

**DIGITAL HEALTH MICRO INSURANCE AND ACCESS TO HEALTH  
CARE: THE CASE OF EMBU COUNTY.**

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## DECLARATION OF ORIGINALITY FORM

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## **DEDICATION**

*To*

*My daughter Adia,*

*This is to always remind you that the sky is the limit, follow your dreams, believe in yourself and never give up.*

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First, I would like to Thank God for His Grace has been sufficient throughout this journey.

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## LIST OF ACRONYMS

AFI	Alliance for Financial Inclusion
COVID-19	Corona Virus Disease of 2019
DDF	Data Driven Finance
KHFS	Kenya Health Financing Strategy
KII	Key Informant Interview
KNBS	Kenya National Bureau of Statistics
MOH	Ministry of Health
NHIF	National Hospital Insurance Fund
OOP	Out-of-Pocket
UHC	Universal Health Coverage
USSD	Unstructured Supplementary Service Data
WHO	World Health Organization

## **ABSTRACT**

Good health is essential in ensuring the well-being of people yet, financial access to health care remains a challenge in developing countries. Members of poor households, informal sector workers and rural dwellers feel this strain more due to low insurance coverage. This has caused many individuals to forego seeking treatment, delay seeking treatment or end up becoming impoverished due to high health expenses. Microinsurance has proven to offer financial protection to its beneficiaries and has contributed to the reduction of incidences of OOP expenses. Over the years, the mode of delivery of microinsurance to low-income earners has evolved and now insurers are moving towards digitizing processes by leveraging on mobile phone technology and digital financial platforms. This has enhanced affordability of microinsurance products, made processes more efficient and proven to be convenient. This study sought to analyse how digital health microinsurance is facilitating access to health care using the case of Hospital Cash in Embu County. To achieve this, the study sought to: identify the characteristics of uptakers of Hospital Cash in Embu County; to determine how leveraging on digital technology has enabled Hospital Cash to promote uptake of health microinsurance in Embu County and to establish how Hospital Cash facilitates payment for healthcare services for uptakers in Embu County. The study employed the financial capability theory to understand the importance of the availability of financial services and innovations to choose from and financial knowledge in making improved financial decisions such as taking up health microinsurance, as a form of financial protection against health care expenses. The PACE client value assessment tool was also used to assess the increased individual value clients get from the digitization of microinsurance products which promotes enrollment. Primary data for the study was collected via telephone interviews using a semi-structured interview guide that enabled capturing of both qualitative and quantitative data. Data was collected from 42 individuals who have received a processed claim from the organization using a census approach and from 9 Key Informants who were purposively sampled based on their knowledge and experience in health microinsurance bringing the total number of respondents to 51. The study established that the product; has penetrated a large geographical area and has been able to majorly cover and facilitate access to healthcare to low income earning individuals majority who are women. Financial literacy, awareness and training on the product have significantly contributed to enrollment and digitization has increased efficiency and enabled the organization to avail the product at a rate that is affordable to low income earners. The payout received has enabled the beneficiaries to reduce incidences of OOP expenses and has offered a faster and more convenient mode of settling health expenses via mobile money. Recommendations are made on different areas the product can be improved on based on feedback from the respondents and generally on the viability of adopting digital health financing as a mode of promoting UHC particularly for low income earners.

## CHAPTER ONE: INTRODUCTION

### 1.1 Background to the Study

Health is a fundamental aspect of achieving the overall well-being of people. A healthy population is a catalyst to the achievement of development goals. Adequate access to healthcare has been an issue in many developing countries, particularly where people struggle to obtain the required quality health services due to financial constraints (Zollmann & Ravishankar, 2016). Households in developing countries face different shocks that can affect their finances adversely, such as health shocks due to illnesses. Guaranteeing financial protection in healthcare expenses has proven to be a challenge, especially in settings with constrained resources where prepayment mechanisms are not well developed (Boerma et al., 2014).

Financial strains caused by health expenses, particularly Out-Of-Pocket (OOP) expenditures are a perennial problem in developing countries, often where health systems provided by the state are inadequate, leading to high OOP expenditure (Boerma et al., 2014). These financial strains are felt more by the poor households, those in the informal sector, and the rural dwellers due to lack of financial protection and innovative health financing schemes that meet these groups' needs. Many of them, therefore, opt to forego treatment or become impoverished from incurring high health expenses (Zollmann & Ravishankar, 2016).

A study on the impoverishing effects of OOP expenditure in Kenya established that 7.1 percent of households suffered catastrophic health payments in 2018 and that the health system reforms implemented between 2013 and 2018 had not succeeded in lowering and preventing OOP expenditure effects (Salari et al., 2018). Roughly, 30 percent of urban dwellers in Kenya are insured, while coverage in the rural areas stands at about 14 percent (KNBS, 2018). This percentage reflects the low levels of insurance coverage, particularly among those in the rural areas which leaves them vulnerable to the impoverishing effects of OOP expenditure.

Considering the negative effects that health expenses have on the population, it has been recognized that equitable health systems are key in attaining sustainable development goals related to health. There has been an emphasis by the World Health Organization (WHO) on the importance

of protecting households from health expenses that often cause them to forego seeking healthcare or push them into poverty by advocating for financing systems that will protect people from the impoverishing effects of health expenses. There is also the recognition that reliable health financing systems are essential in facilitating universal healthcare access (WHO, 2010).

The need of designing systems that will ensure households are protected from the risk of impoverishment as a result of OOP health expenses and guarantee low-income citizens access to health services when they need them has increased (Rono, 2017). Kenya's main strategy towards attaining Universal Health Coverage (UHC), is by expanding health insurance coverage through the National Hospital Insurance Fund (NHIF) however the scheme mostly covers those in formal employment and the plan is to cover more people in the informal sector (KHFS, 2016). Insurance coverage in the country remains low and private insurers through voluntary health insurance schemes, account for a significant percentage of total health spending in the country. This shows the critical role that private insurers play in the financing of healthcare and in supplementing the services and benefits covered by NHIF (MOH, 2018).

Digital financial platforms have enabled greater financial inclusion in Sub-Saharan Africa and these platforms have diversified from only offering basic money transfer and payment options to credit, savings and insurance (AFI, 2018). These platforms have accelerated the growth and reach of health micro insurance which is an alternative mode of financing healthcare for individuals and families in developing countries who cannot afford formal health insurance schemes, through affordable premiums (Ahmed et al., 2005).

The relevance of digital financial platforms in promoting access to healthcare in Kenya has been enhanced by the availability of mobile phones in the country and the population quickly embracing mobile money as a mode of payment. Mobile money technology has expanded access to healthcare in the country through remittance of insurance premiums, savings for healthcare needs, and payment for healthcare (Josea, 2016)

Kenya has seen an increase in the number of digital platforms targeting the health sector. A report on health financing systems in Kenya, shows that collectively five of the main digital platforms in health in Kenya cover roughly 1.5 million people, a majority being from the informal sector. These platforms include M-TIBA, MicroEnsure with Airtel, Afya Poa, Mamakiba, and M-Kadi maternity and family health that have grown as an alternative mode of financing healthcare for the poor in the country, making significant contributions in enabling access to health care (KHFS, 2018).

Research findings show that OOP expenses remain a major challenge for the poor in developing countries as they lack proper financial protection against health expenses that often prevents them from accessing healthcare or pushes them into poverty (Habib et al., 2016; Salari et al., 2018; Rono, 2017). Digital financial platforms offer a low cost and more convenient channel of ensuring that insurance services reach those in the most remote areas, and are financially protected against high health expenses (Churchill, 2012).

With the increase in financial inclusion in the country and growing adoption of digital financial innovations within Kenya's health sector, it is important to assess the contribution that these products have in promoting healthcare access, for the low-income groups. Access to healthcare in this paper will be conceptualized as the ability of patients to pay for health care that is: treatment, admission and medication costs on time in order to achieve better health outcomes, without facing financial shocks.

## **1.2 About Hospital Cash**

This study, sought to analyse how digital health microinsurance is facilitating access to healthcare. This was done by conducting a research on Hospital Cash, a digital health microinsurance product by DataDrivenFinance Kenya Limited (DDFinance), which provides end-to-end affordable insurance on USSD mobile phones for low-income earners. DDFinance is a Norwegian insurance automation company based in Kenya and the organization offers individual insurance to end users through groups known as collectives where premiums and claims are made via mobile phones through the M-pesa platform. The collectives comprise of groups with 10-30 members who have a common bond and has been in operation for at least one year. These could be either saving groups, community groups, welfare groups or women groups that have been in existence for at

least one year. DDFinance is able to identify such groups by partnering with other organizations such as Care International and Catholic Relief Services that work with similar groups in different areas, training them on table banking and financial management.

Hospital cash caters for inpatient costs for the insured up to 15 days annually. The premiums are paid once a year and they range between 133 Ksh-1265 Ksh. The product has been rolled out within different informal settlements in Nairobi, and in rural areas in Embu, Kisumu, Mombasa, Homabay, Vihiga, Bungoma, West Pokot and Migori Counties. This particular study focused on Embu County as the area of study. Embu County was the first rural area outside of Nairobi where the product was introduced hence the area stood to provide more data. The insured in this region have also completed a full cycle-meaning they have renewed the product since their first registration. Embu County is majorly a rural county, and literature shows that insurance coverage is lower in the rural areas (Salari et al., 2018; KNBS 2018).

### **1.3 Problem Statement.**

Financial access to healthcare remains a challenge in many developing countries. Millions of people worldwide are limited from accessing health services because they have to pay for these services at the point of delivery and those who end up using the services face financial hardships due to OOP expenses (WHO, 2010). Many people incur high OOP expenditure levels, which is an inequitable and inefficient mode of financing healthcare services. As a result, this has negatively affected the utilization of healthcare services in Kenya (Dutta et al., 2018). High health care cost was cited by 19.4 percent of households as the main reason for not accessing healthcare services (MOH, 2018). This percentage is higher among poor households and has left them vulnerable to adverse effects of health expenses.

The burden of OOP expenditure is higher among the poorest and those in the rural areas such as Embu county who spend between 10- 15 percent of their budget on average for healthcare. This suggests the need for more intensive efforts aimed at protecting Kenyans against financial strains that result from health expenses (Salari et al., 2018).



Insurance coverage in the rural areas is lower than the urban areas (KNBS, 2018). This is explained to be as a result of socioeconomic status as higher poverty levels tend to be recorded in the rural areas (Kazungu & Barasa, 2017). In a study on the utilization of NHIF in Embu County, it was established that catastrophic health expenditure stood at 9 per cent, a figure higher than national average of 6.2 per cent. Findings from the study further revealed that out of 306 sampled respondents, less than half of them were enrolled in NHIF and majority of those who were not enrolled reported high premiums as a barrier to utilization of the cover (Ombiro & Otieno, 2019). Microinsurance has proven to offer financial protection to its beneficiaries through reducing occurrence of OOP expenses in a number of cases (Habib et al., 2016). There has been advancements over the years in the way microinsurance is delivered to low-income earners. Digital financial platforms via mobile phones have enhanced the penetration of microinsurance products and increased their reach. Digital technology, has allowed the use of mobile phones to enroll clients, and enabled payment of premiums and claims conveniently (Josea, 2016).

Various literature was reviewed and data obtained from 13 insurance schemes that leverage on mobile phone technology (Prashad et al., 2013). The study established that by leveraging on digital technology, processes have been made more efficient across the insurance value chain, through cost reduction, lower turnaround times, and wider geographical coverage. The study however concludes that insurers need to design their products and processes carefully in order to tap into the opportunity offered by digital technology while ensuring they enhance scale and efficiency in meeting clients' needs.

Literature highlights the need to analyse the value clients' gain from microinsurance products in order to gain insight on the relevance of microinsurance products in meeting the immediate needs of the low-income earners (Matul & Kelly, 2012). This study sought to establish how digital health microinsurance facilitates access to healthcare. This was achieved by analyzing Hospital Cash, a digital health microinsurance product by DDFinance, and how it is facilitating access to healthcare in Embu County.

## **1.4 Research Questions**

The research questions that guided the study were:

1. What are the characteristics of uptakers of Hospital Cash in Embu County?
2. In what way has Hospital Cash promoted health microinsurance uptake in Embu County?
3. How does Hospital Cash facilitate payment for health care services for uptakers in Embu County?

## **1.5 Objectives**

The study's main objective was to analyse how hospital cash is facilitating access to healthcare for uptakers in Embu County.

The specific objectives included:

1. To identify the characteristics of uptakers of Hospital Cash in Embu County.
2. To determine whether leveraging on digital technology has enabled Hospital Cash to promote uptake of health microinsurance in Embu County.
3. To establish how hospital cash facilitates payment for healthcare services for uptakers in Embu County.

## **1.6 Justification of the Study**

Many low-income individuals are unable to access healthcare services due to financial barriers. The need therefore arises for coming up with solutions to financially protect the poor and increase their accessibility to healthcare. Digital health financing platforms have grown in number over the years in the country as an alternative mode to financing healthcare hence the need to analyse the value clients obtain from these platforms. This study has collected data on how Hospital Cash is facilitating access to healthcare and how this can be improved and even replicated in other areas.

## **1.7 Significance of the study**

Findings from this study can be used to inform formulation of policies and implementation of projects aimed towards promoting access to healthcare in the country through digital technology. The findings provide insight on the potential of digital health microinsurance in addressing the existing challenge of access to health care in the country by protecting the poor from OOP expenditure. This information can be valuable to the public health sector and private sector

investors who intend on leveraging on digital technology to further promote access to health care in the country.

### **1.8 Scope and Limitations of the Study**

The study focused on analyzing the contribution of digital health microinsurance in facilitating access to healthcare by collecting data on Hospital Cash in Embu County. The scope of the study was limited to a specific digital health microinsurance product and to feedback from only those who have received processed claims in Embu County.

