

The role of M-pesa in enabling E-commerce in Kenya

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<p>Life in the 21st century has drastically changed with the introduction of affordable internet, smartphones and computers which has revolutionized most industries especially the retail industry. In the last decade, retail has changed the most with shopping being reduced to a press of a button without requiring consumers to visit the traditional brick and mortar stores enabling them shop from anywhere in the world at the comfort of their homes. For e-commerce to be possible, there must be a payment option to facilitate the sale so with the transformation of the retail industry, the financial industry also took advantage to provide the needed services.</p> <p>As the transition to e-commerce took place worldwide, Kenya has also adopted and even though e-commerce in the East African nation is still in its early stages and there is a huge demand for it mostly in the urban areas and amongst the young people.</p> <p>The main purpose of this thesis is to study the role M-pesa, a mobile transfer platform, has played in enabling e-commerce in Kenya. This thesis will study a case study of an online retailer in Kenya to get a snapshot of the e-commerce industry with an aim to find out the role of M-pesa.</p>	
Keywords E-commerce, M-pesa, Kenya	

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List of abbreviations

API	Application Programming Interface
CA	Communications Authority of Kenya
KShs	Kenyan Shillings
UNCTAD	United Nations Conference on Trade and Development
USSD	Unstructured Supplementary Service Data
SMS	Short Message Service
SME	Small and Medium Enterprises

1 Introduction

E-commerce in the world is ever increasing with the advancement of technology more so over the last decade where mobile commerce has surged. Kenya, like the rest of the continent, is still lagging behind in infrastructure which supports e-commerce. However, Kenya has mode of payment which can be useful in e-commerce, M-pesa. M-pesa has been successfully adopted and is being used by both individuals and businesses to transfer money and make purchases. The widespread use of M-pesa could promote e-commerce in Kenya as a digital mode of payment is one of the requirements for a successful e-commerce system.

1.1 Research Objectives and Questions

This study will seek to find out the role of M-pesa in enabling e-commerce in Kenya and will be done through a case study of an online retail business which sells clothes, shoes and accessories. The business is owned by a lady, Mary, situated in Nairobi, Kenya who has primarily used M-pesa in her 5 years of operation and has recently opened up an M-pesa agent shop expanding her businesses. This study will go through her business operations, identify the M-pesa services she uses, other M-pesa alternatives available to her, her customer base and the mode of payment they prefer. Through the information collected from this business I hope to answer the research question.

Research question: What services and products does M-pesa offer to make it the most suitable choice for e-commerce? How has M-pesa enabled e-commerce in Kenya?

1.2 Research Gap

Current research has been mainly focused on how mobile money has increased financial access in Kenya by catering to the unbanked in addition to its successful adoption and implementation (FSD Kenya 2011, 24). The FinAccess Household Survey has been conducting surveys in conjunction with Kenya National Bureau of Statistics (KNBS) and Central Bank of Kenya (CBK) to help policymakers identify barriers to financial inclusion in Kenya. Mobile money services in this case M-pesa, has also been instrumental in enabling entrepreneurship by providing merchant payment options. One of the industries that has benefited from the retail payment option is e-commerce where digital mode of payments is key.

1.3 Case Study

This chapter introduces the case study, which is an online retail store based in Nairobi, specializing in selling men's, women's and children's clothing and accessories. The study will examine the business' operations such as payment collection methods from customers, financial services used by the business. From studying the store's business operations answer the research questions what services and products does M-pesa offer to make it the most suitable choice for e-commerce? How has M-pesa enabled e-commerce in Kenya?

1.4 Executive Summary

Bantu Trendy Outfits is an SME started in 2014 and it is the fashion retail business. The store was opened by a full-time travel agent with an aim of increasing her income streams and started out on Facebook by creating a Facebook page targeting close family and friends. The page gained followers and grew organically attracting about a thousand people who liked the page forming a community in support of her small business. The initial strategy was to post pictures of shoes, clothes and other accessories on the Facebook page along with the prices and anyone interested in any product could message her and she would deliver the items over the weekend.

She set her business apart from her competitors by offering free deliveries for customers who did not mind waiting until the weekend however charged a delivery fee of KShs 300 for immediate deliveries. However, the operations remained in Nairobi and its environs due to the lack of a reliable cost-efficient logistical infrastructure to cater for customers outside the Nairobi Metropolitan area.

Through Facebook inquiries from her customers she began to put her main focus on supplying shoes and garments to weddings, graduation ceremonies and other special occasions with large gatherings. From these kinds of events she would make multiple sales at a time and it was a way to attract new customers to her business. Following the success the business had on Facebook, the business ventured into an e-commerce platform, Jumia. Jumia is the largest online retail store in Kenya with an estimated 15 million monthly visitors and one and half million subscribers according to their website (Jumia). Setting up shop on Jumia came with the advantage of free marketing, a wider range of customers and solved the logistical challenges.

Jumia collects payments from customers and also handles the delivery of products from the vendors to the customers bridging the gap between the customers and the vendors. Expanding to Jumia meant more customer orders which became overwhelming for the owner who at the time just had a part time motorcycle rider commonly referred to as boda-boda to assist in deliveries. She later brought in a full-time employee to assist in running the business while also serving as an agent at her recent venture, authorised M-pesa agent outlet.

1.5 Structure of the thesis

This thesis consists of four chapters. The first chapter contains the introduction, the research objectives, research questions which are presented to guide the research and also an introduction to the case study. The second chapter is the theoretical background where general information on the state of e-commerce in Kenya will be presented and also an overview of M-pesa such as services offered, charges and the M-pesa ecosystem.

The third chapter presents the research methodology used in the thesis while the fourth chapter presents analysis and key findings. The fifth chapter concludes by presenting the discussion and suggestions for further research.

2 Theoretical background

This chapter presents the global overview of e-commerce and the current state, the drivers of e-commerce in Kenya, barriers and the impact it has. It will also go through general information on M-pesa, the success factors, and its application in businesses.

2.1 E-commerce

Electronic commerce (e-commerce) has been defined by UNCTAD as the sale or purchase of goods or services, conducted by methods specifically designed for the purpose of receiving or placing orders (UNCTAD 2015, 3). It involves a wide variety processes and tools to enable buyers and sellers complete each transaction such as payment systems, logistical systems, devices used to make the transactions and the internet.

E-commerce has been on an upward trajectory since the invention of the internet with significant growth coinciding with changes of technology and global events such as the breakout of Covid-19 in late 2019 which rendered most businesses shut consequently leaving e-commerce as the only acceptable way of operating (Pejić-Bach 2021). Technological breakthroughs such as the invention of PayPal, an online payment system, in the early days of e-commerce led to a significant growth in both customers and retailers.

According to Statista, the global e-commerce sales have increased steadily over the years with sales amounting to 4.28 trillion US dollars in 2020 and e-retail revenues are projected to grow to 5.4 trillion US dollars in 2022 (Statista 2021). Figure 1 below shows retail e-commerce sales worldwide from 2014 to 2024 (Statista 2021).

