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The viability of insuring outpatient care for a micro health insurance scheme.

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DECLARATION

I declare that this work has not been previously submitted and approved for the award of a degree by this or any other University. To the best of my knowledge and belief, the Research Project contains no material previously published or written by another person except where due reference is made in the Research Project itself.

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ABSTRACT

Outpatient care is not widely insured due to demand side moral hazard. This is compounded by the fact that there is very high out-of-pocket expenditure especially for the poor. Micro Insurance firms cater for the needs of the poor but outpatient care is rarely part of the cover given to them. Even with the ones that provide the cover, it is limited. The purpose of this study is to assess the feasibility of a micro insurance company to insure outpatient care. The study focuses on outpatient utilisation for three schemes. Outpatient costs are assessed as a measure of utilisation and premium payments are also used as a measure of utilisation. The study uses a panel data set from a Kenyan insurance company for the years 2012-2014. It incorporates the use of hypothesis tests to assess outpatient medical costs. The level of utilisation of the outpatient benefits is very low. A small number of policyholders utilise more than their premiums paid and even less exceed the cover limits. This shows that these schemes are viable. More importantly it raises the question; why is the level of utilisation in these schemes low given the high levels of outpatient utilisations in Kenya?

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LIST OF ABBREVIATIONS

NGO	Non-Governmental Organization
ILO	International Labour Organization
GDP	Gross Domestic Product
EAC	East African Community
GLM	Generalized Linear Models
YLL	Years of Lives Lost
HIV	Human Immuno-deficiency Virus
WHO	World Health Organization
HMIS	Health Micro-Insurance Scheme
MSA	Member Savings Account
MIP	Micro Insurance Protection
NHIF	National Health Insurance Fund
OLS	Ordinary Least Squares
KNBS	Kenya National Bureau of Statistics

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CHAPTER 1: INTRODUCTION.

1.1 Background of the study

Micro insurance in various forms has been available in East Africa for many generations now. Since the 1970's pro-poor microfinance institutions existed in the semi-formal sector that catered for the needs of the low income earners (Takaful Re limited, 2012). As of 2005, new efforts and formal programmes were introduced to improve people's ability to manage their risk. Some hospitals and clinics developed prepayment schemes. A number of non-governmental organizations (NGOs) that work with low income clients developed risk management products like emergency credit or micro insurance products (McCord & Osinde, 2005).

With increasing competition among healthcare plans, the target consumer is faced with more opportunities for choice and more complex options than in the past (Mechanic, 1989). All these methods of healthcare funding can be classified according to whether they are forms of prepayments or points-of-service prepayments. Medical savings accounts are a hybrid of point-of-service and prepayment: although money is put into a savings (prepaid) account and there is no pooling of funds. Dixon (2002) Suggests that the medical savings accounts have received attention as an alternative to predominant systems of funding that provide full insurance coverage because of their potential to address the problem of moral hazard. (ILO,2006) however suggests that what could be considered as demand-side, user-driven moral hazard is very likely to be nothing more than the expression of a real need for epidemiological and clinical treatment. In other words it is not a question of over-utilization after joining a health scheme, but rather under-utilization prior to joining.

Health micro insurance implies that the premium charged is appropriate for the low income clients; this in turn results in severe rationing of benefits to maintain viability (ILO, 2006). When the benefits of a product are rationed, they need to be tailored to the needs of different market segments.

Although Kenya is still considered a low-income country by international standards, it is seen as one of the leading economies in the East African Community (EAC), a customs union between Kenya, Tanzania, Uganda, Rwanda and Burundi. Kenya's Gross Domestic Product (GDP) per capita, at USD 1,802 is among the highest of the region. However, this figure masks great disparities between Kenya's small and rich elite and the majority who live in poverty.

Kenya's economy is characterised by a relatively small formal sector with about 1.9 million employees and a large and growing informal sector with over 8.3 million employees. Total GDP was USD 75 billion in 2012 with growth of 4.7% and inflation (CPI) of 9.4% (Kenya National Bureau of Statistics (KNBS), 2010).

According to Greyling (2014) the average Kenyan is healthier, more educated and enjoys better infrastructure services than a decade ago, but a large proportion of the population continues to live in fragile conditions with sub-standard access to water, sanitation and energy. The growing size of the elderly population is also likely to shift healthcare needs over time towards lifestyle diseases, like hypertension and diabetes, which require more long term treatment. Measured by the number of years of life lost (YLLs) due to premature death in Kenya, HIV/AIDS, lower respiratory infections, and malaria were the highest ranking causes in 2010, although the incidence of lower respiratory infections had reduced by 21% compared to 1990 (Greyling, 2014).

Kenya's health sector faces enormous deficiencies in coverage and infrastructure. Due to the poor quality of the public sector offering, Kenyans increasingly look to the private sector for quality and value for their money. As a result, Kenyan consumers spend a greater proportion of their income on healthcare than they did a decade ago.

Greyling (2014) says that there is a high degree of outpatient payments in Kenya and this creates a problem. In 2013 ,out of pocket spending on outpatient care accounted for approximately 78%(KSh 48.4 billion) of the total household health expenditures, while spending on inpatient services accounted for close to 22%(KSh 13.7 billion). The total number of outpatient visits increased from 4.8 million visits in 2003 to 9.1 million in 2013. A nearly 90% increase, this translates to an average of 24 visits per 100 people compared with 15 visits per 100 people in 2003. This indicates that outpatient utilisation has gone up over the period of 10 years.

A closer look at the utilisation of outpatient services by type and health provider and ownership shows a high dependency on public facilities. Over 58% of outpatient visits in 2013 were to public health facilities, with public health centres and dispensaries accounting for about 40% and public hospitals accounting for just over 185 of these visits. Dependence on public health facilities for outpatient services is significantly higher among rural populations at 65.3% while that for urban populations is 43.2%. Despite the lower costs but higher probability of occurrence this falls into the category of hardly insurable risk for the insurance provider as administrative

costs for insuring risks are too high. This creates a problem of preferences between the insurer and the insured.

1.2 Purpose of study

The result of a study commissioned by the government of Kenya show that the costs of healthcare services are high in Kenya (Flessa, Moeller, Ensor, & Hometz, 2011). However, these costs do not necessarily increase proportionately as coverage increases as a result of a high level of fixed costs. This phenomenon will affect the poor to a greater extent than it will the rich. This means that policymakers have to implement policies to contain expenditure growth but this is not synonymous with improving efficiency. They may attempt to increase the technical efficiency of healthcare services to maximize the return on financial inputs (European Observatory on healthcare systems series, 2002). Product manufacturing is therefore a very important process in meeting the needs of different social classes. It requires the definition of several elements: a specific target client group, the demand for insurance, the composition of the benefit package, pricing, the healthcare providers, as well as control for moral hazard and adverse selection (ILO, 2006).

According to Greyling (2014) the cost of administration and management of health micro insurance schemes are unsustainably high. In the Afya Yetu scheme, administration costs as a percentage of premiums went from 45% in 2009 to 72% in 2011 and 51% in 2012 (Koven, Magnoni, Zimmerman, Sobol, & Budzyna, 2014). Nevertheless micro insurance schemes are supposed to offer affordable services to its customers.

