DETERMINANTS OF HEALTH INSURANCE PARTICIPATION AMONG INFORMAL SECTOR WORKERS IN RURAL TANZANIA

LUITFRID PETER MNALLY

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ABSTRACT

Health insurance schemes established to improve health financing in Tanzania faces many challenges including low acceptability. Therefore, the study to assess the determinants of health insurance participation among informal sector workers in rural Tanzania was undertaken. The general objective of the study was to assess issues that influence the readiness of informal sector workers to enroll in the health insurance scheme necessary for designing a pro equity health financing system. Specific objectives were to identify the reasons for participation in particular health insurance scheme; to identify the overall attitudes of the informal sector workers towards health insurance schemes and to estimate the informal sector workers enrolment into health insurance schemes. A sample of 250 respondents participated in this study. The binary logistic regression technique was used to examine the likelihood of an informal sector worker to be willing to enroll into health insurance scheme. The study showed that the acceptability of the health insurance scheme among the informal sector workers is enhanced by affordability, accessibility and quality of health services and is worsened by misconceptions, mistrust and lack of knowledge about such schemes. The overall attitude was that the health insurance should be universal, voluntary and financed by using tax shillings. Debt ($p < 0.01$), debt to income ratio ($p < 0.05$) and experience in the current occupation ($p < 0.05$) were strong predictors of willingness to join health insurance. Sex, income and number of dependants were not good predictors of willingness to join health insurance ($p > 0.1$). The policy implication of these results include the need of increasing flexibility of the scheme through innovative approaches of collecting premiums, improving affordability, establishing health financing tax and accreditation system for health facilities. These measures will enhance acceptability and deeper penetration of health insurance schemes in rural areas.

DECLARATION

I, **LUITFRID PETER MNALLY**, do hereby declare to the Senate of Sokoine University of Agriculture that this dissertation is my own original work done within the period of registration and that it has neither been submitted nor being concurrently submitted in any other institution.

_____   _____

Luitfrid Peter Mnally   Date

(M.Sc. Agricultural Economics candidate)

The above declaration is hereby confirmed

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Dr. F. J. Mishili   Date

(Supervisor)

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DEDICATION

This dissertation is dedicated to my beloved parents, Peter Moses Mnally and Perpetua Emilian Ng'oloko who laid a foundation of my education; and my late brother Bonaventure Mnally for his exemplary brotherly love and kindness to our family.

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LIST OF ABBREVIATIONS AND SYMBOLS

Abbreviations

CD ROMS	Media discs that are used to store data electronically
FAO	Food and Agriculture Organization
G	Standard Gini Index
GNP	Gross National Product
H-L	Hosmer and Lemeshow test of goodness-of-fit statistic
ICLS	The International Conference of Labour Statisticians
ILC	The International Labour Conference
ILO	International Labour Organization
MOH	Ministry of Health
NBS	National Bureau of Statistics
NHIF	National Health Insurance Fund
NSSF	National Social Security Fund
OLS	Ordinary Least Square
PMO-RALG	Prime Minister's Office Regional Administration and Local Government
SPSS	Statistical Package for Social Scientists
SSRA	Social Security Regulatory Authority
TDHS	Tanzania Demographic and Health Survey
THE	Total Health Expenditure
TIKA	Tiba kwa Kadi
TIRA	Tanzania Insurance Regulatory Authority
Tshs	Tanzanian shillings

URT	The United Republic of Tanzania
USAID	United States Agency for International Development
WHO	The World Health Organization

Symbols

p	P – value
R^2	The coefficient of determination
SES	Standard Error of Skewness
$SE\beta$	Standard error of the regression coefficient
β	Regression coefficient
Σ	Sum / Total
χ^2	Pearson chi-square statistic

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background

Health services delivery systems in developing countries face major challenges including a triple burden of communicable diseases, emerging diet -related chronic non-communicable disease and malnutrition. The coverage of health services is not only inadequate but also constrained by inadequate funding (Carrin and Waelkens, 2005). Provision of free health care in poor countries is challenged by small tax base; large informal sector; donor dependency; weak income and asset taxes; and high dependence on international trade. As these countries strive to establish social health insurance new challenges emerge, including troubles in arriving at a national consensus for health insurance schemes structure; income inequalities; weak government managerial capacity and poor infrastructure which limit the facilitation of collections, re-imbursements and monitoring (WHO, 2003; Carrin and Waelkens, 2005).

The negative economic impacts of poor health in underdeveloped countries have attracted attention of many researchers in recent years, and it is no wonder that nowadays countries are experiencing ever increasing financial burden of health payments (Xu *et al.,* 2007 and O'Donnell *et al.,* 2008a). The recent health care reforms in various parts of the world including the United States of America have initiated worldwide debate focusing on plausible ways of attaining the most efficacious health care system (Chung *et al.,* 2011).

Tanzania, being among the least developed countries, is also facing health financing challenges. There is tight public health care budget and growing need to improve access to health services, especially for the poor, majority of them working in the informal sector

(Lundberg *et al.*, 2000; Ndangala and Kalimalwendo, 2005). In dealing with these challenges, user fees were introduced in 1993 as part of wider reforms in health care financing. This left as history the provision of free health care to all citizens amid the overall poor performance of the economy (Quijada and Comfort, 2002). With the present socio-economic trends and political situation, it seems that health financing policy will become a major issue in Tanzania.

1.2 Problem Statement and Justification

Majority of the low and middle income countries are facing increasing difficulties in sustaining sufficient funding for health care. The pinch of deteriorating capacity to fund health care programs and services has been too severe particularly to the poorest segment of the population. This in turn have made various stakeholders including international and national level policy makers to recommend a range of suitable remedial measures including conditional cash transfers, cost sharing arrangements and a variety of health insurance schemes including social health insurance (Largarde and Palmer, 2009; Ekman, 2004). The WHO in 2005 passed a resolution that it would support a strategy to mobilize more resources for health, for risk pooling, increasing access to health care for the poor and delivery of quality health care (WHO, 2005) in all its member states but especially low income countries. This strategy is also supported by the World Bank (Hsiao and Shaw, 2007).

Due to the growing need of a long-term strategy for financing health services in Tanzania the National Health Insurance Fund (NHIF) was established by an Act of Parliament No. 8 of 1999. NHIF is a compulsory scheme covering all formal sector employees as principal members. Benefits offered by NHIF include registration fees; basic diagnostic tests; and outpatient services; costs of in-patient services and surgery (NHIF, 2005).

While NHIF seems to be more sustainable health financing strategy in Tanzania, it excludes the informal sector workers who are the majority and contributors of about 40% of GDP but are least insured (The Economic and Social Research Foundation, 2010).

Interestingly, while several studies in Tanzania have addressed a variety of health care issues such as Community Based Health Fund schemes (Chee and Smith, 2002; MOH, 2003a; Msuya and Jutting, 2004; Mhina, 2005., Sheuya, 2006), equity in health financing (Laterveer and Munga, 2004); pro-poor health financing (Lundberg *et al.*, 2000; Ndangala and Kalimalwendo, 2005), patient as well as health care provider satisfaction and performance, exemptions and waivers and willingness to pay (Burns and Mantel, 2006; Dominick and Kurowski, 2005), little is known about factors which may influence the readiness of informal sector workers to enroll in the National Health Insurance Scheme.

In view of the above, the study to assess the determinants of health insurance participation among informal sector workers in rural Tanzania was undertaken. The study provides empirical information which can be used by stakeholders to devise a health insurance financing system that responds to the needs of informal sector workers and increase equity in health services utilization. The study also provides some useful insights about the attitude of the informal sector workers in regard to the extent our country should cover their medical needs. Hence the study can be utilized to design a health care system that adequately reflects attitude of the people.

1.3 Objectives

1.3.1 General objective

The general objective of this study is to provide empirical information and evidences which can be used to devise a health insurance financing system that responds to the

needs of informal sector workers as well as enhancing equity in utilization of health services.

1.3.2 Specific objectives

Specifically the objectives of the study were to:

(i)   Identify the reasons to participate in particular health insurance scheme

(ii)   Identify the overall attitudes of the informal sector workers towards health insurance schemes.

(iii)   Estimate the informal sector enrolment into health insurance schemes

1.4 Research Questions

1.4.1 General research question

What determines informal sector workers' willingness to enrol into social health insurance schemes and what are their attitudes towards such schemes?

1.4.2 Specific research questions

(i)   What are the reasons to participate in particular health insurance scheme?

(ii)   What are the overall attitudes of the informal sector workers towards health insurance schemes?

(iii)   What is the likelihood of the informal sector to enrol into health insurance schemes?

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Social Health Insurance

Social health insurance schemes are generally understood as health insurance schemes provided by governments to its citizens, especially to low and middle income populations. Social health insurance at the community level in developing countries is provided by governments, non-government organizations (Churchil, 2006). More often health insurance schemes pool the health risks of its members, on the one hand, and the contributions of enterprises, households and governments on the other. Most social health insurance schemes coalesce different sources of funds, with government often contributing on behalf of people who cannot afford to pay themselves (WHO, 2005).

Social health insurance is different from 'tax based financing' which typically entitles all citizens to services thereby giving universal coverage. Social health insurance entitlement is linked to a contribution made by, or on behalf of specific individuals in the population (WHO, 2005). Community-based health financing schemes are said to be among the leading plausible options for extending health insurance coverage in low-income countries, particularly among rural and informal sectors of society (Diop *et al.*, 1995; Ekman, 2004). Varian (1998) and Townsend (1994) assert that social health insurance can bring about welfare improvement through improved health status and maintenance of non-health consumption goods through ensuring that health expenditures are smoothed over time and that there is no significant decline in household labor supply.

2.2 Out of Pocket Payments

Out-of-pocket health expenditure occurs when a patient or his immediate custodian, friend or family member is paying the cost of health care whether before or after receiving the service. More often the payment is made directly from ones income. This sometimes led not only to potentially catastrophic payment for health care, but also to failure to access health services in case of insufficient cash. The objective of health insurance has been to address the consequences of out of pocket payments in meeting the costs of health care (Mahal *et al.*, 2010; Xu *et al.*, 2003).

2.3 Catastrophic Spending

Catastrophic spending occurs when the proportion of ability to pay the cost of hospitalization for an individual or household exceeds a certain threshold (Mahal *et al.*, 2010; Xu *et al.*, 2003). According to various authors (Mahal *et al.*, 2010; Xu *et al.*, 2003), the threshold value can range from 5% to 40% albeit the measure is considered theoretically unsound. This is because the welfare implication of the measure is unclear principally when measured across people in different income classes. For instance a billionaire can use more than 40% of his income to access health service and that proportion cannot be termed as catastrophic spending. However, it is most likely true that for the already poor households, a 40% drop in their usual consumption is likely to impact their wellbeing significantly. Therefore, the need for large expenditure to cater for health care can be prevented if health insurance successfully spreads risk across time and people.

2.4 Informal Sector

Several definitions have been put forward to explain the meaning of informal sector. For instance according to Friedrich *et al*. (2010) informal sector or informal economy broadly refers to an economy which is not taxed, monitored by any form of government,

or included in any Gross National Product (GNP), unlike the formal economy. Other terms used to refer to the informal sector include 'the black market', 'the shadow economy', 'the underground economy' and 'system D'. Associated phrases include 'under the table' and 'off the books'. The 90th session of the International Labour Conference (ILC) referred 'informal economy' as "all economic activities by workers and economic units that are – in law or in practice – not covered or insufficiently covered by formal arrangements" (Ralf, 2004).

Another meaning of informal sector was that defined by the 15th International Conference of Labour Statisticians (ICLS) in the year 2003 (Ralf, 2004). The definition by ICLS recognizes the informal sector as private unincorporated enterprises owned by individuals or households that are not constituted as separate legal entities independently of their owners. Such enterprises must not own complete accounts that would permit a financial separation of the production activities of the enterprise from the other activities of its owner (Ralf, 2004).

These enterprises can be owned and operated by individual household members or by several members of the same household. They might be unincorporated partnerships and co-operatives formed by members of different households in condition that they lack complete sets of accounts. Their size in terms of employment is below a certain threshold to be determined according to national circumstances provided that they are not registered under specific forms of national legislation and / or their employees (if any) are not registered (Ralf, 2004).

The informal sector workers including smallholder farmers often face health related shocks, such as unpredictable illnesses that weaken their health status. This results into

massive loss of income but also meager resources that has been in a hard way saved over a long period of time. In addition to this, if they are not insured they face heavy medical bills while they are unable to work, which consequently impact not only on their economic activities, but also their overall wellbeing. Thus, health insurance if extended to informal sector workers will provide them with financial protection against health shocks thus enabling them to avoid catastrophic consequences of health payments.

2.5 Typology of Health Financing Systems

Universal coverage of health care is now receiving substantial worldwide and national attention. Debate continues on the best mix of financing mechanisms, especially to protect people outside the formal employment sector. The World Health Report (WHO, 2010) and the World Health Assembly (WHA, 2011) insisted on extending affordable universal coverage and access of health services for all people on the basis of equity and solidarity. The core aim of universal coverage is to provide all people with access to prevention, promotion, treatment and rehabilitation health services of sufficient quality to be effective while making sure that the use of these services does not expose the user to financial hardship. Several countries, including India and South Africa have developed policy for universal coverage in health systems (National Department of Health, 2011; High Level Expert Group, 2011).

Direct and indirect taxes financing is the most common form of health financing in many countries. Other forms of health financing include out-of-pocket payments, health-insurance, social health insurance and community-based insurance (Anne *et al.,* 2012). Health financing through general taxation or through the development of social health insurance are generally recognized to be powerful methods to achieve universal coverage with adequate financial protection for all against healthcare costs. In tax-funded systems,

the population contributes indirectly via taxes, whereas in social health insurance systems, households and enterprises generally pay in via contributions based on salaries or income (Carrin *et al*., 2005). However, a fully fledged tax-funded health system may not be easy to develop, due to the lack of a robust tax base and a low institutional capacity to effectively collect taxes. Social health insurance has traditionally started by insuring workers who were employed in the formal sector, although now are expanding to the self-employed and non-formal sector (ILO, 2001). Health insurance schemes can be mandatory or voluntary. Voluntary, community-based health insurance whereby contributions are generally made as flat amounts is being widely promoted as an important means to financial protection for poorer groups (Preker and Carrin, 2003).

During 1960s, health system of many African countries were funded by general tax revenue and external assistance, with no charges at the point of service (Preker and Carrin, 2003; O'Donnell *et al*., 2008a). Over reliance on tax revenues and donor funding amid increasing population size and economic turmoil led to introduction of user fees in public-health facilities as part of a structural adjustment programme in 1980s. User fees deemed inevitable financing method which would circumvent political and organizational difficulties emanated from severe constraints on government finance in many developing countries. User fee policies were also seen as a possible expression of community financing. However, most studies alerted decision makers to the negative effects of user fees on the demand for care, especially that of the poorest households (McPake, 1993). While governments enjoyed some relief due to decreased burden of health financing, these user fees posed a major barrier to health-service access especially amongst the poor. To do away with the created barrier to health service access countries have introduced health insurance schemes (Preker and Carrin, 2003; O'Donnell *et al*., 2008b).

Community financing for health or community-based health insurance is referred to as a mechanism whereby households in a community (the population in a village, district or other geographical area, or a socio-economic or ethnic population group) finance or co-finance the current and/or capital costs associated with a given set of health services (Bose and Desai, 1983). At the same time they are expected to gain participation in the management of the community financing scheme and the organization of the health services. The idea of establishing community in health financing schemes emanated from the Alma Ata Declaration in 1978 (Bose and Desai, 1983), urging maximum community participation in organization of primary health care.

Community financing for health can be instituted by direct payment of user fees for health care at the point and time of use. Schemes in urban areas can be inclined to establish monthly or quarterly contributions so as to match the income patterns of urban formal sector workers. Annual contributions, collected at the time of harvest of cash crops, seem to be prevalent among schemes in rural areas (Bennett *et al.,* 1998). However, in some schemes, payment schedules were held flexible, with monthly, quarterly or semi-annual payments (Ron, 1999). Other schemes link the time of payment of the contribution with a suitable event in the community. For instance, burial societies in Uganda use their monthly meetings for the collection of premiums, either for the first-time members or for those who renew their membership (Carrin *et al*., 2001).

2.6 Health Financing Policy and Legal Framework

Building a successful health insurance system requires good enabling environment to flourish. This includes health and related policies, legislations, laws and regulations which favour health insurance. Also decision on whether health insurance scheme should be mandatory or voluntary requires policy consensus. These instruments will assist health

insurance schemes to reach a consensus about guaranteeing similar health service benefits to those with similar healthcare needs, regardless of the level of contributions that are made (Lautier, 2003). Without policy consensus the challenge of inequality of incomes, assets and accessing health services will be difficult to address especially in countries where middle- and high-income earners are reluctant to contribute significantly more than the poor do (Lautier, 2003).

Health financing policy can take several forms such as progressive, proportional or regressive financing. Progressive financing is a mechanism whereby groups with a higher income contribute a higher percentage of their income than do groups with a lower income. On the other hand, proportional financing is a mechanism whereby everyone contributes the same percentage of income to funding of health care, irrespective of income. Regressive financing is a mechanism whereby groups with a lower income contribute a higher percentage of their income than do groups with a higher income (Kakwani, 1977). Thus, health and related policy and legal instruments need to provide guidance about the equity implications of different health financing policies. For instance, these instruments can promote fair financial contributions for health whereby health expenditure of households is distributed according to ability to pay rather than to actual costs incurred as a consequence of illness (Lautier, 2003).

Furthermore, pro equity health financing policies recognizes that prepayment does not have to rely on households exclusively. Thus, policies, legislations, laws and regulations relevant to health financing needs to identify all stakeholders that contributes to the prepayment of health care. These may include central and local government, enterprises, communities and local as well as international donors. International subsidies and an internal subsidy from commercial venture of the health insurance schemes can as well

contribute a significant share of expenditure (Desmet *et al.,* 1999). Such policies will help health insurance schemes to obtain a prepayment ratio that is high enough to neutralize the negative impact of out-of-pocket payment. Another policy related challenge in risk pooling schemes such as health insurance schemes is that related to moral hazards specifically selection bias and adverse selection. Risk pooling in health insurance allow financial sharing of resources between the healthy and the sick (Davies and Carrin, 2001). Selection bias in health insurance schemes occurs when the healthier people become less interested in joining such scheme judging that the contribution proposed is unnecessary cost to them since they are less likely to become ill. In contrast the less healthy may be interested in signing up for the opposite reason (Cutler and Zeckhauser, 2000). In a voluntary framework, adverse selection and its impact on healthcare costs and contributions may even lead to the discontinuation of insurance. This is because contributions may become so high that the scheme stops to attract potential members altogether (Cutler and Zeckhauser, 2000).