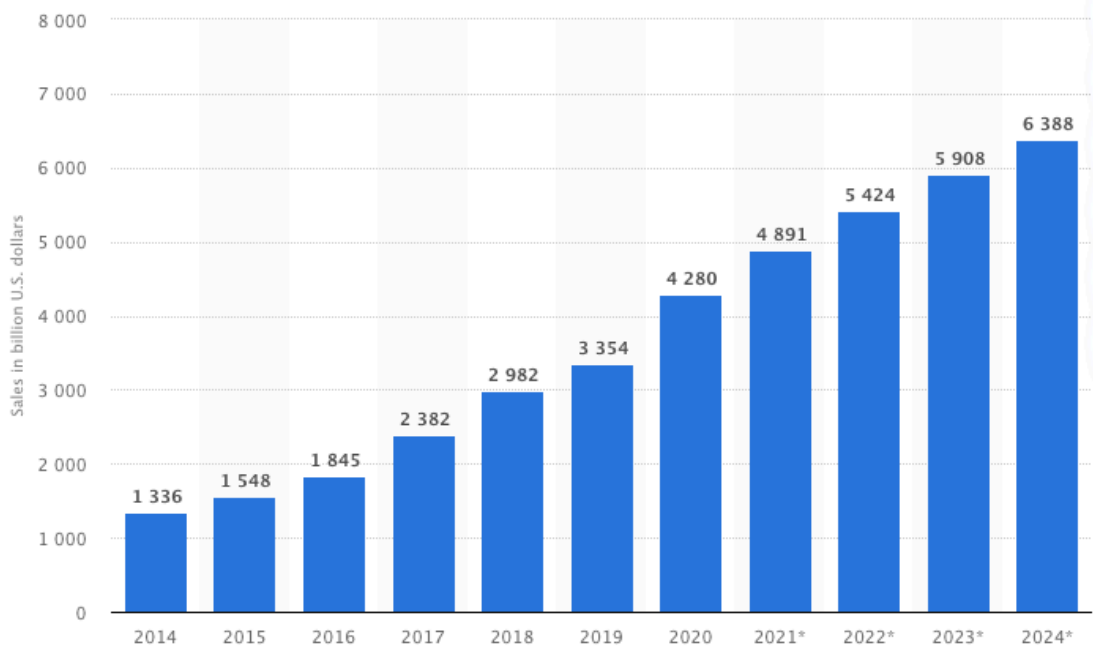


Figure 1. Global retail e-commerce sales 2014 to 2024 (Statista 2021)

E-commerce can take place between different countries and it is referred to as cross-border e-commerce while e-commerce within the same country is referred to as domestic e-commerce (UNCTAD 2015,3). These can be further explained as:

Cross-Border E-commerce – This is the purchase of products and services from a foreign e-commerce retailer. The customer orders a certain product and from a different country and it is delivered to specified location. This type of e-commerce is taking shape in Kenya with consumers and retailers alike ordering items which are not locally available in the country from international websites such as Amazon, Alibaba, Wish and Zalando.

Domestic E-commerce – This is the purchase of products and services from a local e-commerce retailer. The customer orders products and services available in the same country.

There are generally five types of e-commerce and they include (UNCTAD 2015, 3):

Business-to-Business (B2B) – Involves transactions between businesses, such as between a manufacturer and a wholesaler, or between a wholesaler and a retailer.

Business-to-Consumer(B2C) – This is the process of selling products and services directly to the consumers who are the end users

Consumer-to-Business(C2B) – This is a type of e-commerce where the consumer places an order of a specific product or service with specific requirements and a price range and a business meets the specified requirements.

Consumer-to-Consumer(C2C) – This is where consumers trade products and services through the internet. The consumers can display their items of sale in an e-commerce platform or a social media site and any interested party can purchase the item and agree on the delivery of the product.

Business-to-Government(B2G) – This is type of e-commerce where companies supply products or services to a government entity.

2.2 E-commerce in Kenya

The Communications Authority of Kenya (CA) defines e-commerce as the trading or facilitation of trading in products or services using computer networks, such as the internet and estimates that 39% of private enterprises engage in e-commerce. The e-commerce sector is still small but has shown significant growth over the last few years this can be attributed to the increase in internet penetration with (Communications Authority of Kenya 2018).

Kenya is ranked number 88 in the 2019 UNCTAD B2C commerce index and the fastest growing and transitioning e-commerce in Africa (UNCTAD 2019). With Kenya's huge population of 47.6 million with a median age of 20 years, according to the Kenya National Bureau of Statistics, there is huge potential for the growth of e-commerce (KNBS 2019).

There are several top e-commerce platforms in Kenya, they include Jumia, Kilimall, Skygarden, Cheki Kenya, Jiji, Masoko and Avechi.

A pioneer and perhaps the biggest e-commerce platform in Kenya, Jumia, was founded in Nigeria in 2012 and made its way into Kenya in 2013 and later expanding to Egypt, Morocco and South Africa (Jumia 2017). Jumia has been instrumental in promoting e-commerce in Kenya by not only offering a platform for buyers and sellers but also logistical and payment service. Jumia also offers Jumia travel, a hotel booking platform and Jumia food, a food delivery platform. E-commerce in Kenya remains to be popular in urban areas mostly in the three big cities Nairobi, Mombasa and Kisumu where there is a younger and working population with food delivery services, electronics and fashion topping sales (Clickpesa 2020).

E-commerce in Kenya also takes place in social media platforms like Facebook through marketplace, Instagram and twitter. According to the Global Digital Stats and Report 2021 (Datareportal 2021), there are an estimated 11 million active social media users in Kenya thus attracting retailers who create pages in these social media platforms with the aim of advertising their products or even making sales. One of the popular social media platforms, Facebook, has a local marketplace where a lot of second-hand sales takes place

as people nearby can easily buy and sell goods and services to each other. Local market-places are preferred as they overcome the huge gap in the e-commerce market in Kenya which is lack of a logistical infrastructure.

The Postal Corporation of Kenya which has a huge network in the country has not evolved to accommodate e-commerce orders. In an effort to make deliveries possible some online vendors set up small pick-up shops where customers can go pick up their orders while others prefer using motorcycle operators known as boda bodas to make deliveries as they are cheap within short distances compared to other courier services (Business Daily 2015).

Logistical challenges in Kenya have also prompted companies like Copia, which is a rural-focused e-commerce start-up. Copia Global, based in Central Kenya, was launched in 2015 and has a unique hybrid e-commerce model which is both online and offline targeting low-income and unbanked Kenyans living in rural areas. Copia's strategy is based on setting up a widespread agent network who earn commissions by serving as points of aggregation of orders and delivery distribution (Global Data Point 2019).

Copia has three ways in which customers can order from, it can be through Copia's website, face to face with an agent who places the orders on the customers' behalf or by sending a WhatsApp message or via USSD. Through their strategy, Copia has been able to solve infrastructure issue while also solving the trust deficit which accompany most e-commerce businesses. Copia's model seems to be working as they have fulfilled more than 3 million orders to 450,000 customers serving the last mile customers. Copia has managed to attract investors and managed to raise \$26 million back in 2019 and has now managed to expand their agent network to 30,000 and has further plans to expand neighbouring Uganda (Global Data Point 2019).

2.2.1 Drivers of E-commerce growth in Kenya

There are several factors that are driving the growth of e-commerce in Kenya and the major one is internet access and penetration which is important in making e-commerce possible. The Communications Authority of Kenya (CA) in their first quarter sector statistics report for the financial year 2020/2021, estimates that there are 44.4 million data/internet subscriptions of which 43.8 million were wireless and 572982 were fixed(wired) subscriptions in 2020 (Communications Authority of Kenya 2021). Internet service providers have been offering internet services to low income earners through cheap internet bundles from

as low as KShs 10 (Osaji, 2019). Access to the internet increases the possibilities for consumers to buy goods and services from the internet not only from the local market but they can also shop internationally.

