

DETERMINANTS OF HEALTH INSURANCE UPTAKE IN TANZANIA

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X53/11406/2018


**Research Project submitted in partial fulfilment of the requirements for the
award of the degree of Master of Science in Health Economics and Policy.**

School of Economics, University of Nairobi

August 2020

Declaration

This research project is my original work and has not been presented to any other examining body for the award of any degree.

Signature 

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The research project has been submitted for review with approval as the University Supervisor.

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Dr Martine Odhiambo Oleche

Acknowledgement

I acknowledge my supervisor Dr Martine Odhiambo Oleche for enormous support, patient guidance and encouragement as I wrote this document.

Dedication

To my lovely parents

Raymond January Lutinah

&

Maryprisma Augustine Tegamaisho

Abstract

This study explored socio-demographic, economic, health status-related characteristics linked to enrolment to the insurance scheme. The general objective was to examine the determinants of health insurance uptake in Tanzania with specific objectives; to examine the profile of health insurance schemes, to inspect the influence of socio-demographic, economic and health status-related factors on health insurance uptake and to draw key policy recommendations to improve health insurance uptake in Tanzania. Descriptive statistics and Probit model have been used to analyse data retrieved from Tanzania Demographic and Health Survey and Malaria Indicator Survey (TDHS-MIS 2015-2016). The study established that more than 50 percent of the household were registered under mutual or community-based health insurance scheme while only 2 percent purchased insurance cover privately. Age, marital status, education level, place of residence, occupation, wealth index, health facility visits, reading magazine or newspaper, watching television, listening to the radio and using the internet had a significant association with health insurance uptake. The association of gender, employment status and cigarette smoking to health insurance uptake was not statistically significant. Based on the findings, the paper recommends; designing group-specific campaigns that will target consumers from different socio-demographic background, low premium prices to cater for different economic groups and intensifying mass media to increase access to health insurance information.

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Acronyms and Abbreviations

CHF	Community Health Fund
CBHI	Community Based Insurance Scheme
FY	Fiscal Year
HSSP	Health Sector Strategic Plan
MoH	Ministry of Health
MoHCDGEC and Children	Ministry of Health, Community Development, Gender, Elderly
NHIF	National Health Insurance Fund
OOP	Out Of Pocket Payment
SHIB	Social Health Insurance Benefits
TDHS-MIS Survey	Tanzania Demographic and Health Survey and Malaria Indicator
THE	Total Health Expenditure
TNBS	Tanzania National Bureau of Statistics
UNICEF	United Nations Children's Fund
WBG	World Bank Group
WHO	World Health Organisation
UHC	Universal Health Coverage

CHAPTER ONE: INTRODUCTION

1.1 Background

Health insurance is the most advocated route towards universal health care for different socio-economic groups. WHO, 2010 emphasized that effective health care financing system has to facilitate the accomplishment of universal coverage that will improve general population health by ensuring attainable health care services and people should not be exposed to financial difficulties when purchasing health care.

1.1.1 Health Financing in Tanzania

Health financing system operates under several functions including mobilizing, pooling and allocating health care resources. The benefits and claims are also defined and measured by health financing system policies as a cost-sharing obligation (Kutzin, Cashin & Jakab, 2010). A well-functioning system is needed to achieve different health care goals including keeping people health through promotion, prevention and treatment, ensure efficiency and equitable utilization of the services. People should be covered from ill health financial risk (not exposed to financial hardship when purchasing health care services). Different countries adapted different arrangements to meet these goals depending on their challenges and opportunities (WHO, 2010).

Globally, health financing policy is an important subject with the growing demand in health expenditure due to changes in population, medical technologies, practice and behaviour, high-cost services and financial changes in health care (Fan & Saved off, 2014). Due to social, political and economic changes improving health system performance has not been straightforward and countries have been responding to these challenges differently. The system performance depends on public funding as a sustainable financing strategy to achieve its objectives effectively therefore country's income determines what is being spent on health (Kutzin, Cashin&Jakab, 2010). This has been difficult for developing countries where resources cannot be equally and efficiently distributed hence limited access to the services. Insufficient resources to address the health needs, inefficiency and ineffective system and impoverishment due to direct payments are shortcomings hindering effective financing of medical care in less developed countries (Kumar et al., 2011).

Kutzin, 2013 indicated that health care goals are highly influenced by the social determinants and other factors outside the health system therefore strong health reform is needed to connect the system and goals. The achievement of these goals is contextualize depending on different country's factors including economics and politics hence the coordination across the whole country's system is needed. Since the system depends largely on public funding, the government needs to come up with the strategy that will effectively and equitably generate and control the finances. Monitoring and evaluation system should also be in check to measure the success of health financing system depending on different dimensions; providers, utilization behaviour, availability, affordability and accessibility of the services (Palmer et al., 2004).

Alma-Ata Declaration 1978 participants endorsed "Health for all" as one of the milestones to achieve the required quality of life by promoting and protecting people's health to accomplish coverage for all. The need for universal coverage is greater now due to globalization diseases, economic disparities and the rising demand for chronic care (WHO, 2010). According to WHO 2018, Universal coverage of health can be accomplished when people can receive comprehensive acceptable quality health services in all dimensions including treatment, prevention as well as promotion to meet their needs and they are not financially at risk when purchasing these services. This requires a system that ensures the needed quality of services is provided to the population efficiently with financial risk protection as the key component. This strategy was used as a narrative for adjustments in health financing systems including Social Health Insurance (Saksena, Hsu & Evans, 2014).