On the other hand, adverse selection occurs when health insurance schemes prefers to enroll more members who are healthy than those who are chronically ill or more likely to become ill. This phenomenon is also known as 'skim creaming' (Davies and Carrin, 2001). That's why some health insurance schemes may charge different premiums and keep separate fund for different categories of people, adjusting contributions benefits to the risks in each fund. The high-risk members may be charged higher premiums than their counterparts who are low-risk individuals. This mechanism of funding may make the high-risk group reduce their willingness to sign up because of inability to pay higher premiums. Similarly, Schemes formed by wealthier groups can afford a more comprehensive benefit package than schemes that recruit among poorer population groups (Davies and Carrin, 2001).

2.7 Health Financing System in Tanzania

2.7.1 Institutional landscape of health financing in Tanzania

The delivery of health service in Tanzania follows the policy of Decentralisation by Devolution whereby the Local Government Authorities are responsible for delivering public health services. The government of Tanzania through the ministry of Health provides standards, guidelines and protocols that are used in the delivery of health services. The Ministry of Health and Social Welfare and Prime Minister's Office Regional Administration and Local Government (PMO-RALG) in collaboration with Public Service Management Office are responsible for recruitment and distribution of health staff throughout the country (URT, 2009).

Primary health care services in Tanzania form the basis of the pyramidal structure of health care services. The health services delivery units in Tanzania are comprised of dispensaries, health centers, general hospitals and referral hospitals. These facilities are either publicly or privately owned. By the year 2010 there were 4 679 dispensaries and 481 health centers throughout the country and about 90% of population was living within five kilometers of a primary health facility (URT, 2009). Moreover, there were 55 district hospitals owned by Government and 13 Designated District Hospitals, owned by Faith Based Organizations. Furthermore, there were 86 other hospitals at first referral level owned by Government, parastatals and private sector, 18 Regional Hospitals and eight consultancy and specialized hospitals (URT, 2009).

National Support
Services

Referral Hospital Services
National and Regional Referral
Hospitals

Council Health Services
Primary Health Care and First Level
Hospital Services
Public and Private Health Care Providers
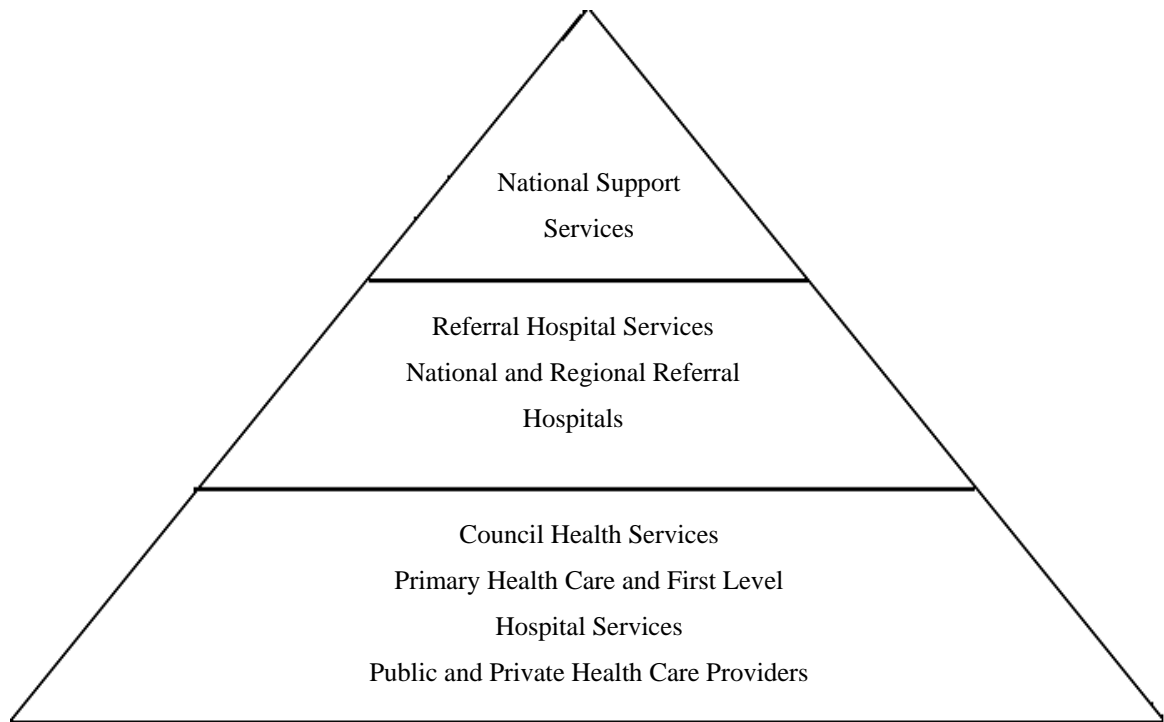
Figure 1: The Health System in Tanzania

By 2009, Tanzania had 116 institutions which offer training courses on health and allied sciences of 72 were owned by the government and 44 were owned by the private sector and faith based organizations. There were also seven medical universities, of which six were privately owned (URT, 2009). The health services system in Tanzania is facing a severe human resource crisis whereby in the year 2009, only 35% of positions were filled with qualified health workers (URT, 2009). The problem of shortage of health staff is more severe in remote areas. Insufficient capacity to provide quality health service in Tanzania is manifested by several problems. These include lack of diagnostic equipment in public facilities; insufficient skilled staff, long distances to tertiary health facilities and poor public transport, especially in rural areas. Others include frequent unavailability of drugs in public facilities and poor attitudes of staff which discourage use of facilities (URT, 2009).

Like other countries, Tanzania is facing tight public health care budget and growing need to improve access to health services. In dealing with these challenges user fees were introduced in 1993 as part of wider reforms in health care financing. The Community Health Fund (CHF) was established in 1996 as a way of reducing the cost of health care. The scheme improved access to basic health care services among the poor people in the rural areas and those working in informal sector. The primary aim of CHF was not to raise additional funds but to improve access to health care for the poor citizens (MOH, 2003a).

Due to the growing need of a long-term strategy for financing health services in Tanzania the National Health Insurance Fund (NHIF) was established by an Act of Parliament: Act No. eight of 1999. NHIF is a compulsory scheme covering all formal sector employees as principal members, their spouses and up to four legal dependants. Benefits offered by NHIF include registration fees; basic diagnostic tests and outpatient services. The bundle of benefits include payment of examinations and all drugs prescribed in private and public hospitals as well as Faith Based and Non Governmental Organization's health facilities that are accredited by the Fund. The Fund covers also costs of in-patient services such as accommodation, medication, examinations, investigations and both minor and super specialized surgery (NHIF, 2005).

Table 1: Salient features of three state schemes

Prepayment scheme	NHIF	NSSF	CHF/TIKA
Number of lives covered	2.5 million beneficiaries *(468 611 policy holders)*	51 300 beneficiaries *(31 000 policy holders)*	3.4 million beneficiaries *(531 154 policy holders)*
Coverage	Principal members, spouses and four children / dependents	Principal members, spouses and four children	Principal member, spouse and children < 18 years
Target market	Formal public sector	Formal private sector and parastatals	Informal sector
Enrolment basis	Compulsory	Voluntary	Voluntary
Premium Range	6% of basic salary, (3% employer, 3% employee)	Part of 20% NSSF contribution, half employer, half employee	Agreed by community members, annual premium typically range between TZS 5 000 – 15 000; doubled by matching grant from Health Basket Fund
Premium collection method	Payroll deduction and submission to NHIF	Payroll deduction and submission to NSSF	Collected at health facility level, remitted to district
Payment method	Fee for service	Capitation and some fee for service	Capitation/state-subsidized
Benefit package	Full range of services	Broad range of services	Public primary healthcare and some hospital services
Facility coverage	Over 5 500 health facilities	264 facilities	Typically the facility where subscriber is registered
Regulatory oversight	SSRA	SSRA	Administered by NHIF

Source: The Centre for Financial Regulations and Inclusion *et al*. (2012).

As of now the public owned health insurance schemes include the NHIF, the National Social Security Fund (NSSF), CHF which is operating in rural areas and Tiba kwa Kadi (TIKA) which is operating in urban areas. There are also health insurance schemes that operate outside of the formal insurance market which are organized by private sector and Non Governmental Organizations. The third category is comprised by private health insurance which is provided by general insurers (The Centre for Financial Regulations and Inclusion *et al*., 2012). The institutional landscape includes the Ministry of Health and Social Welfare in a coordinating capacity, the Social Security Regulatory Authority (SSRA) as regulatory home for the NSSF, NHIF and, through the NHIF, the TIKA, and Tanzania Insurance Regulatory Authority (TIRA) as regulator of private health insurers.
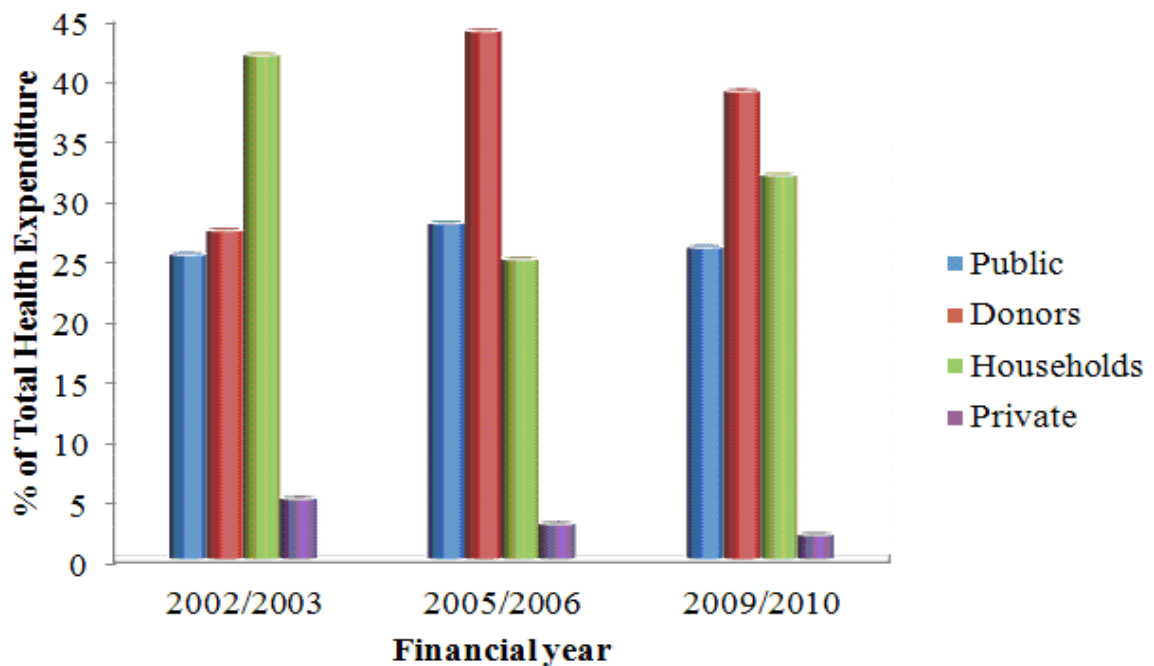
Figure 2: Total Health Expenditure (THE) according to financing source in Mainland Tanzania

Source: URT (2010)

Despite the establishment of health insurance schemes in Tanzania, government's health expenditure as a proportion of total government expenditure remained constant between 2002/03 and 2009/10, at approximately 7% of total government expenditures (URT, 2010). Donors were the largest contributors to Total Health Expenditure (THE) in 2009/10. Although households' out of pocket expenditures have declined from 2002/03 to 2009/10, still it represents nearly a third of THE (Fig. 2).

2.7.2 Pro-poor health financing policy

The Vision of the Tanzania National Health Policy is to improve the health and well being of all Tanzanians with a focus on those most at risk, and encourage the health system to be more responsive to the needs of the people. The government also aims at establishing a mechanism for risk sharing and cross-subsidization in order to ensure solidarity and equity (MOH, 2003b). The Tanzania National Strategy for Growth and Reduction of Poverty places a greater emphasis on equity in the delivery of health and social services so as to improve access for children, women, the poor and other vulnerable groups especially in rural areas (URT, 2009).

2.7.3 Mechanisms of reaching the poor

Community Health Fund scheme (CHF) is a possible strategy of extending coverage to a large number of rural and low income populations that would otherwise be excluded. CHF scheme have great potential to improve access of poorer groups by removing out-of pocket payment and allowing members to pay when they can afford (Ekman, 2004). In Tanzania, Msuya and Jutting (2004) argue that the CHF has improved access to health facilities of the poor; it has enhanced utilization of formal health care services among its members; and it has reduced the use of traditional healers and the use of alternative medical care such as self medication, especially for the poor. However CHF in Tanzania

suffers from persistently low enrolment rates hence it is difficult for it to impact on improving equity of access for the health system. As of 2012 CHF and TIKA has enrolled a total of 531 154 policy holders and 3.4 million beneficiaries.

2.7.4 Exemptions and waivers

Exemption is a statutory entitlement to free health care services granted to individuals who automatically fall under the specific categories of social group such as women who are attending maternal and child health services, children under five years of age, and the elderly. A waiver is granted to patients who are not qualified for exemptions but are classified as "unable to pay" (MOH, 1999). District Councils are expected to fully subsidize the CHF membership fees for those who have been exempted or waived. Identifying those entitled to exemptions is straightforward, however, identification criteria for those entitled to waivers is lacking; hence, the current system may favour the better off since most of those exempted belong to households which are able to pay the CHF membership fees (Burns and Mantel, 2006). The poorest often do not have access to waivers, either due to a lack of information or denial of the waiver by a provider.

This approach often leads to misuse and abuse of the system alongside having a cumbersome identification processes which deter people from applying (Burns and Mantel, 2006). The weakness in the implementation of waivers is evident in districts where only a few people are waived with unclear criteria for identifying the poor (Laterveer and Munga, 2004; Burns and Mantel, 2006). Sometimes exemptions and waivers are not accepted at non-government facilities (Burns and Mantel, 2006). Additionally, waiving decision is left to the community which has low technical back-stopping. Due to long procedures, there are only a few cases where poor people are waived and, as a result, people end up treated on credit in case of facilities acceptance.

2.8 Studies on Health Insurance

The area of health economics particularly health systems financing have attracted a wide attention of researchers in recent years. For instance, O'Donnell *et al*. (2008b) analyzed progressivity of health-care financing and catastrophic health-care payments in Ghana, South Africa and Tanzania. The study used household per adult equivalent consumption expenditure as the measure of socioeconomic status. Financing concentration curves with the Lorenz curve of household consumption expenditure of the three countries were also compared. The study found out that direct taxes were progressive in Ghana, Tanzania and South Africa; out-of-pocket payments were regressive and overall health-care financing was progressive in all three countries (O'Donnell *et al*., 2008b). The study concluded that in Ghana and Tanzania the burden of catastrophic payments affected poorer households; problem of out-of-pocket payments was greatest in Ghana, then Tanzania; and South Africa had the greatest degree of financial protection. The study further showed that overall health-service benefits favoured the rich in all three countries, with services being most pro-rich in South Africa and only marginally so in Tanzania. Public-sector and faith-based organizations' health-service benefits in Tanzania were evenly distributed across the population, but those from private for-profit services were strongly pro-rich. In Ghana and South Africa, benefits from public-sector services were pro-rich and from the private sector even more so (O'Donnell *et al*., 2008b).

A study by Ha *et al*. (2010) used data from a household survey Ghanaian rural districts to analyse the skewness of health expenditure data and the absolute amount of out-of-pocket spending years after the initiation of the Ghana National Health Insurance Scheme. The study used a probit model to estimate the likelihood of catastrophic health expenditures relative to household income and non-food consumption expenditure. The methodology also controlled for chronic and self-assessed health conditions, which

typically drive adverse selection in insurance. Results showed that although the benefit package of insurance is generous, insured people still incurred out-of-pocket payment for care from informal sources and for uncovered drugs and tests at health facilities (Ha *et al*., 2010). Insured people paid significantly less than the uninsured. Insurance has been shown to have a protective effect against the financial burden of health care, reducing significantly the likelihood of incurring catastrophic payment particularly among the poor (Ha *et al*., 2010). The study results encourage low income countries to expand social health insurance although instituting insurance by itself is not adequate to remove fully the out-of-pocket payment for health (Ha *et al*., 2010).

Carrin *et al*. (2005) studied the potential of community-based health insurance to contribute to the performance of health financing systems. The survey analysed revenue collection, pooling of resources and purchasing of services which are the three health-financing sub-functions. The results indicated that achievements of community-based health insurance have been modest, although many community-based health insurance schemes were relatively young and would need more time to develop (Carrin *et al*., 2005).

In addition, a number of studies have expounded the list of possible factors that could qualify as key determinants of health insurance especially those designed for low income people. For instance several studies have shown that the most important product attributes of micro health insurance products from a client perspective were simplicity; affordability and value (Churchill, 2006; McCord and Osinde, 2003). These factors are not only the determinants of uptake but also determine the impact of micro health insurance. Gustafson *et al*. (2009) found out that the problem of selection bias affect acceptance of health insurance. In their study they found out that some people were unwilling to join

health insurance scheme because of avoiding paying membership fee when they are not ill. This perception indicates selection bias notably adverse selection in health insurance scheme membership whereby healthy people have a lower probability of joining health insurance as compared to unhealthy individuals (Gustafson *et al.*, 2009).

Roth *et al*. (2007) found out that lacking in insurance is due to ignorance about insurance products and risks in life. The knowledge gap can be an important factor in reducing willingness to join health insurance scheme because it is difficult to gauge if there is a demand for something that people do not understand. This knowledge gap is partly contributed by the very limited exposure to insurance and a poor understanding of the insurance concept. The uptake and impact of micro-health insurance on the welfare of the poorest households strongly depends on whether the households are aware of the benefits of the insurance, and can therefore make full use of it, and continue to stay members of their insurance policy. Thus, a major challenge in extending insurance to the poor is educating the market and overcoming its bias against insurance. For instance some people are skeptical about paying premiums for an intangible product with future benefits that may never be claimed. Also some people are often not too trusting of insurance companies (Churchill, 2006).