Figure 2 below shows data and internet subscriptions in Kenya.

<i>Indicator/Period</i>	<i>Oct-Dec 20</i>	<i>Jul-Sep 20</i>	<i>Quarterly Variation (%)</i>
<i>Total Wireless Subscriptions</i>	43,811,237	42,899,145	2.1
<i>Mobile Data Subscriptions</i>	43,707,173	42,806,044	2.1
<i>Terrestrial Wireless Data Subscribers</i>	102,794	91,826	11.9
<i>Satellite Data Subscribers</i>	1,270	1,275	-0.4
<i>Total Fixed (Wired) Subscriptions</i>	580,253	551,715	5.2
<i>Fixed DSL Data Subscribers (Copper)</i>	870	995	-12.6
<i>Fixed Fibre Optic Data Subscribers</i>	400,355	373,835	7.1
<i>Fixed Cable Modem Subscribers</i>	178,224	176,081	1.2
<i>Other Fixed Data Subscribers (e.g. Radio)</i>	804	804	0.0
<i>Total Subscriptions</i>	44,391,490	43,450,860	2.2

Figure 2. Data/Internet subscriptions (Communications Authority of Kenya 2021)

Payment solutions in Kenya have also promoted e-commerce growth. Though cash remains the most popular mode of payment, alternative methods of payments are gaining traction with M-pesa coming in second after cash with others including credit/debit card payments, PayPal and account transfers. Mobile money payments have gained popularity with M-pesa dominating with a 98 percent market share (Communications Authority of Kenya 2021). Most of retail merchants have integrated M-pesa in their businesses as it offers retail payment services under their service 'Lipa na M-pesa'. It is used by most Kenyans as it was introduced to serve the majority low income users and it easy to join with a sim card and a phone the only requirement also it has cheap transaction charges compared to other digital modes of payments.

Social media use in Kenya has also promoted e-commerce. E-commerce stores and brands started using social media to build brand awareness, showcase their products and direct customers to their websites and this has evolved to where social media users can buy directly through social media platforms. Facebook added the marketplace where businesses and individuals alike can post up pictures of what they are selling with the price and users can inquire or make the purchase. Instagram also has recently added 'shop' which works the same as Facebook's marketplace (Sloane 2020).

Twitter is one of the most interactive platforms where retailers and consumers engage freely. Twitter is helpful in advertising where one can place an advertisement alongside what's trending or put the advertisement at the top of the conversation as the first advertisement of the day (Michieka 2021). Popular social media users who have huge followings are also promoting e-commerce by advertising small businesses at a small cost (Kahongeh 2021).

Access to the international market has also promoted e-commerce growth as it has a wide reach and more diversity in products and services offered. Customers in Kenya can shop from other countries accessing products which are not available locally and have them delivered (Savo store). International access comes with demand and supply of not only goods but also services where businesses and individuals seeking services such as consulting work among other freelancing jobs can meet potential professionals who can do the work (Upwork).

2.2.2 E-commerce Barriers in Kenya

Despite the steady growth of e-commerce in Kenya there are also barriers which are limiting growth. One of the barriers limiting e-commerce growth, is the lack of a functional e-commerce infrastructure which is essential in logistics and delivery of items ordered. A key challenge is the lack of a national courier service catering to e-commerce deliveries (Wanyonyi 2018). Most e-commerce vendors have to rely on a third party for deliveries choosing the most efficient courier based on the customer's location. Motorcycles commonly referred to as boda boda, are mostly used in the cities in short distances and are preferred since they are cheap and can get their way around traffic congestions (CAK 2018, 4).

Another missing key infrastructure is a national addressing system which is essential in e-commerce as products bought have to be delivered a specific location (Njugunah 2017). The government along with relevant stakeholders have set out to implement a national address system, but it has not yet been implemented leaving people using notable landmarks such as schools and hospitals or sharing a location with the delivery companies using their phones (Ministry of ICT, 2016). This can slow down the delivery process and discourage potential customers especially the ones living in the remote areas.

Despite the internet access and adoption in Kenya, internet prices still remain high with prices averaging KShs 240(USD 2.25) for one gigabit of internet which would cost KShs 80(USD 0.75) in neighbouring Tanzania and KShs 166(USD 1.56) in Uganda (Weber &

Lukas 2019). High internet prices are a hinderance to the growth of e-commerce as most of the operations are done online and it is essential to both retailers and their customers. Lower internet prices cause a ripple effect on both businesses in e-commerce and their customers. Business would have lower operational costs increasing their profits while reducing prices and lower prices would also mean more internet users increasing potential e-commerce customers.

Another barrier to the growth and adoption of e-commerce in Kenya is fraud. There are instances that individuals have created fake mobile apps and websites purporting to be engaging in e-commerce only to steal from unsuspecting buyers (Business daily 2018). Instances like this where genuine customers are swindled off their money, discourage more people from e-commerce hurting the genuine retailers and the industry itself.

2.3 M-pesa in Kenya

M-pesa is a mobile money transfer service that uses the USSD feature on a sim card and works by using the short message service (SMS) system to transfer money from person to person and to make payments to vendors (M-pesa Guide 2019). It was launched in 2007 by Safaricom, a Vodafone associate, the M in M-pesa stands for mobile and pesa means money in Swahili and it is operational in Kenya, Tanzania, Democratic Republic of Congo, Mozambique, Lesotho, Egypt and Ghana. The users' phone numbers serve as their accounts and to start using M-pesa, users are required to activate their account by registering at any M-pesa agent with a national identification card as a requirement (Vodafone).

M-pesa originally offered the transfer of money from person to person when it began allowing the users send, receive and store money targeting people sending money from urban areas to rural areas. It then expanded its services to cater for the payment of goods and services catering for small informal sector payments and contributions to the informal saving groups as well as utility bills, payment at gas stations, supermarkets and hospitals (Pazarbasioglu, Mora, Uttamchandani, Natarajan, Feyen & Saal 2020).

M-pesa has been operational in Kenya for 13 years gaining over 30 million users and accumulated KShs 84.4 Bn in revenue, accounting for 33.6 percent of Safaricom's service revenue in the financial year 2019/2020 according to Safaricom's own annual report (Safaricom 2020, 6).

M-pesa has been hugely successful in Kenya due to a number of reasons including demand of cheap and reliable financial services especially in rural areas where residents

couldn't access financial services due to either non-existence of traditional bank branches around them or high minimum deposits and maintenance fees of accounts (Mas & Radcliffe 2010). M-pesa has been able to attract and cater for customers who were previously neglected by traditional banks by providing affordable and reliable mobile money services while also catering for the huge urban population. Following its success in Kenya, it has expanded its operations in other 7 countries and it has been termed as one of the most successful mobile money platforms in the world (Vodafone).

One of the earliest M-pesa adopters were educated phone owners who lived in the urban areas and was mostly used for remittance. M-pesa then quickly gained popularity among other demographics mostly because of its ease of use and enabling people working in the urban areas, who were breadwinners, send money to their families back home in the rural areas. This led to the opening up of more M-pesa agents both in the rural and urban centres to cater for the demand. M-pesa has since expanded its services enabling people to save, conduct businesses through retail payments, access insurance and transfer money in and out banks accounts (Ngugi, Pelowski & Ogembo 2010).