Universal coverage can be achieved if sufficient funds are raised through prepayment including taxes and insurance and the funds are utilized sufficiently and equitably. Unfortunately, in many settings, the health system is weak to hold up the high rate scale-up of service coverage hence the progress is not enough to achieve these goals. (Evans & Etienne, 2010). Achievement of universal health coverage has been delayed due to insufficient resources and overdependence on cash payments when purchasing services and inequity and inefficiency use of resources. Despite political and technical challenges hindering universal coverage, it is also difficult to track the progress (WHO/WBG 2015 tracking UHC).

According to Ekman (2006), there are different health financing mechanisms for the low-income consumer but these schemes have shown to mobilize insufficient funds. Strategies have been designed to ensure a smooth path to universal coverage; raising sufficient funds,

reduce direct payment and improving efficiency and equity which is the road to achieve quality and improve health. WHO, 2018 suggested advancing universal health coverage in three dimensions; broadening prioritized services, focusing on covering bigger population and minimizing direct payment by shifting to mandatory prepayments with pooling of funds especially for vulnerable groups. Due to the shortage of resources, goals in focus should be aligned to social, political and economic objectives of the specific country. Fan & Savedoff, 2014 emphasized on cross-cutting in different components that influence health spending such as economic growth, social demographics, technology and politics as the strategy to bring development in health and achieve universal coverage.

The government of Tanzania became the sole source of social services including health care through taxation after the Arusha declaration in 1967. The aim was to develop the national economy with high profile social service programs hence adopted nationalized health care. This led to a chain of policies in the health sector focusing on the vulnerable groups (poor, unhealthy and people in rural areas (Lyimo, 1981). Due to rising costs, increased population and struggling economy it was difficult to provide quality and accessible free services. Through “Health Sector Reform Plan in 1993” the government established user fees as the policy to mobilize for more healthcare resources (Government of Tanzania, 2015). The double burden of diseases has led to the increase of health needs, hence rise in health interventions costs. Unfortunately, there is an overall slow progression in health financing intending to focus on taxation and insurance schemes as the main financing sources. There is a significant fall in external funds which creates a bigger need for improved domestic revenues and ensuring equity, transparency, sustainability and efficiency health financing system towards universal coverage (Government of Tanzania, 2017).

Despite all the strategies, health financing system faces many challenges leaving the bigger group with limited access to health services, no health insurance and impoverished due direct cash payments (Mtei et al., 2007). There are low rates of impoverishment due to catastrophic spending on health in Tanzania compared to other developing countries but the burden is still significant among vulnerable population hindering universal health coverage achievement (Mtei, Makawia & Masanja, 2014). The health financing system in Tanzania is currently fragmented with numerous funding sources and programs; insurance schemes (NHIF, CHF, SHIB, private insurance), user fees/out of pocket, donor funding through health care programs. Special strategies are directed to disadvantaged population groups such as the

removal of direct payments, waivers and exemptions for women, elderly and children (Renggli et al., 2019).

1.1.2 Profile of Health Insurance Scheme in Tanzania

Health Insurance Scheme is the financing technique that facilitates improvement in mobilization of health care resources and distributes them equally. With health insurance, funds are raised to ensure the suitable use of health care services and reducing direct payment. Contributions are compulsory or voluntary from the employer, employees, independent individuals or institutions and the government to cover for a package of health services (Puteh & Almualm, 2017). Dalinjong & SuukLaar, 2012 described health insurance as the major advocated strategy for health financing where resources are mobilized through prepayments and risk pooling. Abundant evidence indicates that the prepayment mechanism is the most efficient and equitable method to mobilize funds and increasing population health care coverage. This work through cross-subsidization that is rich for poor, healthy for unhealthy and low-risk for high-risk. (WHO, 2010).

According to Mensah, Oppong & Schmidt, 2010, Health Insurance Scheme facilitates affordable and accessible health services and improving health outcomes. The scheme enables behavioural changes in utilization of services through improving practices leading to better health outcomes. Health insurance scheme is an important ingredient in increasing health care utilization and insured individuals are not likely to experience catastrophic health expenditure when purchasing health care services (Shimeles, 2010). Individuals linked to certain health insurance cover are strongly linked to good health care seeking behaviour and a large number of people who visit clinics/hospitals are insured (Blanchet, Fink & Osei-Akoto, 2012).

Kazungu & Barasa, 2017 also indicated that health insurance can contribute to the effective and equitable health system and the evidence has shown that it can facilitate the overall increase in health care coverage. Unfortunately, the large population is still uncovered especially those in informal employment sector in less developed countries. The evidence points out that health insurance enrolment is positively related to the affordable premiums, perception as well as the effectiveness of the scheme, captivating benefit packages, number of the schemes available and services offered by the providers (Carin, Waelkens & Criel, 2005). Household and economic factors are also strongly associated with the enrolment

whereby there is lower uptake from low-income communities. The choice to register in the program is influenced by education level, gender, marital status, family size, health status as well as availability of health services. (Jehu-Appiah et al., 2012).

Universal access to health care was the strategies adopted in 1999 for Tanzania's 2025 Development Vision with specific goals to cover more people through health insurance, upgrading enrolment procedures and focus on better management to guide the scheme (Government of Tanzania, 2015). With the increase demand of health services and towards universal coverage for health, the government committed to expanding health insurance. Health insurance schemes were heavily promoted to sustain financing health system, especially for the disadvantaged groups. Unfortunately, they played an insignificant role due to low contribution, low enrolment rates and fragmented pools. Low health insurance coverage meant that more people are paying directly at the point of services, whereby the efforts connected to universal health care coverage are restrained hence the country is still facing inequity in health care. (Mtei et al., 2012).