That's why Cohen and Sebstad (2006) in their study recommendations underscored the need to create awareness about health insurance so as to improve the general knowledge of insurance and enhance familiarity of the insurance provider among the clients. They also recommended increasing the understanding of the specific products available, including product features and the costs and benefits of insurance relative to other risk-management strategies. Educational strategies such as the use of pictorial instruments can be effective if they take into account the target market's education level (Cohen and

Sebstad, 2006). USAID (2008) argued that a balance is required between acquisition of new technologies (which make insurance product less labour intense) and human contact to educate policy holders and build trust. Rademarcher *et al*. (2010) underscored the importance of trust along two dimensions; first the insurer is willing to make payments to clients, and second, the insurer is able to deliver the payments or services. Lack of knowledge about the importance of health insurance tend to worsen mistrust towards the insurance schemes due to poor services, the inability to distinguish between insurance and savings as well as the expectation to get money back at the end of the policy.

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Research Conceptual Framework

The determinants of participation into health insurance are multi faceted. Firstly, there are a number of social economic factors such as income, wealth, and type of livelihood of the individuals among others. These can make an individual decide to join such service or otherwise. On the other hand, the socio-economic factors are in a constant interaction with knowledge as well as attitudes of the individual about health insurance. This entails background factors such as education, norms, beliefs and trust towards such schemes. For instance ones' perception and belief about consequences of unpredictable health shock in his life can considerably influence his decision about joining such schemes or otherwise.

Other factors to underscore are those related to institutional systems that support day to day operations of health insurance scheme. These include the health system as a whole and robustness of the health insurance scheme itself. Without a reliable health services delivery system and well performing insurance scheme, efforts to increase acceptance of health scheme in the community will prove futile. All these factors need a good environment to flourish. Therefore, an enabling environment characterized by presence of well articulated relevant policies, legislations, laws, regulations and relevant legal instruments is crucial. The said categories of factors namely socio-economic; knowledge and attitudes; institutional; and enabling environment are necessary in influencing willingness of individuals to join health insurance scheme. However one category of factors may not be sufficient in influencing willingness of individuals to join health insurance scheme unless when it is complimented by one or more category of factors (Fig.3).
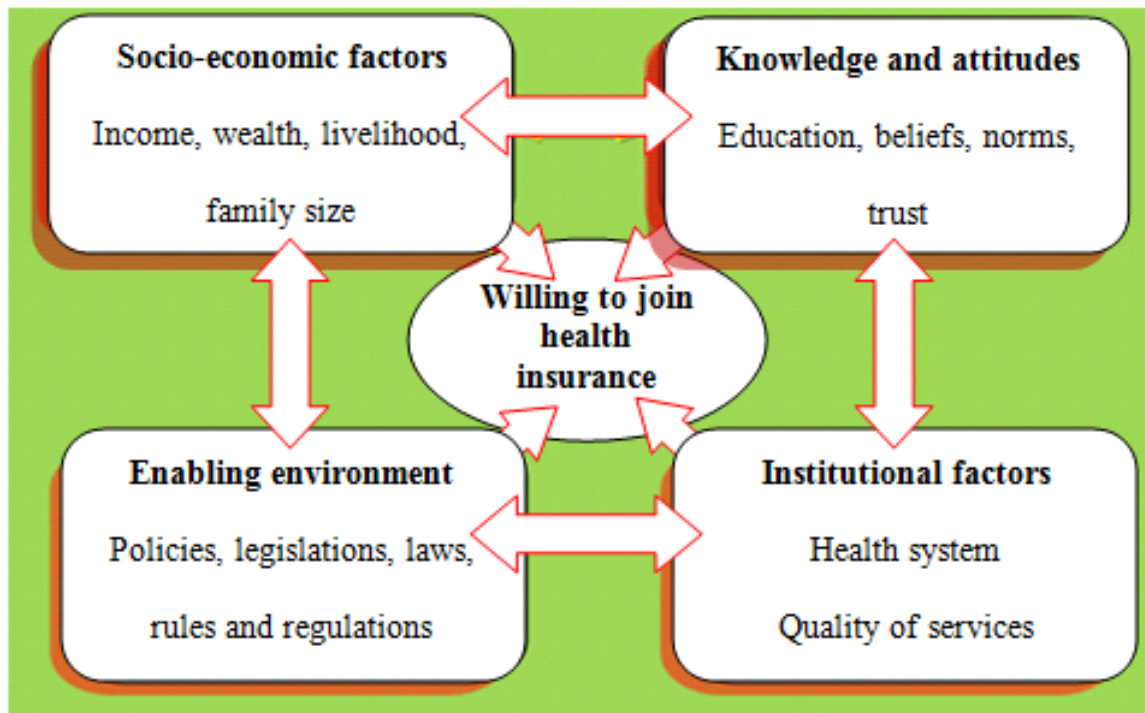
Figure 3: Conceptual framework of determinants of enrolment into health insurance

3.2 The Study Area

This study was undertaken in Kilolo District, Iringa Region. Kilolo is one of the four districts of Iringa Region in Tanzania. The choice of the study area was based on the fact that Kilolo District is among the most productive agro ecological zones in Tanzania and it has a large proportion of population which is employed in the informal sector (URT 2007; URT, 2006). In addition to that, the district is easily accessible by road as it is located along the southern highland highway which is linking the country with Zambia and Malawi.
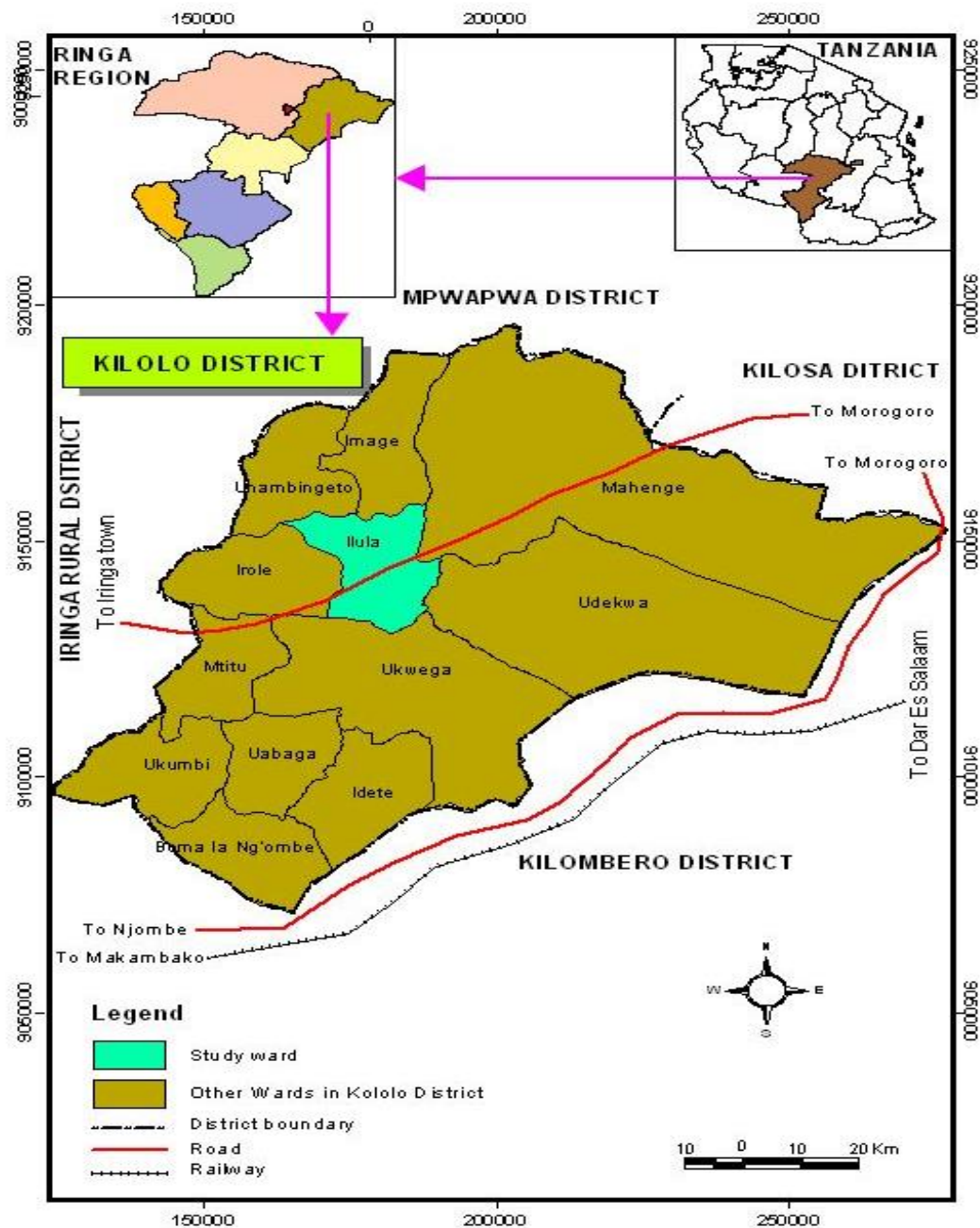
Figure 4: Map of Kilolo District

Source: Sokoine University of Agriculture Geographic Information System Unit

(2012)

Kilolo District is bordered to the North and East by the Morogoro Region, to the South by the Mufindi District and to the West by the Iringa rural District. Kilolo District is administratively divided into 12 wards namely Bagamoyo, Dabaga, Idete, Ilula and Image. Other wards are Irole, Mahenge, Mtitu, Udekwa, Uhambingeto, Ukumbi and Ukwega. The district extends between latitudes 7° to 8.3° south and longitudes 34° to 37° east. Agriculture is the largest single sector in the economy of Kilolo District followed by livestock keeping (URT, 2006). Maize is the major staple food crop but horticultural crops made up of onions, tomatoes, fruits, cabbage and other vegetables are grown commercially.

3.3 Study Design

This study employed a cross-sectional exploratory design. This design was chosen owing to its convenience and cost effectiveness amid the ever increasing cost of living due to inflationary factors in the country. In addition, as opposed to longitudinal design, the use of cross-sectional design was inevitable because of time constrain.

3.4 The Population

According to the National Bureau of Statistics (NBS) population projections that are based on the year 2002 population census, the total population for Kilolo District will reach 277 937 people in the year 2012. Among them, the population of males will reach 138 812 which is equivalent to about 50% of the total population whereas females will reach 139 124 which is equivalent to about 50% of the total population (URT, 2006). This study has drawn data from the population of male and female adults whose major occupation was categorized as informal sector according to the operational definition of the informal employment that their enterprises were neither had formal bookkeeping system nor registered.

3.6 Sources of Data

Relevant data for this study were from primary sources. Primary data comprised of socio-economic characteristics of the respondents, whether the respondents were willing to join social health insurance scheme or otherwise, reasons in favour of or against health insurance and their attitudes towards various issues that are related to social health insurance schemes. The data included such variables as monthly income, experience in the current occupation, sex, age, level of education and debt.

3.7 Sample Size

The sample size used in this study was 250 respondents. This sample was obtained basing on the criteria for binary logistic regression model which requires a minimum sample of 100 cases to yield good results (Hosmer and Lemeshow, 2000).

3.8 Sampling Technique

The target population for this study was workers in informal sector in Kilolo District. The sampling units were households in the selected villages. At the village level, the sampling frame included all the households excluding those people who were employed in the formal sector such as teachers and health service providers. A purposive sample of three villages in the study area namely Mazombe, Itabali and Ilula was selected basing on road accessibility and availability of communication services. From the two villages of Mazombe and Itabali which had relatively small population as compared to Ilula, a sample of 50 households was obtained by using a simple random sampling technique. Similarly, in Ilula village a sample of 150 households was picked by using a simple random sampling technique. From each of the selected household one adult who was not employed in the formal sector was conveniently sampled to participate in the study.

3.9 Data Collection

A major instrument that was used to collect data was a structured questionnaire for cross-sectional data collection. The questionnaire comprised both close and open ended non coded questions. A data collection exercise was preceded by the recruitment of five enumerators and one day standardization exercise to acquaint and orient them with the objectives of the study and data collection skills. During the standardization exercise, enumerators interviewed one another so as to familiarize with the data collection tool. The standardization exercise helped the researcher to fine-tune the research instrument. In addition, courtesy call was paid to the respective Village Executive Officers to inform them about the study and to obtain their clearance. All interviews with the respondents were done at a convenient place in the household. Prior to the interview, the respondents were asked for their oral consent to participate in the study after being briefed about its objective.

3.10 Data Analysis

3.10.1 Reasons for joining health insurance

The data was keyed into SPSS ® version 18 computer software for data analysis and was then cleaned and later on analyzed in the Windows 2007 environment. The quantitative analysis of the data was done by computation of frequency distributions and measures of central tendency and dispersion for social economic characteristics of the respondents. In addition, the Lorenz Curve (Lorenzo and Paolo, 2006) was charted to represent income dispersal among the respondents. Further analysis included computation of Gini Coefficient to measure the level of income inequality among the respondents which may affect their willingness to join health insurance scheme. In lieu of computing the Gini coefficient by using the Lorenz derivation the index was calculated by using the covariance formula (Lorenzo and Paolo, 2006). The computation was based on the direct

expression of the Gini Index in terms of the covariance between income levels of individual respondents and the cumulative distribution of their income by using the formula given herein under:

$$G = Cov\left(y, \quad F(y)\right)\frac{2}{\delta} \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots (1)$$

Whereby

G   Standard Gini Index.

$Cov(y, \quad F(y))$ Is the covariance between income levels of individual

respondents (y) and the cumulative distribution of the

same income.

δ Mean income of the respondents.

The covariance $[Cov(y, F(y))]$ is the expected value of the products of the deviations from the mean of each variable which is denoted as:

$$S_{xy} = \left[\sum_{i=1}^{n} x\,y - \left[\sum(x)\sum(y) \div n\right]\right]/n - 1 \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots (2)$$

Whereby

S_{xy} The covariance between income levels and the cumulative distribution of the

same income.

x Income distribution by income level of individual respondents.

y Cumulative distribution of the income of the respondents.

i Individual respondent.

n Sample size.

3.10.2 Attitudes towards the health insurance

The Likert scale was used to measure respondents' attitudes towards participation in health insurance scheme. The pre-coded responses for the attitude questions were strongly agree, agree, undecided, disagree and strongly disagree. Descriptive statistics particularly frequency distribution was used to analyse the data.

3.10.3 The log odds of willingness to join health insurance

Traditionally, research problems which require the analysis and prediction of a dichotomous outcome were addressed by either Ordinary Least Squares (OLS) regression or linear discriminant function analysis. Both techniques were found to be less than ideal for handling dichotomous outcomes due to their strict statistical assumptions (Lei and Koehly, 2000; Tabachnick and Fidell, 2001). In view of this, logistic regression was proposed as an alternative and it became routinely available in statistical packages in the early 1980s. Since in this study the willingness of informal sector workers to enroll in insurance scheme was treated as an independent binary variable, the logistic regression model shown below was used to explore the log likelihood of respondents to be willing to join health insurance schemes and some selected socio-economic variables of interest.

$$Logit\ (y) = \ \ln(\varphi \div 1 - \ \varphi) = \alpha + \beta_1 x_1 + \ \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \beta_5 x_5 + \beta_6 x_6 \dots (3)$$

Whereby:

y Dichotomous variable (Willing to join the health insurance scheme or otherwise)

φ Probability y is the outcome of interest

α Constant parameter

β Regression coefficients for individual predictor variables.

x_1 Experience in the current major occupation (in years)

x_2 Monthly income

x_3 Number of dependants

x_4 Debt (in 1 000 Tshs)

x_5 Debt to income ratio

x_6 Gender dummy variable

The research output include the logistic regression parameter estimates with the statistical tests of individual predictors; an overall evaluation of the logistic model (the Likelihood ratio inferential test); the goodness-of-fit statistics H-L statistic (Hosmer and Lemeshow, 2000); and supplementary descriptive measures of goodness-of-fit which are pseudo R^2 indices defined by Cox and Snell (1989) and Nagelkerke (1991).

CHAPTER FOUR

4.0 RESULTS AND DISCUSSION

4.1 Socio-economic Characteristics of Respondents

Section 4.1 summarizes socio-economic characteristics of the population and socio-economic variables such as dependants, monthly income, major occupation, debt and income to debt ratio. This information facilitates interpretation of key demographic, socio-economic, and economic indices and also assists in the assessment of the representativeness of the survey.

4.1.1 Population by age and gender

Age and sex are demographic variables that are paramount in economic research. They are also very important variables in the study of labor force availability, dependency, gender, and health issues. The distribution of the *de facto* household population in the study is shown in Fig. 5 with four disaggregated age groups, according to gender.