Figure 3 below shows the mobile money transfer services in Kenya.

Mobile Money Brand/Indicator	M-Pesa	Airtel Money	T-Kash	Total
<i>Agents</i>	215,367	25,206	4,551	245,124
<i>Active Registered Mobile Money Subscriptions</i>	31,417,232	341,306	32,875	31,791,413
<i>Value of C2B Transfers in KShs.</i>	735,011,138,819	852,638,530	39,624,602	735,903,401,951
<i>Value of B2C Transfers in KShs</i>	530,472,200,493	269,685,920	29,584,973	530,771,471,386
<i>Value of B2B Transfers in KShs.</i>	1,336,552,782,688	-	-	1,336,552,782,688
<i>Value of G2C Transfers in KShs</i>	7,489,510,294	-	-	7,489,510,294
<i>Value of C2G Transfers in KShs.</i>	12,346,527,835	18,828,778	-	12,365,356,613
<i>Volume of P2P Transfers</i>	712,764,895	1,055,274	135,688	713,955,857
<i>Value of P2P Transfers in KShs.</i>	895,920,603,089	488,782,396	86,031,897	896,495,417,382
<i>Total value of Deposits in KShs</i>	886,157,500,354	1,928,947,106	20,958,476	888,107,405,936

Figure 3. Mobile Money Transfer Services (Communications Authority of Kenya 2021)

According to the Communications Authority of Kenya (CA), M-pesa dominates the mobile money services industry with a 98.8 percent market share while Airtel and other service

providers account for 1.2 percent. In the year 2020, there was KShs 5.21 trillion transacted through mobile money platforms, a number which is equivalent to the half of the Kenya's Gross Domestic Product (GDP) (Communications Authority of Kenya 2021). The number was a rise of 20% from the previous year with the slightly higher increase than normal attributed to the Covid-19 prevention measures where digital methods of payments were recommended by the government (Bright 2020).

2.3.1 How M-pesa Works

M-pesa uses the USSD feature on a SIM card which once inserted into the mobile phone, one can use SMS messages to transfer money and make payments. For one to access M-pesa services one has to register as a user this is among other reasons to help in accountability and prevent fraud cases such as money laundering and also the phone number acts as an account number (Vodafone).

Figure 4 below shows an illustration of how M-pesa works and the different actors interact with each other.

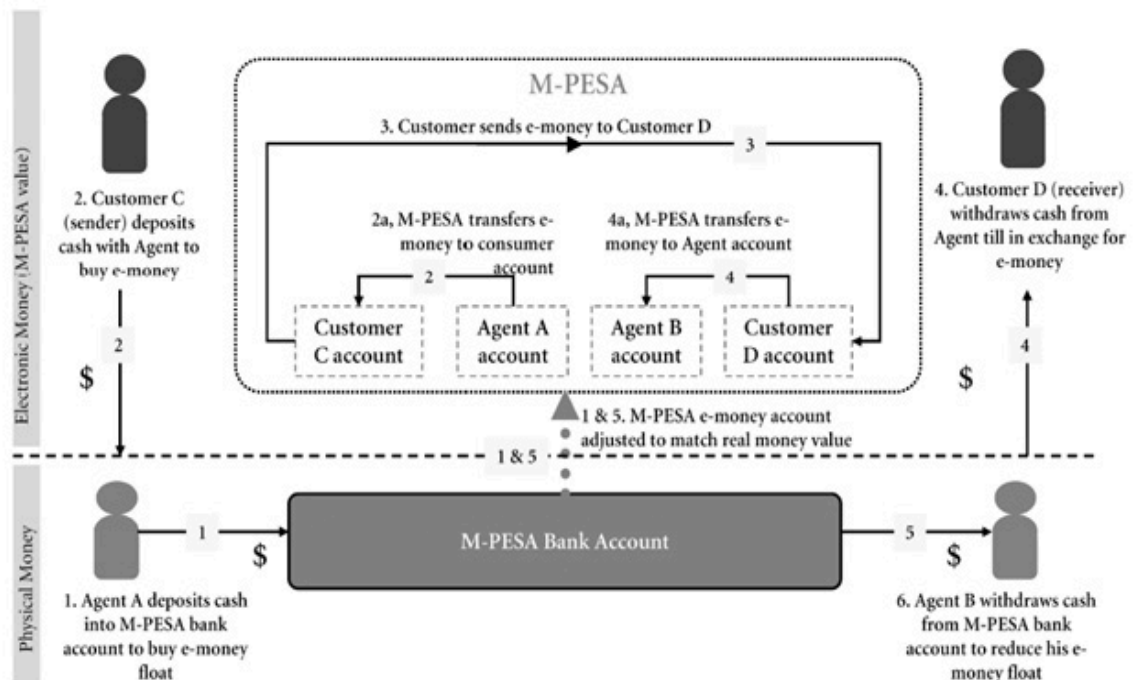


Figure 4. How M-pesa works (Hughes & Lonie 2007)

To register for an account, a customer needs to present a Safaricom SIM card and a valid identification document such as National ID or passport and fill a customer registration

form at an M-pesa agent. After verification, the customer receives a confirmation message from M-pesa of successful registration. After registration, the customer can access M-pesa services through the Safaricom SIM toolkit usually under the M-pesa menu. All transactions require the user's PIN number created by the user and acts as authorisation for each transaction (Mas & Morawczynski 2009).

After every transaction the user gets a confirmation message including date, time and name of person or business the money is transferred to also these transactions are also stored for later reference and customers can access statements which details all their transactions helping them be accountable especially for business (Mas & Morawczynski 2009). Transactions can also be reversed within 25 seconds of conducting a transaction in case there was a mistake in the entry of details (Business Daily 2017).

To make the service seamless and highly accessible to users, M-pesa authorises independent M-pesa agents whose main tasks are to verify identity of customers both when signing up and when conducting other transactions such as provide customers with physical cash and electronic money, offer customer services, sell airtime, sell and replace SIM cards (Mas & Morawczynski 2009). The agent shops are easily accessible and visible countrywide as they are painted green with the M-pesa logo in white. They play a critical role as they are the face of the service and they acquire new customers and enable them to transact by offering customer services.