### **1.9 Operational Definition of Terms**

The study adopted the following operational definitions:

**Access to healthcare** – Access often describes factors that influence one’s initial contact in utilizing services (Anderson & Newman, 2005). Access to health care is defined as utilizing health services on time to achieve the best possible health outcome (Margolis et al., 1995). In this study, access to health care has been conceptualized as patients having the ability to pay for care that is: treatment, admission or medication costs on time in order to achieve better health outcomes without facing financial shocks. Ability to pay is enabled by ones income, the assets they own, social capital and health insurance which is the focus of the study. (Levesque et al., 2013)

**Digital health microinsurance** –This is insurance against medical expenses delivered to low-income individuals and households through digital financial platforms that leverage on mobile phone technology. (Braniff & Riley, 2017)

**Financial Inclusion**- This involves availing financial services to all segments of the population, especially those historically excluded from the formal financial sector (Horn et al., 2020).

**Health microinsurance**- It is insurance that protects low-income people against the risk of incurring medical expenses in exchange for premium payments (Churchill, 2006)

**Out-Of-Pocket (OOP) expenses**- These are direct payments of cash incurred by individuals or households when seeking healthcare services. These payments include costs for consultation and treatment, admission, and medication, which are often not reimbursed (Salari et al., 2018).

**Universal Health Coverage (UHC)** – This includes access to quality essential healthcare services and medicine while protecting people from financial risks caused by adverse health situations. (WHO, 2010)

## **CHAPTER TWO: LITERATURE REVIEW**

### **2.1 Introduction**

Financial access to health care is a challenge especially for the rural poor who end up incurring OOP expenses or foregoing treatment. Health microinsurance covers the low-income persons against the shocks of high health expenses and digital platforms avail microinsurance to a wider segment of the intended population at a more affordable rate.

This review will focus on the various literature written regarding financial inclusion, health microinsurance and digital innovations in promoting access to healthcare. This will include a theoretical review of the subject under study and the empirical review on studies done by scholars in the same area and the findings of their studies.

### **2.2 Theoretical Literature**

#### **2.2.1 Capability Approach**

The capability approach developed by Amartya Sen (1993) was intended to give a broader evaluation of people's well-being proposing the well-being of people to be evaluated based on what they can be and do in life. It entails functioning and capabilities at the individual level. Capabilities are the doings and beings that people can achieve if they so choose. Functioning focuses on what people can do such as make wise financial decisions and what they are for example whether they are financially literate (Cera et al. , 2020). Someone's capability to achieve a certain doing depends on conversion of factors which can be personal, social or environmental (Sen, 1993).

Financial inclusion is a key component of inclusive development. It focuses on availing financial services to the wider population, especially those historically excluded from the formal financial sector. Through financial inclusion, members of a society can access different financial services, including payment, credit, savings, insurance and pension services, and financial education aimed at improving their well-being (Horn et al., 2020).

Financial capability is defined as the availability of financial services among which people can choose and the different ways they can use these services to meet their valued life goals (Storchi & Johnson, 2016). The concept of financial capability advocates that people who are financially capable are able to improve their well-being financially by making responsible financial decisions and actions based on the financial opportunities availed to them (Accion, 2013). Such financial decisions may include planning ahead in order to minimize the impact of an unexpected major expense or choosing financial products wisely such as taking an insurance cover in order to be protected from health shocks (Atkinson & Kempson, 2008).

Low-income households need financial products that are not costly, can be accessed easily and are trustworthy in order to improve their uptake and consumption behavior. Particular demographics including ones age, gender and education influence the likelihood of them embracing financial innovations as these factors influence the suitability of the product to the user (Barboni , 2015 ). Research on health and financial inclusion have incorporated the capability theory through improved financial control, better management of economic resources and improved health outcomes (Allmark & Machaczek, 2015). The approach analyzes financial capability which tends to have an implication on seeking health care. When people have financial capability then they are able to manage their finances better and handle health risks and shocks (Robeyns, 2005)

Different forms of financial inclusion such as owning a bank account and having a health insurance cover are essential in providing financial protection to individuals and communities, which improve people's general wellbeing (Gyasi et al., 2018). Increasing the participation of disadvantaged groups in the financial sector may improve their wellbeing health wise (Aguila et al., 2016).

The perspective of financial inclusion from the capability approach highlights that despite the freedom of people to choose financial services that best meet their needs, it recognizes that structural barriers may prevent people from accessing these services, such as geographical distance, cultural and gender norms (Storchi & Johnson, 2016). The other important highlight is that people may opt not to utilize the services even when they are readily available.

The Capability Approach highlights that the heterogeneity of humans and conversion factors that can either be personal, social and geographical, influence how people convert assets and resources available to them into valued functionings. Therefore, the approach recognizes that capability is specific to each individual based on the available financial services and existing social structures, as well as their knowledge and perceived value of the financial and economic options available (Storchi & Johnson, 2016).

Using the financial capability approach, people have the opportunity of choosing to utilize a financial services such as digital health microinsurance in order to achieve a desired outcome which is better health outcomes by being able to access health care services. It is however evident that despite the availability of digital financial platforms that may conveniently offer health financing solutions, there are other factors that determine the usage and uptake of these products among the target population. These include demographic factors and the individual's knowledge, and perceived importance of the service.

Development cannot be achieved by simply enabling access to financial services and innovations, but rather on how those financial innovations are designed and delivered to offer solutions to social problems. Low levels of financial literacy and awareness have a negative implication on the adoption of financial innovations. A greater understanding of the benefits of financial services lead to higher adoption and demand for these services (Beck & De la Torre, 2006).

Financial capability can be enhanced through financial training programmes in order to equip people with the knowledge, skills and understanding to better manage their personal finances. This for instance can be done through community learning (Mundy, 2011), like the case of the collectives that DDFinance works with. These groups have prior training on financial management including savings and credit hence making it more viable to first introduce to them insurance coverage as a way of financially managing one's resources by planning ahead in order to be protected from financial health shocks.

Financial capability comprises of knowledge and access to financial services. Financial knowledge tends to affect financial performance and behaviors and it is evident that those with higher financial knowledge depict better financial behavior (Nguyen & Rozsa, 2019).

### **2.2.2 PACE Client Value Assessment Tool**

The PACE client value assessment tool is a framework that can be used to explain how digitization of microinsurance increases the value that insurers receive from microinsurance products hence promoting more enrollment. This tool was developed by the International Labor Organization's Microinsurance Innovation Facility, to enable analysis of the value clients receive from microinsurance schemes compared to alternatives providing protection for similar risks. The tool evaluates microinsurance programs from a client's perspective by looking at four key areas which are: product, access, cost and experience with the aim of improving value (Matul & Kelly, 2012). In the context of PACE, client value is centered on improving risk management practices that will lead to improved welfare of the clients. Leveraging on mobile phone technology, through digital financial platforms, provides an avenue of improving risk management for microinsurance providers and creating more value for clients as compared to the traditional mode of delivering microinsurance.

Digitization enables customization and designing of microinsurance products for different markets as well as extension of benefits to a wider population. In terms of access, mobile technology increases efficiency in the enrollment process and payment of claims making it convenient for clients to register for the product at the comfort of their homes. Costs on the other hand, are reduced through mobile technology and clients are able to get more value for their money since insurers are able to minimize on operational costs such as administration and distribution costs by leveraging on technology, which translates into lower premiums and more affordable products. Finally, clients are able to have a better experience through a faster and less complicated registration and claims processing process and, better communication and customer care thus ensuring quality service delivery (Prashad et al., 2013).

The main assumption behind the PACE tool is that clients can obtain more value from microinsurance products based on their appropriateness, simplicity, accessibility, affordability and responsiveness (Matul & Kelly, 2012). It is however important for clients to be educated on the benefits of a product in order for them to benefit since it is possible for a product to meet the above four dimensions but receive low uptake levels due to a lack of perceived value or benefit by members of the target population (Prashad et al. , 2013).

## **2.3 Empirical Literature**

### **2.3.1 From health microinsurance to digital health microinsurance.**

A major question regarding access to health services in developing countries has been on the methods of financing health care and how affordable they are to the poor. Financial access, often associated with affordability, is now considered an important determinant of healthcare access and is directly associated with reducing poverty. (Peters et al., 2007)

There is an increased focus on addressing the financial barriers that deter people from seeking treatment and reducing healthcare expenses' economic consequences. Health microinsurance, is coverage targeting low-income people to protect them against risks associated with diseases and ill health in exchange for premium payments (Churchill, 2006). It therefore acts as a safety net to cushion them against high health expenses and protect them from falling into poverty.

Those who take up health microinsurance experience better financial protection from financial shocks caused by health expenses and can access healthcare easily compared to those who do not. The extent of financial protection varies; however what is clear is that these microinsurance products help reduce individual and household OOP expenses (Wagstaff, 2007). The emergence and growth of health microinsurance programs and products have contributed to the poor receiving adequate access to health care, minimizing OOP expenditure, and promoting positive health-seeking behavior (Churchill, 2012).

A systematic review on the role of health microinsurance in providing financial risk protection in developing countries, established that health microinsurance offered financial protection to its beneficiaries by lowering health expenses, borrowing by households and poverty in majority of



the cases. Increase in assets, household savings, and consumption patterns were also identified. (Habib et al., 2016)

A study on the impoverishing effects of OOP healthcare payments in Kenya analysed the incidences and the severity of health expenditure effects (Salari et al, 2018). Questions included in the survey factored in utilization of inpatient and outpatient care, health insurance coverage and household expenditure. The study used a logistic regression analysis to assess the characteristics of households with a higher probability of experiencing impoverishing health expenses. It was established that poor households in the rural areas were more prone to incidences of catastrophic payments as a result of outpatient services. The study concludes that OOP expenditures are an inequitable source of healthcare financing, creating the need for additional investments that will ensure a progressive healthcare financing system such as health insurance coverage.

Research was conducted on the effects of OOP payments for healthcare on household welfare in rural and urban areas of Kenya. The objectives of the study were to establish the incidences of OOP payments among different economic groups, the effects OOP has had on households and how these households are coping with the high health expenditures. Results from the study established that the poorest households in the rural areas had higher incidences of high health expenses in comparison to those in the urban areas. The study further showed that some of the factors that determine occurrence of OOP expenditure were household size, age of household members, income, chronic illness and status of insurance coverage (Rono, 2017).

Delivery of microinsurance to the target population has proved to be complex due to the various challenges encountered such as high costs, inadequate infrastructure, lack of client awareness and demand and pre-existing social structures (Prashad et al., 2013). The microinsurance programs also vary in design, distribution and issuance of benefits since they serve different markets with different needs, in different contexts. (Churchill, 2012). This has been addressed over the past decade through digital innovations that have been supported by increased coverage of financial services among the wider population.

Financial services offer various opportunities that play a role in enabling access to healthcare. For instance, savings platforms can enable people to set aside funds and plan for future health expenses, access to credit avails finances to people when need be which can ensure they get the healthcare they need and digital microinsurance can help cushion against health shocks (Braniff & Riley, 2017). In the case of insurance activity, financial inclusion has centered on enabling those with lower incomes in the society to gain access to products that enable them to improve their well-being by protecting their health, life and assets, through the savings and loss compensation which are an integral part of insurance products (Horn et al., 2020). Digital platforms that automate insurance activities, including brokerage, claims processing, and partnerships enable providers to expand their reach and develop innovative ways to address the needs of low-income customers (AFI, 2018).

Microinsurance providers are taking significant steps towards embracing digital finance, by digitizing existing products and services or coming up with new innovations either through mobile devices or partnering with digital financial service providers (AFI, 2018). Digitization can facilitate a smooth process flow along the financial service life cycle and improve efficiency. Such technological advancements in microinsurance achieve significant reduction in transaction and management costs, which reduces the amount that would need to be allocated from the premiums to cover administration and distribution costs. This characteristic makes digitization in microinsurance a more viable approach in serving the population for which it is intended (Horn et al. 2020).

The use of technology in the delivery of microinsurance has proved to be efficient, better in management and has increased quality of care (Churchill, 2012). These digital platforms have enhanced affordability, facilitated reaching more clients, particularly those in remote areas and made collection and payment of premiums more efficient (Churchill, 2012). Cost for marketing, collecting contributions and disbursing payments are considerably reduced by mobile platforms hence increasing the reach of various products including microinsurance (Josea, 2016).

Digitizing health microinsurance is therefore a key strategy in promoting access to healthcare by building on what is already working. It enables convenient and affordable access to insurance programs which goes directly to serve the needs of the low-income target group.

### **2.3.2 Digital Health Microinsurance in Kenya**

A report on advancing access to healthcare set out to investigate how mobile money increases access to healthcare for low income people (Josea, 2016). The report focused on four ways that mobile money can potentially increase access to health care that is through insurance products, savings via mobile money, and payment for healthcare using health voucher systems. Different case studies of organizations leveraging on mobile money to advance access to health care were featured in the report. The featured case studies included Changamka MicroHealth Limited, PharmAccess, Jacaranda Health, Changamka MicroInsurance Limited and MicroEnsure.

The report details the business models of these organizations and how they leverage mobile money to promote access to healthcare. It was highlighted that some of the challenges that limit these innovations from reaching their full potential are low levels of knowledge and literacy on insurance, critical for ensuring utilization of the mobile money-based products among the target populations and, socio-cultural beliefs that hinder usage of these products. Recommendations are made in the report on how mobile money can be utilized to further expand access to healthcare more especially through forging strategic partnerships and enhancing policy dialogues between the government and other stakeholders.

77.3 per cent of the rural population in Kenya are financially included and, one of the channels that has gained dominance in paying insurance premiums is through mobile money especially in rural areas (FinAccess, 2019). The accessibility of mobile phones has driven the increase in relevance of mobile money in expanding access to healthcare in Kenya. Digital financial platforms in Kenya have enabled more penetration of various health insurance services among the informal sector allowing for ease in enrollment, payment of premiums and reimbursements. These platforms also make savings for health expenses easier and lower transaction costs (Josea, 2016).

The inability to afford insurance was however cited by Kenyans as the main reason as to they lack insurance cover in 2019. These findings are promising for the growth of digital health microinsurance and create an enabling environment for such products to contribute to increase in access to healthcare among the low-income groups.

Evidence shows how insurers are leveraging on mobile phone technology and forming partnerships with mobile network providers to penetrate the market and increase efficiency (Prashad et al., 2013). The paper was based on 13 selected schemes that are using mobile phones to increase efficiency and enhance client experience through better management of data and good communication. One of the schemes leverages on a mobile phone application for its health insurance scheme, for client enrollment and creation of an auditable trail for reconciling premium payments. The enrolment for the scheme takes 4 days with the implementation of the digital process instead of the 15 days it took before.