Different health insurance schemes were established in Tanzania. Following table 1.1; National Health Insurance Fund (NHIF) was introduced by government 1999 for public employees. Initially provided mandatory cover for public servants later on extended to private institutions and self-employed. The government with the support from the World Bank introduced Community Health Fund (CHF) in 1996 and Tiba Kwa Kadi (TIKA) in 2009 for the informal sector in rural and urban areas respectively. Social Health Insurance Benefit (SHIB) established in 2005 as one of the benefit packages for the members within the National Social Security Fund (NSSF), financed through NSSF contributions. Other schemes are Private Health Insurance and Micro (small scale) Insurance that operate voluntarily with contribution varying from scheme to scheme. (Borghi & Joachim, 2011 & Musau et al., 2011)

Health insurance has shown to create a route towards increase availability of resource as well as equal distribution hence catering for the basis of universal coverage. These schemes allowed individual contributions to the health system facilitating effective resources distribution and reducing the inequity in health care by addressing payment hardship (Marwa et al., 2013). The schemes have been progressive over the years covering around 9 percent of the population in 2008, 13 percent in 2010 and 16 percent in 2015. Following figure 1.1, the government committed to expanding the coverage with the estimation of 45 percent coverage

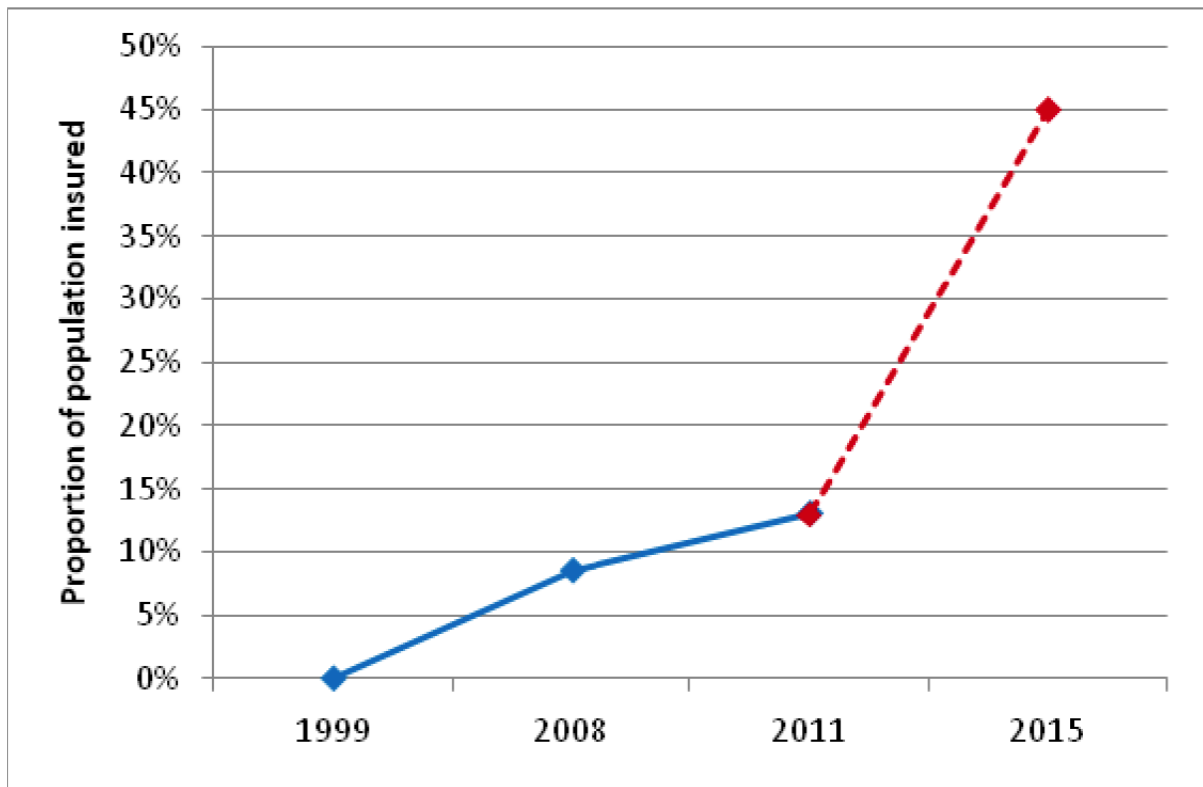
by 2015 (Borghi & Joachim, 2011 and Dutta, 2015). The rapid increase in coverage by the scheme has been seen from FY2016/2017 to 2018, 7 percent of individual covered under National Health Insurance Fund (NHIF) and 25 percent under Community Health Fund (CHF) (UNICEF Tanzania, 2018). Although health insurance coverage has been growing steadily, low quality health care services, financial constraints, insufficient knowledge about the scheme and poor administration system are still the major health insurance scheme challenges (Mtei, Makawia & Masanja, 2014 & Kiyoya, 2019).

Table 1. 1 Health Insurance Schemes in Tanzania

Scheme	Eligibility	Contribution	Benefit package
National Health Insurance Fund (NHIF)	Compulsory for government employees covering their spouse and 4 dependents. Later on, opened up to other sectors	6% of the salary, equally shared between the employer and employee	Outpatient & inpatient care at public and accredited facilities
National Social Security Fund (Social Health Insurance Benefit - SHIB)	Compulsory for NSSF members as one of the benefit packages, covering up to 5 dependents.	Financed through NSSF contribution	Outpatient and inpatient care
Private Insurance Scheme (e.g. AAR And Jubilee)	Voluntary for employed or individual	Depending on organization and benefits	Depending on the contribution.
Community Health Fund (CHF) & Tiba Kwa Kadi (TIKA)	Voluntary based on risk pooling and solidarity	Tsh5,000- 20,000 per year/household	Primary health care level public facilities. Special arrangement with a local private provider
Health micro-insurance (sponsored by religious groups, independent organizations)	Voluntary	Varying	Primary health care

Source: Borghi & Joachim, 2011

Figure 1. 1 Estimated expansion in health insurance coverage in Tanzania



Source: Borghi & Joachim, 2011

1.2 Statement of the Problem

Inequality in health care is yet the striking issue in less economically developing countries due to insufficient funds as well as inadequate government spending due to different factors including population growth and burden of diseases (Adebayo et al., 2015). Over the past decade, economic development in Tanzania has been steady but poverty reduction has not been sufficiently due by high population growth rate since a good percentage of people live below the average living cost. This financial barrier limits people from accessing health services hence maintaining inequality and the vulnerable do suffer immensely (Wang & Rosemberg, 2018).