Fig. 5 indicates that more than three quarter (80%) of the population belonged to 20 - 40 years age group, while the remaining 20% is older than age 40. The proportion of males and females in age group 20 - 30 is similar (16%). In total this category comprised of 32% of the participants of the study. In contrast, the proportion of females in age groups > 30 - 40 and > 40 - 50 was slightly higher than that of males which was 26% and 8% as compared to 22% and 7% respectively. These results depict a fair inclusion of males and females in the study which add value in terms of reliability of the findings.
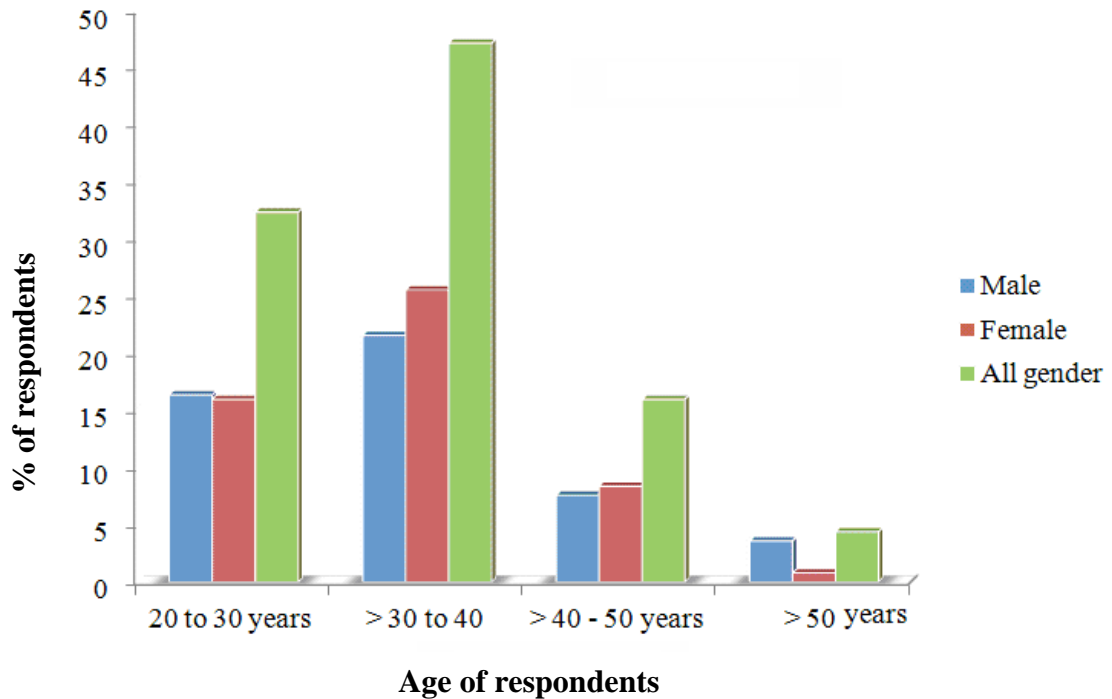
Figure 5: Respondents by age and gender

4.1.2 Marital status, education attainment and dependants

The basic background characteristics including marital status, education and number of dependants are shown in Fig. 6 hereinunder. About 68% of all respondents were married. Those who were unmarried were 25% whereas the remaining 7% were widows/widowers.

Fig. 6 further shows that majority of respondents (55%) have completed primary education. Moreover, 36% reached ordinary level of secondary education whereas 9% did not attain any level of formal education. The proportion of respondents who pursued some college education was almost zero. The proportion of respondents with no education was slightly lower than that reported in the Tanzania Demographic and Health Survey (TDHS) of 2010 for Iringa Region which was about 10% (NBS and ICF Macro, 2010).

Marital status, education and number of dependants
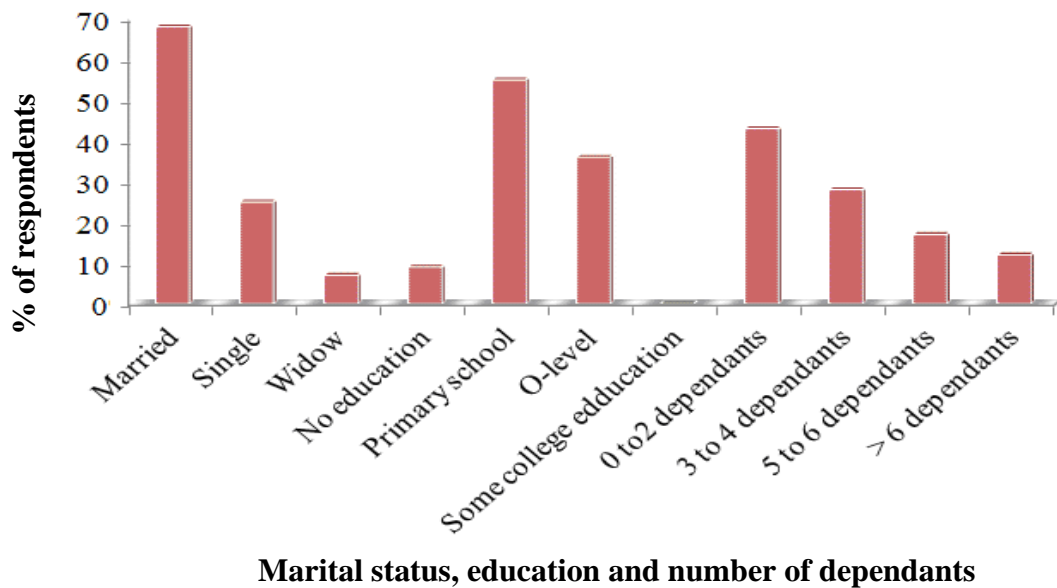
Figure 6: Respondents' marital status, level of education and number of dependants

While it is acknowledged that education provides people with the knowledge and skills that can lead to a better worthy life, it is likely that the level of education of an individual correlates with positive rational decisions and choices in life including the choice to join health insurance. As regards to number of dependants, Fig. 6 indicates that 43% of the sample population had zero to two dependants, 28% had three to four dependants, 17% had five to six dependants and 12% had more than six dependants.

4.1.3 Respondent's age and level of education

According to the results presented in Fig. 7 it seems that those respondents aged 31 - 40 years old had the largest proportion of individuals who did not attained formal education (44%), followed by those aged 20 – 30 years old and 41 – 50 age group (43% each). Surprisingly the figure shows that respondents who are aged 51 years and above have the least proportion of respondents who did not attain any level of formal education (28%). The proportion of respondents who attained primary school level of education is more or less distributed throughout the age categories as it ranges from 33% to 36%. Overall, the

proportion of respondents who did not attain any level of formal education was 43%, entailing that the remaining 57% have attained a certain level of formal education.
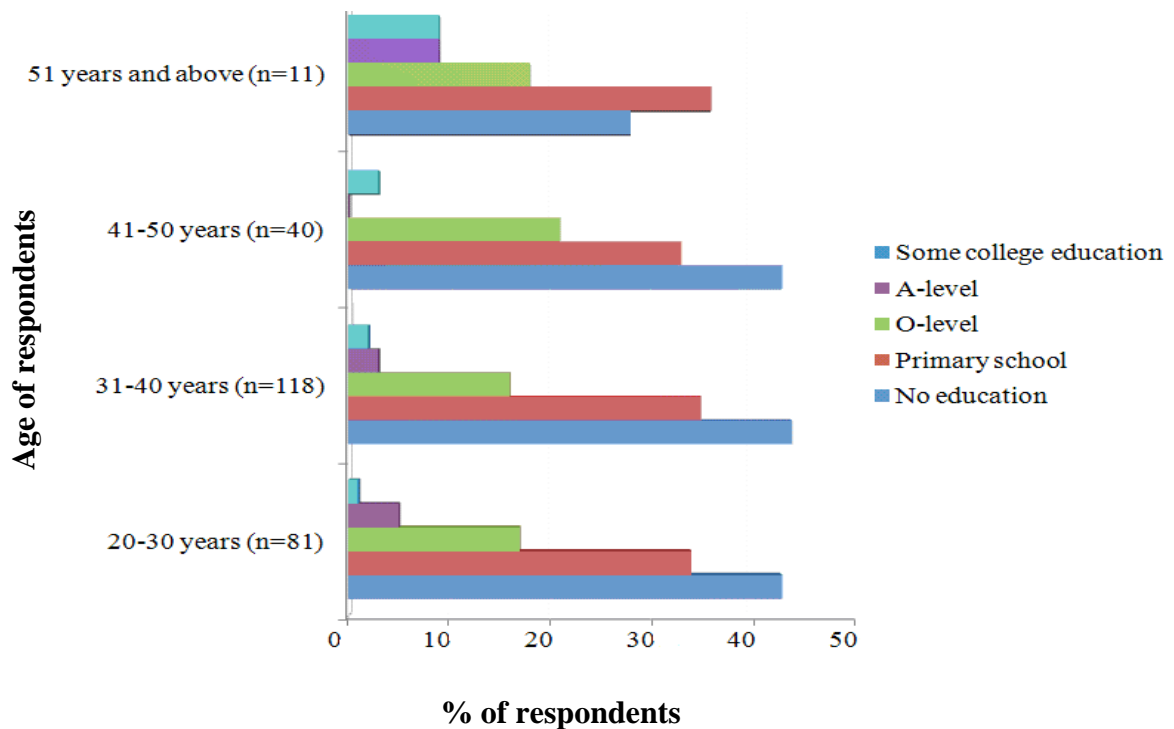
Figure 7: Respondents' level of education by age

4.1.4 Respondent's level of education by sex

Fig. 8 shows that nearly 32% of women and about 36% of men have completed primary school only. Surprisingly, while 21% of females attained O-level education, only 14% of their male counterparts reached that level of education. In addition, the proportion of male and females who did not attain any level of formal education was 44% and 42% respectively. The TDHS 2010 shows that in Iringa Region the proportion of males who did not attain any level of formal education and those who did not complete primary school was about 47% which is slightly higher than the one observed in this study (NBS and ICF Macro, 2010). Furthermore, TDHS 2010 shows that about 54% of females either did not attend or complete primary school which is slightly higher than the one obtained

in this study. Generally, the results do not show large differential in educational attainment between men and women.
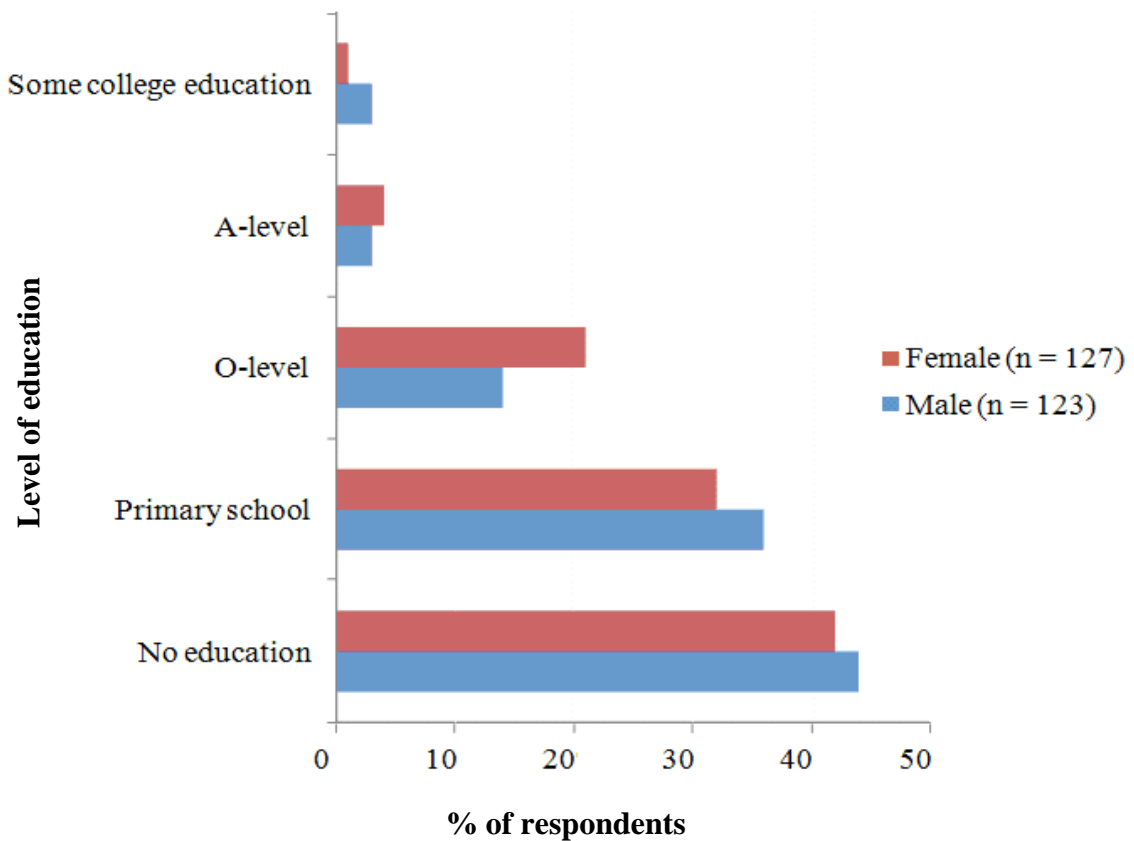
Figure 8: Respondents level of education by gender

4.1.5 Respondent's occupation

Occupation of respondents is important not only in sustaining their livelihood but also making choices and decisions about various issues including health financing. The survey questionnaire included a question which required the respondents to state their principal occupation. The results presented in Fig. 9 show a similar pattern to that of agrarian economy which is common in most of the developing countries whereby the agricultural sector remains the main employer.
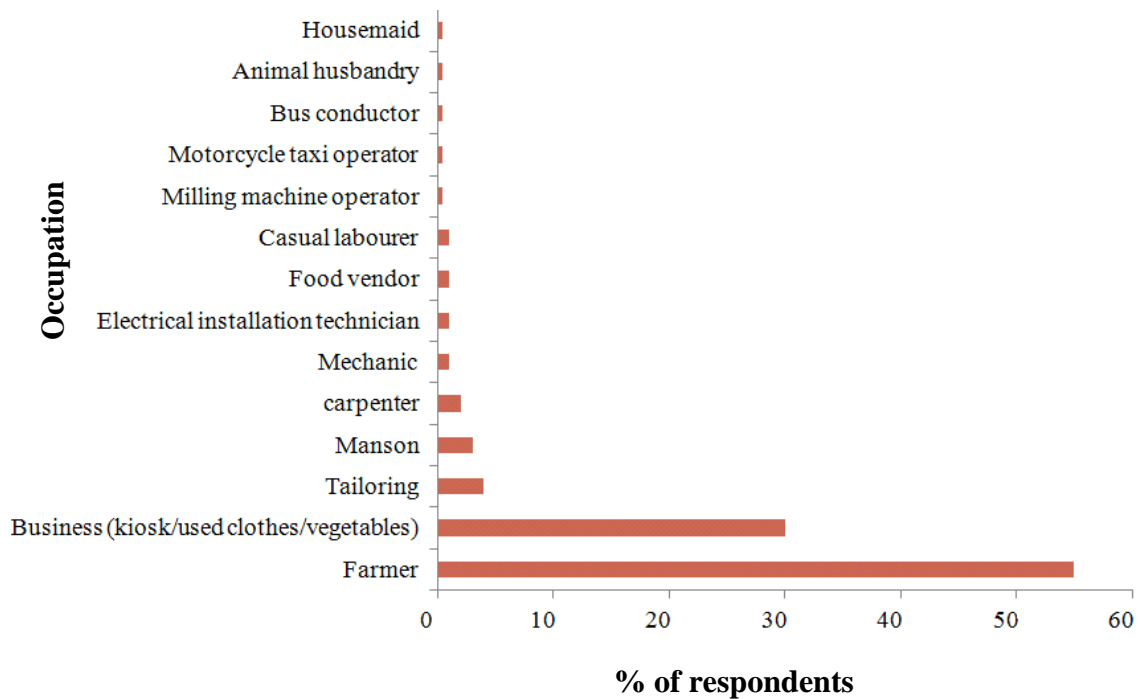
Figure 9: Respondent's current occupation

The result shows that 55% of respondents were engaged in agricultural occupations. This proportion is lower than the Iringa Region data which was 69% (NBS and ICF Macro, 2010). The reason for this disparity might be due to high rate of livelihood strategies change from predominant agricultural to a more heterogeneous livelihood strategies because of high rate of urbanization. Business seems to be a significant emerging sector employing 30% of respondents. Tailoring, masonry and carpentry provides employment to 4%, 3% and 2% of the respondents respectively. Other forms of occupations namely mechanic, household electrical installation artisans, food vending and casual laboring provides employment to about 1% of respondents. Milling machine operation, motorcycle tax operation, animal production, bus conductor and housemaid cumulatively employed 2% of the respondents.
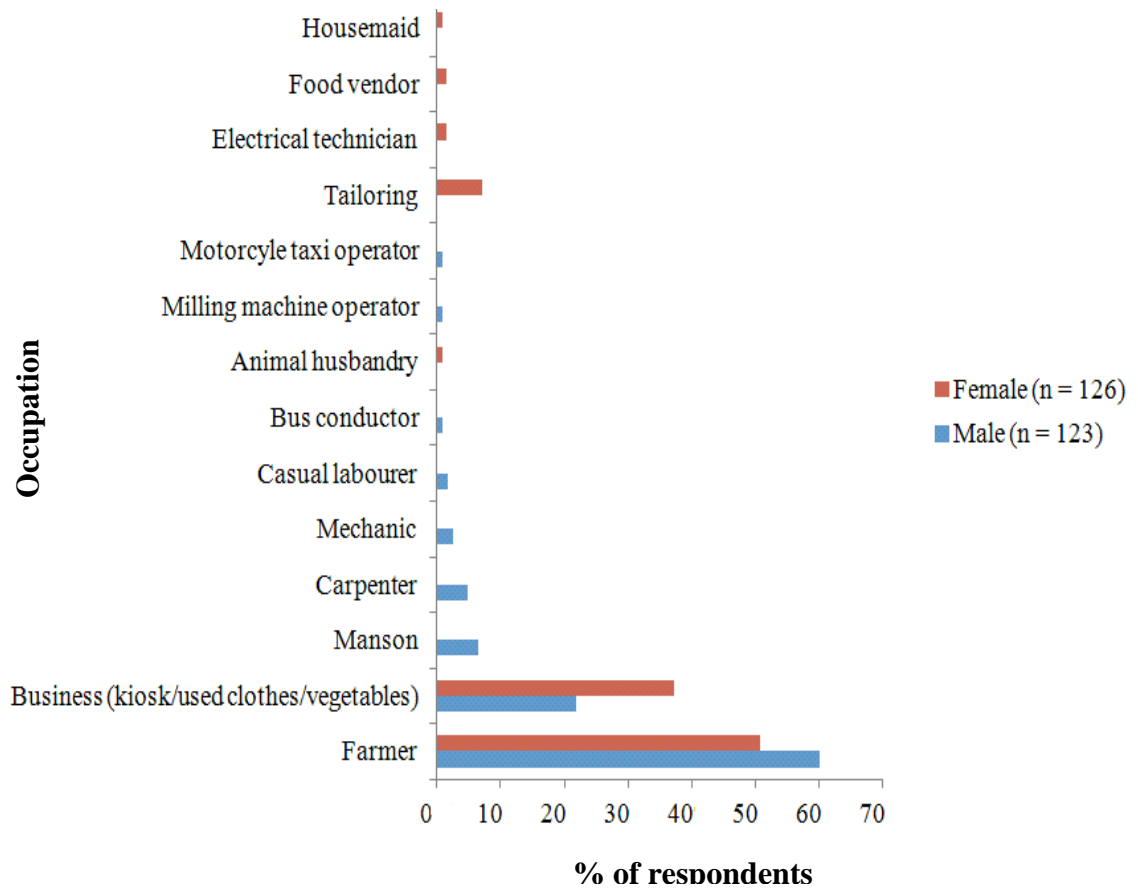
Figure 10: Respondent's major occupation by gender

Fig. 10 presents information on men's and women's occupation category. The data show that farming is the main occupation among both gender employing about 60% and 51% of males and females respectively. Business is the second largest occupation employing about 22% of males and 37% of females respectively. Other respondents though in small proportion were engaged in various occupations such as tailoring shop keeping, masonry, carpentry and casual laboring.