In the world's poorest countries, most people particularly the poor, must pay cash for healthcare when they are sick and most in need, which tends to be regressive and often hinders the access to healthcare. Since the Millennium Declaration was signed in 2000, resources remain insufficient in most low income countries to ensure that most people have access to even a very basic set of health services. As a result, an estimated 150 million people suffer severe financial hardship and 100 million are pushed into poverty each year because they have to pay for health services out of their own pockets (World Health Organisation(WHO), 2014). The prepaid healthcare developments is important in reducing the out-of-pocket payments.

Evidence from many health systems shows that prepayment through insurance schemes lead to greater financial fairness (WHO, 2010). Despite this, the penetration levels of prepaid insurance is very low in Kenya with enrolment standing at 20%. In addition, less than 5% of the population

is participating in private health insurance (Greyling, 2014). In addition private health insurers prefer to provide inpatient cover on a group basis and few schemes provide combined inpatient and outpatient cover and individual plans. This is based on the perceived risks and costs associated with outpatient and individual plans. There is a lack of adequate actuarial information about outpatient and individual covers and this is exacerbated by a fear of adverse selection and moral hazard. Outpatient and individual covers have therefore only been provided intermittently.

Table 1: ***Range of benefits offered by private insurance schemes and MIPs***

Prepaid Scheme	**Type**	**Inpatient cover**	**Outpatient cover only**	**Inpatient and**	**Individual cover**	**Group cover**
Britam	PHI	Yes	No	No	No	Yes
APA	PHI	Yes	No	Yes	Yes	Yes
Jubilee	PHI	Yes	No	Yes	Yes	Yes
UAP	PHI	Yes	No	Limited	Yes	Yes
CFC/Heritage	PHI	Yes	No	Yes	No	Yes
AAR	MIP	Yes	No	Yes	Yes	Yes
RHEA	MIP	Yes	No	Yes	Yes	Yes

Source: Deloitte Consulting, 2011, Market assessment of private prepaid health schemes.

Table 2 and 3 below provides a breakdown of specific health micro insurance schemes that have been available in Kenya. All of these schemes with the exception of Kinga ya Mkulima, have been discontinued or scaled down significantly in recent times. This indicates that micro insurance schemes are facing a big challenge in maintaining sustainability.

Table 2: *Illustration of key health micro insurance schemes*

Company	**CIC Bima ya Jamii**	**Pioneer Faulu Afya**	**Kinga ya Mkulima**	**Jamii Bora Health insurance**
Start date	**2007**	**2010**	**2007**	**2001**
	Product type	IP, health, AD&D, Funeral, voluntary, stand alone	IP & OP health, term life, AD&D, voluntary, stand alone	IP health, AD&D, Mandatory for borrowers of Jamii Bora Trust (JBT)
	Cover limits	338,480Ksh (IP health), 49,760Ksh (hospital cash), 99,520Ksh (AD&D), 29,840Ksh (funeral)	199,120Ksh (IP & unlimited OP health), 99,520Ksh (life & disability)	Unlimited IP health, outstanding loan cover
	Annual Premium	3,600Ksh per family	6,960Ksh per family	Ksh2,400 per family
	Distribution	SACCO's & MFI's	MFI	MFI
	1. Premiums do not include the cost of taking a loan to purchase insurance, which is very common for all the products reviewed except Britak. 2. Average monthly household income based on estimations from the providers, on-going impact study of the CIC product conducted by European Research Development Network (EUDN) and Oxford University and Ana Klincic's study on Jamii Bora Trust clients. 3. CIC product sells NHIF inpatient cover and bundles it with life benefits underwritten by CIC. Note: USD 1 = KES 80; IP = Inpatient: OP = Outpatient; AD&D = Accidental death & disability			

Source: ILO Micro insurance Paper no. 12, 2011.

Table 3: *Illustration of key health micro insurance schemes*

Company	CIC Bima ya Jamii	Pioneer Faulu Afya	Kinga ya Mkulima	Jamii Bora Health Insurance
Start date	**2007**	**2010**	**2007**	**2001**
	Targeted segment	SACCO members & MFI clients Ksh9,920 to Ksh14,960 (rural),KSh 14,960 to KSh 29,840 (urban)	Urban micro entrepreneurs KSh 14,960 to Ksh29,840	Urban slum dwellers KSh 9,920 to KSh19,920
	Performance	8,300 lives (06/2010); 40% claims ratio for life; 120% claims ratio for health; 25% renewal ratio	11,000 lives (09/2010); >100% claims ratio	600,000 lives (10/2010); 80% to 100% claims ratio
	1. Premiums do not include the cost of taking a loan to purchase insurance, which is very common for all the products reviewed except Britak. 2. Average monthly household income based on estimations from the providers, on-going impact study of the CIC product conducted by European Research Development Network (EUDN) and Oxford University and Ana Klincic's study on Jamii Bora Trust clients. 3. CIC product sells NHIF inpatient cover and bundles it with life benefits underwritten by CIC. Note: USD 1 = KES 80; IP = Inpatient: OP = Outpatient; AD&D = Accidental death & disability			

Source: ILO Micro insurance Paper no. 12, 2011.

1.3 Problem statement

The most pressing need for below poverty line families is to transfer the risk of outpatient events. The demand however does not match supply as insurers do not readily offer outpatient care. Consequently, the lack of sufficient outpatient care contributes to high levels of out-of-pocket expenses. These grim facts are compounded by the unsustainability of micro health insurance in Kenya. This is a persisting problem, with health insurance having to rely on subsidies. In addition, mobilising adequate resources required to achieve access to an acceptable standard of healthcare for the population as a whole is a major challenge. Having an insurer that offers outpatient care hence invites inquiry as to how they sustain a micro insurance scheme that offers outpatient care given most of the available cover continue to focus more only on inpatient benefits. Furthermore disparities exist between outpatient and inpatient costs of care, as well as the amount paid by the insured and uninsured population.

Another problem is the moral hazard inherent in insuring outpatient care. With insurance, ideal conditions require that the event being insured against be beyond the control of the individual being insured. However, this is not the case for medical insurance. According to Freiberg & Scutchfield (1976) the occurrence of illness or injury is essentially a random event, however the institutional treatment of illness or injury is determined to a large extent by individual being insured; hence medical insurance increases the demand for outpatient care.

1.4 Research objectives

The aim of this research is to analyze extent of outpatient care utilisation for the low income earners. This is done by looking at the cost of claims versus the premiums paid to determine if the premiums match the costs.

1.5 Research questions

1. What is the level of outpatient utilisation for the schemes?

2. What is the relationship between average out-patient claim amounts and premiums paid for the schemes?

1.6 Scope of research

The research focuses on outpatient utilisation for three different micro insurance schemes of a single company. The period of study is from January 2012 to December 2014.

1.7 Significance of research

The research attempts to contribute to literature on outpatient utilisation for health insurance schemes. The main beneficiaries of this research are likely to be product designers for medical insurance products and in particular for products that have outpatient covers. With information on outpatient utilisation of policyholders, they would be able to charge appropriate premiums on policies and also put appropriate cover limits on policies.