Through the use of applications on mobile phones, majority of the insurance schemes were able to digitize data collection which replaced manual paper work on enrollment and processing of claims thereby reducing turnaround time and costs. Partnering with mobile network providers also enabled the insurers to access a wider client base and increase awareness on insurance in markets with low insurance penetration.

### **2.3.3 Access to Health Care**

In a study that assessed access to primary healthcare services in urban slums in Nairobi, structured interviewer-administered questionnaires were used to collect primary data from 300 households in Viwandani slums via random selection and secondary data obtained on the socio-economic status of the selected households (Otieno et al., 2020). In the study, access to primary care was measured using the Penchansky and Thomas' model and different indicators of access to healthcare were taken into consideration. These included coverage through health insurance, distance to the nearest health centre, timeliness of care, and availability of essential health services, acceptability, affordability, and quality of care. An index for access was constructed and categorized as poor, moderate and highest.

Findings from the study revealed that seeking care from a public health facility, living in a female headed household and making OOP payments for health services were significantly connected to low access to primary care. The study highlights that providing financial protection against the risk of OOP expenses is critical to improving access to primary healthcare in areas where resources are limited.

Another study on access to healthcare services in informal settlements, focused on the perspective of the elderly in Kibera slum Nairobi (Wairiuko et al., 2017). Access was developed using three of whose service factors which are availability, affordability and acceptability. A descriptive cross-sectional study, mixed methods approach and multistage sampling technique were used. Quantitative data was analyzed using SPSS and the qualitative data went through manifest content analysis. The study established that access to healthcare services among the elderly was low and that acceptability and availability were major challenges to access to healthcare services. Variations in access can be related to demand or supply and these include aspects such as availability, accessibility, affordability, accommodation, acceptability and adequacy (Penchansky & Thomas, 1981). The geographic, financial, cultural and structural factors of access to health care also relate to these variants.

#### **2.3.4 Health seeking behavior.**

Healthcare seeking behavior involves the actions undertaken by a person who perceives themselves to be unwell with the aim of seeking appropriate remedy. A decision making process which is informed by certain factors including social and demographic factors and availability and cost of health care services are what lead up to health seeking behavior (Ryan, 1998; Young 1981). Socio-demographic factors such as one's age, education and gender, economic conditions, physical and financial accessibility are factors which vary the health care seeking behavior from person to person (Shaikh & Hatcher, 2004).

A study on the influence of socio-economic factors on utilization of healthcare services in Kenya's informal settlements, sought to investigate the influence of level of income, literacy levels, poverty and gender on health-care seeking behavior (Kathuo, 2015). Results from the study established the level of income and poverty had a highly significant relationship with utilization of healthcare

services and a somewhat significant relationship between literacy level and healthcare services utilization. There was not any relationship between gender and the utilization of healthcare services. The study recommends that efforts should be made to improve people's income levels, increasing literacy and reducing poverty levels in order to improve utilization of health care services in Kenya's informal settlements.

In a study that sought to identify the factors associated with the healthcare-seeking behavior of heads of households in a rural community in Southern Nigeria, it was established that predictors of healthcare-seeking behavior included ones level of education, their income and marital status. Other associated factors were age, sex, and occupational classification (Adam, 2018).

Another study examined the influence of socio-demographic variables on health-seeking behavior and the utilization of hospitals in Ghana. Results from the study established that socio-demographic characteristics of gender, marital status, education and income level had a significant relationship with the health-seeking behavior of patients in regard to the utilization of public and private health facilities (Adongo et al., 2021).

Health-seeking practices influence the utilization of available health resources. A study conducted in Uganda identified high cost of services, regular stock-out of drugs and long distance to health centers as factors affecting the health-seeking practices of community members (Musoke at al., 2014). In areas where standard health facilities are present, other barriers to health care access such as socio-cultural factors and poor healthcare financing have been identified (Oлакunde, 2012 ; Uzochukwu et al. 2015)

An analysis on the determinants of health seeking behavior in a Nairobi slum , included variables such as quality of healthcare , gender, size of household, education, age, occupation and user fees. The study established that user fees had a negative effect on seeking health care, the probability of using professional health care service compared to self-treatment increased with age, education level, family size and females are more likely to seek out professional health care compared to their male counterparts (Muriithi, 2013).

## **2.4 Theoretical framework**

Theoretical literature shows that financial inclusion efforts have availed financial services to more segments of the population especially those who were formerly excluded from the formal financial sector. This has enabled people to access different financial services including health insurance services. People who are financially capable have both the ability and opportunity of making responsible financial decisions and actions to improve their financial well-being. These include decisions such as planning ahead and choosing financial products that best meet their needs.

In this study, Hospital Cash is a digital financial service that has been availed to residents in Embu County particularly those who are members of collectives that in most cases have previously received some kind of financial management training that equipped them with the knowledge of making better financial decisions. The assumption is that the target population is financially capable and therefore makes a sound financial decision of taking up the health microinsurance cover so as to protect themselves from the effects of OOP expenses. The study therefore did an analysis of the product in order to get insight on the individual value different uptakers gain from it and how the product has facilitated access to health care for them.

Empirical literature reveals OOP expenditure in the country is still high and often leaves the poor vulnerable and bars them from accessing health care. Rural dwellers are more prone to incidences of OOP expenses and those who take up insurance covers tend to be more financially protected from the effects of OOP expenditure compared to those who do not. There are also specific factors that make individuals and households more prone to experiencing high OOP expenses which need to be taken into consideration when designing health financing systems, in this case digital health microinsurance products. Evidence further shows the importance of health micro insurance in offering an alternative source of healthcare financing and how the incorporation of digital innovations, which are a less costly and offer a more convenient way of reaching more people in the population, can lead to increased access to health care for the poor.

Literature shows that socio-demographic factors such as age, education and gender, economic conditions, physical and financial accessibility are factors that affect the health care seeking behavior of individuals. This study will assess these factors as the intervening variables which inform utilization of digital health microinsurance.

Reviewed findings show that access to health care is determined by different factors based on the model adopted in a study. Some of the factors include acceptability, affordability, availability and health insurance coverage. The study assessing access to primary health care services in Nairobi slums was quantitative and used a wide range of indicators in determining access to primary care which limited the study from gaining qualitative insights on the determinants of access to care (Otieno et al., 2020). A mixed methods approach and a lesser range of indicators were adopted in the study on access to healthcare in informal settlements which were availability, affordability and acceptability. The research however only focused on the elderly hence the findings can only be generalized in understanding access to health care for the elderly (Wairiuko et al., 2017). Both studies used large samples of 300 and 399 respondents respectively which has the limitation of obtaining sufficient qualitative insights on the topic of study and can only be applicable with the availability of sufficient time and resources.

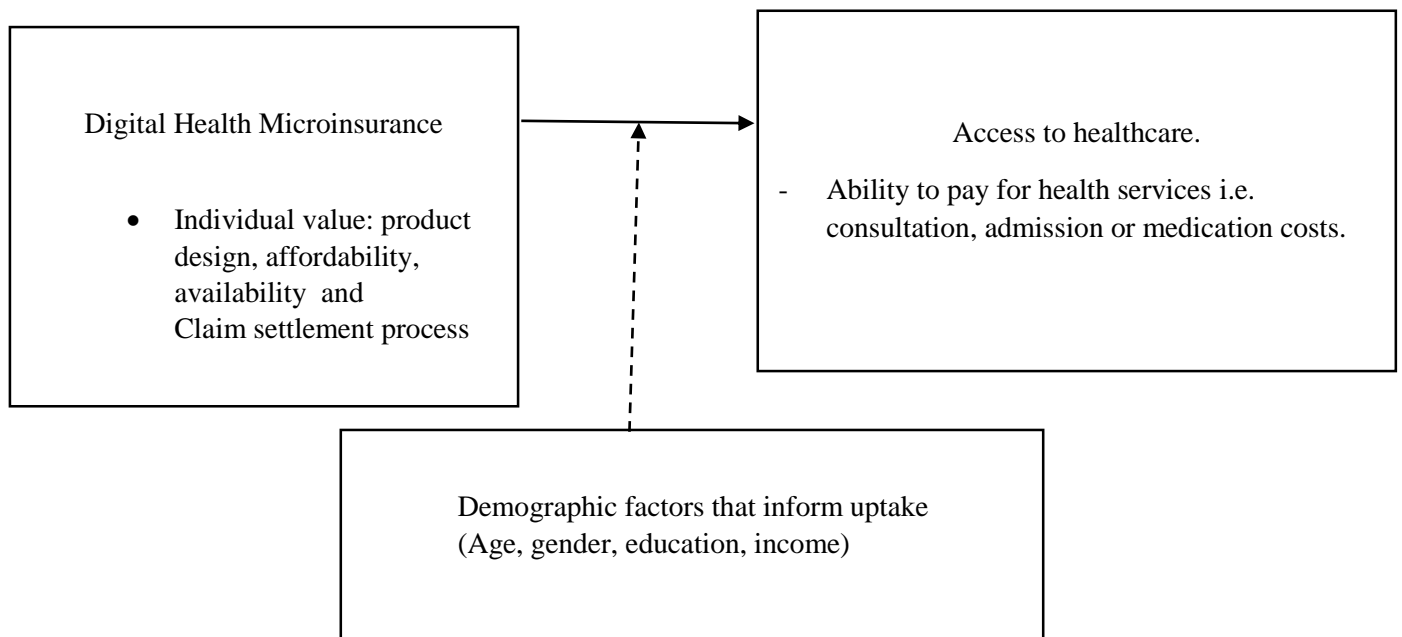
This study majorly focused and expounded on the dimension of affordability from the Penchansky & Thomas Model of 1981 to measure access to healthcare. Affordability refers to clients' ability to pay for health services using existing resources such as health insurance. Literature points out that affordability can facilitate or hinder getting healthcare services (Savedoff, 2009). Affordability influences timely access to health care services that would lead to better health outcomes. The study also used fewer respondents as informed by the context of the study and the time and resources available. This methodology enabled collection of sufficient quantitative and qualitative data for the study.



## 2.5 Conceptual Framework

### Independent Variable

### Dependent Variable



### Intervening Variable

#### Figure 2.1: Conceptual Framework

Author's Conceptualization, 2021

The independent variable in the study was digital health microinsurance and the dependent variable was access to healthcare. Access to healthcare is dependent on digital health microinsurance coverage as this enables one to be able to pay for health care services when the need arises. The causal relationship between the two variables is however not direct and is influenced by an intervening variable which are demographic factors including age, gender education and income which inform uptake of the product.

### Independent Variable

The independent variable is digital health microinsurance. In order to gain more insight on how the independent variable affects access to healthcare, the study analysed the product in terms of the individual value that clients gain from it, which informs uptake of the product thus ensuring

they are assured of financially accessing healthcare when the need arises and the claim settlement process which is the actual payment to access healthcare when the need arises.

**Dependent Variable.**

Access to health care is the dependent variable in the study and it was conceptualized as the ability to pay for health services. With affordable digital microinsurance coverage, clients will be financially protected from health shocks and therefore achieve better health outcomes by being able to pay and access health services as and when the need arises.

**Intervening Variable**

The intervening variable are the demographic factors that influence health seeking behavior and these include one's age, gender , education and income level.

## **CHAPTER THREE: RESEARCH METHODOLOGY**

### **3.1 Study Site**

The study was conducted in Embu County which lies 120 Km North East of Nairobi and covers an area of 2,818 square Km. It is bordered by Kitui, Machakos, Tharaka Nithi, Murang'a and Kirinyaga Counties. The county's health department is already making efforts towards providing universal and affordable health for its residents by initiating projects aimed at improving health facilities within the county. The county has operationalized health centers and dispensaries through provision of medicine, equipment and medical personnel in health facilities. An additional 35 health facilities have also been built at a cost of over Kshs 100 million and construction of minor theatres in all the six level four hospitals (Embu County Government, 2021).

Embu was selected on the grounds that it is the first rural county where the product hospital cash by DDFinance, has been rolled out. NHIF and other private companies including Madison Insurance, UAP and Resolution health currently offer health insurance in the county however coverage still remains low especially for those outside formal employment (Nguru, 2011). The data collected gives insights on how Hospital Cash has facilitated access to healthcare among the residents in the county by financially protecting them from incidences of OOP expenditure.

### **3.2 Research Design**

Research design is the structure which guides how a research method will be executed and how the data collected will be analyzed (Bryman, 2012). The study adopted a descriptive research design which involved collecting data to answer questions on the status of the population being studied (Gay, 1992). The study aimed at gaining information on how hospital cash has promoted access to health care in Embu County.

### **3.3 Target Population and Sampling Design**

A study population is defined as a characterized set of individuals, gathering of things, families of firms which are being explored. This populace ideally fits a specific criteria which is concentrated on (Ngechu, 2004). The target population for the study was individuals in Embu County who have enrolled for the hospital cash microinsurance product offered by DDFinance and have received a processed claim.

### **3.3.1 Sample Size and Sampling technique**

The organization shared a list of 59 people who have received processed claims in Embu County. Upon assessment, it was established that some of the insured had received a processed claim more than once and therefore the eligible target population dropped to 47.

A census was conducted on all the 47 individuals who have received a processed claim but only managed to interview 42 of them since the remaining five could not be reached on phone despite several efforts. This was a response rate of 89.4%.

Purposive sampling was done and data collected from 3 trainers who train the collectives about the product in Embu County as key informants due to their close encounter with the target group. The aim was to obtain their views on the role Hospital Cash has played in promoting access to health care in the county among the groups they have worked with.

The study further purposively sampled 6 more key informants from the insurance sector both private and public who have knowledge and experience in health insurance with the aim of obtaining their views on digital health microinsurance. This brought the total number of respondents in the study to 51.

### **3.4 Data Sources and Methods of Data Collection**

The study used both primary and secondary sources of data and incorporated both quantitative and qualitative data collection methods. Primary data was gathered from the respondents via telephone interviews which were guided by a semi-structured interview guide. The open-ended questions enabled the researcher to get a better understanding of the experience the respondents have had with the digital health microinsurance product and how this has increased their access to healthcare. In order to access data from the organization and the respondents, an official letter from the University had to be submitted to the organization indicating that the research was for study purposes and a Non-disclosure agreement was signed thereafter so as to ensure confidentiality of the information shared to the researcher was upheld.