Health Insurance has been progressively acknowledged as an ingredient to improve human welfare through health system financing, especially in less economically developed countries. In the view of the growing demand for accessible and affordable quality health services, prepayment mechanisms were advocated in Tanzania as the main agenda of health financial strategy to address the complex health insurance market. Different prepayment mechanisms

were introduced as the vital strategy against inequities in access to healthcare but the modalities have shown weaknesses in both implementation and low enrolment rates (Mtei & Mulligan, 2007). The government made a commitment to achieve universal health coverage under the strategic plan for health sector through emphasizing social health protection (Government of Tanzania, 2008).

Health sector implemented different modalities to address the low quality of health services and insufficient finances. The road towards universal health coverage has afforded some attention towards health sector fostering more concentration to quality health services and integration of health in all policies (Government of Tanzania, 2014). Even with the significant efforts, some challenges limit the effectiveness in health financing, hindering attainability of universal access to health care and sustainability of the strategy. Fragmented health financing system due to multiple revenue sources restricts pooling of resources hence hindering efficiency. Direct payment finance accounts for high percentage of Total Health Expenditure despite the emphasis on prepayment scheme. Although external funds have dropped significantly, they are still the leading financing source followed by the domestic funds then health insurance scheme contributing to only 9 percent (Wang & Rosemberg, 2018).

Tanzania has been firmly advocating for health insurance for both raising revenues for the health care finances, increases health care availability and utilization of healthcare an ensuring sustainable health financing mechanisms (Ellison, 2014). Despite this modality majority of the population remains uninsured, leading to inequities in health care. A population-based cross-sectional survey in Tanzania revealed that health insurance ownership was an ingredient for availability and accessibility to better healthcare and health outcomes. Improving health insurance scheme enrolment and addressing social determinants is a good strategy to reduce problems accessing health care services (Bintabara, Nakamura, Seino, 2018). Although there are studies covering health insurance, few have explored health insurance uptake and some focusing on the CBHI scheme specifically (Macha et al., 2014 & Msaki 2018). Since the enrolment determinants are diverse, it is crucial to understand these varying factors concentrating on all the health insurance schemes available based on socio-demographic, economic and health status-related factors.

1.3 Study Objectives

The broad objective is to explore the determinants of health insurance uptake in Tanzanian households. The specific objectives include:

- i. To examine the profile of health insurance schemes in Tanzania.
- ii. To determine the influence of socio-demographic, economic and health status-related factors on health insurance uptake.
- iii. To draw key policy recommendations to improve health insurance uptake in Tanzania.

1.4 Significance of the Study

Universal health coverage is limited when individual use a direct payment to purchase health services. A malfunctioning prepayment mechanism is a huge financial burden that can be relieved by a viable and sustainable health insurance plan accommodating a larger population. Therefore, it is very necessary to explore the determinants for health insurance uptake for better decision making and accomplishment of national health insurance goals. The study findings will be appropriate to the government and other development partners in adapting strategies that will increase health insurance coverage while paying attention to different population needs.

CHAPTER TWO: LITERATURE REVIEW

2.1 Theoretical Literature

Health insurance is a central role to better health expenditure, it supports and motivates the health system functions. Health insurance provides the best prepayment arrangements thus individuals purchase services to level where marginal benefits from unsatisfactory care being provided are balanced out by the marginal gains (Cutler & Zeckhauser 2000). According to Spence & Zeckhauser 1978 with prepayment mechanism, the risk of incurring expenses while seeking health care is spread that the individuals do not pay the full amount.

Health insurance demand is difficult to understand given the complexities linked to its purchase due to irregular and unpredictable medical services, this explains the risk aversion behaviour linked to a consumer in health care expenditure (Friedman, 1974). According to Lieberthal 2016, the economic law of demand guides the need to be insured and there are different determinants and coverage for different health insurance schemes. Two theories can be applied to explain the reasons for purchasing health insurance, one is the conventional theory that given the same magnitude, an individual prefers certain losses to uncertain ones. Second is the alternative theory that consumer prefers transfer of income hence premiums are transferred when ill or from health to unhealthy individuals enabling client access to the care they could not otherwise afford (Nyman, 2006). Uncertainty in medical care is a multi-dimensional phenomenon related to disease incidence, treatment efficacy and management strategies (Han, Klein & Arora, 2011)

2.1.1 Expected Utility Theory

Expected utility theory is the descriptive model for decisions under risk and holds that the health insurance demand is a demand for certainty. Given the rational choice, this model is used to explain the decision making under risk. While procuring health insurance, there is an assumption that utility obtained when insured is higher than the cost given the utility sacrificed for different goods and services. This theory can be explained in two perspectives, one individual who participate in health insurance schemes pay premiums from their income thus in event of sickness the cost of medical care which by that time is higher than premiums will be paid by the health insurance company. On the other hand, those who are not participating in a health insurance scheme do not pay premiums thus they will suffer the

burden of paying for their medical care (Nyman, 2001). According to Friedman and Savage 1948, the consumer will choose among alternatives given different risk degree that one with the highest expected utility and also utility positively correlated with income. When making a decision that can result in a loss, individual are risk-averse, they will prefer buying insurance meaning accepting certain losses of small sum (premiums) in exchange to uncertain ones (medical bills).