CHAPTER 2: LITERATURE REVIEW

Micro insurance services low income communities that are unable to afford traditional insurance products. Generally these low-income communities are in developing countries and are not serviced by the conventional insurance market or social insurance schemes because the premiums are unaffordable or their incomes are irregular (Richardson, 2011). Micro insurance products for health and agriculture seem to have the greatest potential to improve people's quality of life, as these risks are listed to be most troublesome by low-income people in Uganda, Kenya, Tanzania, Nigeria, Ethiopia and Zambia (Institute of Health Metrics and Evaluation(IHME), 2014).

2.1 Health micro insurance schemes

A health Micro insurance scheme (HMIS) is a micro insurance scheme that provides healthcare cover for its members. The premiums collected from the members may not cover the full cost of the scheme; the extra costs may be covered by a subsidy from the government or a charity organisation. There are some schemes that aim to operate on a fully funded basis i.e. with the premiums collected covering the full costs and even providing a profit for providers. Health micro insurance schemes that have limited access to subsidies or may be fully self-funded need to ensure that premiums are calculated so that they accurately reflect the expected costs. As a consequence good pricing techniques need to be considered (Leach, 2008).

Premiums need to be affordable for very low income groups to minimize the large margins for data or model errors. However this is a problem since the data available is likely to be scarce and incomplete as experience statistics for the low income groups may not be readily available This happens especially if the product is being offered to the group for the first time. Since so little is initially known about these low-income groups, their behaviour is often difficult to predict. The behaviour of conventional policyholders may also not be applicable and the scheme providers may only fully understand the low income group's behaviour once the scheme has been operational for some time. In addition the risk of illness for these low-income groups may be higher than that for conventional policyholders because of their poor socioeconomic background.

According to Richardson (2011), there are currently no established actuarial practices for pricing health micro insurance schemes. The techniques currently used for such schemes are developed on a case by case basis. Despite health insurance being one of the most widely sought

after micro insurance products in the developing world, most providers of health micro insurance (HMI) have struggled to achieve sustainability without public or donor support. Designing valuable, sustainable HMI products is inherently more complex than for other types of micro insurance. A lack of data and adequate skills for pricing, as well as the challenges around effectively forming and managing provider networks are two key factors that adversely affect HMI sustainability (Greyling, 2014).

2.2 Medical savings accounts.

Medical savings purport to address some of the main inefficiencies of private health insurance –moral hazard, escalating costs, adverse selection, and gaps in coverage (WHO, 2010). According to Dixon (2002), medical savings accounts are similar to bank accounts: the money belongs to the account holder, but its purpose is to pay for medical expenses of an individual or family. Although the implementation of medical savings accounts has been limited thus far, it has raised widespread international interest. The concept of Medical Savings Accounts (MSAs) – that individuals save and pay for their own Medical needs – emerged in response to concerns of escalating healthcare costs. As stated before, medical savings accounts have provided an alternative to predominant systems of funding because of their potential to address moral hazard.

According to economic theory, moral hazard occurs when the act of insurance increases the likelihood of the occurrence of the event being insured against (ILO, 2006). Consumer moral hazard may result in the subscriber using excessive services and provider prescribing excessive treatment Dixon (2002). Consumer and provider moral hazard occur under both public and private insurance. Advocates argue that medical savings accounts will reduce moral hazard, increase choice, improve the efficiency of insurance, and result in lower costs of and expenditure on healthcare.

(WHO, 2010) also suggests that cost-sharing effectively addresses moral hazard. The theory is that if individuals bear more costs, they consume less as they make more conscious consumption choices. Cost-sharing is similarly proposed as a solution because it forces consumers to become more conscious of price and quality. This happens in that as consumers seek cost-effective services, competition is fostered amongst firms on price and quality. Furthermore, costs would be reduced with MSAs given the absence of expensive private

insurance practices, e.g. screening consumers, processing claims/appeals, and conducting utilization reviews/audits.

Private health insurance is also criticised for fostering adverse selection, resulting in inefficient coverage gaps (WHO, 2010). This scenario describes the higher propensity of unhealthier individuals to purchase insurance and conceal their health background. Insurers raise premium prices to account for more and costlier medical expenses. In turn, healthier individuals may find this price expensive and are less likely and/or able to purchase coverage. Their exit from the market causes the insurance pool to shrink in size and increase in risk; prices rise and the cycle continues. In theory, MSAs obviate adverse selection because there is no risk pooling and thus no selection. Rather, pooling occurs across an individual's lifetime – individuals save during economically active, healthy years and spend in elderly years when need for healthcare is increased.

Furthermore, MSAs are often linked with catastrophic insurance which have higher deductibles and therefore lower premiums (WHO, 2010). In theory, lower premiums extend coverage to those currently uninsured. Whether MSAs are effective in addressing adverse selection and coverage gaps is of much debate and raises important questions. Will individuals be able to adequately save? If not, can they still access care?

The success or failure of an MSA as a cost sharing instrument depends heavily on the perceptions that each individual has on their MSA funds (Ramsay & Butler, 2001). If the MSA account is perceived as a contingency fund, then there is no financial barrier, no financial inducement, and thus no incentive on account holders to change their consumption of medical services. On the other hand, if the funds are perceived as potential savings that can be used for other purposes, then account holders would have a stronger incentive to restrain their consumption of medical services. Whether an MSA balance is viewed as savings or insurance depends on the several factors such as taxes, restrictions on the account balance, and the source of the contribution, and these factors will determine the effectiveness of MSAs at reducing the costs of healthcare.

MSA's provide a powerful incentives for individuals to manage their healthcare costs. Some critics however have challenged the ability of an MSA to control nationwide costs. Findings by Matisonn (2000) from a research conducted in South Africa suggest that the average annual

spending of individuals for outpatient care reduce significantly when they enrol in an MSA scheme. He found out that joining an MSA induces people to cut on their average spending by more than half. South Africa's experience with MSA's shows that MSA holders save money hence spending less on discretionary items in a way that does not increase inpatient care. Matisonn (2000) also found out that MSA's attract individuals of different ages and differing degrees of health.

In Singapore too, their experience with MSA's has shown that there are broader potential benefits of adopting it (Butler & Ramsay, 2001). Their Medisave plan encouraged saving, which made more capital available for business development and expansion, generating more economic growth. Some critics have argued that MSAs may deter people from using preventive care because they will be more focused on pocketing the year–end savings than worrying about the uncertain possibility of future illness. However a study conducted by the RAND Health Insurance Experiment showed that, while cost sharing does reduce the use of medical services including preventive care, it will not, for the most part, adversely affect individuals' health (Ramsay & Butler, 2001).

2.2.1 The Kenyan case.

There are several types of prepaid schemes in Kenya that are subject to different organisational frameworks and regulations. These include private health insurance companies, medical insurance providers (MIPs), community based health financing schemes and the National Health Insurance Fund (NHIF). The types of insurance covers and benefits covered vary significantly. Until recently, there was also no regulatory differentiation between insurance and micro insurance. A study on prepaid health schemes in Kenya in 2010 by Deloitte Consulting (2011) estimated that only 7.8 million people, or about 20% of the total population, were covered by any health insurance scheme.