Telephone interviews were used to collect data in this study. There has been increased popularity in the use of telephone interviews to collect data in social science which reflects social change and technological advancements (Worth & Carr, 2015). In this paper, the use of telephone interviews was supported by the fact that the subject under study is already leveraging on mobile phone technology. The current situation with the COVID 19 pandemic further supported this mode of data collection due to the on and off cessation of movements in and out of different counties. The respondents were also geographically dispersed within the county hence telephone interviews were a more viable option to save on time and costs. It is further highlighted that telephone interviews are often more effective where contact has already been established with the participants, which was the case since the respondents were informed prior about the research by the organization (Worth & Carr, 2015).

Data from the Key Informants was gathered using interview guides to obtain their views and understanding on digital health microinsurance. The study further obtained secondary data from the records kept by the organization and information from books, dissertations, journals and survey reports to theoretically support the study and identify knowledge gaps.

### **3.5 Data Analysis and Interpretation**

Data analysis is the process of bringing meaning, order and structure to information collected from a field study (Mugenda, 1999). The process involves classifying collected data into purposeful and usable categories (Orodho, 2005). The study collected both qualitative and quantitative data using a semi-structured interview guide. Quantitative data gathered from the structured interview questions was cross-checked and cleaned on excel to iron out inconsistencies in recording and coding before analysis. This data was then keyed in the computer using the Statistical Package for Social Science (SPSS 22.0) software which generated descriptive statistics that is presented in form of frequencies, Figures percentages and cross tabulations to show relationships...

The qualitative information collected from the open-ended interview questions were organized into emerging themes and assigned codes which were analysed using the SPSS software based on frequencies and presented in tables and graphs.

### 3.6 Ethical Issues

The study upheld the following ethical principles;

1. Ensuring confidentiality of information obtained since insurance information is highly confidential.
2. Acquiring information based on informed consent from the organization and the respondents who were notified by the trainers prior to the interviews.
3. Ensuring increased privacy for the respondents through the telephone interviews.

To meet these ethical issues, the researcher followed all the due processes required by the organization offering the digital microinsurance product including signing a Non-disclosure Agreement to maintain the confidentiality of the information availed for the study. The researcher further ensured respondents were made aware that the information obtained will remain confidential and is for academic purposes.

**Table 3.1: Data Needs**

Research Question	Data Needed	Source	Instrument	Data Type
What are the characteristics of uptakers of hospital cash in Embu County?	-Age -Gender -Health Status -Education -Income level	DDFinance Records, Respondents who have received processed claims	Semi-structured Interview guide	Quantitative
In what way has hospital cash promoted health microinsurance uptake in Embu County?	-Individual Value (Product design, Affordability, Accessibility, )	Respondents who have received processed claims, Key Informants	Semi-structured Interview guide	Quantitative Qualitative
How does hospital cash facilitate payment for healthcare services?	-Response to shocks -Claim settlement procedure -Promptness of Claim settlement -Mode of pay out	Respondents who have received processed claims, Key Informants	Semi-structured Interview guide	Quantitative Qualitative

## **CHAPTER FOUR: RESEARCH FINDINGS AND DISCUSSIONS**

### **4.1 Introduction**

This study sought to analyse how digital health microinsurance is facilitating access to health care in Embu County and this was done by conducting research on Hospital Cash, a digital health microinsurance product by DataDrivenFinance Kenya Limited (DDFinance). DDFinance is a Norwegian insurance automation company based in Kenya which provides end-to-end affordable insurance on USSD mobile phones for low-income earners. The study findings are presented and discussed in this chapter. The chapter is themed as per the research objectives that the study sought to attain. The findings are drawn from data that was collected using semi-structured interviews on individuals who have received processed claims under the Hospital Cash insurance cover by DDFinance.

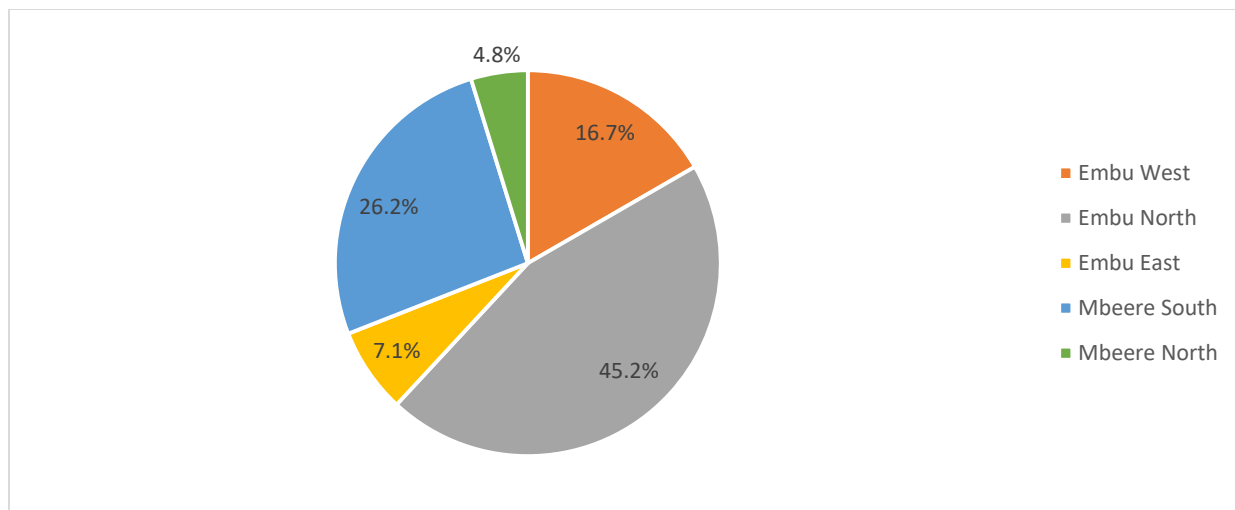
### **4.2 Characteristics of uptakers of hospital cash in Embu County.**

#### **4.2.1 Geographical distribution of Uptakers of Hospital Cash**

The study assessed the reach of the product across the five sub-counties in Embu. As presented in Figure 4.1 below, it was established the respondents are spread out across all the five sub-counties in Embu with 45.2% coming from Embu North as this was the first point of entry within the county. 26.2 % came from Mbeere South, 16.7% from Embu West, and 7.1% and 4.8% from Embu East and Mbeere North respectively. This indicates that the product has been able to penetrate across the different regions within Embu and cover a wide geographical area without any physical offices in the county.

These findings are consistent with literature that digital platforms facilitate reaching of more clients and covering a wider geographical area (Churchill, 2012; Prashad et al., 2013).

**Figure 4.1: Geographical distribution of Uptakers**



Source: Field Data, 2021

#### 4.2.2 Age distribution and Gender Composition of uptakers of Hospital Cash.

The respondents were segmented into four categories starting from 18 years which is the minimum age limit for any adult who wants to purchase the product and the maximum age was 70 years as this is the product's age limit. The study found that majority of the respondents at 31% were between the age of 31-44 years followed closely by those between 45-57 years at 28.5%. Those above the age of 58 were a significant percentage as is the expectation of age influencing health seeking behavior

**Table 4.1: Distribution of Uptakers according to age category**

	Frequency	Percent
<i>18-30 years</i>	7	16.7
<i>31-44 years</i>	13	31
<i>45-57years</i>	12	28.5
<i>58-70 years</i>	10	23.8
<b><i>Total</i></b>	<b>42</b>	<b>100</b>

Source: Field Data, 2021



The study established that 69% of those who had received paid out claims were women and 31% were men. These findings are consistent with a response from one of the Key informants who explained that:

*“Gender is a key factor that influences uptake of the product since women are the ones who are mostly organized in groups and are more prone to requiring health care services especially in their child bearing years.”(KI 3, 5/10/2021)*

Looking at the relationship between the age and the gender of the up takers which is presented in Table 4.2 below, the findings show that 55.1% of Females which represents majority of the respondents at 38.1, fall between the age of 18-44 years which is the main age bracket for increased health care needs unique to women such as child bearing and related care. The findings also show that a significant percentage of the respondents at 52.3 % were above the age of 45 years.

These findings conform with literature which highlights there are certain socio demographic characteristics which influence health seeking behavior including one’s age and gender (Adam, 2018 ; Adongo et al. , 2021 ; Muriithi, 2013).

**Table 4.2: Distribution of Gender of Uptakers by Age.**

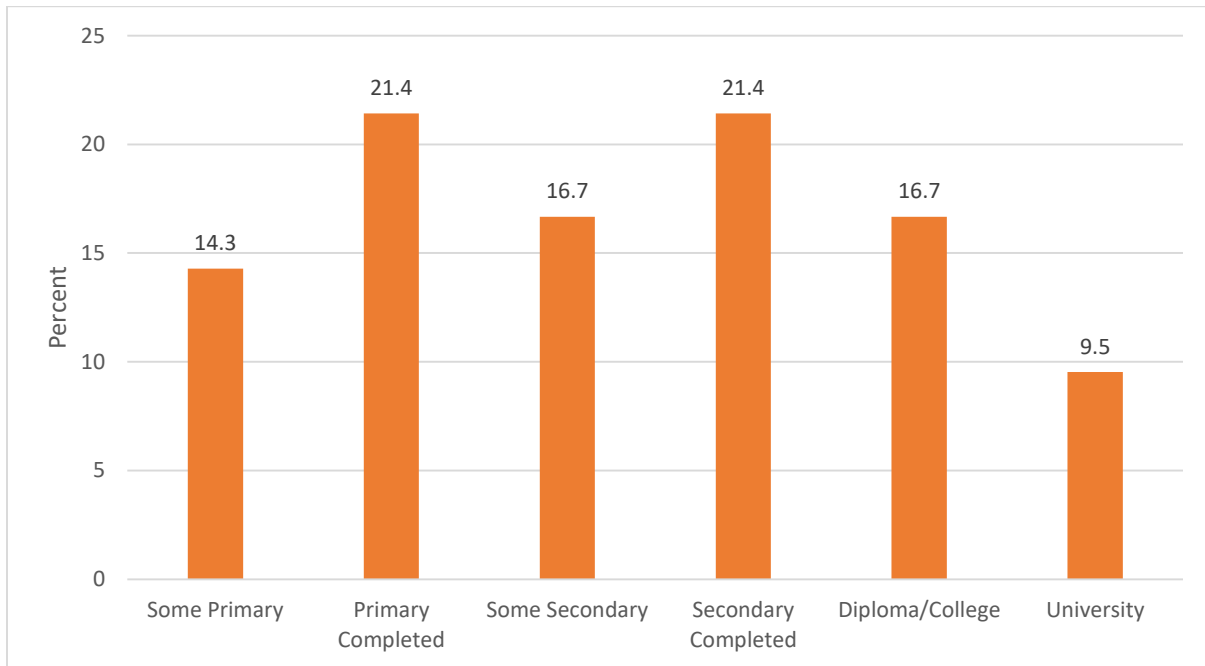
<b>Age Category</b>		<b>Gender</b>	
		<b>Female</b>	<b>Male</b>
18-30 years	Percentage within Gender	17.2%	7.7%
	Percentage of Total	11.9%	2.4%
31-44 years	Percentage within Gender	37.9%	30.8%
	Percentage of Total	26.2%	9.5%
45-57 years	Percentage within Gender	31.0%	38.5%
	Percentage of Total	21.4%	11.9%
58-70 years	Percentage within Gender	13.8%	23.1%
	Percentage of Total	9.5%	7.1%
<b>Total</b>	<b>Percentage of Total</b>	<b>69.0%</b>	<b>31.0%</b>

Source: Field Data, 20210

### 4.2.3 Education attainment of uptakers of Hospital Cash

Findings showed that the respondents were spread out in terms of the highest level of education attained as shown in Figure 4.2. Those who had completed primary and secondary school were however the highest at 21.4%.

**Figure 4.2: Distribution of uptakers across different education levels.**



Source: Field Data, 2021

Looking at the relationship between the respondents' highest level of education attained and their insurance coverage history, Table 4.3 below shows that 91% of those who did not have a cover before had not completed secondary education indicating a possible relationship between one's education level and insurance uptake. It can therefore be argued that there was significant representation across all the education levels in this study as per Figure 4.2 above, due to the awareness and trainings done to ensure that clients understand the product and are able to use it conveniently despite their education level. This is highlighted later in the chapter on Table 4.8 where 85.7% of the respondents reported that the information or training they received about the product was comprehensive enough and contributed highly to them taking up the product.

**Table 4.3: Insurance coverage history of uptakers in relation to their highest level of education**

<b>Education Level</b>			<b>Previous Insurance uptake</b>	
			<b>Yes</b>	<b>No</b>
Some Primary and Primary Completed	Percentage within Previous Insurance uptake		25.8%	63.7%
	Percentage of Total		19.0%	16.7%
Some Secondary	Percentage within Previous Insurance uptake		12.9%	27.3%
	Percentage of Total		9.5%	7.1%
Secondary Completed	Percentage within Previous Insurance uptake		29.0%	0.0%
	Percentage of Total		21.4%	0.0%
Diploma/College	Percentage within Previous Insurance uptake		22.6%	0.0%
	Percentage of Total		16.7%	0.0%
University	Percentage within Previous Insurance uptake		9.7%	9.1%
	Percentage of Total		7.1%	2.4%
<b>Total</b>	<b>Percentage of Total</b>		<b>73.8%</b>	<b>26.2%</b>

Source: Field Data, 2021

#### **4.2.4 Source of Income and Income Level of Uptakers of Hospital Cash**

Findings from the study as presented in Table 4.4 show that 47.6% of the respondents were farmers which is a reflection of the area of study since it is majorly rural. The second highest category at 28.6 % consisted of those running businesses some of which included shop keeping, boda boda operators, mechanics and market vendors.