2.1.2 Prospect Theory

Prospect theory was the model developed criticizing expected utility theory showing that individuals' behaviour is not always consistent, people will be risk-averse when the outcome is good but given bad outcomes, people will become risk-seeking. Second people are not entirely rational, decision making may not depend on utility but choices that will give them less loss. Thirdly gains and losses are based on an individual's reference point. According to Hwang 2016 prospect theory points out how loss aversion may influence health insurance demand negatively. Purchasing health insurance is considered a risky investment since in non-occurrence of illness there is the loss of premiums, individuals may become reluctant to buy insurance. Alternatively, the anticipation of disease occurrence had a positive influence on investing in health insurance.

In a study conducted in Korea, individuals who were conscious about losing premiums had low ownership rate in long-term plan and private insurance. Individuals are more likely to participate in moderate risks with high premiums compared to rare high risks with subsidized premiums. They also consider initial and final wealth after purchasing insurance not only in utility or usefulness (Schmidt, 2012). Sydavong & Goto, 2019 also showed that the choice to join Community-based Health Insurance plan was influenced by risk aversion towards probability prospects and not toward gains.

2.2 Empirical Literature

Different researchers have narrated different factors related to health insurance uptake, these are socio-demographic factors, economic status, risk behaviour, health-related and scheme-relates.

2.2.1 Socio-Demographic and Economic Factors

Despite the tax-financed health system in Ireland, 50% of the population purchase voluntary health insurance with the age being the essential determinant. Age comes with a greater sense of responsibilities and possible higher income hence older people can afford the premiums. Age is also associated with increased medical consumption due to lifestyle diseases thus individuals have greater possibility of being insured. Marital status was one of the health insurance uptake determinants, where married people were more likely to pay for premiums and register in a health insurance scheme. (Ying et al., 2007). According to Kapur (2019) in Ireland, people who reported to be married, older, higher occupational class (professionals) and very unhealthy had a stronger possibility of participating in the private health insurance scheme unlike unmarried, unskilled and individuals who were considered healthy.

In less economically developed countries, the majority are still depending on direct payment despite increased campaigns on health insurance. Example in India, the choice to be registered in the health insurance programme mainly depended on marital status, education, income level, occupation and previous hospitalization. Individuals who were offered basic health facilities by their employers were more reluctant to enrol. Educated individuals were not likely to enrol since they preferred investing in other modes with greater returns (Ghosh, 2013). This was different from results narrated by Adebayo et al., (2015) and Maina, Kithuka & Tororei (2016) that, individuals with higher education had strong possibility to be registered in an insurance scheme and were also linked to better behaviour in health-seeking. The studies also indicated a strong definite relationship between being married and uptake of health insurance and that spousal financial support increase access to health insurance coverage especially from the schemes that provided cover to spouses as well. Ownership of the cover was also determined by financial stability to pay for the cover, cost of the travel to insurance companies and distance. Individual who lived near the urban centres knew where to purchase health insurance and afforded the premiums (Masengeli et al., 2017).

Other studies involving developing countries also showed that age, gender, household income level and place of residence are significantly linked to the uptake of insurance cover. Young individuals and rural dwellers were more ready to enrol and pay for premiums compared to older individuals. Households with many members had a stronger possibility of paying higher premiums unlike those with few members. Households with men as the head had a higher possibility of joining Community Based Health Insurance program unlike those where

women were the head in Nigerian and Burkina Faso while in Ghana, Mali and Senegal households with women as the head were more likely enrol. Female household heads had more attachment value to Community Based Health Insurance (Adebayo et al., 2015). Some factors had a universal impact while others had a localized impact. Education, gender, age of the household head together with an elderly member in the household influenced the uptake of Community Health Insurance significantly. Other factors including household size, household head and the marital situation had a strong correlation with the enrolment to health insurance program in Asia while in Sub-Saharan Africa the association was negative (Dror et al., 2016)

The study exploring the health insurance enrolment in the rural poor in Ghana revealed that the decision to enrol was determined by age, gender, education and household size. Younger individuals were ready to join the scheme and they were more educated and with smaller household size while the uptake was lower among older people. Being male increased probability of taking up insurance and low participation was revealed among women but when age and gender interaction was taken into the account older women had a stronger possibility of being registered in an insurance scheme unlike older men. Increased in education level and smaller family sizes were linked to increasing the probability of health insurance uptake (Alesane&Anang, 2018). Nketiah-Amponsah & Hiemenz, 2009 in Ghana, examined women's need to be insured and revealed that older women had a greater possibility of being registered in the health insurance program. Older adults seen to be more aware of their health, have accumulated enough health wealth to invest in health care. Another study from Ghana evaluating members' perception and factors influencing health insurance policy renewal revealed marital status and religion as the essential determinants in enrolment in a health insurance scheme. Females, married, widowed or divorced were more likely to enrol and more Christians enrolled compared to Muslims (Boateng&Awunyo-Vitor, 2013).

Mhere 2013 revealed that in Zambia, the participation in the health insurance program is low. The uptake was determined by education level, household income, family size, age and chronic illness. Education promoted knowledge and enlightened individuals about the wellbeing of the families and learning might have included some aspects of healthcare. Higher rates of participation were seen among individual with high income due to affordability of premiums. Age was seen to influence health insurance uptake in both positively and negatively. Increased age positively influenced participation in health

insurance due to older people having a sense of responsibility and they preferred taking care of their health needs. But age had a negative influence on the fact that people get beyond productive age and become less careful with their health needs. Family size impacted health insurance scheme participation negatively. This was different from other studies that larger family size came with higher premiums, due to unaffordability people may decide not to participate.