Table 2: Respondents major occupation by education level

Occupation	None (n = 107)	Primary school (n = 84)	O-level (n = 44)	A-level (n= 9)	Some college education (n = 5)
	Percentage of respondents (%)				
Farmer	56	65	43	44	-
Business (shop / kiosk / second hand clothes)	33	18	43	33	40
Tailoring	2	5	2	11	20
Mechanic	2	-	-	-	20
Carpenter	3	2	-	-	20
Masonry	2	5	2	11	-
Electrical installation technician	-	1	2	-	-
Casual labourer	-	1	2	-	-
Food vendor	1	-	2	-	-
Bus conductor	-	1	-	-	-
Milling machine operator	-	1	-	-	-
Pastoralist	-	-	2	-	-
Housemaid	1	-	-	-	-
Motorcycle taxi operator	1	-	-	-	-
Total	100	100	100	100	100

Analysis by level of education shows that with the exception of those who attained some college education, farming emerged to be the leading occupation in all other categories employing about 56% of those who did not attain any level of formal education , 66% of primary school group, 43% of O- level group and 44% of A-level group. Business is the second prominent form of occupation among the respondents who have not attained any form of formal education and those who attained ordinary level of secondary education. Business was the major occupation for those who attained some college education and

was the second largest employer for all other education categories (Table 2). Analysis by age suggests farming was the most common form of occupation in all age groups followed by business and others (Table. 3).

Table 3: Respondent's major occupation by age

Occupation	Age in years			
	20 - 30 (n = 81)	> 30 - 40 (n = 117)	> 40 - 50 (n = 40)	> 50 (n = 11)
	Percentage of respondents (%)			
Farmer	54	51	68	64
Business (kiosk/used lothes/vegetables)	32	32	20	27
Tailoring	3	4	3	-
Manson	2	3	2	9
Carpenter	2	3	2	
Mechanic	2	1	-	-
Electrical installation technician	-	2	-	-
Food vendor	1	-	3	-
Casual labourer	1	1	-	-
Milling machine operator	-	1	-	-
Motorcycle taxi operator	-	-	2	-
Bus conductor	1	-	-	-
Animal husbandry	-	1	-	-
Housemaid	-	1	-	-
Total	100	100	100	100

4.1.6 Measures of income dispersals and inequalities

Inequalities in income earnings may affect households' income expenditure decisions including the willingness of the informal sector workers to join health insurance schemes. This is because income earnings are vital for meeting costs of living including the costs of health care. In this regard, this subsection presents the study results on monthly income earnings of the respondents.

Fig. 11 shows the respondents' disaggregated income whereby in general, majority of them appeared to belong to the lower earnings categories namely 10 000 to < 100 000 Tshs (21%) and 100 000 to < 200 000 Tshs (21%). The least proportion of respondents is in the earning category of between 400 000 Tshs to <500 000 Tshs per month (9%). The results of this study show that the mean monthly income of respondents was 274 004 Tshs with the Pearsons Coefficient of Skewness of 0.154. The value of Standard Error of Skewness (SES) indicates a possibility of positively skewed income distribution although the skewness is not to a significant degree since the value is less than the common cut off point of two or more regardless of the sign (Tabachnick and Fidell, 2001). Similarly the mean incomes of male and female respondents were 276 676 and 271 417 Tshs respectively whereas their Pearsons Coefficient of Skewness values were 0.218 and 0.125 respectively indicating insignificant positive skewed distributions.

The mean monthly income of respondents was 5.3 times higher than the value for Tanzania Mainland as reported in the Household Budget Survey of 2007 which was 51 678 Tshs (NBS, 2009). This might be caused by the fact that in Kilolo District, the reference month namely October which was used to estimate monthly income coincides with the area's peak economic activities including marketing season for horticultural crops. In addition, it is recognized that reported income is habitually less reliable since its accuracy is usually low. Also, the cited income might include both gross and net income.
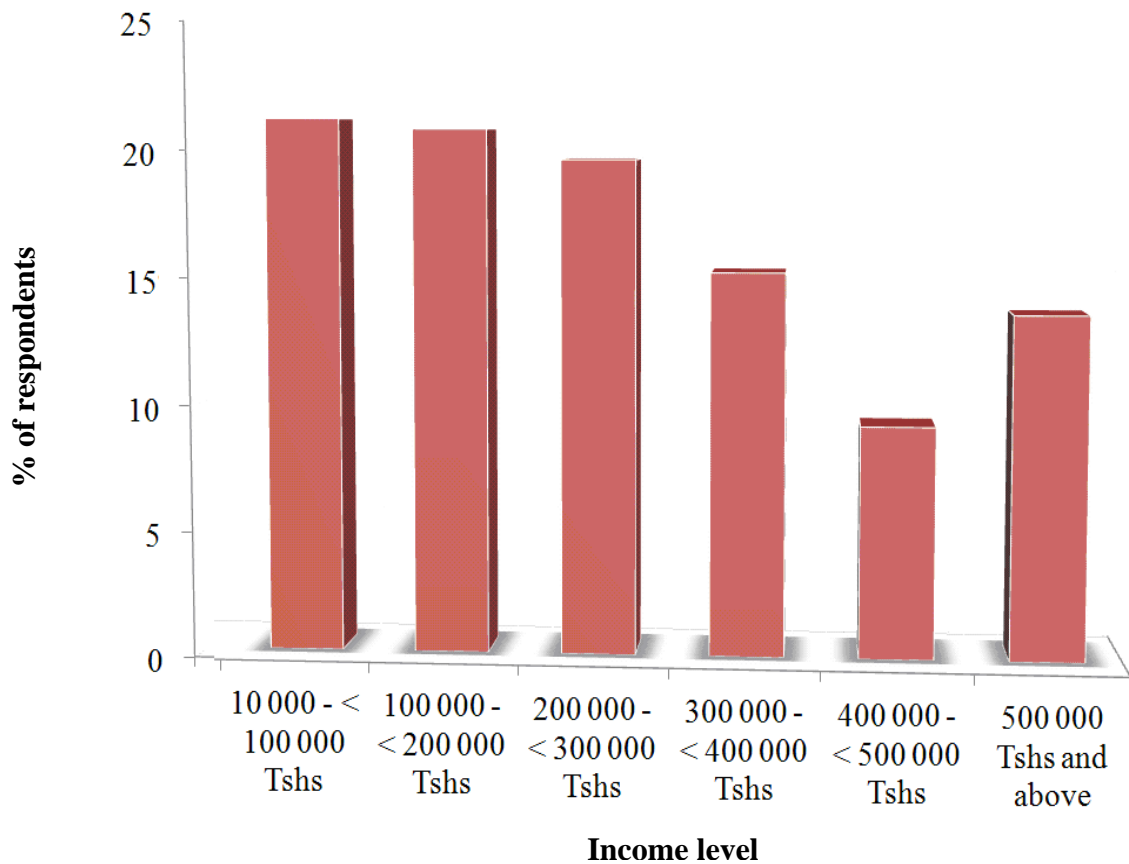
Figure 11: Respondent's disaggregated income

The level of income inequality among respondents is shown graphically by using the Lorenz Curve as proposed by Lorenz. Gini index which is equivalent to the ratio of the area between the Lorenz Curve and the equidistribution line indicates the level of concentration of wealth, zero depict equal distribution and one shows totally unequal distribution (Cowell, 1977; Lambert, 1993). The Lorenz Curves shows that the females curve is closer to the equidistribution line than the male curve, suggesting that income inequality among females was less than that of men. The curve for all gender appears to be closest to the equidistribution line, thus suggesting that overall income inequality is least as compared to inequality among gender (Fig. 12).
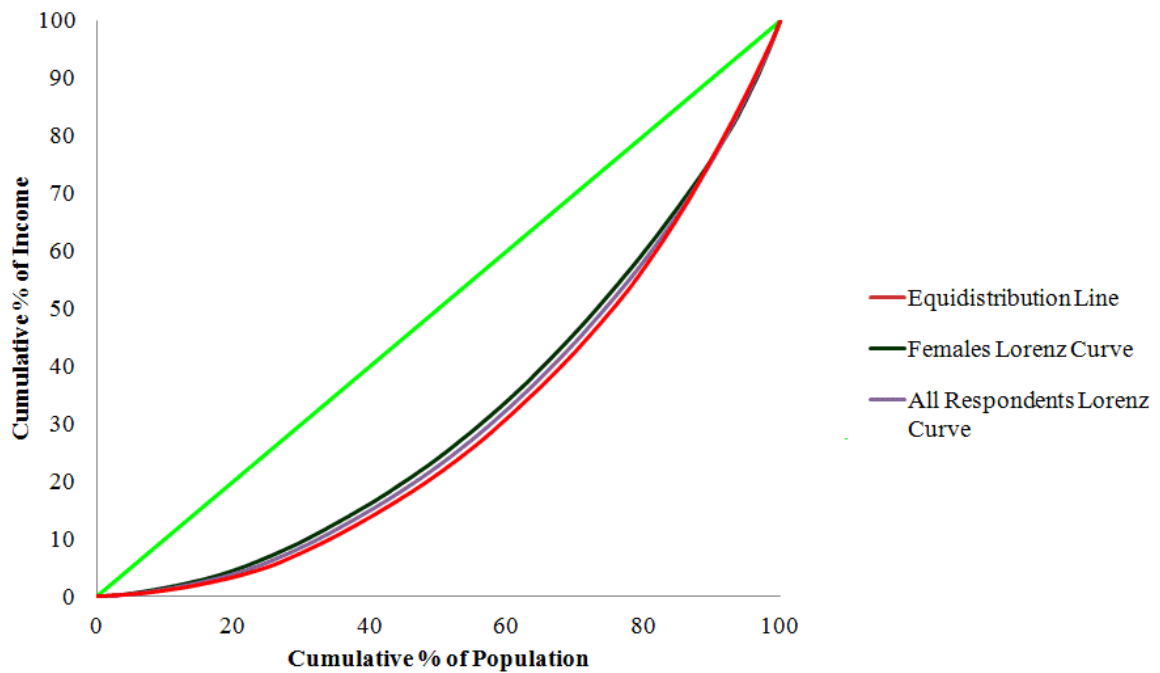
Figure 12: The Lorenz Curve for respondent's monthly income

The depiction of income inequality by using the Lorenz Curve was supported with the computed Gini Coefficients for males, females and all gender. The results show that the overall Gini Coefficient for monthly income of the respondents was 0.384. The Gini Coefficient for monthly income of male and female respondents was 0.405 and 0.37 respectively. This Gini Coefficients were slightly higher than that reported for Iringa Region which was 0.358 but lower than the overall Gini Coefficient for Tanzania mainland which was 0.502 (NBS and ICF Macro, 2010) depicting a fairly less income inequality in the study area. The level of income inequality among male respondents was higher as compared to that of female respondents and this might contribute to sex based differentials in willingness to join health insurance schemes.

4.2 Willingness to Join Health Insurance Scheme

This section shows the willingness of the informal sector workers to join social health insurance scheme in relation to their socio-economic variables namely age, sex, income level and the level of education of respondents. Also, the rationale behind the willingness and unwillingness to join health insurance schemes are presented.

4.2.1 General willingness

Fig. 13 indicates that three quarters of the respondents (75%) reported that they were not willing to join social health insurance. Those who reported that they were willing were only one quarter of all respondents (25%).
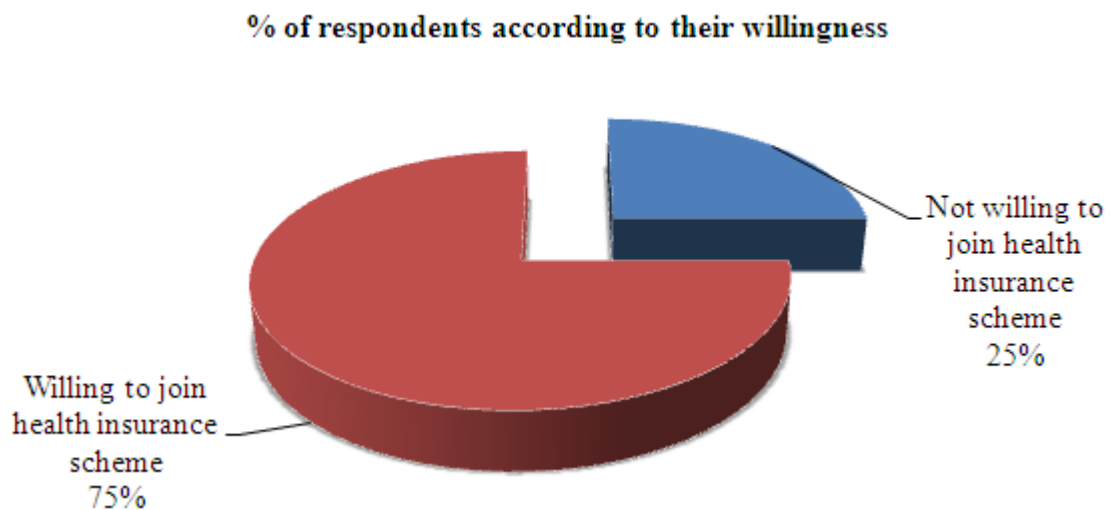
Figure 13: Respondent's willingness to join health insurance

The low proportion of willingness to join health insurance scheme is consistent with studies which indicate that the uptake of any type of insurance in developing countries is low (Gine and Yang, 2007). Generally, the enrolment in voluntary health insurance schemes is subject to the problem of selection bias through adverse selection whereby there is a tendency of more unhealthy people joining health insurance.

Another type of adverse selection popularly referred to as "cream skimming" exist whereby the insurers enroll only the healthy people and conveniently excluding the high risk population group consisting of the elderly, the poor, people with known chronic ailments from the insurance program (Gustafson *et al.*, 2009; William, 1999). The low enrollment in health insurance was also found among informal sector workers in Nicaragua by Rebecca *et al.* (2010) who reported that overall take-up of the program was low, with only 20% enrollment. Further researches suggest that take-up of voluntary health insurance among the poor is typically low (Chankova *et al.,* 2008; Gine *et al.,* 2007; Pauly *et al.,* 2008).

4.2.2 Willingness by various socio-economic characteristics of the respondents

Table 4 shows those respondents who attained an ordinary level of secondary have the largest proportion of individuals who would like to join health insurance scheme at their own will (36%). The second group of respondents with a higher probability of joining health insurance scheme at their own will is that of farmers (30%), which is followed by respondents who earn 500 000 Tshs and above.

On the other hand, 90% of respondents who were engaged in occupations such as housekeeping, animal husbandry, bus conductor, motorcycle taxi operator, milling machine operator, casual labourer, food vending, electrical installation, mechanics and carpentry were not willing to join health insurance scheme. The proportion of unwillingness to join health insurance scheme among respondents who were engaged in tailoring and masonry occupations was as high as 89% and 86% respectively.

Table 4: Willingness to join health insurance by gender, education, income and occupation

		Not willing	Willing
	n	Percentage of respondents (%)	
Male	123	74	26
Female	127	76	24
No education	107	79	21
Primary school	85	74	26
O-level	44	64	36
A-level	9	78	22
Some college education	5	80	20
10 000 - < 100 000 Tshs	53	74	26
100 000 - < 200 000 Tshs	53	71	29
200 000 - < 300 000 Tshs	49	84	16
300 000 - < 400 000 Tshs	38	76	24
400 000 - < 500 000 Tshs	24	71	29
500 000 Tshs and above	34	71	29
Farmer	138	70	30
Business (kiosk/used clothes/vegetables)	74	76	24
Tailoring	9	89	11
Mason	8	88	13
Housekeeper, animal husbandry, bus conductor, motorcycle taxi operator, milling machine operator, casual laborer, food vendor, electrical installation technician, mechanic, carpenter	20	90	10

These results suggest that scaling up of secondary education will likely enhance the willingness of informal sector workers to join health insurance schemes. The finding that the willingness of highly educated respondents to join health insurance was low did not come by surprise. Similar results by Msuya and Jutting (2004) showed that more educated persons were less likely to join the scheme than less educated ones. The finding that farmers are more likely to join health insurance scheme as compared with other occupation workers is again in favour with the dissemination of health insurance schemes to the informal sector workers since agriculture sector is still the largest employer in Tanzania.

4.3 Rationale for Readiness and Reluctance to Join Health Insurance

In order to get a clear picture of issues that might affect the willingness of the informal sector workers to join health insurance scheme, an attempt was made to obtain respondents' reasons and views in favor of the health insurance or otherwise. This sub section provides a general overview of those issues that might be critical in institutionalization of health insurance scheme among the informal sector workers.

4.3.1 Reasons in favor of health insurance scheme

Fig. 14 displays pertinent factors which attract the informal sector workers to join health insurance scheme. The most critical reason which enhances the willingness to join health insurance is the fact that the schemes provide low cost or affordable means to health financing. This fact is supported by the largest proportion of respondents who mentioned that they are willing to join health insurance scheme because it is cheap (22%). Second most critical reason is that it enables principal and non-principal members to access health services in a timely and easy manner (12%). Another important reason provided by the respondents is that being a member of health insurance scheme enables one to access health services without paying out of pocket medical fees (10%).