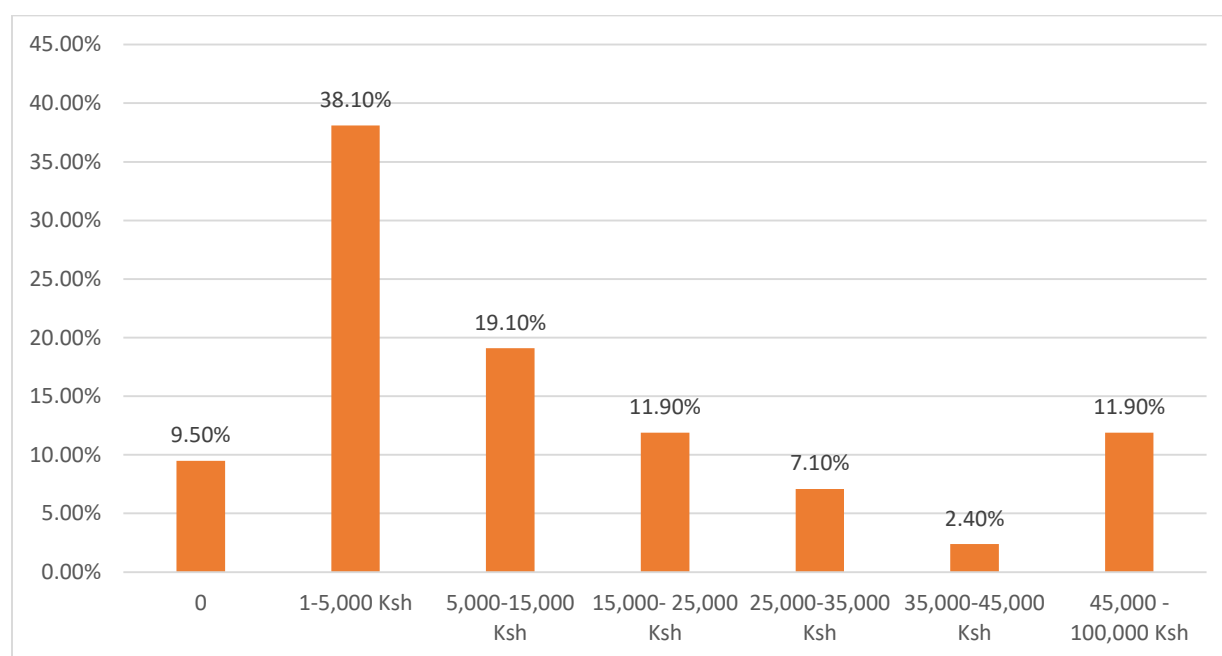
38.1% of those interviewed had an income ranging between 1-5000 Ksh. This indicates that the product has been able to reach the intended market which is low income earners and availed insurance coverage to them thereby promoting access health services for them. This is in line with the main purpose of microinsurance as defined in literature which is to offer coverage to low-income people to protect them against various risks (Churchill, 2006).

**Table 4.4: Distribution of Uptakers across different Income source categories**

	Frequency	Percent
<i>Farming</i>	20	47.6
<i>Employed</i>	6	14.3
<i>Business</i>	12	28.6
<i>Unemployed</i>	4	9.5
<b>Total</b>	<b>42</b>	<b>100.0</b>

Source: Field Data, 2021

**Figure 4.3: Trend in Income Level of Uptakers**



Source: Field Data, 2021

### 4.3 Digital technology and uptake of health microinsurance in Embu County.

#### 4.3.1 Uptake based on insurance coverage history

The study sought to assess whether the respondents were previously covered under any insurance and if not, what made them take up the digital health microinsurance cover.

Findings as presented in Figure 4.4 below, established that 73.8% were previously covered and majority of them were covered under NHIF. The remaining 26.2% had no insurance cover previously, but decided to take it up after being taken through the benefits. This is contrary to previous findings on the utilization of NHIF in Embu County where less than half of the respondents were enrolled in NHIF and majority of those who were not enrolled reported high premiums as a barrier to utilization of the cover (Ombiro & Otieno, 2019).

A number of respondents who had previously been covered under NHIF, explained that they took up an additional cover in order to supplement their NHIF cover and be cushioned better and that the digital microinsurance was affordable, convenient and with good benefits.

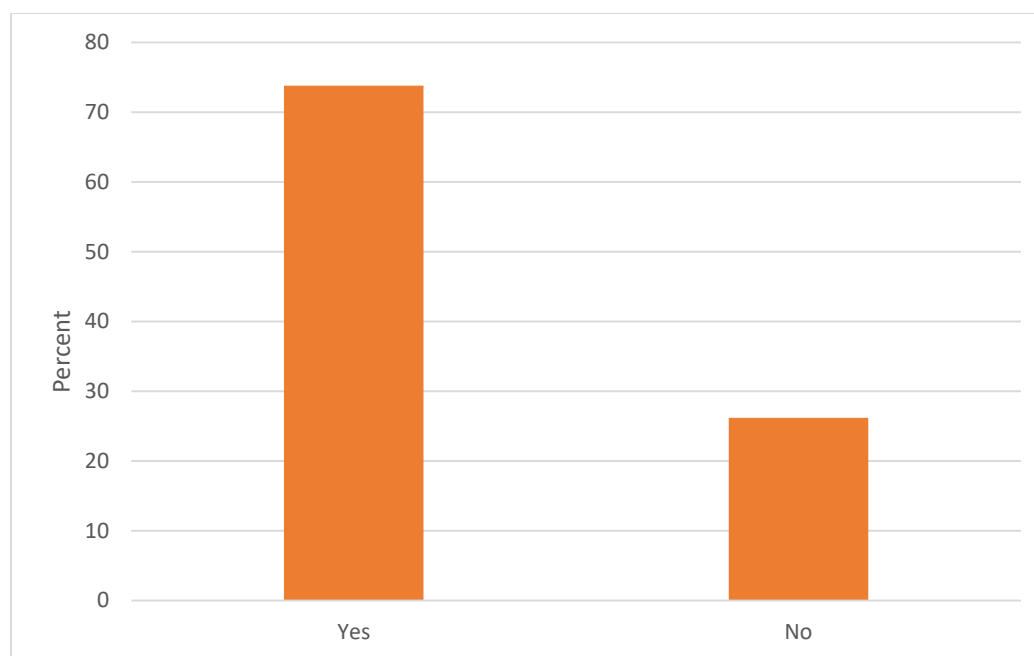
One of the respondents that did not have a cover previously explained that:

*“We were trained well on the product and I saw the benefits of having an insurance cover.”(Respondent 18, 28/09/2021)*

The findings show that due to the efficiency and reduction in delivery costs brought about by digitization, the product has been able to increase uptake by onboarding both individuals with previous insurance coverage and those previously without. Looking at the relationship between Insurance coverage history and the variable gender which is presented in Table 4.5, the findings establish that 50% of the respondents are females who had a previous insurance coverage while males were 23.8% of the respondents. There were however more females among the respondents without a previous insurance cover at 72.7% compared to the males who were 27.3 % indicating the digital microinsurance product has managed to increase insurance uptake for more females who were previously not covered.

Further analysis aimed at understanding the high percentage of respondents having had an insurance cover before contrary to literature established that financial literacy had a significant contribution to this finding. 72.2% of those who had a previous insurance cover reported to having received formal financial management training within their collective or in a different forum for instance in church. This is an indication that financial literacy combined with the availability of suitable financial services lead to improved financial decisions in this case, taking up an insurance cover in order to be financially protected from OOP expenses.

**Figure 4.4: Trend of Insurance Coverage History of uptakers**



Source: Field Data, 2021

**Table 4.5: Insurance coverage history of Uptakers in relation to their gender**

<b>Gender</b>			<b>Previous Insurance uptake</b>	
			<b>Yes</b>	<b>No</b>
Female	Percentage within Previous Insurance uptake	67.7%	72.7%	
	Percentage of Total	50.0%	19.0%	
Male	Percentage within Previous Insurance uptake	32.3%	27.3%	
	Percentage of Total	23.8%	7.1%	
<b>Total</b>	<b>Percentage of Total</b>	<b>73.8%</b>	<b>26.2%</b>	

Source: Field Data, 2021

### 4.3.2 Uptake based on efficiency in processes.

Majority of the respondents at 76.2% reported that the digital enrollment and registration process was easy for them and quite straight forward making the process more efficient. Those that had difficulties and found the process either slightly hard or hard were 16.6% as presented in table 4.6 below and were mostly the elderly or those with special needs who needed assistance.

95.2 % of the interviewees further expressed that the use of mobile phone technology made it more convenient for them to take up the health microinsurance cover and to pay their premiums.

One of the respondents explained that:

*“The process was straightforward and I did not have to go through a long process and filling up a lot of paper work.” (Respondent 10, 27/09/2021)*

These findings confirm those in literature where digital microinsurance schemes studied were able to increase efficiency of the enrollment process by using mobile phones and making the process more convenient for clients as they could enroll at their own convenience (Prashad et al. , 2013).

**Table 4.6: Percentage representation of respondents’ views on digitized processes**

	Percent
<i>Easy</i>	76.2
<i>Relatively Easy</i>	7.1
<i>Slightly Hard</i>	9.5
<i>Hard</i>	7.1
<b><i>Total</i></b>	<b>100.0</b>

Source: Field Data, 2021

Table 4.7 below looks at the relationship between age and technology adoption. The findings established that 53.2% of those who found the digital enrollment and payment of premiums easy were below the age of 44 years. 66.7% who found the process hard were between 58-70 years of age however this represented 20% of the respondents within the 58-70 year age bracket and 4.8% of the total respondents.

The total percentage of respondents who found the enrollment process and payment of premiums easy was the highest at 76.2% and was spread out across all the age brackets. This shows that with proper training on digital products, how user friendly they are and their suitability to the user, then age may not be a limiting factor of adoption of new digital innovations.

**Table 4.7: Age in relation to ease in technology adoption**

<b>Age Category</b>		<b>View on digitized processes</b>			
		<b>Easy</b>	<b>Relatively Easy</b>	<b>Slightly Hard</b>	<b>Hard</b>
18-30 years	Percentage within Age	85.7%	14.3%	0.0%	0.0%
	Percentage within View on digitized processes	18.8%	33.3%	0.0%	0.0%
	Percentage of Total	14.3%	2.4%	0.0%	0.0%
31-44 years	Percentage within Age	84.6%	7.7%	7.7%	0.0%
	Percentage within View on digitized processes	34.4%	33.3%	25.0%	0.0%
	Percentage of Total	26.2%	2.4%	2.4%	0.0%
45-57 years	Percentage within Age	83.3%	0.0%	16.7%	8.33%
	Percentage within View on digitized processes	31.3%	0.0%	25.0%	33.3%
	Percentage of Total	23.8%	0.0%	2.4%	2.4%
58-70 years	Percentage within Age	50.0%	10.0%	20.0%	20.0%
	Percentage within View on digitized processes	15.6%	33.3%	50.0%	66.7%
	Percentage of Total	11.9%	2.4%	4.8%	4.8%
<b>Total</b>	<b>Percentage of Total</b>	<b>76.2%</b>	<b>7.1%</b>	<b>9.5%</b>	<b>7.1%</b>

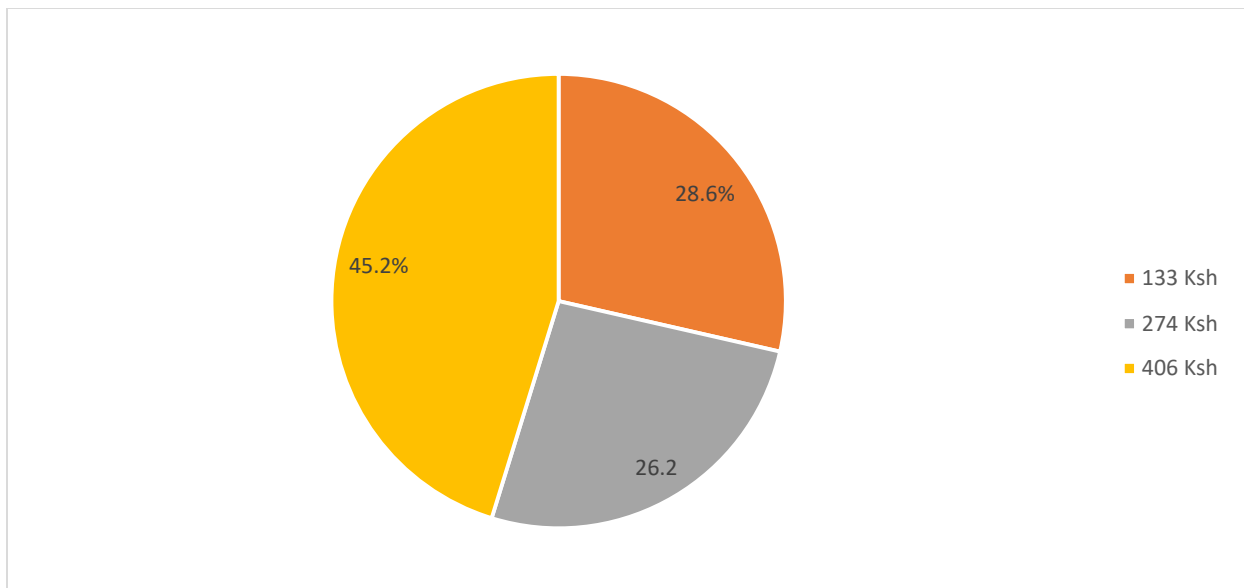
Source: Field Data, 2021



### 4.3.3 Uptake based on product pricing

The product has premium categories ranging from 133 Ksh to 1265 Ksh. The study however found that most of the respondents had taken up covers ranging between 133 Ksh to 406 Ksh as presented on Figure 4.5. This is because when the product was introduced within the county, most people were skeptical and took up the lower bands as a trial. However further information obtained from the organization indicates that upon renewal more people have opted to take up the higher bands after seeing the benefits of the product.