A study in Kenya revealed that participation in health insurance scheme was positively correlated with patient's household characteristics (age, marital status, education, size and employment) but no notable association between health insurance and gender. Age increase was directly linked to the health insurance coverage due to additional healthcare needs and increase financial security. Marriage increased the need for health insurance as financial protection in purchasing health services also combined income made it possible to pay for premiums. Education level was greatly associated with the ability to acquire health insurance information. Low rates of enrolment and non-renewal were also due to unreliable income and low quality of care (Masengeli et al., 2017). A study examining the socio-demographic pattern of health insurance in Namibia revealed that although health insurance was correlated with increased health care utilization the coverage was still low. Education was the vital factor for the uptake of insurance and it had a very strong influence when associated with female sex and poverty (Allcock, Young & Sandhu, 2019).

Different factors such as income, employment and occupation were seen to determine the uptake of health insurance in both economically and less economically developed countries. The study examining the need for privately purchases health insurance in China (Ying et al., 2007) revealed that younger individuals and those in the highest wealth quintile and higher education were linked to purchasing premiums. Also, the probability of paying for premiums is higher when the price is lower. As the income increased and unemployment rates dropped people were more willing to pay for premiums. People with higher education and higher health expenditure were more likely to pay for higher premiums in Ghana. Also, education and gender had a positive influence in paying for health insurance premiums, where men were more likely to pay for premiums compared to women (Asenso-Okyere et al., 1997).

A study exploring community participation in health insurance in rural India revealed that individuals were eager to join the scheme but not paying premiums. Vellakkal, 2013 explained how the economic status of the household played bigger on influencing health

insurance enrolment in India. An individual from the richest household was more likely not only to enrol but also buy higher premiums compared to individuals from the poorest household. The study conducted in Nigeria by Ojezele, 2015 revealed that the readiness to pay was linked to the size of the household and living standards. Households with smaller size had a strong possibility of purchasing health insurance when payment was per household member. Rich people were ready to pay the highest price and the very poor were ready to pay the lowest price.

The economic situation of the household strongly influenced the uptake of Community-based Health Insurance based on household income, expenditure or assets. Limited financial means was a primary cause for not enrolling, wealthier households are shown to be ready and able to pay for the premiums. (Adebayo et al., 2015, Dror et al., 2016). Poor households had low enrolment rates in different health insurance programs. Low health insurance coverage was seen among poor and low income working women and they were highly linked to inadequate health care hence poor health outcomes (Bravemen et al., 1988). Cross-sectional time-series analysis revealed that individuals with below poverty line income were uninsured and most of them were women (Frick, 2005).

The assessment of Health Insurance Scheme in Nigeria revealed that awareness of the program was significantly associated with the employment level. This shows more people are likely to enrol when they have good-paying jobs. The study also pointed out that confidence in the program influenced enrolment (Sanusi& Awe, 2009). In Ghana, the main reason for enrolment was financial protection avoiding out of pocket payment and information they received from community leaders and close relatives. According to Jehu-Appiah et al., 2011, larger group did not enrol due to unaffordable payments, not pleased by the services provided, difficulty accessing the services, no history of previous illness and lack of confidence on the scheme

2.2.2 Awareness and Attitude.

A household exploration in India showed that the greater number of people were not knowledgeable of the existing pre-payment scheme, how it works and the products available. Informed consumers had a link to the health insurance uptake compared to uninformed consumers (Vellakkal, 2013). Being aware of the health insurance program was the best influence to enrol when associated with the ability to pay. A randomized study conducted in Burkina Faso showed that information was associated with modest improvement in

understanding health insurance scheme but was not enough to increase uptake (Bocoum et al 2018).

Poor social infrastructure made health services inaccessible especially for people in peripheral areas due to long distance to health services, poor transport and poor communication. Low uptake of health insurance is revealed among individual who experienced these difficulties in Ghana. Other studies showed that low rates of enrolment were linked to lack knowledge on how the scheme works and the cross-subsiding principle (rich subsidizing the poor, health subsidizing the sick). People did not feel they have to pay premiums since they rarely fall sick and they frequently used herbs for treatment. Lower enrolment rate was evidently among the vulnerable groups poor, aged, disabled, mentally unwell and the migrants (Fenny et al., 2016). Nketiah-Amponsah, 2009 also revealed that in Ghana, availability health insurance information through television and newspaper was strongly associated with the enrollment in the health insurance program among women.

Health insurance cover ownership was positively correlated with the awareness of the existence of health insurance program and the benefits. Individuals who were knowledgeable of the existing and benefits of the scheme had a strong possibility to enrol. A study from Ghana evaluating the members' perception and factors influencing health insurance policy renewal revealed that respondents' views on health insurance scheme benefits were related to enrolment status. Individuals who were enrolled believed that the scheme was one of the strategies for financial protection that they will save money from paying for health services. The majority also described scheme office location inconvenience as another reason for not enrolling (Boateng&Awunyor-Vitor, 2013).

Adebayo et al., (2015) and Maina, Kithuka & Tororei (2016) pointed out that poor knowledge and comprehension of the scheme, cultural beliefs and low community participation in decision-making process affected the enrolment rate. Increase uptake was associated by knowing the benefits of health insurance, premiums and claims relationship, entitlement limits and if those who were insured were seeking health care frequently. Culture and religious belief had also a strong effect on the enrolment in Ghana. Women had to seek permission to enrol and male partners were the sole financial support for paying premiums. Traditional leaders also played the biggest role, lack of a strong relationship between community members and government contributed to low enrolment (Fenny et al., 2016).