TRANSACTION RANGE (KSHS)		TRANSACTION TYPE AND CUSTOMER CHARGES (KSHS)			
MIN	MAX	TRANSFER TO M-PESA USERS, POCHI LA BIAHARA AND BUSINESS TILL TO CUSTOMER	TRANSFER TO OTHER REGISTERED MOBILE MONEY USERS	TRANSFER TO UNREGISTERED USERS	WITHDRAWAL FROM M-PESA AGENT
1	49	Free	Free	N/A	N/A
50	100	Free	Free	N/A	10
101	500	6	6	45	27
501	1,000	12	12	49	28
1,001	1,500	22	22	59	28
1,501	2,500	32	32	74	28
2,501	3,500	51	51	112	50
3,501	5,000	55	55	135	67
5,001	7,500	75	75	166	84
7,501	10,000	87	87	205	112
10,001	15,000	97	97	265	162
15,001	20,000	102	102	288	180
20,001	35,000	105	105	309	191
35,001	50,000	105	105	N/A	270
50,001	150,000	105	105	N/A	300

MAXIMUM AMOUNT CUSTOMER CAN TRANSACT DAILY		MAXIMUM AMOUNT CUSTOMER CAN HOLD IN M-PESA	
300,000		300,000	

ATM WITHDRAWAL			OTHER TRANSACTIONS		KSHS	
TRANSACTION RANGE (KSHS)		CUSTOMER CHARGE (KSHS)				
MIN	MAX					
200	2,500	34	ALL DEPOSITS		FREE	
2,501	5,000	67	M-PESA REGISTRATION		FREE	
5,001	10,000	112	BUYING AIRTIME THROUGH M-PESA		FREE	
10,001	20,000	197	M-PESA BALANCE ENQUIRY		FREE	
			CHANGE M-PESA PIN		FREE	

• Download mySafaricom App and transact on M-PESA.
 • Dial *334# to access all M-PESA services

Figure 5. M-pesa charges (Okuro 2020)

Prior to March 2020, when the first cases of COVID-19 were reported in Kenya, the maximum limit per transaction was capped at KShs 70000 and the maximum daily limit was capped at KShs 300000. This was later reviewed to encourage use of digital methods of payments reducing contact between people and now the maximum amount per transaction increased to KShs 150000 and the maximum daily limit is KShs 300000 (Okuoro 2020).

2.3.2 M-pesa Success Factors

During M-pesa's introduction there wasn't clear policies on non-bank payment policies which are set by the Central Bank of Kenya (CBK) and there was pushback from banks who expressed concern that M-pesa was allowed to conduct financial services without the same regulatory burden (Okoth 2016). However, the regulators created policies which allowed M-pesa to operate as M-pesa filled a gap in the financial services market which the banks could not fill and by receiving the green light from CBK, people gained confidence in M-pesa. The regulatory institutions have enabled the successful adoption of M-pesa, and they continue to monitor M-pesa's operations and regulate ensuring safety of citizens' money.

As people were slowly warming up to the idea of mobile money, Safaricom was busy setting up a network by training M-pesa agents who would offer services to the growing customer base the number of agents has since grown to over 200,000 agents. The agents were to be the face of M-pesa and would offer customer services to the new customers. (Mas & Morawczynski 2009).

Mobile phone penetration also played a big role in M-pesa's success since it is a prerequisite to start using M-pesa. Currently, the Communications Authority places mobile penetration at 125.8 percent making it easy for people to adopt M-pesa and other services (Communications Authority of Kenya 2021). Figure 6 below shows mobile subscriptions and mobile penetration in Kenya.

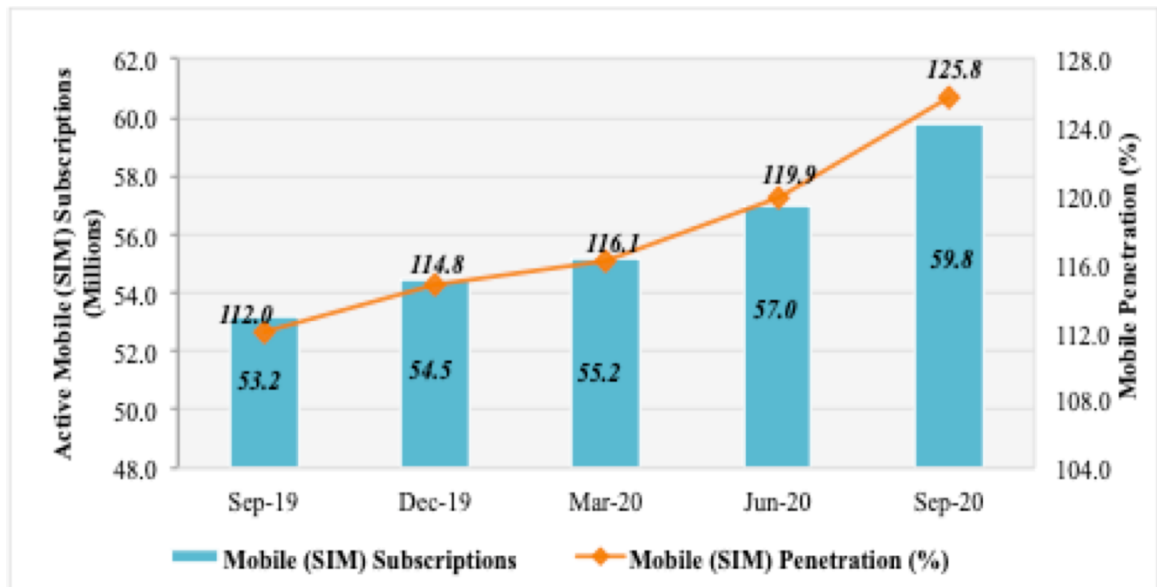


Figure 6. Mobile subscriptions and penetration (Communications Authority of Kenya 2021)

M-pesa has always had less entry requirements compared to banks which may require minimum deposits, high service costs and a lot of paperwork with the only requirement to use M-pesa being an identification document and registration (Mas & Radcliffe 2010). This made it more attractive to users countrywide. Kenya's demographics has also played a role on M-pesa's success with a lot of breadwinners working and living in the urban areas and the rest of their families living back in the rural areas (Mas & Radcliffe 2010).

M-pesa's innovation has also led to its success with the launch of other services like M-shwari which is a partnership between M-pesa and Commercial Bank of Africa (CBA) launched in 2012. M-shwari is a bank account offering a combination of savings and loans (Cook & McKay 2015).

2.3.3 M-pesa Challenges

Although M-pesa has been successful over the years, there has been challenges with implementation and use. One of the biggest challenges is M-pesa is vulnerable to people with intentions to commit crimes such as money laundering and terrorism financing. The current regulations require every deposit or withdrawal made at an M-pesa agent to be recorded in a book detailing the time, date, name and the identification number of the person making the transaction (Ashta 2017). However, this is not enough to curb these vulnerabilities since there are a lot of transactions taking place furthermore customers are not required to state the reason for sending, receiving or withdrawing money. The regulators

have however put limits on daily transaction amounts and amounts per transaction (CBK 2020).

Another challenge M-pesa faces is M-pesa agents who facilitate exchange of physical money and e-money, are prone to robbery and fraud. There has been reports of M-pesa agents being robbed or their shops being broken into as they usually have cash in hand (Wako 2020).

Setting up an M-pesa involves high upfront costs which include KShs 100,000 as float money, which is electronic money. Other than the float money, a business permit is required, a phone, a stall or small shop space including rent and other utilities. It costs an estimated at least KShs 250000 to set up a functioning M-pesa agent shop which is high as M-pesa agents receive transaction commissions so their income is directly proportional to the transactions they support (Eijkman, Kendall & Mas 2010). The upfront costs may discourage a lot of people since it takes a lot of time to start making profits.

M-pesa agents face inventory managements issues where they do not have enough e-float or cash available to facilitate deposits or withdrawals (Eijkman, Kendall & Mas 2009). The M-pesa service is less useful when customers are unable to make transactions due to the agent's lack of liquidity and can lead to deterioration of trust and reliability (IFC, 16).