**Figure 4.5: Distribution of premium Amounts among uptakers**



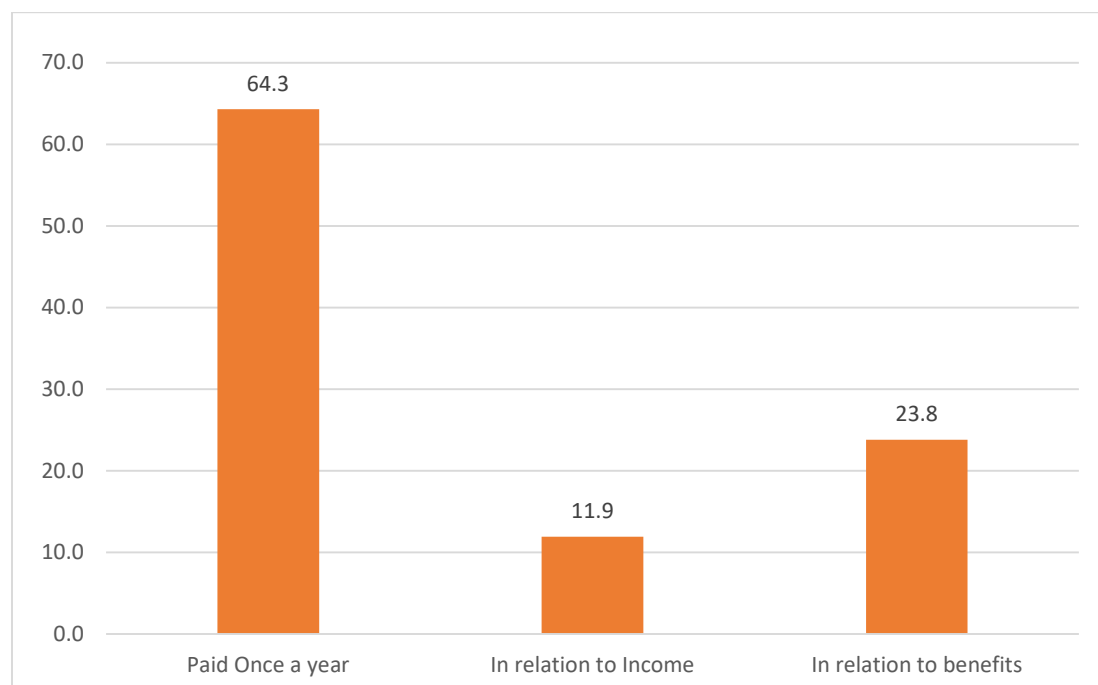
Source: Field Data, 2021

Findings showed that all the respondents found the premiums to be affordable with 64.3% of them quoting that they found it affordable since they had to pay once a year. 23.8% of the respondents found the product affordable in relation to the benefits offered and 11.9% in relation to their income level which is presented on Figure 4.6 below. The product has managed to be affordable due to reduction in operation costs as a result of digitization thereby enabling the organization to avail the digital health microinsurance at a price that low-income earners can afford.

One of the Key Informants explained:

*“Digitization is the way to go. It has made delivery and utilization of services much easier, has facilitated better storage of data and saves on time and resources. This in turn has enabled insurance companies to set affordable premium rates as administrative costs have been cut down.” (KI 5, 4/10/2021)*

**Figure 4.6: Pattern on reasons respondents find the premiums affordable**



Source: Field Data, 2021

#### **4.3.4: Uptake based on awareness and Training on the product**

The study assessed how the respondents received information about the digital health microinsurance product and whether they had received official training on the usage and benefits of the product. 64.3% highlighted that an official trainer sent by the organization attended one of their group meetings and introduced the product to them. The remaining 35.7% were briefed on the product by a family member, friend or neighbor who had received training prior. This shows that since the organization has minimized on administration costs due to digitization, resources have instead been allocated towards creating awareness and training on the product thereby increasing coverage. With more awareness and training being done, it means the product has been able to reach more people and has the potential of reaching an even wider population from referrals of those who have been trained on the product and its benefits. These findings conform to what is in literature that knowledge and literacy on insurance are essential in ensuring utilization of mobile money-based products among the target populations (Josea, 2016).

On Table 4.8 below, 85.7% of the respondents reported that the information or training they received about the product was comprehensive and contributed highly to them enrolling.

One of them explained:

*“The trainer came and took us through the product very well and answered all our questions. I understood how the product works and I saw the benefits of enrolling.”*  
*(Respondent 13 28/09/2021)*

**Table 4.8: Percentage representation of comprehensiveness of training on the product before uptake**

	<b>Percent</b>
<i>Yes</i>	85.7
<i>No</i>	14.3
<b><i>Total</i></b>	<b>100.0</b>

Source: Field Data, 2021

#### **4.3.5 Uptake based on Collective Membership and financial literacy**

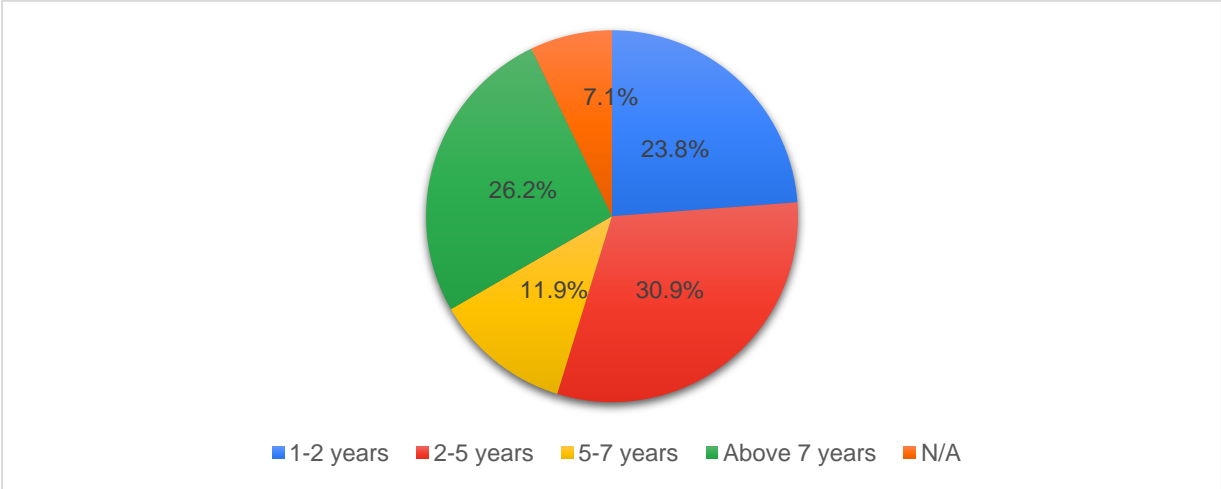
One of the main eligibility criteria for getting the DDFinance insurance product is being a member of a collective which is a group of between 10-30 members that has been in operation for at least one year. This is a key requirement as the business model for determining claim pay out by the organization is through getting confirmation messages via mobile phones from one’s fellow collective members regarding their hospitalization. Majority the respondents were therefore members of a collective before introduction of the product and this automatically made them eligible to purchase the product hence encouraging uptake among collective members.

The findings as presented in Figure 4.7 below reveal that 69.1% of the respondents have been members of their collective for more than two years highlighting the strong social networks that exist between members. Collective membership enables the organization to capture existing trust and reputational insights of and between people in groups thereby reducing insurance work-flow costs of needing to have physical presence in the local area.

42.8% of the respondents recorded that they had received some kind of formal financial management training either on savings or table banking prior to the introduction of Hospital Cash within their collective, which informed their uptake of an insurance cover as a way of managing their finances better and protecting themselves from the negative effects brought about by OOP health expenses.

The remaining 57.3% had not received formal financial management training within their collective instead, some reported they had received financial awareness in a different forum for instance in church. The respondents further reported that the training offered before uptake of the product was insightful and showed them the benefits of financially protecting themselves from expenses brought about by illnesses through either taking up an additional insurance cover or taking up a cover for the first time. The findings reflect those in literature that indicate a greater understanding of the benefits of financial services lead to higher adoption and demand for these services (Beck & De la Torre 2006)

**Figure 4.7: Length in years of Collective Membership of Uptakers**



Source: Field Data, 2021

**4.4 Digital Health microinsurance in facilitating payment for healthcare services.**

**4.4.1 Digital Claim Launching and Settlement Process**

The insured under Hospital Cash are able to launch a claim by themselves via USSD on their mobile phones at their own convenience and receive their payout directly on their mobile phones via mobile money. Verification before payout is also done via mobile phone where random

members within ones collective are called to confirm their hospitalization. As presented in Table 4.9 below, 76.2 % of the respondents found the claim launching process easy or relatively easy whereas the remaining 23.8 % considered the process slightly hard or hard due to some of the challenges or delays they encountered when launching their claims. This digital process is faster and does not involve a lot of processes compared to filling paperwork and having to visit a physical office for assistance making it more convenient for the clients to receive their claim and pay for their health expenses.

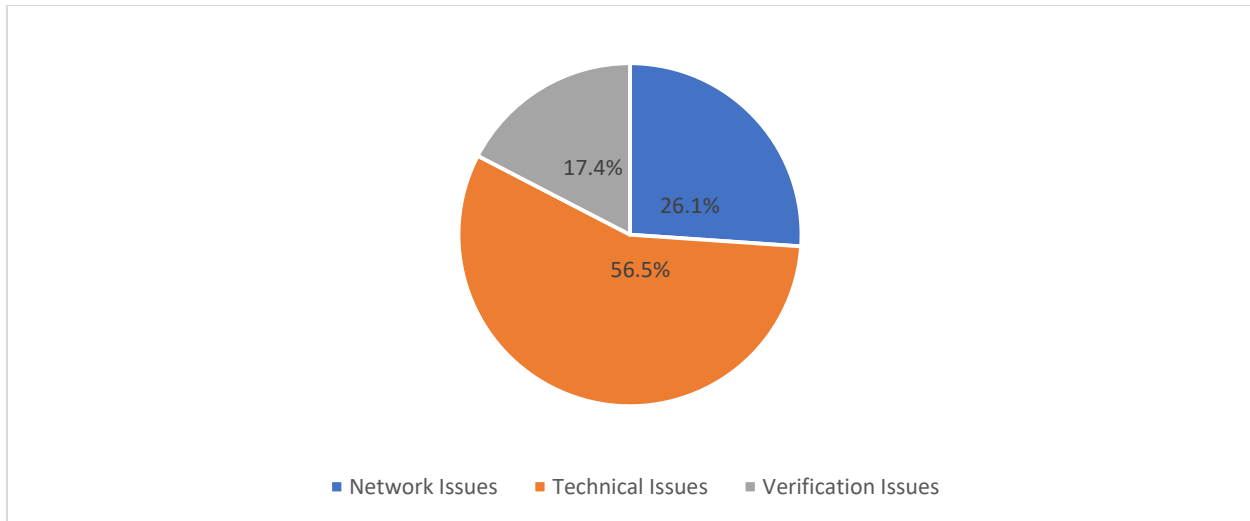
**Table 4.9: Percentage representation of respondents’ views on the claim Launching Process**

	<b>Percent</b>
<i>Easy</i>	50.0
<i>Relatively Easy</i>	26.2
<i>Slightly hard</i>	19.0
<i>Hard</i>	4.8
<b><i>Total</i></b>	<b>100.0</b>

Source: Field Data, 2021

54.8% responded yes to having faced difficulties in the settlement of their claim. Their explanations on the nature of the difficulties they encountered fell under three categories as presented in Figure 4.8 below. The technical issues were the highest in percentage and included system down time and claims that needed further assistance from the office for them to be processed. This is an issue that can be managed through further training and support on the ground and streamlining systems within the organization hence the possibility of enhancing the efficiency of the product.

**Figure 4.8: Distribution across claim settlement Issues**



Source: Field Data, 2021

The study established that 61.9 % of the claims took more than 48 hours to be processed. This is due to the nature of the verification process used by the organization which involves waiting for confirmations from a claimants fellow collective members regarding their hospitalization in order to decide paying out a claim or not. In addition some of the claimants faced various issues including network and technical issues that further delayed the processing of their claim.

One of the respondents expressed their concern:

*“The organization should look into the verification process since some members are old and others illiterate hence making it difficult to follow through when confirming a claim. Alternatively, confirmations can be done directly with the hospital in order to save time during claim settlement. ”*  
 (Respondent 2, 27/09/2021)

**Table 4.10: Trend in claim settlement processing time**

	Percent
<i>Less than 24 Hours</i>	4.8
<i>Between 24-48 Hours</i>	33.3
<i>More than 48 Hours</i>	61.9
<b>Total</b>	<b>100.0</b>

Source: Field Data, 2021

Despite the delays experienced by some of the claimants in the processing of their claims, the respondents expressed that the use of M-pesa as a mode of payout made it easier and faster to settle their health expenses.

Some of the respondents explained:

*“The money was sent directly to my phone and I was able to immediately pay for my health care expenses without many complications.” (Respondent 25, 28/09/2021)*

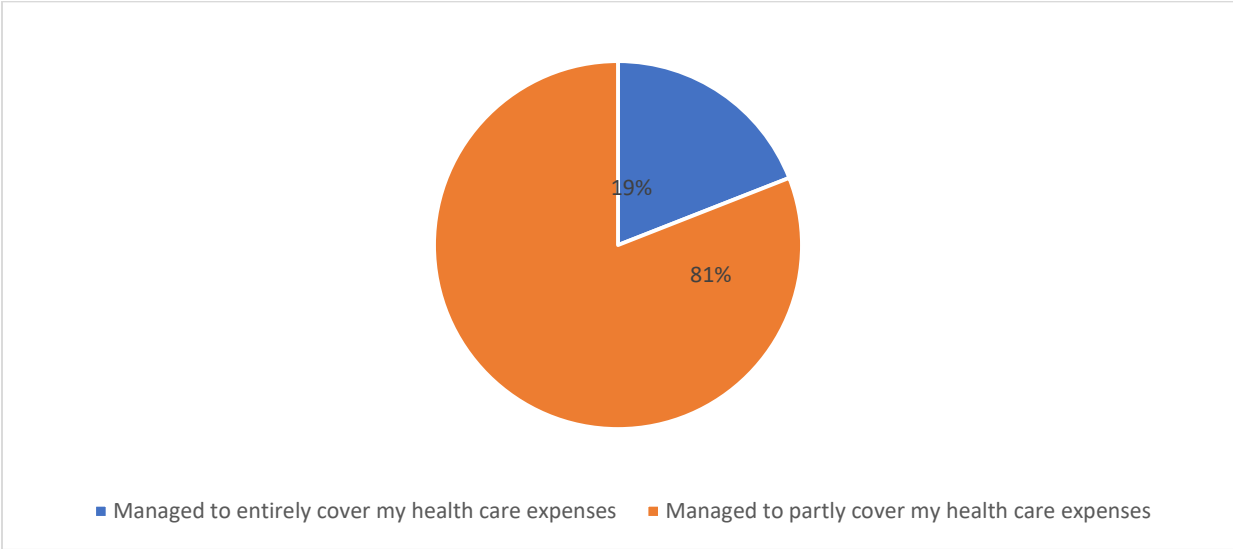
*“I gave my daughter the instructions and she was able to make the payment easily as I was still not very strong.” (Respondent 30, 28/09/2021)*

*“The use of M-pesa in receiving my claim was very convenient for me since I am already used to the platform. Many hospitals now also accept payment via M-pesa and this made it easy.” (Respondent 37, 30/09/2021)*

**4.4.2 Payment for healthcare expenses**

The study assessed the extent to which respondents were able to cover their health expenses with the processed claim. As presented in Figure 4.9 below, findings established that 81% managed to partly cover their health care expenses with the processed claim and only 19% managed to entirely cover their health care expenses with the paid out claim.