Health insurance products are generally viewed as difficult products to make work for the low-income market, due to the difficulty of claims management and high levels of administration expenses. However, a number of health insurance products have been designed and rolled out for the low-income market in Kenya. This is partly the result of high levels of expressed demand for this product (particularly by MFIs and their clients), as well as insurance companies' willingness to experiment with this product. The strong interest in health insurance also

emerged as a prominent theme from the focus group discussions which were conducted for this study (ILO, 2014).

2.3 Outpatient care

By far the majority of HMI schemes only cover inpatient benefits. This is based on the perceived risks and costs associated with outpatient and individual plans. However, it should be questioned whether they address the overall financial burden of ill-health experienced by the poor. Although an inpatient admission would be a catastrophic event for most poor people, outpatient care constitutes a much higher share of overall health expenditure than inpatient care and much of this continues to be out-of-pocket (Greyling, 2014). In addition, a chronic ailment that requires regular treatment on an outpatient basis can involve higher expenditures than an inpatient procedure (Nagpal, 2013).

A major difference exists between the preferences of insurers and policyholders with regard to outpatient care (ILO), 2006). Insurers like to cover rare, high cost events and dislike many small costs that drive up administration costs. In contrast insured's are loss averse preferring products that reduce their losses, which do not necessarily result from low probability high cost events but rather from accumulation of low-cost high probability events. Besides this conflict, there is a further problem with the insurance scheme if it does not cover outpatient care. A policyholder that was meant to be covered for outpatient treatment with a minor illness would have an incentive to delay treatment until the health condition is serious enough to warrant a claim. In the end, this becomes too expensive for the insurer too.

There is a lack of adequate information about outpatient covers and this is exacerbated by a fear of adverse selection and moral hazard. Despite this lack thereof, the review of the studies in South Africa, Ghana, Colombia and Kenya demonstrate that the primary care outpatient needs for the majority of the below poverty lines families consist of events such as malaria, respiratory infection and diarrhoea (Greyling, 2014). Mahal, Krishnaswamy, Ruchismita, & Babu (2013) observe that although out of pocket spending on outpatient care is much higher than on inpatient care, health insurers have been mostly focused on insuring hospitalization which is less frequent but more catastrophic in nature.

A study conducted in India reveals the need for insuring outpatient care. Of the 9.7 million under five deaths in the world every year 25% occur in India. Of the 26.3 million un-immunized children in the world 43% reside in India. 60% of all global measles deaths occur in India

(Mahal et al., 2013). According to World Health Report (2007), 60% of all polio cases, 22% of all maternal deaths and 40% of underweight children below five years of age are in India. Despite the state-led initiatives to lower the financial risks of hospitalization, the poor in India still face the considerable risk of health expenditure. This is because the population coverage of the schemes have thus far been limited and they only cover inpatient care (Mitchell, Mahal, & Bossert, 2011). In addition, few programs in India focus on outpatient care, although the per capita outpatient expense of below poverty line individuals(at Rs 30.1) is more than twice their inpatient expense(Rs 14) (Mahal et al., 2013).

In a study conducted in the region of Yavatmal in Maharashtra India, the out-of-pocket outpatient expenses accounted for nearly 80% of all out of pocket spending by households. One of the recommendations made by was that provisioning of primary care through a health card may have significantly higher impact by way of improved treatment seeking behaviour among patients compared to a pay-per use model, even when the fee per visit is small. Secondly, insurers and government agencies deploying hospitalization insurance products in markets where access to healthcare is poor may benefit if the inpatient cover may be bundled with outpatient insurance.

The past decade saw a steady rise in the use of outpatient care (Ministry of Health, 2015). The average number of visits to an outpatient health provider (utilisation rate) per capita, per year increased by 35 percent from 2007 to 2013. From a survey the ministry conducted, an overwhelming majority (87.3%) of survey respondents reported that they consulted a healthcare provider when ill. Of those that did not seek care when ill, most reported that they did not consider the illness serious enough, that they self-medicated, or that the cost of care was too high. Those that lived within 3 km of a health facility were much more likely to seek care than those who lived over 10 km, 6–9 km, and even 4–5 km away.

OOP spending in 2013 was KSh 61.5 billion; outpatient care accounted for approximately 78 percent of this figure (KSh 48.4 billion) (Ministry of Health, 2015). Average annual per capita spending on outpatient care fell between 2003 and 2007, but rose again from 2007 to 2013, to KSh 1,254. In general, females, urban households, older segments of the population, and those with college and university educations spent the most on outpatient services. According to their findings, Health insurance coverage did not seem to significantly affect whether someone

sought outpatient care, with the insured and uninsured reporting almost the same number of outpatient visits per capita.

2.4 Factors affecting healthcare utilisation

An observed association between health insurance affiliation and healthcare use and expenditure may be due to underlying unobservable characteristics and not insurance .With respect to the impact of health insurance on the healthcare use, Waters (1999) names the potential endogeneity of the choice of insurance for healthcare use as the main problem, leading to potential selection bias. Individuals who self-select into the insurance programme have unobservable characteristics—related to preference or health status (adverse selection)—that might make them more likely than other to join the programme and also might influence their decision to use healthcare services.

Membership to a health insurance organization would also increase outpatient healthcare utilization. The probability of members to frequent a healthcare provider is higher because they pay less for their treatment in comparison to non-members. A study by Sekyi.Samuel & Dobanman (2012) indicates that members of the National Health Insurance Scheme (NHIS) utilize more of outpatient care and have less out-of-pocket expenditures. Membership of NHIS also had a strong positive impact on levels of out-of-pocket expenditures on outpatient care. The study revealed that membership to a scheme is an effective tool for increasing utilization of modern healthcare particularly outpatient care. In addition, the more individuals perceive their illness as severe the more likely they will visit a healthcare provider.

Demographic variables too affect the levels of outpatient utilisation. According to Sekyi.Samuel & Dobanman (2012) five demographic variables are of particular importance-sex, employment status, age, education, and household size. Females are found to consume somewhat more health care than males do primarily because of childbearing (Miller, 1994). Furthermore, because health often deteriorates as a result of aging, we could assume that the older an individual, the more health care he/she would seek. A study conducted by the Ministry of health (2009) revealed that women make 1.3 more visits as men do. Another significant finding was that the young and the old made significantly more visits than those of intermediate age.

The opportunity cost of illness is higher for the employed, hence they more likely to seek care when ill (Sekyi.Samuel & Dobanman, 2012). Most often the higher an individual's education, the more socially advantaged he/she will probably be and the more access he/she will have to

medical care. In turn, the more medical care one seeks, the more his or her out-of-pocket medical expenditures will be. An increase in household size should also increase the likelihood of healthcare use and result in more out-of-pocket expenditures. The household size is expected to have a positive coefficient on outpatient utilization and out-of-pocket expenditure.