2.3.4 M-pesa as a Business Tool

Among the services M-pesa offers to businesses 'Lipa na M-pesa' is the most used service by retailers it is means pay with M-pesa in Swahili (Mahoney 2017). It has two components which are Paybill and M-pesa Business Till 'Buy goods' they enable customer to business payments however, they can also be used to pay for utilities and pay salaries. Paybill is used by businesses to collect remote payments for goods and services rendered this may include e-commerce retailers, paying water and electricity bills among other utilities. The Business Till service is mostly used for retail purchases such as supermarkets, restaurants, gas stations, bars and pharmacies where the customers and retailers are in close proximity. The transactions are real time, charges are cheap and both parties involved in the transaction get confirmation messages of a transaction (Lipa Na M-pesa).

Smaller business owners such as motorcycle operators, food vendors and small retailers who would do not qualify for Paybill and Business Till numbers have the option to use 'Pochi la Biashara' which translated to English from Swahili means business wallet. Pochi la

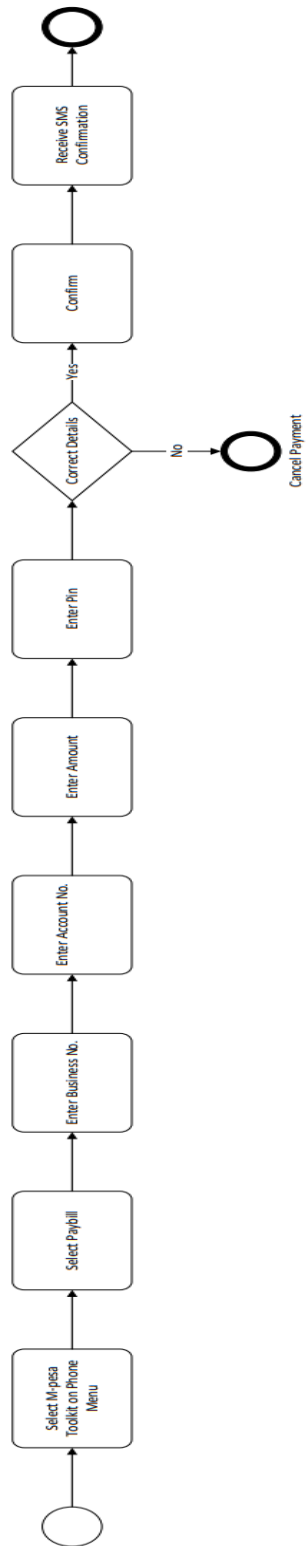
Biashara enables these small business owners to receive and separate business funds from personal funds on their M-pesa line (Business Daily 2020).

M-pesa also offers business loans to the retailers using the Lipa na M-pesa service under the Bloom Finance Service (Bloom finance) which enables the retailers access credit for sales expansion, stock financing or funds for business operations usually between KShs 5000 and KShs 150000. The amount loaned is dependent on the account's activity and the amount of payments received. The loans are short term with the payment period usually being either within 7 days or 30 days and the fee charged is 2 percent for the 7 days loan while the 30 days loan comes at a 7 percent charge. The funds are accessible immediately the loan is approved and the more one pays on time the loan limit increases (Bloom finance).

M-pesa has an overdraft service by the name Fuliza which allows account holders to complete M-pesa transactions when they have insufficient funds. The service was introduced in January 2019 and is popular among low income users who take loans of less than KShs 2000 for their daily needs and can only be used to pay for goods and services and one cannot withdraw the amount. The service is enabled by Safaricom's partnership with two local banks, KCB Group (Kenya Commercial Bank) and NCBA Group providing the short-term loans. The debt is recovered from M-pesa balances automatically and subscribers who don't pay their overdrafts within thirty days are barred from using their credit limit until they pay the outstanding amount (NCBA 2019).

The amount one can get depends on the value of one's transactions with people making a lot of high value transactions, getting more money availed to them. Fuliza loans are charged a one-off interest rate of 1.083% and a daily administrative fee on the outstanding balance as shown in the table above. However, Fuliza loans have increased over the past year after Kenya imposed a lock down due to the corona virus pandemic which led to layoffs and job cuts. It is estimated that Fuliza loans increased from KShs 81 billion to 176 billion in 2020, therefore Kenyans are borrowing KShs 967 million daily (Financial Services Monitor Worldwide 2019).

Figure 7 below shows an M-pesa bill payment process.



M-pesa Bill Payment
James Njoroge
2021

Figure 7. M-pesa Bill Payment Process

M-pesa also offers the SurePay service to businesses using Lipa na M-pesa which allows restricted use of funds on M-pesa. One can restrict use of funds to specified beneficiaries, ensure money can only be cashed out in specific areas and cash sent to beneficiaries will be used for intended purpose (M-pesa SurePay). This is a security measure which ensures safety of business funds especially where there is a number of people who have access to the account. Another useful tool is the M-pesa API which allows versatile integration capabilities that developers can take advantage of to create M-pesa journeys. Through the M-pesa API third party applications can easily plug into M-pesa and create automations like automated payment receipt processing, automated payment disbursements and automated payments reversal (M-pesa API).

M-pesa also allows transfer of money to and from banks reducing the risks associated with handling of cash. This is possible through partnerships with local banks allowing customers deposit and withdraw money without having to queue in a bank or an Automated Teller Machine (ATM). This service is easy to use, time saving and comes with the convenience to be able to access funds any time whether the bank is open or not. The service is also convenient for banks as they reduce the amount of resources needed to serve customers at the bank as customers can access services from home and they can spend their resources on product sales and customer acquisition (Musyoka 2020).

3 Research Methodology

This chapter introduces the research methodology used in this thesis an explanation of qualitative research and the interview process.

3.1 Qualitative research

The qualitative method was chosen as the most suitable way to conduct this research as it aims to increase the overall understanding of the quality, characteristics and meanings of the researched topic. Qualitative research is based on data expressed mostly in the form of words, descriptions, accounts, opinions and feelings (Walliman 2010).

Qualitative research is practised in many disciplines, so a range of data collection methods has been devised to cater for the varied requirements of the different subjects such as interviewing focus groups, participant, discourse and conversation analysis and analysis of texts and documents (Walliman 2010). For the purposes of this research an interview with an individual was conducted to gain insights and increase the overall understanding of the research topic which is to find out the role of M-pesa in enabling e-commerce in Kenya.

The participant in the interview was chosen as she has incorporated M-pesa products and services in her e-commerce business qualifying her as a suitable candidate for the interview. The interviewee in the case study was a Facebook mutual friend who was inviting people to like her new Facebook page where she was selling fashion items five years ago. Since then I took interest in how she was running her business, without a physical store, which at the time was new and innovative. Since then we have been in close contact and when she was laid off early last year, she opened an M-pesa agent outlet which also served as a pick-up point for orders made online. Again, she showed ingenuity making her business an area worth studying as she is constantly evolving and creating practical solutions which serves her customers.

3.2 Interview process

A series of semi-structured interviews were conducted with an online retail owner to gain insights of how the business uses M-pesa in its everyday operations. Semi-structured interviews employ a blend of closed and open-ended questions often accompanied by follow up questions (Schmidt 2004). Confidentiality and proper ethics were assured to the interviewee in this case especially with sensitive information about the business. The interviews were conducted via WhatsApp phone calls as this was the most suitable and available option for the interviewee. There was a total of four interview each lasting thirty to forty minutes. The first interview focused on the structure of the business. The other three interviews divulged into how the business interacts with the stakeholders that is customers and suppliers.