**Figure 4.9: Extent of coverage for healthcare expenses**



Source: Field Data, 2021

One of the respondents explained:

*“My hospital bill was higher than the claim I received from DDFinance. NHIF paid for my hospital bed and food and the money I received from DDFinance catered for my medication and recovery at home.”*  
(Respondent 22, 28/09/2021)

The above findings reflect the premium amounts which are low compared to other products in the market such as NHIF and are further paid only once a year. Subsequently, the pay outs are bound not to be high compared to other insurance products in the market. The product has however proven to still be financially beneficial especially where the insured have another cover and the money they receive from DDFinance supplements their other cover making them have better protection against OOP expenses.

These findings are consistent with literature which indicates that the extent of financial protection offered by microinsurance schemes varies however what is clear is that these microinsurance products help reduce individual and household OOP expenses (Wagstaff, 2007). Asked whether the respondents were able to save money they would have otherwise spent on paying to access healthcare services, 100% said yes.

What came up from the respondents' explanations is that with the digital health microinsurance cover, they did not have to worry or go back to their pockets to spend an extra amount for their health care needs. The amount they received further cushioned the respondents for the period they were out of work after hospitalization.

On Table 4.11 below, the study analysed the relationship between the variable gender and the extent of coverage offered by the digital health microinsurance product in paying for health care expenses and the findings show that more females at 87.5% reported to having managed to cover all their healthcare expenses from the claim received compared to only 12.5% of males. The table also shows that out of the total target population, 69% of those who were able to pay for their health expenses either partly or entirely were women. An indication that the product has facilitated access to healthcare for more females.



**Table 4.11: Payment for health care expenses in relation to gender**

<b>Gender</b>		<b>Payment for healthcare expenses</b>	
		<b>Managed to cover all healthcare expenses</b>	<b>Managed to partly cover health care expenses</b>
Female	Percentage within Payment for healthcare expenses	87.5%	64.7%
	Percentage of Total	16.7%	52.4%
Male	Percentage within Payment for healthcare expenses	12.5%	35.3%
	Percentage of Total	2.4%	28.6%
<b>Total</b>	<b>Percentage of Total</b>	<b>19.0%</b>	<b>81.0%</b>

Source: Field Data, 2021

## **CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATIONS**

### **5.1 Introduction**

The study aimed to achieve the overall objective of analyzing how digital health microinsurance facilitates access to health care services. The research focused on hospital cash, a digital health microinsurance by DDFinance and how it has facilitated access to healthcare for uptakers in Embu County. This chapter presents a summary of the findings of the study a conclusion and recommendations on the product and on digital health financing in general.

### **5.2 Summary**

Many developing countries face financial constraints in access to health care particularly OOP expenses. Those affected the most are poor households, informal sector workers and rural dwellers due to low insurance coverage. This has created the need for health care financing solutions which will protect poor households from these financial strains. Digital financial platforms have enabled greater financial inclusion in SSA and have diversified from only offering basic money transfer and payment options to credit, savings and insurance. Mobile money technology has contributed to increase in access to health care in Kenya through remittance of insurance premiums, savings for future healthcare needs, and payment for healthcare products and services.

This study sought to analyse how digital health microinsurance is facilitating access to healthcare by conducting a research on Hospital Cash, a digital health microinsurance product that offers collective based insurance to individuals via USSD on mobile phones, leveraging on the M-pesa platform for premium payment and claim settlement. To realize the main objective of analyzing how Hospital Cash has facilitated access to healthcare for uptakers in Embu County, the study sought to identify the characteristics of uptakers of Hospital Cash in Embu County; to determine how leveraging on digital technology has enabled Hospital Cash to promote uptake of health microinsurance in Embu County and to establish how Hospital Cash facilitates payment for healthcare services for uptakers in Embu County.

Primary data for the study was collected via telephone interviews using a semi-structured interview guide that enabled capturing of both qualitative and quantitative data. Data was collected from

individuals who have received a processed claim from the organization and from Key Informants who have knowledge and experience in health microinsurance. The researcher conducted a census on the entire target population and managed to attain a response rate of 89.4%. The quantitative data was analysed using the SPSS software to generate descriptive statistics that were presented in form of frequencies, percentages and cross-tabulations to show relationships. The qualitative data was organized into emerging themes, coded and analysed using SPSS.

Evidence from the data points to the convenience and efficiency brought about by digitization of health microinsurance. This has enabled penetration of health microinsurance to a wider segment of the population, particularly low-income earners thereby protecting them from the negative effects of OOP expenses. Due to the reduction in operation costs as a result of digitization, Hospital Cash has been availed to low income earners conveniently and at low costs hence wider coverage. The study established that the product has managed to penetrate across the five different sub-counties in Embu hence covering a wider geographical area without any physical offices in the county.

Majority of the respondents were women at 69%. 55.1% of Females were between the age of 18-44 years which is the main age bracket of women during their child bearing years and a significant percentage of the respondents at 52.3% were above the age of 45 years. Most of the respondents had completed primary and secondary school at 21.4% each however there was no education level that proved to be significantly dominant due to the comprehensive training done prior to up take. Majority of the uptakers at 47.6% were farmers and 38.1% had an income ranging between 1-5000 Ksh which was the lowest income bracket in the study.

Only 8% of the respondents had a pre-existing condition prior to taking up the product and most quoted to having either had diabetes or High Blood Pressure. Majority of the respondents were members of a collective as this is one of the main requirements for eligibility. Those that were not members had been introduced and registered as a family member of a person belonging to a collective.

The product has been able to increase up take for both individuals with previous insurance coverage and those previously without due to the convenience and reduction in delivery costs brought about by digitization that translates into lower premiums and good benefits. This was significantly noticed among women who were 72.7% of the respondents who did not have a previous insurance cover.

The importance of financial literacy in promoting the uptake of financial services is identified in the study as 72.2 % of the respondents who had a previous insurance cover had received formal financial management training within their collective or in a different forum. Further to this, the training offered before uptake of the product, contributed to the enrollment of respondents who had no insurance cover before as they understood the importance of financially protecting themselves from expenses brought about by illnesses through taking up an insurance cover. 76.2% of the respondents reported that the digital registration process was easy and straight forward making it more efficient and 95.2% expressed the convenience brought about by the use of mobile phone technology which significantly influenced their uptake of the product.

Contrary to literature that identifies certain socio demographic factors such as age and gender as determinants of technology uptake, the study established that 66.7% who found the digital process hard were between 58-70 years of age however this represented only 20% of the respondents within the 58-70 year age bracket and 4.8% of the total respondents. The study established that all the respondents found the premiums affordable with 64.3% of them quoting that the premiums were affordable to them since they only had to pay once a year. Due to digitization, more resources have been channeled towards creating awareness and training on the product through the use of local trainers since 85.7% of the respondents reported that the information or training they received about the product was comprehensive and contributed highly to them enrolling.

By leveraging on mobile phone technology, the insured are able to launch a claim by themselves via USSD on their mobile phones at their own convenience and receive their payout directly on their mobile phones via mobile money. This has made the claim settlement process easier, faster and more convenient. 54.8% reported to having faced some kind of difficulty during the processing of their claim however many of the issues faced are factors that can be addressed through further

training and streamlining the system from the end of the organization thereby increasing efficiency of the insurance product.

The study established that the product was only able to cover the health expenses of the respondents to some extent as 81% reported that their health expenses were higher than the payout. However, they expressed the important role that the claim they received played in reducing costs they would have otherwise spent from their pockets. This can be attributed to the low premium amounts which are further paid only once a year.

Findings from the study largely point to more females being enabled to access health care services by the product under study and this can be attributed to the business model of the organization which uses a collective based model to deliver microinsurance and, women are the ones who are mostly organized in groups.

### **5.3 Conclusion**

This study highlights how digital health microinsurance has facilitated access to healthcare in Embu County. Based on the objectives, the study concludes that the product; has penetrated a wide geographical area and has been able to majorly cover and facilitate access to healthcare to low income earning individuals majority who are women between the age of 18-44 years. This can be attributed to the collective based model where individuals have to be members of a group so as to be eligible for the cover. Financial literacy, awareness and training on the product have significantly contributed to enrollment as the respondents understood the need of taking up an insurance cover as a way of financially protecting themselves against health risks.

Leveraging on technology has made processes more efficient for the microinsurance product as clients are easily and conveniently able to enroll, pay premiums and receive their claims via mobile money. Digitization has further enabled reduction in operational and administration costs for the organization thereby enabling health microinsurance to be availed at low prices to low income earners which is reflected by the affordable premiums. These are factors that have increased uptake of the product.

Due to the low nature of the premiums paid, the payout has managed to only partially cover for the health expenses of majority of the insured however, the amount paid out has still made a difference by reducing incidences of OOP expenses and promoting access to healthcare for the uptakers.

#### **5.4 Recommendations**

Digital health microinsurance has the potential of offering health care financing solutions to a wider section of the population particularly low income earners. In order to achieve this and based on this study's findings, the following recommendations are made.

First, with regard to Hospital Cash and based on the findings, the product is well tailored, affordable and offers good benefits. The product has further enabled more people to access healthcare and protected them from the effects of OOP expenses particularly women. Majority of the respondents recorded to having more than two of their family members on boarded meaning once an individual has been trained and has seen the benefits of the product, they are more likely to refer it to their family members , friends and or neighbors. In order to leverage on this, the organization should put more resources and efforts towards ensuring there is proper training and support offered to clients as this will in turn lead to more enrollment once the trained persons understand and see the benefits of the product therefore more coverage.

The recommendation above is in line with findings from the field where majority of the respondents at 28.6% identified training support and awareness as one of the main things that can be done to improve the product. The organization should further do an individual value assessment and identify ways of improving customer experience with regard to benefits , coverage for instance increasing the age limit since many of the elderly persons have been locked out of the scheme and the verification process since 54.8% of the respondents highlighted one of these three areas as needing improvement.

Finally in order to ensure the claim settlement process is made more efficient, the organization will have to address technical issues such as ensuring there are no system delays on their end and

identifying a way to make the verification process more efficient since a number of the respondents raised their concerns on this as it is one of the major causes of pay out delays.

Second, with regard to digital health microinsurance in general as a healthcare financing solution. This is a very promising health care financing solution especially for low income earners as it is affordable and convenient and has the potential of solving the problem of access to health care in the country. Digitization makes processes more efficient and affordable and saves on time and resources. The Ministry of health and other players within the health sector in Kenya should consider taking up this as a strategy towards promoting UHC particularly for the low income earners in the country. The success of mobile money in the country stands as a great stepping stone for digital health microinsurance since this kind of financial services have managed to reach a wide segment of the population especially low-income earners who are the main target population for health microinsurance. This can be made more effective by building on what has worked for other digital health financing solutions in the country and improving on what failed for previous players. In addition, increasing awareness and training to the wider population with regard to digital health financing innovations that are in the market will enable more coverage and ensure citizens understand and are able to use the innovations availed to them.

A prospective future area of study would be to assess what has worked for successful players within the digital health financing sector, what led to the failure of previous innovations, the challenges and opportunities that exist for new innovations. This kind of information will provide useful insights that will guide future innovations and policies which will shape the future of digital health financing in the country and the promotion of access to health care for low income earners.

## REFERENCES

- Accion P. (2013). Enabling Financial Capability on the Road to Financial Inclusion.
- Adam V. (2018). Sociodemographic factors associated with the healthcare-seeking behavior of heads of households in a rural community in Southern Nigeria. *Sahel Medical Journal* 21.
- Adongo A., Dapaah J., Azumah F., Nachinaab J. (2021). The influence of socio demographic behavioural variables on health-seeking behaviour and the utilisation of public and private hospitals in Ghana. *International Journal of Sociology and Social Policy*.
- Aguila, E., Angrisani, M., & Blanco, L. R. (2016). Ownership of a bank account and health of older Hispanics. *Economics Letters*
- Ahmed M., Islam S., Abul Quashem A., Ahmed N. (2005). Good and Bad Practices Case Study No. 13, CGAP Working Group on Microinsurance.
- Alliance for Financial Inclusion (AFI) Data Working Group. (2018). “Measuring Financial Inclusion: Core Set of Financial Inclusion Indicators.”
- Allmark, P., & Machaczek, K. (2015). Financial capability, health and disability. *BMC Public Health*
- Andersen R., and Newman J. (2005). Societal and Individual Determinants of Medical Care Utilization in the United States. *Milbank Mem Fund Q Health Soc*, volume 51.
- Atkinson, A. & Kempson, E., (2008). Measuring and improving financial capability Designing an approach for Kenya. Personal Finance Research Centre, University of Bristol.
- Beck T., and De la Torre A. (2006). The basic analytics of access to financial services. Policy Research Working Paper Series . The World Bank.
- Barboni G. (2015). The Geography of Financial Services Providers in Kenya. *Kenya’s Financial Transformation in the 21st Century*. Nairobi, Kenya: FSD Kenya.
- Boerma T, Eozenou P, Evans D, et al. (2014). Monitoring progress towards universal health coverage at country and global levels.
- Braniff L. and Riley P. (2017). A Digital Finance Prescription for Universal Health Coverage. CGAP Digital Finance for global health blog series.