2.5 Conclusion

The outcomes of the different surveys conducted indicate that the out-of-pocket expenditures for the poor is high. However, most insurers have focused more on insuring inpatient cover despite there being higher outpatient costs. This can be attributed to the difficulty of insuring outpatient cover. In addition, the failure of some of the Kenyan micro insurance schemes who cover outpatient compounds this factor. This creates an urgent need to insure the poor for outpatient cover.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Research design

The research attempts to determine the level of outpatient utilisation. It is a quantitative, explanatory study making use of hypothesis testing techniques to determine outpatient costs for different schemes. Data primarily sought from three different schemes is used. These schemes are all under one insurance company but they offer different levels of covers. The study uses data covering a period of three years. The benefit utilisation is determined for each scheme and a comparison is done between the cover limits and the outpatient costs for the policyholders to determine if the outpatient costs exceed the cover limits.

3.2 Target population sample

The population in this study is a health micro-insurance scheme in Kenya. The study focuses on outpatient cover for three different policies offered by the insurance company.

3.3 Data collection

The data is obtained entirely from a secondary source. The type of data used for this study is numeric/quantitative. In addition, the study uses annual levels of cost for outpatient covers for each of the policies from the three different schemes.

3.4 Hypothesis testing

A hypothesis is a statement about the value of an unknown parameter in the model (ACTED, 2014). It evaluates two mutually exclusive statements about a population to determine which statement is best supported by the sample data. The basic hypothesis being tested is the null hypothesis, denoted H_0 – it can sometimes be regarded as representing the current state of knowledge or belief. Where a hypothesis completely specifies the distribution, it is called a simple hypothesis. Otherwise it is called a composite hypothesis. In this case, a composite hypothesis is most relevant.

Hypothesis tests are used when you want to test a claim or a hypothesis about a parameter in a population using data measured in a sample. The hypothesis is tested by determining the likelihood that a sample statistic could have been selected if the hypothesis regarding the population parameter were true (Privitera, 2015). The current study is mainly concerned with

outpatient utilisation of insured lives. This can be assessed using premiums payable vis-à-vis the costs from each policy to see if the insurance is viable.

3.4.1 One sided and two sided tests

A test is a rule which divides the sample space (the set of possible values of the data) into two subsets, a region in which the data are consistent with H_0, and its complement, in which the data are inconsistent with H_0 . The test is designed to answer the question "Does the data provide sufficient evidence to justify our rejecting H_0?" A one-sided test only considers a change in one direction while a two sided test considers a change in either direction. The actual decision is based on the value of a suitable function of the data, the test statistic. The set of possible values of the test statistic itself divides into two subsets, a region in which the value of the test statistic is consistent with H_0, and its complement, the critical region (or rejection region), in which the value of the test statistic is inconsistent with H_0 . If the test statistic has a value in the critical region, H_0 is rejected.

According to Privitera (2015) the likelihood or level of significance is typically set at 5% in behavioral research studies. When the probability of obtaining a sample mean is less than 5% if the null hypothesis were true, then we conclude that the sample we selected is too unlikely and so we reject the null hypothesis. The test statistic computed will aid in decision making by telling us how far the sample mean is from the population mean. The decision is based on the probability of obtaining a sample mean, given that the value stated in the null hypothesis is true. If the probability of obtaining a sample mean is less than 5% when the null hypothesis is true, then the decision is to reject the null hypothesis.

A one-tailed test is used where the alternative hypothesis is stated as less than (<) or greater than (>) the null hypothesis. It is used to compare a mean from a single sample to an expected "norm." The norm for the test comes from a hypothetical value or observations in prior studies, and does not come from the current data. Our expected "norms" in this case are the premium amounts and the cover limits for the policies. For thus reason, the study will use a one-tailed test. The two-tailed test is more conservative; it makes it more difficult to reject the null hypothesis. The one-tailed test, though, is associated with greater power. If the value stated in the null hypothesis is false, then a one-tailed test will make it easier to detect this (Privitera, 2015) .

3.4.2 Testing the value of a population mean

Given that we have a random sample of size n, from $N(u, \sigma^2)$- with sample mean $\bar{X}$, testing

$$H_0: u = u_o \tag{1}$$

And that σ is known, the test statistic $\bar{X}$, is

$$\frac{\bar{X} - u_0}{\sigma/\sqrt{n}} \sim N(0,1) \; under \; H_0 \tag{2}$$

The central limit theorem which states that If $X_1, X_2, X_3 \ldots X_n$ is a sequence of independent and identically distributed random variables with finite mean μ and finite (nonzero) variance σ^2 then the distribution of $\frac{\bar{X}-u_0}{\sigma/\sqrt{n}}$ approaches a standard normal distribution as n tends to ∞, justifies the use of a normal approximation for the distribution of $\bar{X}$ in sampling for any reasonable population.

The three hypothesis that are used to answer the research questions are;

H_0: Is utilisation/spending equal to 50,000?

H_1: Is utilisation/spending < 50,000?

This hypothesis tests against the value of 50,000 since this is the value of the cover limit for all the schemes.

H_0: Is spending= premium paid

H_1 Is spending > premium paid

The expenditure for the policies is compared to the premiums paid in order to assess the viability of insuring outpatient care. If for any scheme the spending is greater than the premium paid then it is not viable to insure outpatient care.

H_0: Claim amount=premium paid

H_1:Claim amount < premium paid

Where the premium charged for each policy is 32,000. This hypothesis looks more into the expenditure of the schemes just to see to what extent the insured spends given than the expenditure is more than the premium charged. Each of these hypotheses will be tested at the 5% level of significance as recommended by (Privitera, 2015).

CHAPTER 4: RESULTS AND ANALYSIS

This section gives a practical understanding of the methodology outlined in chapter 3. The results of the analysis will be presented and an analysis of the same.

4.1 Data refining

The research employed variables such as premiums paid, the annual costs and demographic factors affecting outpatient cover for a period from 2012-2014. Data refining process included the elimination of incomplete and absurd data points. This included elimination of absurd ages such as claimants who were aged 4917 years. Adjustments were also made to separate individuals who claimed from the individuals who did not claim for purposes of prediction. This was done by comparing the all claims data details by the member numbers on the individual schemes sheets. The reason for this was that individuals who did not claim would not provide any insight on outpatient utilisation for any of the schemes. The details that were relevant but not useful to my modelling process in R-software were also eliminated, details such as member numbers.

4.2 Summary statistics of annual costs

The data analysis began with an evaluation of key statistics for the outpatient costs. The results given on the tables are for policyholders who utilised their outpatient covers.

Min	Q1	Median	Q3	Mean	Max
0	200	400	820	1,724.395	275,000

Table 4: Gives measures of central tendency for scheme 1.

Looking at the number of policies which registered a claim in scheme 1 as compared to the number of people who did not claim the numbers are 1,537 compared to 1054 who did not claim for the scheme. There are only 9 policies out of the 1,537 whose expenditure exceeded 50,000Ksh. The number of policies whose expenditure exceed 30,000 but are less than 50,000 are only 9. This is a very small percentage of all the people that claimed.

