of passengers paying fare using Mpesa					
Mpesa promotions rewarding users help increase the number of passengers willing to pay fare using Mpesa e.g. Kochokocho					
Advertising and education of Mpesa on radio, Tv, Newspaper etc is useful in encouraging passengers to pay using Mpesa					
Mpesa trade promotions rewarding business that use PayBill and Till numbers with pickups, motorbikes etc have motivated owners to set up PayBill and Till numbers for fare collection					
Mpesa PayBill / Till number allows direct payment of fare to the owner / management, eliminating the need of end of day reconciliation					
Lowering the commission charged on PayBill / Till numbers encourages the owner or management for use of the PayBill / Till numbers					

Introduction of gadgets in matatus such as Mpesa Tap would help quicken the speed of collecting fare					
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Section 4: Relationship between the paratransit operational environment and use of Mpesa

8. On a scale of 1 to 5 please rate the following factors as reasons for using Mpesa in your daily work

Key:

1. Strongly Disagree
2. Disagree
3. Neither Agree nor Disagree
4. Agree
5. Strongly Agree

External operational issues	1	2	3	4	5
<i>Industry characteristics</i>					
Cash is required for small expenses such as meals, tipping casuals to load luggage or to solicit for passengers etc, therefore accepting fare in cash provides a float, better than Mpesa would, to easily manage these expenses					
<i>Competitive pressure</i>					
Because other matatus (competitors) use Mpesa, I am compelled to use it too					
<i>Customer readiness</i>					
Passengers prefer to use Mpesa (and not cash) to pay for fare for short distances within Nairobi					
Passengers prefer to use Mpesa (and not cash) to pay for fare for trips from Nairobi to up-country					
<i>Interactions with government</i>					

External operational issues	1	2	3	4	5
The Communication Authority of Kenya should penalise payment systems whose service uptime levels are below 99%					
The Central Bank of Kenya should regulate the pricing of low-value Mpesa transactions to ensure it is nil or minimal					
The government should ensure users of retail / low-value payment systems such as the matatu industry, do so at zero risk to their business					

9. On a scale of 1 to 5 please rate the following factors as reasons for using Mpesa in your daily work

Key:

1. Strongly Disagree
2. Disagree
3. Neither Agree nor Disagree
4. Agree
5. Strongly Agree

Internal operational issues	1	2	3	4	5
<i>Size of operation:</i>					
Because there are many matatus in the fleet, use of Mpesa makes it easy for owner / management to monitor operations					
<i>Management influence:</i>					
The owner / management requires that I use Mpesa if a customer requests					
<i>Peer influence:</i>					
Other conductors / administrators in the office are using Mpesa to collect fare					
<i>Individual influence:</i>					
Use of Mpesa to collect fare reduces the amount of wages I make					

Section 5: Use of Mpesa as measured by the value derived from its use

11. From the outcome(s) listed below, please rate the usefulness Mpesa's in collecting and managing fare, on a scale of 1 -5

Key:

1. Very Useful
2. Fairly Useful
3. Neither Useful nor Un-useful
4. Moderately Un-useful
5. Very Un-useful

Benefits derived from the use of Mpesa	1	2	3	4	5
<i>Improved Efficiency</i>					
Increased speed of fare collection					
Improved storage and security of fare collected					
Increase in the amount of fare collected					
<i>Improved Accounting</i>					
Improved accountability of overall amount collected given the need to change the fare charged due to traffic surges					
Improved management of change					
Easy and quick reporting of amount of fare collected					
<i>Increased Management over-sight</i>					
The management / owner is able to monitor the output of multiple vehicles easily					
The management / owner with vehicles in different routes is able to measure the output of the different routes					
The management / owner is able to monitor the performance of different conductors / office administrators who collect fare					

THANK YOU