Despite several advertisements in Kenya people didn't know what health insurance was although positive words such as "support/assistance" were used. People did not have information about how health insurance works, where and how to enrol. Formal sector workers didn't know what their payroll deductions were for and informal sector workers were not aware that they could join the program as voluntary members. (Mathauer, Schmidt & Wenyaa, 2008). The descriptive study done in Tanzania revealed that health system, community, as well as individual factors, were the reasons the Mtwara region was left behind in Community health fund. Specifically, the factors were low household income, limited awareness regarding health insurance and poor quality of health care (Ndomba & Maluka, 2019). Mushi & Millanzi 2019 also revealed that lack of knowledge concerning the health insurance programs and low-income among female food sellers were vital factors hindering health insurance uptake in Tanzania. More wealthy groups were insured compared to poor and rich people were covered by different health insurance schemes in Tanzania (Borghi & Joachim, 2011).

2.2.3 Health-related Factors

Quality of care under health insurance program is one of the major health-related ingredients that influences health insurance uptake in less developed countries. When the quality of care was perceived to be good based on waiting time, health provider attitude and technical competence individuals were more ready to pay and join the scheme (Adebayo et al., 2015). In Ghana, a bad perception of the quality of care has affected enrolment. There is an attitude that insured people receive poor quality of care when sick, this perception discouraged people from enrolling (Fenny et al., 2016). Another health-related factor influenced health insurance uptake was illness history, individuals/households with illness experience, higher illness rates or more sick household members were more likely to participate in pre-payment scheme (Adebayo et al., 2015). The previous history of hospitalization and high rate of long-term illness in less developed countries were also strongly associated with participation in the scheme with a stronger effect (Dror et al., 2016).

This was also revealed in developed countries where in China chronic diseases were directly linked to higher rates health insurance plan enrolment. Due to the long-lasting diseases such as diabetes, asthma, anaemia, cancer and coronary heart diseases individuals have an increased need to be insured so they can deal effectively with long-lasting spending in health care (Fang, Shia, & Ma, 2012). Risk behaviour affecting an individual's health such as

cigarette smoking has been linked to an increased need for health insurance. A study that examined women who owned health insurance in South Africa concluded that smoking was strongly linked to purchasing health insurance (Kirigia et al., 2005).

Better services were positively correlated with health insurance cover ownership. People were discouraged from enrolling or renewing health insurance membership due to several service-related issues including poor quality services, insufficient drugs and other supplies and long queues when purchasing services, limited services and shortage of workers (Masengeli et al., 2017). In Kenya, people didn't see the need to be insured due to unacceptable quality of the services that were offered at the government facilities mostly unavailability of drugs that pushed the clients to co-pay (Mathauer, Schmidt &Wenyaa, 2008). The same situation was observed in Tanzania where the low quality of services was the biggest challenge in the health insurance scheme enrolment. People did not feel the need to pay for the system which has issues with drugs and medical supplies, limited staffs and range of services (Kamuzora& Gilson, 2007). The empirical study of NHIF beneficiaries in Tanzania showed that members were not pleased by the quality of health services obtained under the scheme. Their judgment was based on the number of health workers, diagnostic equipment and services covered. The beneficiaries also argued that all the situation was better for clients who were paying directly from the pockets (Kiyoya 2019).

2.2.4 Scheme-related Factors

In Kenya, scheme design features were also the elements for health insurance coverage. The high upfront annual payment was difficult to make and defaults resulted in penalties. Group member preferred frequent lower payments, closer collection points and flexible payments schedules (Mathauer, Schmidt &Wenyaa, 2008). A study from Ghana evaluating the policyholders' characteristics determining health insurance policy also revealed that the price of the health insurance as the determinant for enrolment. Most of the respondents considered the price to be very high as the reason for not enrolling. System-wide factors such as political, historic, economic structure have also shown to affect health insurance scheme enrolment in Ghana (Boetang&Awunyor-Vitor, 2013).

National Health Insurance Program is known to be weak due to limited funds, poor administration, unsatisfied participants and lack of confidence on the scheme hence individual refuse to enrol or renew expired cards. Health care providers are also affected by this due to delay reimbursement of the claim which affects the services provided (Fenny et

al., 2016). Fenny, Yates & Thompson 2018 also indicated that scheme complicated identification process lead to poor, vulnerable and other disadvantaged groups to be left behind for Social health insurance uptake. The health insurance plan is also seen to attract more members with affordable premiums. The examination of the Community health insurance program in Uganda showed that individual who had the key health insurance information and the financial impact of health services costs were more like to purchase premiums if the price was reasonable (Biggerri, Nannini & Putoto, 2018).

In Ethiopia, the majority preferred and were ready to pay premiums for the Social health insurance plan but scheme related issues such as high premium contributions and unsatisfactory benefit packages had a negative influence on the process (Gidey et al 2019). Specifically, policy design features such as unavailability of membership cards, long waiting time and unauthorized cash transfers when receiving services had more influence to the enrolment in National health insurance plan compared to individual characteristics (Nsiah-Boateng et al., 2019).

Prepayment schemes were one of health financing strategy in Tanzania but low in enrolment was one of the factors hindering achievements of the objectives. Kamuzora& Gilson, (2007) discussed several barriers leading to low enrolment including the inability to pay annual contributions especially for low-income households, untrustworthy system pointing out corruption and lack of transparency being major barriers, lack of understanding the rationale of the scheme that majority didn't understand prepayment mechanism. Other scheme-related factors such voluntary nature of the scheme, limited benefit package, restricted services, limited covered health conditions, weak scheme management and lack of political commitment were largely associated with poor enrolment (Marwa et al, 2013).