4 Analysis and Findings

This section presents the findings from the interview and presents the different M-pesa products and services the business has utilized over a period of six months, the perceived advantages gained from using M-pesa in an effort to determine how M-pesa is used in the running of an e-commerce business.

4.1 M-pesa utilization

In the period between July and December 2020 the business used M-pesa to transact the following

4.1.1 Payment collection

The business receives an average of four to six orders a week from either Facebook, recommendation from past customers or from regular customers who mostly call when they see a new product they would like to purchase. The number of orders increases to almost double the amount during the holiday months April, August and December which coincides with special holidays and there are more celebrations such as weddings and graduations. For the period between July and December 2020 there were 170 orders of which 32 were paid through cash and 138 other orders were paid through M-pesa.

Figure 8 below shows the percentage of payments received.

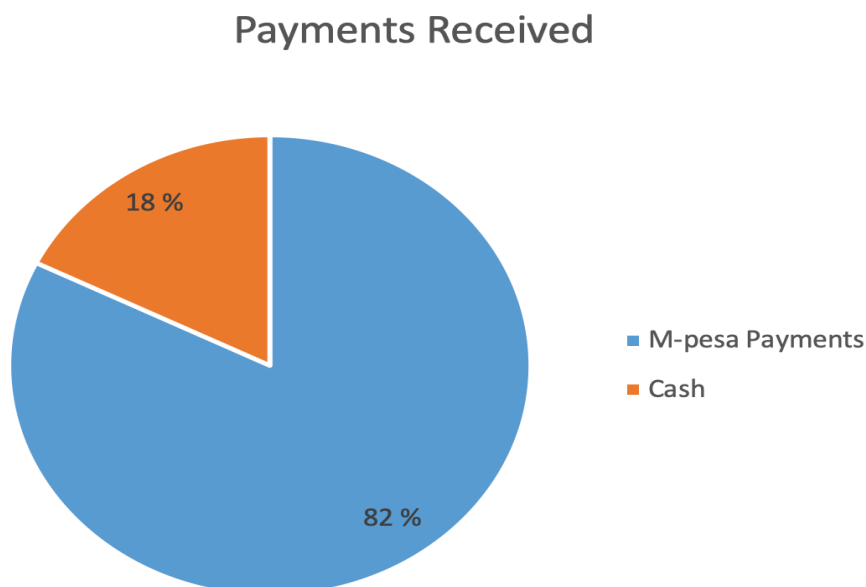


Figure 8. Percentage of payments received

M-pesa is a preferred mode of payment for customers and also the store requires payment as confirmation for the order before delivery especially for new clients. Regular clients are allowed to pay with cash however, majority still pay via M-pesa as handling cash especially in Nairobi comes with the risk of theft or losing money. M-pesa is a cheaper and more convenient way of collecting payments as the store does not incur any fees from payment collection and when a client pays through cash, depositing the cash to the M-pesa account is free.

4.1.2 Inventory procurement

The store procures its inventory from neighbouring Uganda and before the COVID-19 pandemic, the owner would go to Kampala once every two months. While there she would still use M-pesa to purchase her stock. Uganda has a different mobile operator, MTN while M-pesa in Kenya is under Safaricom. It is however possible to transfer money between the two operators. By using M-pesa she does not have to change currencies in order to make transfers as Kenya and Uganda have different currencies this is a huge advantage as a lot of time which would be used going to the bank is saved. Also while travelling it is wise not to travel with huge amounts of cash due to the security concerns.

4.1.3 Credit Services

Like any other business, there are times when this business needs credit mostly to fulfill large orders or to make up for shortfalls in the short term. M-pesa offers credit services where they provide weeklong and month-long loans at lower rates than banks. During the six-month period the business had applied for three thirty-day loans each amounting to KShs 50000. The loans were taken in anticipation of the busy holiday seasons in August and December. The loans were meant to buy more stock as there are usually more orders during the holiday season and the loans had been paid back a week in advance to maintain credit worthiness. The sooner one pays back, the more the loan limit increases and one avoids the penalties for loan repayment delays.

4.1.4 Bank Transfers

One of the most essential services that this business uses is transferring money to and from the bank account using M-pesa. M-pesa has working relationship and agreements with local banks to enable customers to withdraw and deposit money to and from bank ac-

counts via M-pesa. Each bank has different M-pesa Paybill numbers from which customers can access their account and make transactions. This service is very essential to this business as M-pesa has a maximum deposit limit of KShs 300000 so any money not being used is transferred to the bank without having to withdraw and then again deposit to the bank. Banks are known for their long queues which means more time spent at the bank, and for a person running a business and working a full-time job, time is essential and this service saves time which would be otherwise spent at the bank. This service is secure, easy to use and reduces the trips to the bank therefore saving a lot of time.

4.1.5 Expenses

Throughout the years of operation, the owner has been paying for the business' expenses via M-pesa in an effort to track expenses incurred. Through paying with M-pesa, she can go through the statements and calculate all the expenses incurred some of which include cost of making deliveries, transaction charges, marketing, rent of the M-pesa shop, salary, airtime and internet bills. During the past year when it was no longer possible to cross over the border to neighbouring Uganda to buy inventory for the business, M-pesa was very useful in paying for the inventory and paying for it to be delivered in Nairobi all this done while at home. Payment is instant whereas paying to a different country and bank would take two to three working days and a lot of paperwork. Through the M-pesa's bill manager the owner pays the recurring expenses which include the employee's salary and rent for the M-pesa shop.

4.2 M-pesa agent outlet

The M-pesa agent outlet was opened on April 2020 when Mary was laid off for three months due to the global pandemic, COVID-19, as her industry was affected heavily due to the ban of travel in and out of the country. The M-pesa agent outlet idea came about after the government in Kenya recommended the use of digital mode of payment to limit contact between people. Opening up an M-pesa agent outlet involved getting permits and meeting all the requirements set by Safaricom and most importantly picking the right location to get more customers as revenue is based on the commission from customer transactions.

The M-pesa agent outlet is not only an essential business to the owner but also to the community at large as it serves as a 'bank branch'. From the outlet M-pesa customers can

replace their phone sim cards in case they get lost, buy new sim cards, buy airtime, deposit and withdraw money with only a National Identification card as the only requirement. On average the shop serves about 30 to 50 customers daily with the main transactions being withdrawals and deposits. There is usually an increase in these transactions during the last week of the month as businesses pay salaries to their employees and regular customers withdraw money.

After a few weeks in operation she noted most people made transactions at the M-pesa shop during mid-morning and during the evenings. Other small business owners would usually make deposits and withdrawals during the mid-morning hours while individuals came to the shop during the evenings usually these were casual labour workers withdrawing their day's earnings to shop for essentials. Based on her observations she also put up some foodstuffs to increase her revenue and also hired a shop attendant since she had to back to work after a while. Figure 9 below shows pictures of the M-pesa agent outlet.



Figure 9. Pictures of M-pesa agent outlet. Courtesy to Mary.

M-pesa transactions are usually short and interaction with customers usually takes 5 to 10 minutes so the attendant has a lot of down time and with this knowledge an idea was born to make the M-pesa outlet a pick-up point for her e-commerce business. This was an alternative to delivering orders herself which is expensive so this would cut costs and increase productivity of the M-pesa attendant.