There are other reasons which contribute to such willingness including affordability (3%); it helps poor people to access health services when they become ill and to get treatment free of charge (7%); the dire need or curiosity to know more about such scheme (6%) and just hearing favorable views from others (5%). Further reasons cited include unreliability of income earnings; to avoid utilization of excessive share of income for accessing health services; and paying low membership fee (3%).
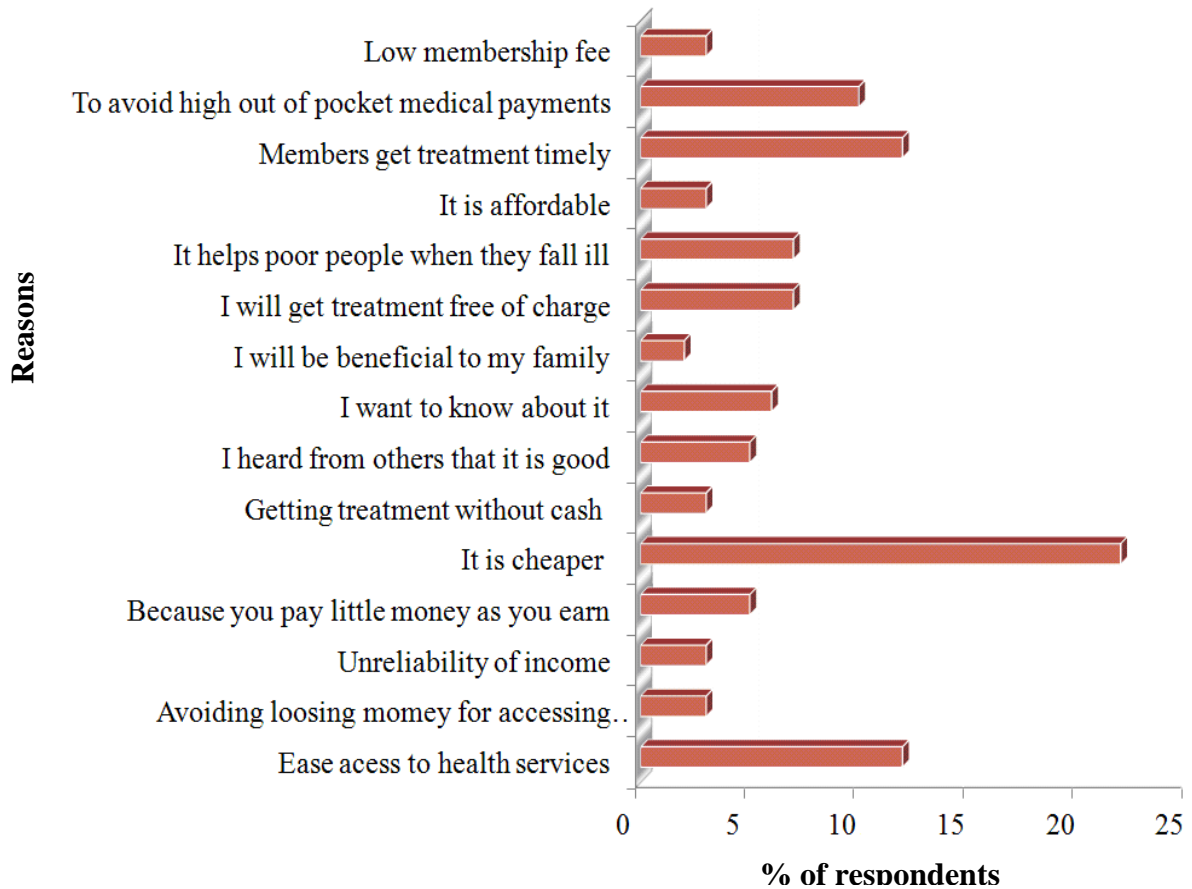
Figure 14: Respondent's reasons for willingness to join health insurance scheme

These findings are similar to those of many recent studies that have expounded the list of possible factors that could qualify as key determinants of health insurance especially those designed for low income people. For instance the most important product attributes of micro health insurance products from a client perspective were found to include simplicity; affordability and value (Churchill, 2006; McCord and Osinde, 2003). The finding that affordability of premiums or contributions is one of the main determinants of membership is consistent with that of WHO study of the Nkoranza Scheme in Ghana (Atim, 1998). In this study it was shown that unaffordable contributions could be a financial obstacle to membership. These factors are not only the determinants of uptake but also determine the impact of micro health insurance as well.

Harnessing these positive factors that enhances public appeal for health insurance scheme will surely enable the realization of the dire need of the society to extend coverage to those Tanzanian citizens who are employed in the informal sector.

4.3.2 Reasons against health insurance scheme

Among the critical question of the study was what are the factors, reasons or issues that may lead to low acceptance of health insurance schemes among the informal sector workers in typical Tanzania rural community. The most critical reason is that the schemes are expensive, cited by 18% of the respondents who were not willing to join health insurance scheme. The second critical reason was lack of knowledge about such schemes cited by 17% of the unwilling respondents; low income earnings cited by 13%; and reluctance to pay membership fee when one is not sick cited by 11% (Fig. 15).
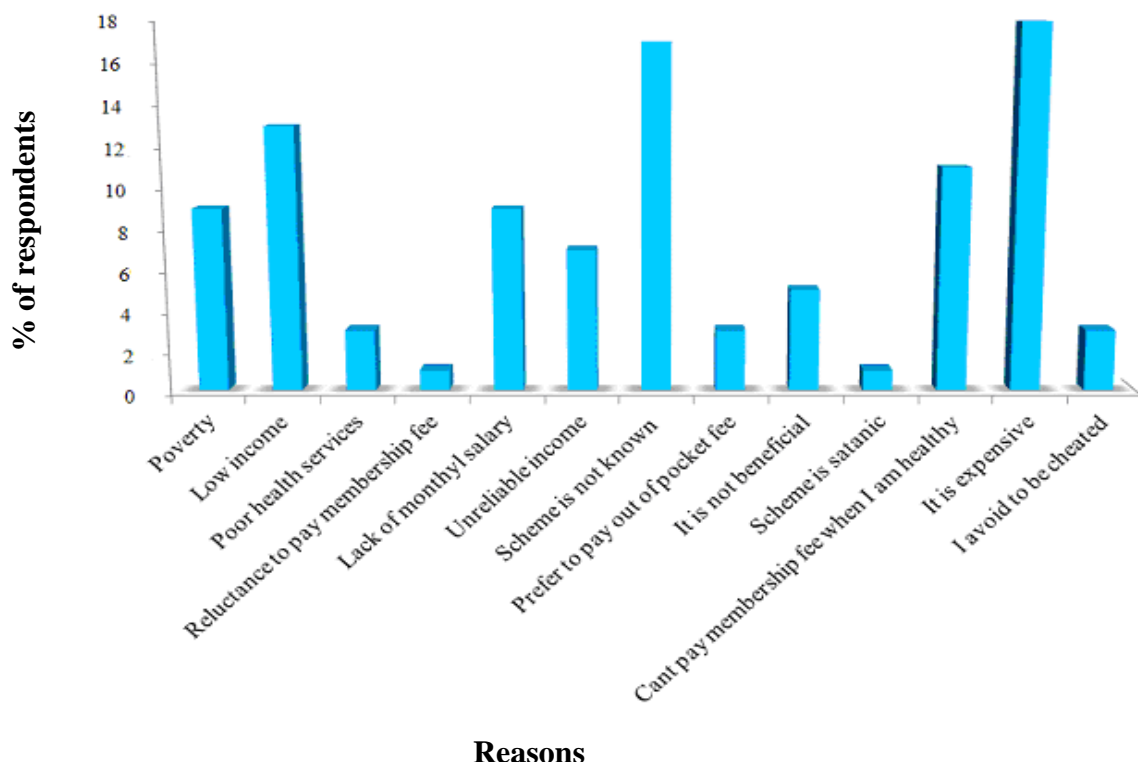
Figure 15: Respondent's reasons against joining health insurance schemes

The informal sector workers who said that they were unwilling to join health insurance scheme because of avoiding paying membership fee when they are not ill perceived that paying a fee when one is health is unnecessary economic loss. Again this perception indicates selection bias notably adverse selection in health insurance scheme membership whereby healthy people have a lower probability of joining health insurance as compared to unhealthy individuals (Gustafson *et al.*, 2009).

Few respondents who expressed their unwillingness to join health insurance (1%) gave a rather strange reason that joining health insurance is indistinguishable to entering into a contract with the devil. This reason stems from myths that members of health insurance schemes usually become ill more often than non-members. The myth like this underscores the need for social marketing of the scheme by using social and behavior change communication approach so as to do away with such misconceptions in the communities. Other reasons against health insurance schemes were fear of being conned (3%); lack of knowledge about its benefits (5%); preference to pay out of pocket medical fee (3%); unreliable income (7%); and lack of monthly salary (9%). In addition there were respondents who mentioned that they were unwilling to join health insurance scheme because current members are not getting good health services (3%) and poverty (9%).

The finding that lack of knowledge about the importance of health insurance hinders the informal sector workers to enroll in such schemes is consistent with other studies. According to Manje (2005) and Matul (2005), lack of information and understanding seems to be a major factor which reduces demand for health insurance. McCord (2001) found out that one of identified constrain in selling health insurance product to poor household is the lack of understanding of insurance product. More informed households have been found to be the ones who are more likely to take up insurance (Chankova *et al.,*

2008; Gine *et al.,* 2008). If there is a lack of awareness amongst the poor about insurance, they find it difficult to understand and accept the risk pooling concept (Brown and McCord, 2000; Brown and Churchill, 2000; McCord, 2001; Havers, 2001). In addition, a study by Antonia (2009) showed that inability to pay premium, the price of the premium, complete lack of awareness of the scheme's existence amongst some of the population, lack of   understanding of insurance theory and concepts, unfavorable scheme design and lack of trust in management are important factors which lowers willingness to join health insurance schemes.

The noted myths, misconception and mistrust that leads to unwillingness to join health insurance schemes may be explained by the findings of a study by Varian (1998) who found out that unwillingness to join health insurance emerges from the prevailing perceptions about one's own risk, understanding of the product offered by such schemes and social factors such as trust in financial institutions because members have to pay membership fees. The findings are also similar to that of Dauda and Francis (2009) who identified trust or lack of it as a serious constraint to the uptake of insurance. According to Dauda and Francis (2009) trust is also essential for customer retention. In their view, trust of individuals and communities can be built by education, building existing structures, or through careful marketing and sales strategies. The finding that some respondents were not willing to join health insurance because of poor health services is consistent with the finding of a study by Antonia (2009) which showed that poor healthcare quality principally lack of availability of medications was an important reason against enrollment into health insurance in Kongwa District.

4.4 Social Attitude Towards Health Insurance Scheme

To assess survey respondents' attitudes towards the reliance on tax revenue to meet their health care, respondents were asked to agree, to disagree or to remain neutral on two taxes related questions. The first tax related question was "Tax revenues should be used to provide or help pay for health insurance for individuals who cannot afford their own health insurance" and the second was "Tax revenues should be used to make it affordable for each individual or household to purchase health insurance". The results shown in Appendix 2 shows that majority of the respondents (84%) agree with the first tax related statement whereas 55% disagree with the second statement. This responses show that the prevailing social attitude favors a certain degree of utilization of tax shillings to support some vulnerable individuals to access health services.

The second set had four statements aimed at measuring social attitude towards the central government responsibility to cover the informal sector workers with health insurance. The first statement under this set asserts that "The government should have no role in the provision of health insurance". The second statement declare that "The government should do more to help needy citizens, even if it means going deeper into debt" the third statement asserts that "The government should provide basic health insurance for everyone in society" and the last statement asserts that "The government today cannot afford to do much more to help the needy". Appendix 2 shows that majority of the respondents (76%) converged to agree in principal on the second assertion. Convergence to disagreement among the majority of respondents was noted on assertion number four (65% rejection). The responses to these two statements depict a strong social attitude that the central government has a huge responsibility to support the most disadvantaged groups to access health services. As for the first and the third statements, those who agreed were fewer than those who disagreed but the proportions of disagreement were

less than 50%. This entails a rather weak negative social attitude towards total disengagement of the central government in provision support to social health insurance of its citizens or provision of universal health insurance support for all citizens regardless of their wealth status.

The third set of statement was aimed at measuring social attitudes towards the local government and society responsibility to provide health insurance coverage for people who are living in their catchment areas. This set had three statements. The first one states that "Local Government should have no role in the provision of health insurance", the second one states that "Society should provide medical treatment for everyone who needs it" and the last one assert that "Everyone in society should have health insurance". In this domain, all three statements resulted into higher proportion of respondents who agreed with them (62%, 80% and 57% for the first, second and third statement respectively). The results from this set of statements shows that society have strong positive attitude that local government authorities have a role to play in provision of social health insurance to its people. Again the prevailing attitude is that everyone should access medical service regardless of social status and wealth and that at least everyone in the society should have a certain form of health insurance coverage.

The last set of statements explore the feasibility of making it mandatory for everyone to join social health insurance scheme or leave the decision to join such schemes to individuals. This set herein referred to as individual responsibility domain or liberty of choice had four statements. The first statement was "The government should make it mandatory for all citizens to purchase health insurance". The second statement was "It should be the decision of each individual or household to purchase health insurance" and the third was "Those that do not have insurance should have to pay for their own

medical treatment, even if they did not cause the sickness directly through their own behavior". The last statement asserted that "Individuals who are not health conscious and live an unhealthy lifestyle should be forced to pay more for their own health insurance".

The results shows that majority of respondents, 78% and 54%, agreed with the second and the third statement respectively. This entails a strong negative attitude against government intervention to make it mandatory for people to enroll into any form of social health insurance. As such this attitude indicates the need for a more social liberty or freedom of choice or individual mandate on matters pertaining to joining health insurance. Majority of respondents disagreed with the first and fourth statements, with disagreement rate at 63% for the first statement and 48% for the fourth statement. These results cement the prevailing social attitude that the government should provide freedom for individuals and households to decide on this (Appendix 2).

Generally, the prevailing social attitude among the informal sector workers is that everyone in the society should have a certain form of health insurance coverage. However the respondents have a strong negative attitude against government intervention to make it mandatory for people to enroll into any form of social health insurance. However, they are in favour of a certain degree of utilization of tax shillings to support some vulnerable individuals to access health services. Although the prevailing attitude of the informal sector workers is to allow individual mandate about whether to join health insurance scheme or not, the government can opt to establish a special health financing tax that will be used to cover informal sector workers in health insurance. This is because health insurance is a product like other commodities and the government has no mandate to force people to buy a commodity which they do not need. Also, this option is feasible since they prefer tax shillings should be used to provide health insurance coverage for all.

4.5 Predictors of Willingness to Join Health Insurance Scheme

A nine predictor logistic model was fitted to the data to examine the log likelihood of an informal sector worker to be willing to join health insurance scheme for some socio-economic variables of interest. The predictor variables were number of dependants; years of experience in the current major occupation; debt; monthly income and debt to income ratio. Others were age, level of education and marital status. However, the last best fitted model which is reported in Table 5 had a total of six predictor variables.

4.5.1   Relationship between willingness to join health insurance and socio-economic variables

The results of binary logistic regression are presented in Table 5. According to the model regression coefficients, the log of the odds of an informal sector worker to be willing to join health insurance was positively related to debt, male gender and levels of income. Predictors which produced negative coefficients were those of number of dependants, years of experience in the current occupation and debt to income ratio. Gender dummy was created and included in the model to contrast the odd ratios of male and female respondents, the reference or baseline category being female gender (Appendix 1). The e^{β} column (Table 5) shows the relative odds (odds ratio). For instance basing on gender the relative odds indicates that males were 1.847 times more likely to be willing to join health insurance than females other things being equal. The p value for this predictor was not statistically significant at 90% level of confidence ($p > 0.1$). This implies that males and females were equally likely to be willing to join health insurance; hence, gender has no statistically significant explanatory power in explaining variations in willingness to join health insurance.

Similarly, based on number of dependants the relative odd of willingness to join health insurance was 0.941. This implies that an addition of one dependant will reduce the relative odd of willingness to join health insurance by 0.941 other things being equal. The p value for number of dependants was not significant ($p > 0.1$) and therefore the respondents were equally likely to be willing to join health insurance notwithstanding how many dependants they had (Table 5). In other words, this means that the number of dependants has no significant explanatory power of predicting variations in willingness.

In addition, the exponent of β coefficient (e^{β}) for years of experience in the current occupation signify that for any one year increase in experience, the log of the odds of an informal sector worker to be willing to join health insurance decreases by a factor of 0.936 all other factors being equal (Table 5).

Table 5: Logistic regression model coefficients estimates

Predictor	β	$SE\ \beta$	Wald's χ^2	df	P	e^{β}
Dependants	-0.061	0.071	0.722	1	0.396	0.941
Experience	-0.066	0.033	3.932	1	0.047**	0.936
Debt	0.288	0.075	14.565	1	0.000***	1.334
Debt/Income	-0.663	0.335	3.914	1	0.048**	0.515
Gender1)[+]	0.614	0.426	2.076	1	0.150	1.847
Income[++]			4.698	5	0.454	
Income(1)	1.774	0.941	3.557	1	0.059*	5.897
Income(2)	1.414	0.860	2.704	1	0.100	4.114
Income(3)	0.829	0.863	0.922	1	0.337	2.291
Income(4)	1.076	0.812	1.755	1	0.185	2.933
Income(5)	1.496	0.910	2.704	1	0.100	4.466
Constant	-2.926	0.906	10.434	1	0.001***	0.054

*** = Significant at 99% confidence level; ** = Significant at 95% confidence level; * = Significant at 90% confidence level; [+] = Reference gender was females; [++] = Reference income group was > 500 000 Tshs.

The *p* value for the log of the odds of years of experience in the current occupation was statistically significant at 95% confidence level ($p < 0.05$). This implies that years of experience in the current occupation has a statistically significant explanatory power of predicting variations in willingness to join health insurance.

The e^β for debt implies that for any 1000 Tshs increase in debt the log of the odds of an informal sector worker to be willing to join health insurance increases by a factor of 1.334. In other words this implies that if an informal sector worker is not owed any amount of money, then his log of the odds of being willing to join health insurance is 1.323 less than that of his counterpart who is owed 1000 Tshs all other things being equal. The *p* value for β coefficient of this predictor was statistically significant at 99% confidence level ($p < 0.01$), thus credit exhibited a very strong explanatory power of variations in willingness to join health insurance (Table 5).

The exponent of β coefficient (e^β) for debt to income ratio shows that for any 100% increase of the debt to income ratio the log of odds of an informal sector worker to be willing to join health insurance decreases by 0.515 all other things being equal. In fact this shows that those informal sector workers who were heavily indebted (relative to their income earnings) were less likely to be willing to join health insurance scheme as compared to those who were not highly indebted. The *p* value for β coefficient of this predictor was statistically significant at 95% confidence level ($p < 0.05$) meaning that debt to income ratio exhibited a strong explanatory power of variations in willingness to join health insurance.