- Braniff L. and Hanouch M. (2018). Bringing Health Microinsurance to Kenyans via Mobile Phone. CGAP Digital Finance for global health blog series.
- Bryman, A. (2012). *Social Research Methods* (4th Ed.). New York: Oxford University Press, Inc.
- Cera G., Khan K., Mlouk A., Brabenec T. (2020). Improving financial capability: the mediating role of financial behavior. *Economic Research* 34 (1).
- Churchill C. 2006. *Protecting the Poor: A Micro Insurance Compendium* (Eds), International Labor Organization.
- Churchill C. and Matul M. 2012. *Protecting the Poor: A Micro Insurance Compendium* (Eds) Volume II
- Cohen M., McCord M., and Sebstad J. (2003). *Reducing Vulnerability: Demand for and Supply of Microinsurance in East Africa*.
- Dutta, A., T. Maina, M. Ginivan, and S. Koseki. 2018. *Kenya Health Financing System Assessment, 2018: Time to Pick the Best Path*. Washington, DC: Palladium, Health Policy Plus.
- Gay, L. R. (1992). *Educational Research Competencies for Analysis and Application* (4th ed.). New York, NY: Macmillan Publishing Company.
- Gikonyo C.K (2014). *The effect of mobile phone technology on the growth of micro insurance in Kenya*.
- Gyasi, R. M. (2018). *Ageing, health and health-seeking behaviour in Ghana* (Doctor's thesis). Lingnan University, Hong Kong.
- Habib S., Perveen S. and Khuwaja H. (2016). The role of micro health insurance in providing financial risk protection in developing countries- a systematic review. *BMC Public Health*.16:281
- Horn M., Vera M., et al (2020). *MAPFRE Economics. Financial inclusion in insurance*, Madrid, MAPFRE Economics.

- Josea R. (2016). Business Call to Action (BCTA). Advancing Bottom of the Pyramid (BoP) Access to Healthcare: A Case Study on Mobile Money Platforms. Nairobi, Kenya.
- Kathuo B. (2015). Influence of socio-economic factors on utilization of healthcare services in informal settlements: A case of health projects in Kibera Slum, Nairobi County. University of Nairobi.
- Kazungu, J.S. and E.W. Barasa. 2017. Levels, Distribution and Correlates of Health Insurance Coverage in Kenya. *Tropical Medicine & International Health*.
- Kenya Health Financing Strategy (KHFS) 2016 ; 2018
- Kenya National Bureau of Statistics (KNBS). 2018. Economic Survey. Nairobi, Kenya.
- Levesque J., Harris M., Russell G. (2013). Patient-centred access to health care: conceptualising access at the interface of health systems and populations. *International Journal for Equity in Health*.
- Margolis P., Carey T., Lannon C., Earp J., Leininger L. (1995). The rest of the access-to-care puzzle. Addressing structural and personal barriers to health care for socially disadvantaged children. *Arch Pediatr Adolesc Med*.
- Matul M. and Kelly E. (2012). How to conduct a PACE client value assessment: A technical guide for microinsurance practitioners. Microinsurance Innovation Facility. ILO
- McIntyre D, Thiede M, Dahlgren G, Whitehead M. (2006). What are the economic consequences for households of illness and of paying for health care in low- and middle-income country contexts? *Soc Sci Med*.
- Meessen B. (2018). The Role of Digital Strategies in Financing Health Care for Universal Health Coverage in Low- and Middle-Income Countries. *Global Health: Science and Practice* 2018 | Volume 6 | Supplement 1
- Ministry of Health Government of Kenya (MOH). 2018. Kenya household health expenditure and utilization survey. Nairobi, Kenya: Government of Kenya.
- Morgan L, and Churchill C. (2018). Financial inclusion and health: How the financial services industry is responding to health risks. *Impact Insurance Working Paper No. 51*

- Mugenda, O., and Mugenda, A. (1999). *Research Methods: Quantitative and Qualitative Approaches*. Acts Press, Nairobi.
- Mundy S. (2011). *Financial capability: Why is it important and how can it be improved?* CfBT Education Trust.
- Muriithi M. (2013). *The determinants of health-seeking behavior in a Nairobi slum, Kenya*.
- Musoke D., Bonton P., Butler C. (2014). *Health seeking behaviour and challenges in utilising health facilities in Wakiso district, Uganda*. *African Health Sciences* 14.
- Ngechu M (2004). *Understanding the Research Process and Methods: An introduction to Research Methods*, Nairobi.
- Nguru C. (2011). *Uptake of health insurance among patients attending public and private hospitals in Embu county, Kenya*. Kenyatta University.
- Nguyen T., and Rozsa Z. (2019). *Financial Literacy and Financial Advice Seeking for Retirement Investment Choice*. *Journal of Competitiveness* 11.
- Otieno P., Wambiya E., Mohamed S., Mutua M., and Kibe P. (2020). *Access to primary healthcare services and associated factors in urban slums in Nairobi-Kenya*. *BMC Public Health*. Research Article.
- Olakunde B. (2012). *Public health care financing in Nigeria: Which way forward?* *Annals of Nigerian Medicine*. Vol 6.
- Ombiro N., and Otieno G. (2019). *Utilization of the National Hospital Insurance Fund in Embu County, Kenya*. *International Journal of Health and Pharmaceutical Research* Vol. 5 No. 1.
- Orodho, J., (2005). *Elements of Education and Social Sciences; Research Methods*.
- Penchansky R., and Thomas WJ (1981). *The concept of access: definition and relationship to consumer satisfaction*. *Med Care*.
- Peters D, Garg A., Bloom G., Walker D., Brieger W., Rahman M. (2007). *Poverty and access to health care in developing countries*.

- Prashad P., Saunders D., and Dalal A. (2013). Mobile Phones and Microinsurance. International Labour Organization. Microinsurance Paper; No.26
- Ritchie J, Lewis J, Elam G. Designing and selecting samples. In: Ritchie J, Lewis J, editors. (2003). Qualitative research practice: a guide for social science students and researchers. London: Sage; 2003. p. 77–108.
- Robeyns, I. (2005). The capability approach: A theoretical survey. *Journal of Human Development*
- Rono G. (2017). Out-of-pocket payment for healthcare and its effects on household welfare in rural and urban areas of Kenya.
- Ryan, W. (1998). What do sequential behaviour patterns suggest about medical decision making process? Modelling home case management of acute illness in a rural Cameroonian village. *Social Sci. Med.*
- Salari P., Di Giorgio L., Ilinca S., et al. (2018). The catastrophic and impoverishing effects of out-of-pocket healthcare payments in Kenya. *BMJ Global Health* 2019.
- Savedoff, W. (2009). *Governance in the Health Sector: A Strategy for Measuring Determinants and Performance*. Social Insight, Portland Maine
- Sen, A. (1993) ‘Capability and well-being’, in M. Nussbaum and A. Sen (Eds.), *The Quality of Life*, Clarendon Press, Oxford.
- Shaikh B., Hatcher J. (2004). Health seeking behaviour and health service utilization in Pakistan: challenging the policy makers. *J Public Health (oxf)*.
- Storchi, Silvia; Johnson, Susan (2016): Financial capability for wellbeing: An alternative perspective from the capability approach, *Bath Papers in International Development and Wellbeing*, No. 44, University of Bath, Centre for Development Studies (CDS), Bath
- Triki T., Faye I. Edts (2013). *Financial Inclusion in Africa*. - African Development Bank (AfDB)
- Uzochukwu B., Ughasoro M., Etiaba E., Okwuosa C., Envuladu E., and Onwujekwe O. (2015). Health care financing in Nigeria: Implications for achieving universal health coverage. *Niger J Clin Pract.*

- Wagstaff A. (2007). Health insurance for the poor: Initial impacts of Vietnam's health care fund for the poor, Policy Research Working Paper Series 4134 .World Bank
- Wagstaff A, Flores G, Hsu J, et al. (2018) Progress on catastrophic health spending in 133 countries: a retrospective observational study. *Lancet Glob Health*.
- Wairiuko JM., Cheboi SK., Ochieng GO. And Oyore JP. (2017) Access to Healthcare Services in Informal Settlement: Perspective of the Elderly in Kibera Slum Nairobi-Kenya. *Annals of Medical and Health Sciences Research*. Research Article.
- World Health Organization (WHO) .2010. *The World Health Report: Health Systems Financing: The path to universal coverage*. Geneva.
- Worth A., and Carr E. (2001). *The use of telephone interviews in research*. Sage Publications. Vol 6, No 1.
- Young J. (1981). Non-use of physicians: methodological approaches, policy implications, and the utility of decision models. *Social Science and Medicine*
- Zollman J. and Ravishankar N. (2016). *Struggling to thrive: How Kenya's low-income families (try to) pay for healthcare*. FSD Kenya.

## APPENDICES

### Appendix 1: Semi-Structured Interview Guide

#### Informed Consent Statement

Good morning/afternoon. My name is ..... I am a student at the University of Nairobi, pursuing a Master's degree in Development Studies. I am conducting research for my project paper on digital health microinsurance and access to healthcare hence the purpose of my call. For my study, I will need information on Hospital Cash and how the product has enabled payment for health care services.

I am kindly requesting you to share your experience on the product and how the claim paid out to you enabled you to access health care. Your identity and the information obtained will remain confidential, and used for learning purposes for my project paper. Kindly note that your participation is on voluntary basis. Your cooperation will be appreciated and I am hopeful that the outcome of this study, will contribute to the development of the product and replication of similar products countrywide in order to enhance access to health care.

Date: .....

#### QUESTIONS

##### Section A: Demographic Information

1. Respondent's Name :

2. Area of Residence:   01). Embu West           04). Mbeere South  
                                  02). Embu North           05). Mbeere North  
                                  03). Embu East



Explain.....

If No, what made you decide to get a health insurance cover?

Explain.....

10. How did you come to know of Hospital Cash?

Explain.....

11. Did you receive training on the product before uptake?

01). Yes    02). No

If No, How did you gain information on the product?

Explain....

12. Was the information/training on the product comprehensive?

01). Yes    02). No

Explain.....

13. How long have you been a member of your current collective?

01). 1-2 years                      04). Above 7 years

02). 2-5 years                      05). N/A

03). 5-7 years

14. What kind of financial management training had you received in your collective before the introduction of Hospital Cash?

Explain:



15. Did the financial training you received make you see the importance of taking up health insurance?

01). Yes 02). No 03) N/A

Explain.....

16. Are there members in your collective who have not enrolled for the product?

01). Yes 02). No 3) N/A

**Section C: Product Information**

17. Is the product tailored to meet your needs?

In terms of:

	YES	NO
Coverage		
Benefit Packages		
Eligibility Criteria		

18. How did you find the enrollment/registration process?

01). Easy 03). Slightly hard  
02). Relatively easy 04). Hard

19. Did the use of mobile phone technology make it more convenient for you to take up the health microinsurance cover and to pay your premiums?

01). Yes 02). No

Explain.....

20. How much premium do you pay for your health insurance cover annually  
(Kshs)?

01). 133 Kshs 04). 651 Kshs  
02). 274 Kshs 05). 1265 Kshs  
03). 406 Kshs

21. Do you find the premiums affordable?

- 01). Yes      02). No

If yes, why do you think it is affordable?

- 01). Premiums are paid once a year  
02). The premium amount is affordable compared to my level of income  
03). The premium is affordable in relation to the benefits.  
04). The premium amount is affordable compared to other products in the market

If No. Explain.....

**Section D: Claim Settlement**

22. How did you find the claim launching process?

- 01). Easy                      03). Slightly hard  
02). Relatively easy    04). Hard

23. Did you face any difficulties in the processing of your claim?

- 01). Yes      02). No

If yes, explain.....

24. How long did your claim take to be processed?

- 01). Less than 24 hours                      02). Between 24-48 hours  
03). More than 48 hours

25. If you were previously insured, did you ever receive a processed claim?

- 01). Yes      02). No    03) N/A

If yes, what was the difference in the claim settlement process? Explain.....

26. To what extent were you able to cover your health expenses with the processed claim?

01). I managed to cover all my health expenses

02). I was able to partly cover my health expenses.

If 02) please explain.....

27. Did the use of mobile money (M-pesa) as a mode of claim pay out make it easier to settle your hospital bill?

Explain.....

28. Did the product enable you to save money that you would have otherwise spent on paying to access the health services?

01). Yes      02). No

Explain.....

29. Is there any other member in your household who is insured under Hospital Cash?

01). Yes      02). No

Explain.....

30. Would you recommend Hospital Cash to other members in your community who are not insured?

01). Yes      02). No

Explain.....

31. In your opinion, what do you think can be improved on to make Hospital Cash better?

Explain.....

## Appendix 2: Key Informant Interview Guide

### Informed Consent Statement

Good morning/afternoon. My name is ..... I am a student at the University of Nairobi, pursuing a Master's degree in Development Studies. I am conducting research for my project paper on digital health microinsurance and access to healthcare hence the purpose of my call.

I am kindly requesting you to share information based on your knowledge and experience on the subject. Your identity and the information obtained will remain confidential, and for study purposes only. Kindly note that your participation is on voluntary basis. Your cooperation will be appreciated and I am hopeful that the outcome of this study, will contribute to the development of the product and replication of similar products countrywide in order to enhance access to health care.

Date: .....

## **General Information of Key Informant**

Name of Respondent:

Gender:

Job Title:

## **Questions**

1. What is your experience with digital health microinsurance?
2. What demographics influence the uptake of digital health microinsurance?
3. Kindly expound on how digital health microinsurance has increased uptake of insurance among low-income earners
4. What features of digital health microinsurance make it valuable to low-income earners?
5. Kindly explain how digital health microinsurance promotes access to health care for low-income earners.
6. In what way does digital health microinsurance facilitate payment for health care services?
7. In your opinion, has digitization of health microinsurance made processes more efficient? Kindly explain.
8. What is your opinion on the adoption of digital health microinsurance as a health care financing solution in the country?
9. What is your opinion on leveraging on mobile money technology as a strategy to promoting access to health care?
10. How can digital health microinsurance be improved to increase further access to healthcare to a wider population?