Min	Q1	Median	Q3	Mean	Max
100	300	850	2,159.75	1,833.694	17,738

Table 5: ***Gives measures of central tendency for scheme 2.***

For this scheme, the number of policies which registered a claim or more are 56 compared to 197 who did not claim from that scheme. There is no policy from scheme 2 whose expenditure exceeded the cover limit of 50,000Ksh. No policy had its expenditure exceed 30,000 for this scheme.

Min	Q1	Median	Q3	Mean	Max
200	500	3,156	5,778	9,096.917	73,139

Table 6: ***Gives measures of central tendency for scheme 3.***

For scheme 3 the number of policies which registered a claim or more were 12 compared to 98 who did not claim. Only one policy's expenditure in scheme 3 exceeded 50,000Ksh. None of the policies that did not exceed the cover limit had their expenditures above 30,000, the closest was 10,071.

Scheme	Test statistic
Scheme 1	-62.42544
Scheme 2	-24.5046
Scheme 3	-8.336028
All claims	0.5855121

Table 7: ***Test statistics results for all schemes .Gives values of how many the standard deviations a sample mean is from the population mean.***

Interpretation

A look at the above results for scheme 1, scheme 2 and scheme 3 shows that at the 5% level of significance we have strong evidence to reject the null hypothesis. Furthermore, at any level of significance ranging from 0.0005% to 50% level of significance we have very strong evidence to reject the null hypothesis that utilisation is equal to 50,000. Data from all claims shows there is only sufficient evidence to reject the null hypothesis at the 0.3 level of significance. This shows that the level of outpatient utilisation is not equal to 50,000 for all the three schemes. From these results it is reasonable to conclude that average outpatient utilisation is less than 50,000 for all schemes.

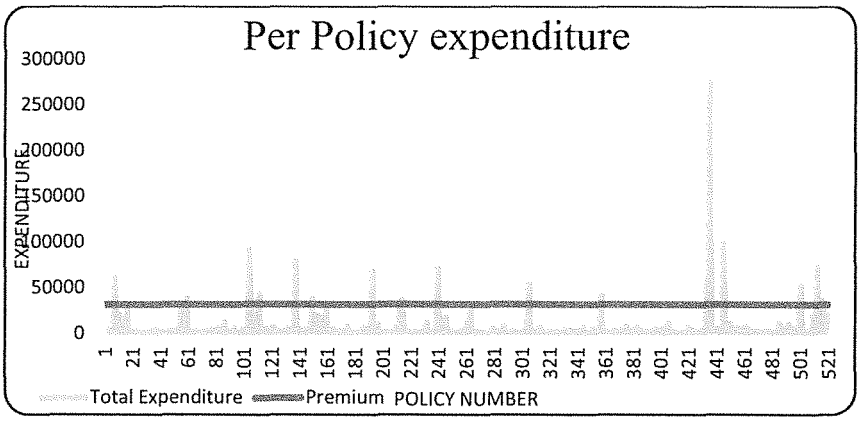
Scheme	Test statistic
Scheme 1	-37.51649
Scheme 2	-14.9696
Scheme 3	-4.8055
All claims	1.09502

Table 8: ***Test statistics results for all schemes .Gives values of how many the standard deviations a sample mean is from the population mean.***

Interpretation

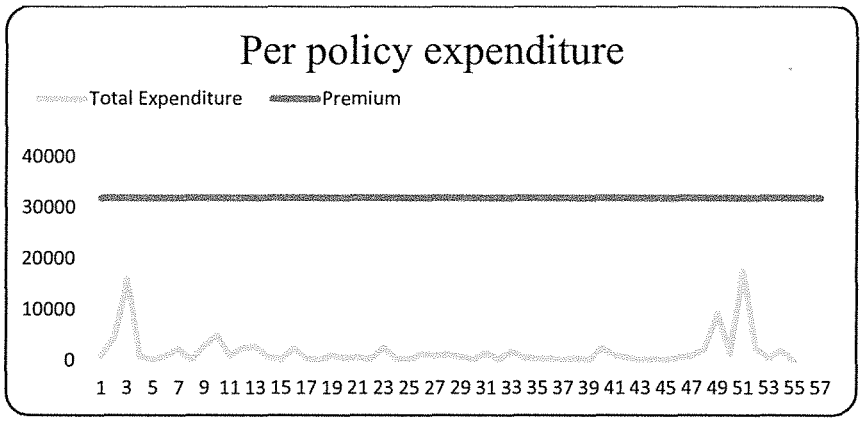
The test statistics results for the third hypothesis are not very different from the ones of the first two hypothesis. We have very strong evidence to reject the null hypothesis at the 5% level of significance that the average claim amounts is equal to the premium charged. Data from all claims shows that there is only sufficient evidence to reject the null hypothesis at the 10% level of significance. This shows that the claim amounts are not greater than the premiums charged for the three schemes. From these results it is reasonable to conclude that the average claim amount is less than 32,000 for all schemes.

Figure 1: ***A graphical representation of total expenditure per policy as compared to the premium paid. Very few policies have the amounts spent being more than the premium for scheme 1.***



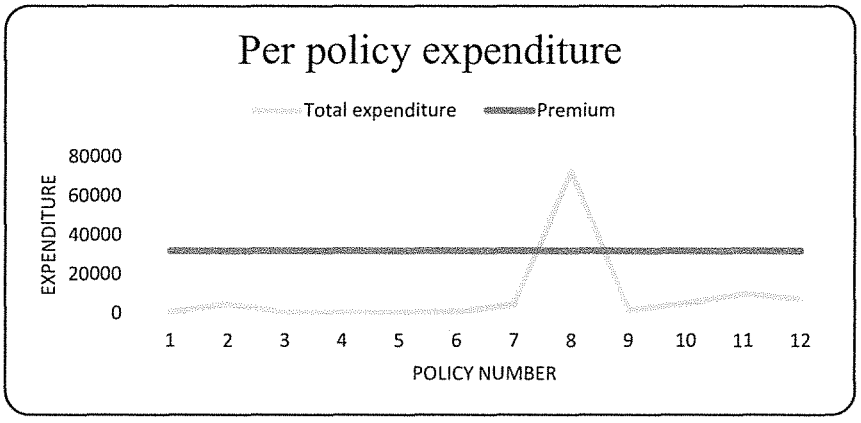
As we can see from the graph only a few policies have their expenditures exceed the premiums paid for scheme 1. Only 19 policies' expenditure out of a possible 1,537 exceeded 32,000. Health insurance coverage on outpatient care does not seem to influence the spending for this particular scheme. This is consistent with the findings of a study conducted on the influence of health insurance on outpatient utilisation (Ministry of Health, 2015).

Figure 2: *A graphical representation of total expenditure per policy as compared to the premium charged. The outpatient utilisation for scheme 2 is very minimal.*



No policy expenditure from scheme 2 exceeded the premium of 32,000. For this scheme too, we see that health insurance coverage does not influence outpatient utilisation. The utilisation of all policyholders was less than 19,000. In addition, it seems the premiums charged for the scheme are too high as compared to the level of utilisation of its members. A reduction in premiums would be a good option for this scheme. However, the results from this scheme differ from the findings of Sekyi, Samuel & Dobanman (2012) which suggest that membership of a health insurance scheme have a positive impact on health care utilisation and especially outpatient utilisation.