By making the M-pesa outlet a pick-up point also had positive impact on the business as some customers who did not trust paying for products before it was delivered, they could go to the shop and pick their order and pay while there. The M-pesa outlet also served as a return point for customers who either got the wrong product delivered or got the wrong size. From a business point of view, the decision to make the M-pesa outlet a pick-up point for orders boosted customers' confidence in the credibility of the business as they could be held accountable for anything that went wrong.

5 Discussion

The aim of this thesis was to study the role of M-pesa in enabling e-commerce in Kenya through a case study. M-pesa plays a big role in the running of the business featured in the case study which is a snapshot of the e-commerce industry in Kenya. This chapter concludes with the research summary and key findings also suggestions for further research.

5.1 Research summary and key findings

In a country where financial inclusion was a huge predicament years ago, seems that the country has shifted from lack financial access to advanced uses such as savings, credit services and in this case e-commerce. All these advanced uses can be traced back to the introduction of mobile money services that serves the bottom of the pyramid who wouldn't access formal financial services before.

From the case study it is clear that M-pesa is not only a mobile money transfer platform, but also an integral part of businesses through its various products and services such as savings, credit services, merchant payment collection and agent outlets who earn commission by facilitating deposits and withdrawals. Since its introduction, M-pesa understood its customer base and has since served them by providing services tailored to them. In the case of e-commerce, M-pesa has been instrumental in serving as a mode of payment for e-commerce. E-commerce is designed in a way that retailers and customers do not meet physically thus payments need to be done digitally and M-pesa has managed to be the top choice with its ease of use, accessibility and low-cost transaction fees attracting a huge customer base.

As seen in the case study an order by a customer in e-commerce is confirmed when the retailer gets a confirmation message from M-pesa that a payment had been made by the customer. This is integral for the online retailers who initiate the packing and the delivery process after payment confirmation and ensure smooth operations. Also, from the case study is the innovative use of the M-pesa agent outlet as a pick-up or delivery point for orders which encourages more people to shop online though this is a hybrid model combining e-commerce with the traditional brick and mortar model. This is a practical model based on catering for the customers who would be more inclined to participate in e-commerce when they could pay for their order on delivery and also solve Kenya's lack of infrastructure supporting e-commerce.

5.2 Suggestions for further research

Kenya has relatively good internet connectivity compared to other countries in the continent and as it becomes cheaper, one of the industries that will grow exponentially is e-commerce as more people will be exposed to the outside world. Future research should focus on the different ways to solve Kenya's logistical problem to provide reliable, low cost delivery services for e-commerce which is one of the inhibitors of e-commerce growth in the country. From the case study, there was a possible solution for Kenya's logistical problem by using M-pesa agent outlets as pick-up points for deliveries. There are over 250000 M-pesa agent outlets all over the country serving the last mile customers according to CA (Communications Authority of Kenya 2021). M-pesa agent shops are widespread throughout the country so Safaricom, which owns M-pesa, can leverage these outlets to provide a solution.

By having more M-pesa agent outlets act as pick up points for e-commerce, people would be encouraged to make more e-commerce transactions as customers would pay while picking up orders bridging the gap on lack of trust in e-commerce and these outlets would serve as return points in case of dissatisfaction on products delivered. By acting as pick-up points, M-pesa agents would also earn commissions for every pick-up adding to their revenue. Some of the e-commerce platforms in Kenya like Jumia and Copia are trying to set up their own agent network to solve the logistical obstacle but there is already one which is under-utilised, and it would be cheaper to use an existing agent network.

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Appendix

Interview Questions

Interviewer: What type of business do you conduct?

Interviewee: *I'm an online retailer selling fashion items mostly on Facebook and Jumia.*

Interviewer: How long have you been in business?

Interviewee: *I started selling shoes and dresses to my close family and friends in 2014 after a trip to Uganda where I discovered fashion items were a lot cheaper than in Nairobi, so I decided to make extra money selling shoes and dresses.*

Interviewer: Why did you choose to venture in the e-commerce sector opposed to the traditional physical store?

Interviewee: *I wasn't intentional about getting into e-commerce, selling through Facebook was the only option for me at the time. I was working a full-time job so I couldn't open a shop and stay there all day as a shopkeeper and hiring one would be expensive besides I did not have much capital to open a physical store.*

Interviewer: Did you face any challenges at the beginning of your online retail business and how did you overcome them?

Interviewee: *Several actually, Firstly I had to attract customers, so I opened a Facebook page where I invited friends and mutual friends to like the page then post pictures on the page. Secondly since I was also working a full time job, it was hard to find time to make deliveries so I had to schedule deliveries in the weekends when I was not working and for urgent deliveries I would pack the orders with me to the office then hire a boda boda rider to deliver. Thirdly, I had to weed out people who were not serious customers by requiring payment as confirmation for a delivery. Lastly I had to limit orders to the Nairobi area since it was expensive to deliver outside the area using courier services.*

Interviewer: How do you collect payment from customers?

Interviewee: *I require an M-pesa payment before I can confirm any delivery however, regular customers can pay with cash as we have established trust over the years*

Interviewer: Why did you settle on these?

Interviewee: *I use M-pesa because it is the most accessible option country wide. The transaction charges are cheaper and also setting up is free compared to a Point of Sale System which requires a huge investment and none of my customers has ever asked to pay any other way.*

Interviewer: How often do you go for inventory and how do you pay for it?

Interviewee: *Before the COVID-19 pandemic I would go Uganda every other month to buy stock. Earlier on I would take my bank card with me and withdraw money while I was there then change the currency since Uganda uses a different currency. I later decided to switch to M-pesa to pay as the supplier there was accepting M-pesa payments and also avert concerns related with handling cash.*

Interviewer: How has it been after the pandemic?

Interviewee: *It has been way much easier for me as I do not have to go all the way to Kampala by bus and I have been able to save on travel costs. Since the borders were*

shut for travel, the supplier has been sending me pictures of the new stock then I choose what is to be delivered by bus to Nairobi as movement of goods is still permitted. Payment of the inventory and transport costs is done via M-pesa.

Interviewer: Apart for paying for expenses and collecting payments how else do you use M-pesa?

Interviewee: *I conduct most of my financial transactions through M-pesa like transferring money to and from the business' bank account, applying for small loans and recently opened an M-pesa agent shop to further the business.*

Interviewer: Why is it the most suitable choice for making all these transactions?

Interviewee: *With just my phone I can have access to my bank account, pay for bills, receive payments from customers and there is always an M-pesa shop nearby incase I need physical cash.*

Interviewer: What made you open an M-pesa shop?

Interviewee: *I had been researching for a while about the M-pesa agent shops seeing how much I use M-pesa after being laid off for two months early 2020 it accelerated the process as I was at home with nothing to do.*

Interviewer: How has the M-pesa agent shop been?

Interviewee: *After two months at the shop, the commissions from transactions were not as much as I had hoped since most customers were transacting small amounts of money. After I got to know the demographic coming to the shop, average time per transaction and at what times of the day are the busiest, I added some foodstuffs at the shop to increase revenue the shop is generating. Also, at the time I couldn't make regular deliveries for my online business so I asked customers to come pick up their orders at the shop with pay at pick-up as an incentive.*

Interviewer: How has the new strategy worked for your business?

Interviewee: *It has performed fairly well since most of my customers are live around and I do not have to deliver to everyone at a time therefore cutting costs. However, there is still reluctance from some customers who live further and would like their orders delivered.*