Dummy variables for monthly income were created and included in the model to contrast the different categories against the baseline category (Appendix 1). The baseline category

of income that was used to fit the logistic regression model was >500 000 Tshs. The binary logistic regression results shows that the exponent of β coefficient ($e^β$) for those respondents who belong to the first income category (10 000 - < 100 000 Tshs) were 5.897 times more likely to be willing to join health insurance scheme than those who belong to > 500 000Tshs all other things being equal. This result was statistically significant at 90% level of confidence ($p < 0.1$) entailing that 10 000Tshs - <100 000Tshs income level exhibited weak explanatory power of variations in willingness to join health insurance scheme (Table 5).

The odd ratios of willingness to join health insurance for the remaining income categories were greater than that of the reference category, all other things being equal (Table 5). However the respective Wald's $χ^2$ for each of the remaining income categories were not statistically significant ($p > 0.1$). This signifies that their explanatory power of explaining variations in willingness to join health insurance was not significant.

Table 6: Change in likelihood ratio

Predictor	Model Log Likelihood	Change in -2 Log Likelihood $χ^2$	df	Sig. of the Change
Dependants	-77.404	0.341	1	0.559
Experience	-79.393	4.319	1	0.038[**]
Debt	-87.267	20.067	1	0.000[***]
Debt/Income ratio	-79.212	3.957	1	0.047[**]
Sex	-78.299	2.132	1	0.144
Income	-79.831	5.195	5	0.393

[***] = Significant at 99% confidence level; [**] = Significant at 95% confidence level

Overall results shows that basing on the more robust change in -2 log likelihood χ^2 test statistic (Table 6) debt emerged to demonstrate strong prediction power of willingness to join health insurance ($p < 0.01$) while experience in the current occupation and debt to income ratio were found to exhibit a moderate explanatory power of explaining variations in willingness ($p < 0.05$). The finding that debt appeared to demonstrate strong prediction power of willingness to join health insurance is consistent with that of Churchill and Cohen (2006).

According to Churchill and Cohen (2006) in many developing countries, existing synergies between the delivery of financial services and health services to clients in the informal sector makes microfinance institutions to be a promising delivery agent to extend health insurance to low-income and other vulnerable groups, particularly in settings where their penetration is high. The findings that having a debt increases the likelihood of joining health insurance scheme should be taken with caution so as to avoid mistrust to social health insurance that may arise from the failure by some rural inhabitants to distinguish between insurance and credit schemes. Informal sector workers would need to understand that microcredit schemes offer money first and then find ways of ensuring that clients repay the loan. In microcredit setting lenders have to find ways to ensure they can trust that repayment by the clients will take place. In insurance, clients first part with their money, and then they have to trust the insurer that they will indeed get the money or the service such as health care when the problems arise. Lenders have to trust the borrowers; while insurers have to be trusted by the clients (Dauda and Francis, 2009).

Based on the change in -2 log likelihood χ^2 test statistic the result shows that income does not exhibit statistically significant explanatory power of explaining variations in

willingness to join health insurance ($p > 0.1$). This finding is similar to that of Dercon *et al.* (2010) and Cole *et al*. (2009) who found out that income is not important explanatory variable of the uptake of micro insurance. Other remaining variables namely gender and number of dependants was not significant predictors of variations in willingness to join health insurance ($p > 0.1$). These findings were in contrast a study by Rebbeca *et al.,* (2010) found out that the total number of children in the family increased the likelihood of take-up of health insurance among the informal sector workers by approximately 3 percentage points while income and education had no additional explanatory power on insurance take-up. However, her finding was attributed by a fact that the type of health insurance scheme that she studied offered fixed premium to households notwithstanding family size as a result households with many dependants were more likely to join the scheme than small family size households.

4.5.2 Model evaluation

One inferential test and two descriptive measures were used to evaluate the fitness of the logistic model against actual outcomes. The inferential goodness-of-fit test is the H–L statistic that yielded a χ^2 of 10.601 which was statistically significant *($p > .05$)*. This suggests that the model fit to the data well (Table 7). Two additional descriptive measures of goodness-of-fit presented in Table 7 are R^2 indices, defined by Cox and Snell (1989) and Nagelkerke (1991), respectively. These pseudo R^2 are variations of the R^2 concept defined for the OLS regression model not as predictive efficient as compared to R^2 in Ordinary Least Square (OLS) regression models. Therefore pseudo R^2 are supplementary indices for evaluation of the logistic model. In linear regression, R^2 has a clear definition that is "the proportion of the variation in the dependent variable that can be explained by predictors in the model". Although attempts have been devised to yield an equivalent of this concept for the logistic model, none however corresponds to

predictive efficiency or can be tested in an inferential framework (Long, 1997, and Menard, 2000).

Table 7: Overall evaluation of the model

Goodness-of-fit test	χ^2	df	P
Hosmer & Lemeshow	10.601	8	0.225
Cox and Snell	pseudo $R^2 = 0.158^\Delta$		
Nagelkerke	pseudo $R^2 = 0.225^\Delta$		

$^\Delta$ = These pseudo R^2 are variations of the R^2 concept defined for the OLS regression model not as predictive efficient as compared to R^2 in Ordinary Least Square (OLS) regression models. Therefore although the values of pseudo R^2 in these results were small they should be considered as supplementary indices for evaluation of the logistic model.

4.5.3 Validations of predicted probabilities

Table 8 shows a classification that documents the validity of predicted probabilities of the model. According to Table 8, the prediction for informal sector workers who were not willing to join health insurance schemes was more accurate than that for those who were willing. This observation was supported by the magnitude of sensitivity (18%) compared to that of specificity (98%).

Table 8: Classification of the logistic regression predicted values

	Predicted		% Correct
	Willing to join health insurance?		
Observed	Yes	No	
Willing to join health insurance?			17.7
Yes	11	51	
No	6	179	96.8
Overall % correct			77.0

The cut value is 0.500; Sensitivity = 11/(11+51) = 18%; Specificity = 179/(179+6) = 98%; False positive = 6/(6+11) = 25%; False negative = 51/(51+179) = 22%.

Both false positive and false negative rates were not more than 25%. Sensitivity measures the proportion of correctly classified events in this case those who were willing to join health insurance scheme, whereas specificity measures the proportion of correctly classified nonevents (those who were not willing to join health insurance scheme). The false negative therefore measures the proportion of observations misclassified as nonevents over all of those classified as nonevents. The overall correct prediction was about 77% correct showing high acceptability of the results.

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The general objective of the study was to assess issues that influence the readiness of informal sector workers to enroll in the health insurance scheme so as to generate evidence which can be used to devise a pro equity health financing system. Specific objectives were to identify the reasons to participate in particular health insurance scheme; to identify the overall attitudes of the informal sector workers towards health insurance schemes and to estimate the informal sector workers enrolment into health insurance schemes. This section gives a summary of major findings emanating from this study.

(a) Reasons in favour of and against health insurance scheme

The study has shown that the most important reasons that enhance the acceptability of the health insurance scheme among the informal sector workers were affordability and better accessibility of health services. Others were provision of health services in a timely manner and accessibility of health service without paying out of pocket fee. In addition unreliability of income earnings and avoiding catastrophic health expenditures has been identified as positive factors. Furthermore, the study has shown that majority of factors which lower willingness to join health insurance schemes are based on misconceptions, myths, perception of one's own risk, lack of understanding of the product offered by such schemes, mistrust and lack of knowledge about such schemes.

(b) Attitudes of the informal sector workers towards the health insurance

The study results have shown that largest proportion of informal sector workers who were willing to join health insurance scheme were those who attained ordinary level of secondary education. The overall attitude was that the health insurance should be financed by using 'tax based financing' and that everybody should be covered. However, individual liberty or freedom of choice in joining social health insurance schemes was more preferable. Thus, most informal sector workers had negative attitude towards compulsory health insurance schemes although they share the feeling that coverage should be universal.

(c) Predictors of health insurance acceptability among informal sector worker

The willingness of an informal sector worker to join health insurance scheme was found to be negatively related to the years of experience in current occupation, debt to income ratio and male gender; and positively related to debt and monthly income. However, statistical scrutiny of the computed log odd ratios confirmed that debt ($p < 0.01$), debt to income ratio ($p < 0.05$) and experience in the current occupation ($p < 0.05$) were strong predictors of willingness to join health insurance. Statistical evidence of the result further suggests that sex ($p > 0.1$), income ($p > 0.1$) and number of dependants ($p > 0.1$) were not good predictors of informal sector workers willingness to join health insurance.

6.2 Recommendations

The study findings have shed light about a number of physical and financial barriers that must be addressed if universal coverage is to become a reality. Firstly, the study have shown that the lack of sufficient knowledge about health insurance schemes among the informal sector workers is a right recipe that flourishes the existence of negative misconceptions and myths about such schemes. In fact, lack of knowledge is a square

hole and therefore designing and implementing a social and behavior change communication with the aim of promoting the uptake of health insurance scheme is the right square peg to fix that square hole. Therefore, there is a need to disseminate information amongst the rural populations particularly through peer education alongside the inclusion of education of insurance theory in the information dissemination.

In order to build trust that will facilitate deep penetration of health insurance among the informal sector workers in hinterlands a need is recognized for policy-makers and health insurance managers to think systematically about a wide range of initiatives that enhance trust and caring. This should go hand in hand with developing tripartite (consumer / health insurance / health service provider) trust-building structures and practices. In addition, overcoming mistrust requires a dual effort to improve communication and financial education on risk-pooling and health insurance tailored to consumers. The communication system should strive to enable the creation of feedback from the community to the management alongside improvement of accountability through publication of spending reports.

Since affordability of health insurance schemes is crucial factor in enhancing willingness of consumers to enroll in those schemes, it is important to increase flexibility of the scheme design, particularly to introduce innovative approaches of collecting premiums. Among the possible approaches that will cater for this purpose include allowing the clients to pay by installments or collecting contributions on monthly, quarterly, biannually or annually basis. Premiums can also be collected during the harvesting season of cash crops or payment can be linked with a suitable event in the community such as during monthly meetings of the members. This will enable those informal sector workers who earn little income to enroll into health insurance scheme.

The finding that increased willingness of informal sector workers to join health insurance schemes is hampered by poor quality of health service underscores the need to improve services and quality of care. Specifically the government should address the health system root causes of poor quality including shortage of health staff especially in remote areas and provision of adequate diagnostic equipment in public facilities. Other causes of poor quality of health services that needs to be overcome include frequent unavailability of drugs in public facilities and poor attitudes of staff which discourage use of facilities. This will require short and long term interventions to develop human resource for health; increased resource allocation and investment in health system. Other proposed measures include procurement and supply of sufficient quantity and quality medical diagnostic tools and drugs. The efforts should also focus on customer care mentorship programs for health and allied workers in the country. An attempt should be made to implement performance improvement actions in the health system so as to improve services and attract more people to join health insurance schemes.

Accreditation of health facilities is necessary and probably the most efficient measure for improving the quality of health care in Tanzania. To start with, the government in collaboration with other stakeholders should establish accreditation system for health facilities. This measure include establishment of accreditation agencies or institution; setting of standards; and enforcement of the standards. Otherwise poor quality of health service will work against the stakeholders wish to increase health insurance coverage to reach more people including those employed in the informal sector and all efforts to scale up health insurance to cover more citizens will be in vain.

Since the study findings have shown that the informal sector workers have a strong negative attitude towards total withdrawal of the government in financing health system,

any devised mechanism of institutionalizing social health insurance should include the government contribution. The benefit of this system is that it will enhance equity in the use of both preventive and curative health services in the country while doing away with a pro-rich bias which is more prominent in the use of specialist hospital services. Moreover, since health insurance is such a special product that every citizen might need at a certain point in his life, and the government have the right to impose tax to its citizens, it is feasible to achieve universal coverage through establishment of special health financing tax. This will in turn lead to a more equitable access to primary health care.

Although income level was found to be insignificant predictor of willingness to join health insurance, it is nevertheless paramount to engage deliberate efforts to redress rural poverty so as to increase the income earnings of the rural dwellers. This is because the informal sector workers who are highly indebted are less likely to join such scheme and these are more often the poorest of the poor. Rural financial institutions which offer credit facilities to the informal sector workers can accelerate the uptake of health insurance schemes among the informal sector workers through dissemination of risk aversion knowledge and building of entrepreneurship acumen. This is evidenced by the finding that having a credit increases the odd of the informal sector worker to be willing to join health insurance scheme.

6.3 Prospects for Future Studies

The study opens avenues of further research. Greater exploration into the socio-economic characteristics of the informal sector workers in rural areas would shed further light into the reasons for low willingness to enroll into health insurance. Inquiry into the effect of the social health insurance scheme on the non-members to ascertain whether the schemes have a detrimental effect on healthcare for non-members would be of great importance.

REFERENCES

Anne, M., John, E. A., James, A., Jo Borghi, B. G., Suzan, M., Gemini, M., Bronwyn, H., Jane, M., Filip, M. and McIntyre, D. (2012). Equity in financing and use of health care in Ghana, South Africa, and Tanzania: implications for paths to universal coverage. European Union and International Development Research Centre. *Lancet* 14(380): 126 – 133.

Antonia, T. (2009). The Kongwa community based health insurance scheme, Tanzania: why is enrolment low and what can be done to increase membership? Nuffield Centre for international health and development, University of Leeds. [http://www.leeds.ac.uk/me dicine/intercalated/timmis_ poster.pdf] site visited on 5/2/2013.

Bennett, S., Creese, A. and Monasch, R. (1998). *Health Insurance Schemes for People Outside Formal Sector Employment* World Health Organisation, Geneva. 98pp.

Bose, A. and Desai, P. B. (1983). *Studies in Social Dynamics of Primary Health Care.* Hindustan Publishing Company, Delhi, India. 126pp.

Brown, W. and Churchill, C. (2000). Insurance provision in low income communities initial lessons from micro-Insurance experiments for the poor. Micro enterprise best practices project, development alternatives. [www.ocdc.coop/insurance.doc] site visited on 3/1/2013.

Brown, W. and McCord, M. J. (2000). Micro enterprise best practices project, development alternatives. [www.ocdc.coop/Sector/insu rance.doc] site visited on 8/4/2013.

Burns, M. and Mantel, M. (2006). Tanzania review of exemptions and waivers, report submitted to the Ministry of Health by the Euro Health Group. [http://www.povertymonitoring.go.tz/nonstate/euro_health_group_on_waivers_an d_exemptions_in_Tz_2006.pdf] site visited on 23/3/2013.

Carrin, G., Desmet, M. and Basaza, R. (2001). *Social Health Insurance Development in Low-Income Developing Countries*: New roles for government and non-profit health insurance organizations. Transaction Publishers, London. 153pp.

Carrin, G., Waelkens, M. P. and Criel, B. (2005). Community-based health insurance in developing countries: a study of its contribution to the performance of health financing systems. *Tropical Medicine and International Health* 10(8): 799 – 811.

Chankova, S., Sulzbach, S. and Diop, F. (2008). Impact of mutual health organizations: evidence from West Africa. *Health Policy and Planning* 23(4): 264 – 276.

Chee, G. and Smith, K. (2002). Assessment of the community health fund in Hanang District, Tanzania. [http://www.Docstoc.com/docs/CHF. Tanzania] site visited on 26/11/2012.

Chung-Ping, A., Katrin, N. and Oliver, S. (2011). Measuring attitude toward social health insurance. *European Journal of Health Economics* 1007: 198 – 1011.

Churchill, C. (2006). *What is Insurance for the Poor? Protecting the Poor:* A Microinsurance Compendium. International Labor Organisation. Craig Churchill, Geneva. 377pp.

Churchill, C. and Cohen, M. (2006). *Marketing Microinsurance. In Protecting the Poor, A Microinsurance Compendium.* (Edited by Churchill, C.), International Labor Organization, Geneva.18pp.

Cohen, M. and Sebstad, J. (2006). *The Demand for Microinsurance.* In: (Edited by Churchill, C.), Protecting the Poor, A Microinsurance Compendium, International Labor Organisation, Craig Churchill, Geneva. 382pp.

Cole, S. A., Gine, X., Tobacman, J., Topalova, P., Townsend, R. and Vickery, J. (2009) *Barriers to Household Risk Management: Evidence from India Harvard Business School.* Working Paper No. 9. India. 20pp.

Cowell F. A. (1977). *Measuring Inequality.* Philip Allan Publisher, London. 25pp.

Cox, D. R. and Snell, E. J. (1989). *The Analysis of Binary Data*. (2nd Ed.), Chapman and Hall Publishers, London. 54pp.

Criel, B. and Waelkens, M. P. (2003). Declining subscriptions to the Maliando mutual health organisation in Guinea-Conakry West Africa: What is going wrong? *Social Science and Medicine* 57: 1205–1219.

Cutler, D. M. and Zeckhauser, R. J. (2000). *The Anatomy of Health Insurance, Handbook of Health Economics*. North Holland, Amsterdam. 11pp.

Dauda, O. Y. and Francis, N. O. (2009). *Determinants of Demand for Micro-Health Insurance in Botswana Handbook of Micro Health Insurance in Africa.* Bibliographic information Published, Deustche. 284pp.

Davies, P. and Carrin, G. (2001). Risk-pooling: necessary but not sufficient. *Bulletin of the World Health Organization* 79: 581 – 587.

Dercon, S., Gunning, J. and Zeitlin, W. (2010). A. friends, fear and finance buying health insurance in Rural Kenya. *Paper Presented at the Academic Track of the Sixth Annual International Microinsurance Conference,* Philippines, Manila. 7pp.

Dercon, S., Kirchberger, M., Gunning, J. W. and Platteau, J. (2008). *Literature Review on Microinsurance.* European Development Research Network, Oxford University. 32pp.

Desmet, M., Chowdury, A. Q. and Islam, M. D. K. (1999). The potential for social mobilisation in Bangladesh: the organisation and functioning of two health insurance schemes. *Social Science and Medicine* 48: 925–938.

Diop, F., Yazbeck, A. and Bitran, R. (1995). The impact of alternative cost recovery schemes on access and equity in Niger. *Health Policy and Planning* 10(3): 223 – 240.

Dominick, A. and Kurowski, J. (2005). *Human Resource for Health - An Appraisal of the Status quo in Tanzania Mainland*. The World Bank. 24pp.

Dror, D. M. (2001). Reinsurance of health insurance for the informal sector. *Bulletin of the World Health Organization* 79: 672 – 678.