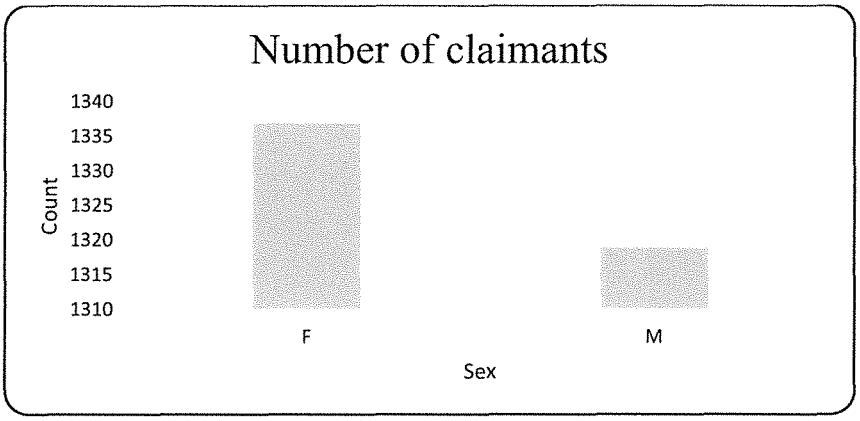
Figure 3: *A graphical representation of total expenditure per policy as compared to the premium charged. In general, Scheme 3 has very few claimants.*



Only one policy had its expenditure exceed 32,000 from the 24 policies that registered a claim in scheme 3. The number of policyholders in this scheme were too few to give a credible result. However, the observations are consistent with those of scheme 1 and 2. Most of the claimants

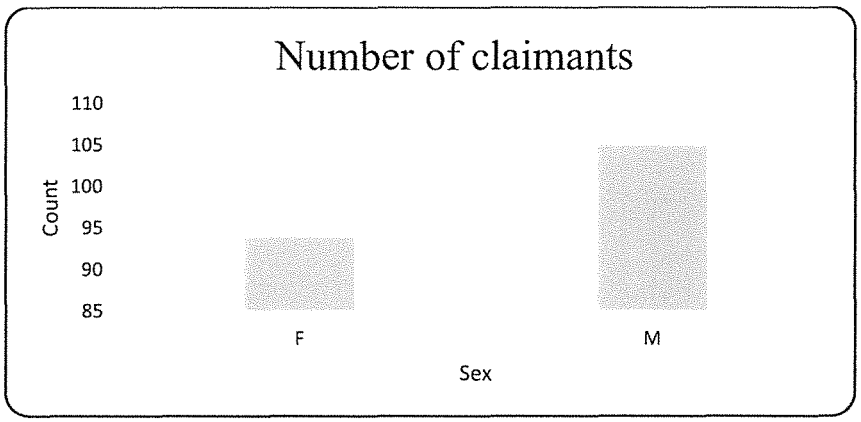
had their utilisation being less than 12,000Ksh. The premiums charged seem too high for this scheme and could therefore be reduced.

Figure 4: ***Shows the number of claimants by sex. The number of claimants from either sex does not differ much for Scheme 1.***



The number of female claimants were 1,339 while that of males was 1,317 for scheme 1. As Sekyi,Samuel & Dobanman (2012) suggests, sex has an impact on outpatient utilisation. The results from this scheme are consistent with the findings of the study by the ministry of health (2009) which showed that women spend more on outpatient care than men.

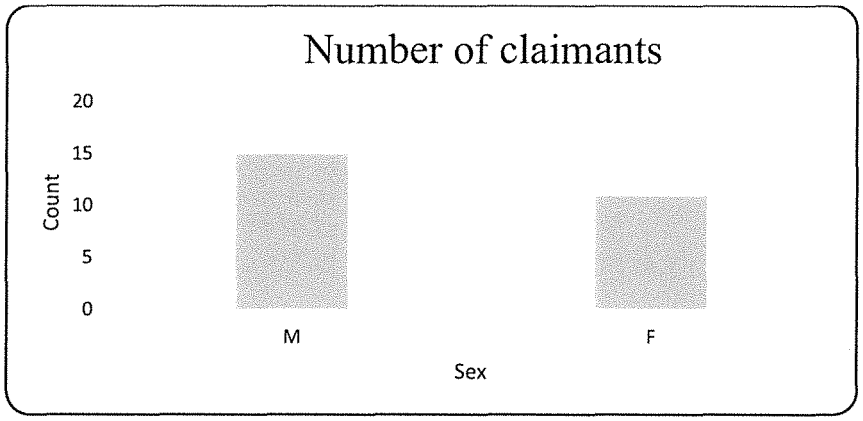
Figure 5: ***Shows the number of claimants by sex. Each sex has nearly the same number of claimants for scheme 2.***



The number of male claimants were 104 while that of females was 94 for scheme 2. The results are inconsistent with the findings of the ministry of health (2009) that reveal women spend more on outpatient care. However, a finding from the study by Miller (1994) which suggests that women spend more on outpatient care because they bear children could help draw an

inference for the result of this scheme. Probably the age of claimants from this group is not within the child-bearing bracket. The results of figure 8 reinforces this conclusion.

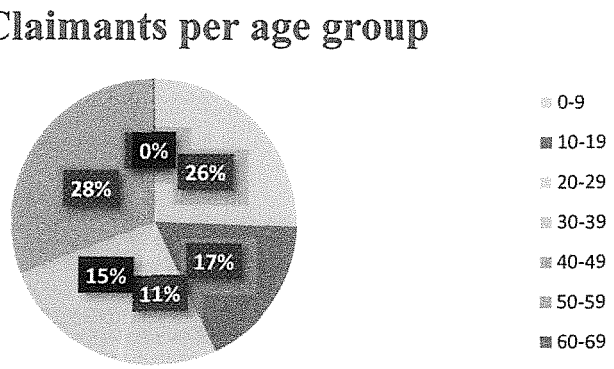
Figure 6: ***Shows the number of claimants by sex. Very few claimants from either sex for scheme 3.***



The number of male claimants were 15 while that of female claimants was 11 in scheme 3. This result is inconsistent with the findings of the study by the Ministry of health (2009) on household health expenditure and utilisation. However, the number of members and even claimants for this scheme were too few to draw a credible conclusion.

In total there were 1,436 males and 1,444 females who claimed for all the three schemes.

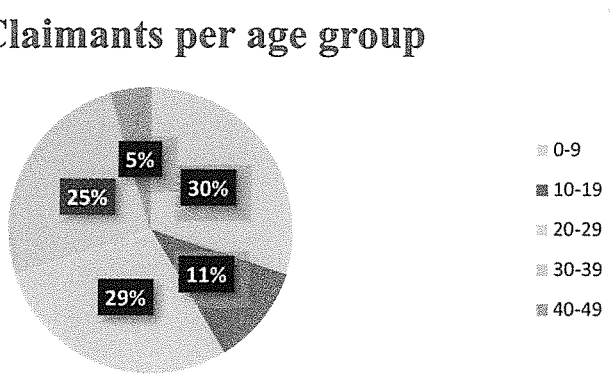
Figure 7: ***A diagrammatic representation of the proportion of claimants by age. The higher and lower ages claim more for scheme 1.***



The highest proportion of claimants for scheme 1 came from the 40-49 age group. As the study by Sekyi,Samuel & Dobanman (2012) suggests the age of individuals influences their level of outpatient utilisation. For this scheme we see that the older age groups and the younger age groups spend more than the intermediate ages. Findings from the study conducted by the

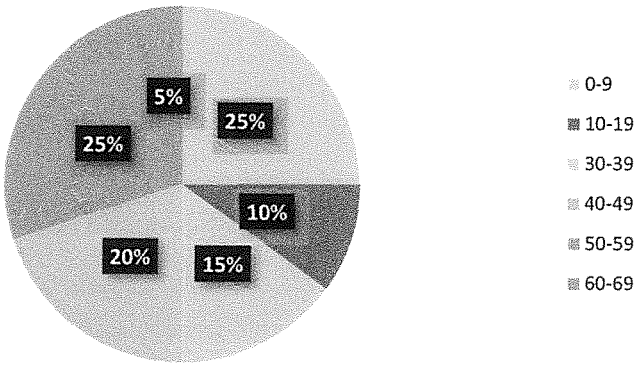
Ministry of health (2015) reveal that the older and the younger age groups spend more on outpatient care than the intermediate ages and as we can see this schemes' results concur with that.

Figure 8: ***A diagrammatic representation of the proportion of claimants by age. The lowest age group utilised more outpatient care for scheme 2.***



The highest proportion of claimants for scheme 2 came from the 0-9 age group. This is followed closely by the 20-29 and 30-39 age groups. For this scheme, the lower age group spend more on outpatient care. However, the older age group for this scheme (40-49) spend less on outpatient care, this could be attributed to the composition of the scheme in general. More of the members are of the lower age groups and so it is rare to find claimants of the higher age group.

Figure 9: ***A diagrammatic representation of the proportion of claimants by age. The lower and higher age groups utilised more outpatient care for scheme 3.***



The highest proportion of claimants from scheme 3 came from the 0-9 and 50-59 age group. The highest proportion of claimants for this scheme come from the lower and the higher age groups. This is consistent with the findings of the study conducted on the expenditure and utilisation of outpatient care (Ministry of Health, 2015). Their higher spending could be attributed to the old needing more care due to their increasing frailty and a decline in some of their aspects of their daily life. The young age group are also prone to utilise more outpatient care probably due to their lower immunity and early childhood diseases.

CHAPTER 5: DISCUSSIONS AND CONCLUSION

The data from the schemes shows some unexpected observations. Yuhua (2002) observes that there is a non-trivial fraction of zero outcomes in outpatient health services but the policyholders from scheme 3 all made a claim on their policies and all of the claims were from the principal policyholder. In addition the number of non-claimants from scheme 1 were also close to the number of claimants from the scheme. The number of policyholders who claimed from scheme 2 for outpatient care were less than the number of people who did not claim too. This is an unusual observation for outpatient claims and could maybe be attributed to the structure of the scheme. Scheme 1 had the biggest number of policyholders and the scheme received a claim from each of the policies.

In terms of demographic characteristics there is no big difference in numbers of claimants who are male and those who are female. However, we see that most claimants come from the higher and lower age groups for all the three schemes. The age group 0-9 is the highest proportion in two of the schemes, this could be attributed to higher morbidity rates for the young ones in Kenya (Luoma, et al., 2010). These observations are also consistent with the findings from Ministry of Health (2015) which say that higher and lower groups utilise outpatient services more than the intermediate ages.

While empirical analysis reveals that most and not all outpatient health policyholders claim Blough & Ramsey (2000), scheme 3 policyholders all claimed. No characteristics of the scheme could be ascribed to this observation, this is due to the limited scope of characteristics given for each scheme. The number of individuals in schemes 2 and 3 were also small as compared to that of scheme 1, the population sample could therefore have an influence on the results got.

5.1 Objective 1

The level of outpatient utilisation is expected to be high for most policies given it is the only expense that the policyholder is able to influence. The outpatient covers also come as additional benefits on a policy seeing that it is mandatory for a policyholder to have inpatient cover in order to access outpatient cover. This gives the policyholders even more incentive to utilise the outpatient cover to the maximum limit. From the results from the tables of the three schemes it is only scheme 1 where we see the level of utilisation to be high. The highest utilisation exceeded the cover limit of 50,000 for scheme 1 while none of the costs for scheme 2 and 3 exceeded the cover limit. The number of policies where the costs exceeded the cover limit were

only 9 for scheme 1. This could either be because the cover limit is too high for a micro health insurance or because the policyholders are just under-utilising their benefits.

5.2 Objective 2

The average claim amounts for scheme 1 were higher than the levels of premium payment for the scheme. Scheme 2 and 3 had their average claim amounts being less than the premium amounts payable. This could be attributed to various factors, however the detail of data limited the scope of inferences given. One of the most noticeable differences was the number of people in each scheme. Scheme 1 had 1,054 claimants, scheme 2 had 150 and scheme 3 had 23 of them. This shows a stark difference in numbers for the 3 schemes that could be a factor influencing the average claim amounts per policy for the three schemes.

5.3 Limitations of study

One of the limitations of this study was the detail of the data. Characteristics of the data such as employment status, education and household size were not given any scheme. According to Sekyi,Samuel & Dobanman(2012) these factors influence the levels of outpatient utilisation for schemes and could have given more useful insight as to why the level of outpatient utilisation was the way it was. The characteristics of the members of each scheme was also not available. Given that the micro insurance schemes are organized groups of micro finance institutions and Savings and Credit Cooperatives (SACCOS), the identification of the composition of each group would have influenced the inferences based on the evidence from each group.

5.4 Recommendations for further study

This influence of each aggregated group (scheme) could be a source of further research. The experience for each of the schemes are very different in terms of number of claimants, the utilisation levels and the influence of the demographic factors on the utilisation. The statistical significance of variables such as sex, age, occupation and household size could be measured as was done by Sekyi,Samuel & Dobanman (2012) to determine their influence on outpatient utilisation. The severity of illnesses which have been found to also affect the level of outpatient utilisation could also be investigated to determine their significance.

The needs met versus the amounts paid as premiums by the insured could also be investigated for the three schemes. There is a possibility that the members of this scheme could be members

of another scheme with a better cover that meets their immediate needs better than for this scheme.

5.5 Conclusion

The results for these schemes are contrary to empirical observations on the utilisation of outpatient care. The hypothesis tests provided useful information on the viability of insuring outpatient care for the three schemes and for the insurer in general. The level of outpatient utilisation was minimal for all schemes. The cover limit of 50,000 seems high for these schemes and could be reduced to reflect more of the needs of the insured. The premiums also seem too high for all schemes, policyholders do not seem to utilise even a minimum of their premiums as benefits. It is therefore reasonable to conclude that the schemes are viable to insure based purely on the outpatient utilisation (costs) and amounts of premium paid.

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