Ekman, B. (2004). Community-based health insurance in low-income countries: a systematic review of the evidence. *Health Policy and Planning* 19(5): 249 – 270.

Friedrich, S., Andreas, B. and Claudio, E. M. (2010). Shadow economies all over the world new estimates for 162 Countries from 1999 to 2007. The World Bank Development Research Group. [http://www.econ.jku.at/publications.pdf] site visited in 21/12/2012.

Gine, X. and Yang, D. (2007). *Insurance, Credit, and Technology Adoption: Field Experimental Evidence from Malawi*. Policy Research Working Paper No. 4425. The World Bank Development Research Group, Washington, DC. 33pp.

Gine, X., Townsend, R. and Vickery, J. (2008). Patterns of rainfall insurance participation in rural India. *World Bank Economic Review* 22 (3): 566 – 593.

Gustafsson-Wright, E., Asfaw, A. and van der Gaag, J. (2009). Willingness to pay for health insurance: An analysis of the potential market for new low-cost health insurance products in Namibia. *Social Science and Medicine* 69: 51 – 59.

Ha TH N., Yogesh, R. and Hong, W. (2010). The financial protection effect of Ghana National Health Insurance Scheme: evidence from a study in two rural districts. *International Journal for Equity in Health* 10(4): 10 – 14.

Havers, M. (2001). From the chair. *Small Enterprise Development* 12(1): 2 – 3.

High Level Expert Group (2011). *Report on Universal Health Coverage for India:* Submitted to Planning Commission of India. New Delhi, India. 135pp.

Hosmer, D. W. and Lemeshow, S. (2000). *Applied Logistic Regression.* (2nd Ed.), Publishers John Wiley and Sons, New York. 203pp.

Hsiao, W. and and Shaw, P. R. (Eds.) (2007). *Social Health Insurance for Developing Nations*. Washington, DC. 39pp.

ILO (2001). *Social Security A New Consensus.* International Labour Office, Geneva. 37pp.

Kakwani, N. C. (1977). Measurement of tax progressivity: An international comparison. *Economic Journal* 87: 71 – 80.

Lambert, P. (1993). *The Distribution and Redistribution of Income.* Manchester University Press, Manchester, UK. 42pp.

Largarde, M. and Palmer, N. (2009). *The Impact of Health Financing Strategies on Access in Low and Middle Income Countries.* The Cochrane Collaboration. Protocol Publisher Wiley, New York. 25pp.

Laterveer, L. and Munga, M. (2004). *Equity Implications of Health Sector User Fees in Tanzania:* Do we retain the user fee or do we set the user free? Analysis of Literature and Stakeholder Views Commissioned by Research for Poverty Alleviation. ETC Crystal, Leusden, The Netherlands. 40pp.

Lautier, B. (2003). Mutual and universal social protection: The condition for effectiveness in the struggle against poverty in Latin America. *International Symposium on Solidarity and Social Protection in Developing Countries*, Turin, Italy, 23–25 April 2003. pp. 120 – 134.

Lei, P. W. and Koehly, L. M. (2000). Linear discriminant analysis versus logistic regression: *A Comparison of Classification Errors. Paper Presented at the Annual Meeting of the American Educational Research Association,* New Orleans. 25pp.

Long, J. S. (1997). *Regression Models for Categorical and Limited Dependent Variables*. Thousand Oaks, CA, Publisher Sage, New York. 67pp.

Lorenzo, G. B. and Paolo, L. (2006). Inequality analysis the Gini index. Food and Agriculture Organization of the United Nations EASYPol resource materials for policy making on-line, Analytical tools module 040. [http://www.fao.org /docs/up/ easypol/329/gini_index _040EN.pdf] site visited on 23/2/2012.

Lundberg, M., Over, M. and Mujinja, P. (2000). Sources of financial assistance for households suffering an adult death in Kagera, Tanzania. *South African Journal of Economics* 68: 420 – 36.

Mahal, A., Anup, K. and Engelgau, M. (2010). The economic implications of non-communicable disease for India, health, nutrition and population. The World Bank. [http://www.scribd.com/doc/89962846/EconomicImplicationsofNCDforIndia] site visited on 28/3/2012.

Manje, L. (2005). *Good and Bad Practices Case Study. Madison Insurance, Zambia, CGAP.* Working group on microinsurance, No. 10. ILO Social Finance Programme, Geneva. 55pp.

Matul, M. (2005). Demand for microinsurance in Georgia. Quantitative study results. microfinance centre for central and Eastern Europe and the New Independent State. [http://www.undp.org.my/Measuring_Monitoring_Poverty_n_Inequality.Pdf] site visited on 8/6/2012.

McCord, M. and Osinde, S. (2003). Reducing vulnerability: The supply of health microinsurance in East Africa. MicroSave-Africa, Nairobi. [http://www. Micro Save Africa.com] site visited on 8/6/2012.

McCord, M. J. (2001). Health care microinsurance – case studies from Uganda, Tanzania, India and Cambodia. *Small Enterprise Development* 12(1): 25 – 39.

McPake B. (1993). User charges for health services in developing countries. *Social Science and Medicine* 36: 1397–1405.

Menard, S. (2000). Coefficients of determination for multiple logistic regression analysis. *The American Statistician* 54(1): 17 – 24.

Mhina, L. G. (2005). Factors contributing to high drop-out of CHF members in Nzega District. Dissertation for Award of MSc Degree at University of Dar es Salaam, Tanzania, 59pp.

MOH (1999). *Community Health Fund Operations Guidelines*. Government Printer, Dar es Salaam, Tanzania. 10pp.

MOH (2003a). *Assessment of Community Health Fund in Tanzania:* Factors affecting enrolment and coverage. Government Printer, Dar es Salaam, Tanzania. 5pp.

MOH (2003b). *National Health Policy*. Government Printer, Dar es Salaam, Tanzania. 4pp.

Msuya, J. M. and Jutting, J. P. (2004). *Impacts of Community Health Insurance Schemes on Health Care Provision in Rural Tanzania*. Discussion Papers on Development Policy Bonn, January 2004. Bonn Zentrum für Entwicklungsforschung, Universität Bonn. 24pp.

Nagelkerke, N. J. D. (1991). A note on a general definition of the coefficient of determination. *Biometrika* 78: 691 – 692.

NBS and ICF Macro (2010). *Tanzania Demographic and Health Survey.* United Republic of Tanzania, National Bureau of Statistics Dar es Salaam, Tanzania, ICF Macro Calverton, Maryland, USA. 47pp.

NDH (2011). *Green Paper on National Health Insurance in South Africa*. National Department of Health, Pretoria. 156pp.

NHIF (2005). *Health Care Financing in Tanzania.* Fact sheet No. 2. National Health Insurance Fund, Dar es Salaam, Tanzania. 2pp.

NBS (2009). *Household Budget Survey 2007 – Tanzania Mainland*. Government Printer, Dar es Salaam, Tanzania. 18pp.

Ndangala, C. P. and Kalimalwendo, E. (2005). Improving the pro-poor aspect: New partnership in health financing-the case of Tanga Councils. [http://www.Doc stoc.com/docs/CHFinTanzania] site visited on 25/8/2012.

Norusis, M. (2004). SPSS 12.0 Guide to data analysis. Upper Saddle River. [http://www. yatedo.com] site visited on 13/11/2012.

O'Donnell, O., van Doorslaer, E., Rannan-Eliya, R., Somanathan, A., Adihkari, S. and Akkazieva, B. (2008a). Who pays for health care in Asia? *Journal of Health Economics* 27: 460 – 475.

O'Donnell, O., Van Doorslaer, E., Wagstaff, A. and Lindelow, M. (2008b). *Analyzing Health Equity Using Household Survey Data:* A guide to techniques and their implementation. World Bank, Washington, DC. 67pp.

Pauly, M., Blavin, F. and Meghan, S. (2008). *Is There a Market for Voluntary Health Insurance in Developing Countries?* NBER Working Paper 14095, Cambridge, MA. 19pp.

Preker, A. S. and Carrin, G. (2003). *Health Financing for Poor People: Resource Mobilization and Risk Sharing*. World Bank. Washington, DC. 69pp.

Quijada, C. and Comfort, A. (2002). *Maternal Health Financing Profile: Tanzania. Partners for Health Reform Plus*. Working Paper No. 3. Abt Associates Inc., Bethesda, Maryland. 19pp.

Radermacher, R. Ashok, S., Zabel, K. and Dror, I. (2010). What do we know about the impact of microinsurance? The annual international Microinsurance 2009 in Dakar. [http://www.munichrefoundation.org/rdonlyres/Radermarcher.pdf] site visited on 10/6/2012.

Ralf, H. (2004). Statistical definition of informal employment. [http://ilo.org/english/bureau/stat/download/def.pdf] site visited on 9/3/2012.

Rebecca, L. T., Laurel, E. H., Erica, M. F., Mursaleena, I., Freddy, S. D. and Martha A. G. (2010). Social security health insurance for the informal sector in Nicaragua: A randomized evaluation. Wiley inter science. *Health Economics* 19: 181 − 206.

Ron, A. (1999). NGOs in community health insurance schemes: examples from Guatemala and the Philippines. *Social Science and Medicine* 48: 939–950.

Roth, J., McCord, M. and Liber, D. (2007). *The Landscape of Microinsurance in the Worlds 100 Poorest Countries*. The Microinsurance Center, Appleton. 34pp.

Sheuya, S. A. (2006). *Assessment of the Rungwe Smallholder Tea Growers Association and wakulima Health Fund Programme*: University College of Lands and Architectural Studies, Dar es Salaam, Tanzania. 40pp.

Tabachnick, B. G. and Fidell, L. S. (2001). Using multivariate statistics (4th Ed.), Harper Collins Publishers, Washington DC. 50pp.

The Centre for Financial Regulations and Inclusion (2012). *Financial Sector Deepening Trust, Tanzania Insurance Regulatory Authority*. Finmak Trust and Access to Insurance Initiative, Dar es Salaam, Tanzania. 127pp.

The Economic and Social Research Foundation (2010). *Informal Sector Taxation in Tanzania*. TAKNET Policy Brief Series No. 12.

Townsend, R. (1994). Risk and insurance in village India. *Econometrica* 62(3): 539 – 591.

URT (2006). *Tanzania Census 2002 Iringa Regional and District Projections* National Bureau of Statistics, Ministry of Planning, Economy and Empowerment, Dar es Salaam, Tanzania. 177pp.

URT (2007). *Iringa Regional Socio Economic Profile*. Ministry of Planning, Economy and Empowerment, Dar es Salaam, Tanzania. 165pp.

URT (2009). *Health Sector Strategic Plan III. July 2009 – June 2015*. Partnership for Delivering the MDGs, Ministry of Health and Social Welfare. Government Printers, Dar es Salaam, Tanzania. 13pp.

URT (2010). *Tanzania Mainland National Health Accounts 2009/2010*. Government Printers, Dar es Salaam, Tanzania. 32pp

USAID (2008). *Visions of the Future of Microinsurance, and Thoughts on Getting There.* Microinsurance, USA. 13pp.

Varian, H. R. (1998*). Intermediate Microeconomics*. Fourth Ed. WW Norton and Company Publishers, New York. 35pp.

WHA (2011). Sustainable health financing structures and universal coverage: 64th World Health Assembly agenda item 13.4. [http://apps.who.int/gb/ebmwha/ pdf_files/ WHA64/ A64_ R9-en.pdf] site visited on 30/8/2011.

WHO (2003). Community based health insurance schemes in developing countries: Facts, problems and perspectives. Department Health system financing, expenditure and resource allocation, cluster evidence and information for policy. [http://www.who. int/healthfinancing/en/cbh.pdf] site visited on 26/5/2012.

WHO (2005). Sustainable health financing, Universal Coverage, and social health Insurance Geneva. [http://www.scribd.com/WorldBankPublications/d/-SocialHea lthInsuranceforDevelopingNations] site visited on 15/2/2012.

WHO (2010). *Health Systems Financing: The Path to Universal Coverage.* World Health Organization, Geneva. 156pp.

William, J. (1999). *Principles of Health Economics in Developing Countries*. World Bank Institute, Washington, DC, USA. 60pp.

Xu, K., Evans, D., Carrin, G., Aguilar-Rivera, A. M., Musgrove, P. and Evans, T. (2007). Protecting households from catastrophic health spending. *Health Affairs* 26: 972 – 983.

Xu, K., Evans, D., Kawabata, K., Zeramdini, R., Klavus, J. and Murray, C. (2003). Household catastrophic health expenditure*:* A multi-country analysis. The Lancet 37: 360 – 362.

APPENDICES

Appendix 1: Dummy variables coding

		Frequency	Dummy / Parameter coding				
			(1)	(2)	(3)	(4)	(5)
Income group	10 000 - < 100 000	39	1.0	0.0	0.0	0.0	0.0
	100 000 - < 200 000	33	0.0	1.0	0.0	0.0	0.0
	200 000 - < 300 000	33	0.0	0.0	1.0	0.0	0.0
	300 000 - < 400 000	24	0.0	0.0	0.0	1.0	0.0
	400 000 - < 500 000	14	0.0	0.0	0.0	0.0	1.0
	500 000 and above	22	0.0	0.0	0.0	0.0	0.0
Sex of respondent	Male	87	1.0				
	Female	78	0.0				

Appendix 2: Respondents attitude towards health insurance schemes

Domain	Attitudinal statement	Agree %	Disagree %	Undecided %	N
Tax questions	1 Tax revenues should be used to provide or help pay for health insurance for individuals who cannot afford their own health insurance.	84	13	3	250
	2 Tax revenues should be used to make it affordable for each individual or household to purchase health insurance.	35	55	10	250
Central government role	1 The government should have no role in the provision of health insurance.	45	47	8	249
	2 The government should do more to help needy citizens, even if it means going deeper into debt.	76	18	6	249
	3 The government should provide basic health insurance for everyone in society.	44	50	6	249
	4 The government today can't afford to do much more to help the needy.	27	65	8	249
Local government and society role	1 Local Government should have no role in the provision of health insurance.	62	30	8	249
	2 Society should provide medical treatment for everyone who needs it.	80	16	4	249
	3 Everyone in society should have health insurance.	57	39	4	249
Liberty of choice	1 The government should make it mandatory for all citizens to purchase health insurance.	31	63	6	249
	2 It should be the decision of each individual or household to purchase health insurance.	78	19	3	249
	3 Those that do not have insurance should have to pay for their own medical treatment, even if they did not cause the sickness directly through their own behaviour.	54	38	8	248
	4 Individuals who are not health conscious and live an unhealthy lifestyle should be forced to pay more for their own health insurance.	44	48	8	249

Appendix 3: Questionnaire for data collection

The study on **ANALYSIS OF DETERMINANTS OF HEALTH INSURANCE PARTICIPATION AMONG INFORMAL SECTOR WORKERS IN RURAL TANZANIA** is undertaken by Mr. **LUITFRID PETER MNALLY** who is a student at the Sokoine University of Agriculture. The participation to this study is voluntary. A respondent may refuse to respond to any question that he/she may deem sensitive. Furthermore, the respondent may decide to withdraw from the interview at any time notwithstanding the completion of the exercise. Names of respondents will not be used in reporting the results of the study and all the information provided by the respondent will be strictly confidential. There will be no direct benefit for the respondent that will accrue from the study. However, the study will provide empirical information that will be useful for policy makers about health insurance financing system that responds to the needs of informal sector workers hence can be used to redesign a holistic health insurance system that cater for all citizens albeit their socio-economic status.

S/N			

1) Date   of   Interview:

   DD_____MM_____YY_____

2) Age of Respondent: Years   (   )

3) Sex of Respondent: Male   (1)   Female   (2)

4)   Level of Education of Respondent: Primary (1)   O-Level (2) A-Level (3) College (4) Graduate (5) Other (6)   Specify

5) Marital Status of Respondent: Married (1) Single   (2) Widow   (3)

6) Number of dependants: (   )

HEALTH INSURANCE PARTICIPATION

7) Are you aware about health insurance?   Yes (1)   No   (2)

8) Would you be willing to enrol for health insurance scheme if requested to do so?

   Yes (1)   No   (2)

9) What are the reasons for your response in question 8?

10) a).......................b).......................

ECONOMIC ACTIVITIES

11) What is your current occupation?   ....

12) How much money do you earn per month from this occupation?   (   )

13) For how long have you been in this occupation? .... (Years)

14) What are other sources of income? (Tick whichever mentioned)

1	Small/petty business (i.e kiosk, mama ntilie, Machinga etc)
3	Sell of labour (in any sector/sub-sector, but it is a day work)
5	Remittances (from family member, friends, non-family member etc)
7	Sell of household assets (house, land, livestock, crops etc)
1	Forest resource activities (e.g. selling charcoal, firewood, honey etc.)
2	Others (Specify)

15) What is the average monthly income do you earn from each of the mentioned sources

   above?

No	Economic activity	Output/return in Tshs.
1		
2		
3		
4		

16) Have you accessed any loan? Yes (1)   No   (2)

17) Have you paid that loan?   Yes (1)   No   (2)

18) Is there still an amount of loan that is still due?   Yes (1)   No   (2)

19) If yes, how much? ....

SOCIAL ATTITUDE TOWARDS HEALTH INSURANCE

Likert Scale Responses: (a) Strongly agree = 1 (b) Somewhat agree = 2 (c) Neither agree nor disagree = 3   (d) Somewhat disagree = 4 (e) Strongly disagree = 5

Tax-related questions	Responses
1. Tax revenues should be used to provide or help pay for health insurance for individuals who cannot afford their own health insurance.	
2. Tax revenues should be used to make it affordable for each individual or household to purchase health insurance.	
Central Government-related questions	
3. The government should have no role in the provision of health insurance.	
4. The government should do more to help needy citizens, even if it means going deeper into debt.	
5. The government should provide basic health insurance for everyone in society.	
6. The government today can't afford to do much more to help the needy.	
Local Government-related questions	
7. Local Government should have no role in the provision of health insurance.	
8. Society should provide medical treatment for everyone who needs it.	
9. Everyone in society should have health insurance.	
Individual responsibility questions	
10. The government should make it mandatory for all citizens to purchase health insurance.	
11. It should be the decision of each individual or household to purchase health insurance.	
12. Those that do not have insurance should have to pay for their own medical treatment, even if they did not cause the sickness directly through their own behaviour.	
13. Individuals who are not health conscious and live an unhealthy lifestyle should be forced to pay more for their own health insurance.	