CHAPTER THREE: METHODOLOGY

3.1 Theoretical Framework

When it comes to consumers, different goods have different demand characteristics, decisions to consume are based on priorities and budget restrictions. Consumption choices under uncertainty usually favour risk reduction when choosing among risky alternatives (Pindyck & Rubinfeld, 2005). People are generally risk-averse, they are expected to choose rationally when not sure of the outcome of their decisions. This is explained by expected utility theory such that people will make decisions depending on the greatest expected utility. Sometimes people do fail to maximize the expected utility due to different attitudes towards risk depending on the situation and financial consequences (Lam & Leung, 2006).

The need for health insurance is tied to health care thus premium is paid as a function of health expenditure. Purchasing health insurance is said to be linked to a reduction of financial loss risk and increase access to health services which would have been unaffordable (Nyman, 1999). The enrolment to the health insurance plan is also linked to the assumed degree of risk aversion and expectations of medical expenses. In this situation prospect theory of how individuals evaluate risk is more likely to be applicable than expected utility model (Marquis & Holmer, 1986).

In health insurance context the expected utility can be analysed in two states, healthy and unhealthy thus the variation between the expected utility with health insurance $E(U)_1$ and the expected utility without health insurance $E(U)_2$ will determine the consumer decision to enrol. With the variation less than zero thus $E(U)_1 - E(U)_2 < 0$ the consumer would not be driven to purchase health insurance cover meanwhile variation greater than zero thus $E(U)_1 - E(U)_2 > 0$, risk-averse people are expected to purchase health insurance cover. Hence, $P_1 = P(E(U)_1 > E(U)_2)$ is the probability that individuals prefer to join an insurance scheme and $P_2 = P(E(U)_1 < E(U)_2)$ is the probability that individuals prefer not to enrol in an insurance scheme.

3.2 Econometric Model

In this study, a binary probit model was used to analyse the determinants of health insurance uptake in Tanzania. Assuming that the relationship between dependent and explanatory variables is linear, the dependent variable was interpreted as the probability of either covered by health insurance or not covered by health insurance.

$$Y = X_i\beta + e \dots\dots\dots (3.1)$$

Where Y is the dependent variable

X_i explanatory variables

β parameters for estimation

e error term

The following measurement equation links the latent variable **Y*** and the observed binary variable Y:

$$Y = \begin{cases} 1 & \text{if } Y^* > K \\ 0 & \text{if } Y^* \leq K \end{cases} \dots\dots\dots (3.2)$$

Whereby 1 covered by health insurance

0 not covered by health insurance

K is the threshold point/cut off, a critical level of index **Y*** beyond which the individual will participate in a health insurance scheme.

The probability of an individual to participate or not to participate in a health insurance scheme will be determined by the effects of explanatory variables X_i on dependent variable Y by regressing explanatory variables X_i against dependent variable Y.

3.3 Model Specifications

Health insurance participation was determined by the functions of several factors

$$HIP = f(SDE, HSR, OF) \dots\dots\dots (3.3)$$

Where HIP=Health Insurance Uptake

SDE= Socio-Demographics and Economic factors

HSR= Health status-related issues

OF = Other factors

The multivariate equation will be expressed as

$$\text{HIP} = \beta_1\text{Age} + \beta_2\text{Gender} + \beta_3\text{Mas} + \beta_4\text{Res} + \beta_5\text{Edu} + \beta_6\text{Emp} + \beta_7\text{Wi} + \beta_8\text{Occ} + \beta_9\text{Cis} + \beta_{10}\text{Hfvis} + \beta_{11}\text{Exr} + \beta_{12}\text{Exnm} + \beta_{13}\text{Extv} + \beta_{14}\text{Inu} + e \dots \dots \dots (3.4)$$

HIP= Health Insurance Participation

Age = Age of the head of the household

Gender = Gender of the head of the household

Mas = Marital status

Res = Place of residence

Edu = Education level

Emp = Employment

Wi = Wealth index

Occ = Occupation

Cis = Cigarette smoking

Hfvis = Health facility visit

Exnm = Reading newspaper or magazine

Exr = Listening to the radio

Extv = Watching television

Inu = Internet usage

e = Error term

Table 3. 1 Variable Definition Measurements and Expected Outcome

Variable		Measurement description	Expected sign
Dependent variable	Health insurance uptake	1 if an individual has health insurance 0 otherwise	
Explanatory variables			
SOCIO- DEMOGRAPHIC, ECONOMIC AND HEALTH-STATUS RELATED FACTORS	Age in years	1 (15-34) 2 (35-54) 3 (55-74) 4 (75-94) 5 (95-114)	Positive/Negative Ying et al., (2007) Nketiah-Amponsah & Hiemenz (2009) Mhere (2013)
	Gender	1 female-headed household 0 male-headed household	Positive/Negative Nketiah-Amponsah & Hiemenz (2009) Alesane & Anang (2018)
	Marital status	1 married 0 otherwise	Positive Boateng&Awunyo-Vitor (2013) Maina, Kithuka & Tororei (2016)
	Education	1 No education 2 Primary 3 Secondary 4 Higher	Positive Adebayo et al (2015) Alesane&Anang (2018)

Place of residence	1 Urban 0 Rural	Positive/Negative Adebayo et al., (2015) Masengeli et al., (2017)
Employment status	1 If employed 0 otherwise	Positive Sanusi & Awe (2009) Masengeli et al., 2017
Occupation	1 None 2 Agriculture 3 Domestic services 4 Unskilled manual 5 Skilled manual 6 Sales and services 7 Clerical 8 Professional/technical/managerial	Positive Ghosh (2013) Kapur (2019)
Wealth quintile	1 Lowest 2 Second 3 Middle 4 Fourth 5 Highest	Positive Adebayo et al., 2015 Vellakkal (2013) Dror et al., (2016)

	Cigarette smoking	1 if smoking 0 otherwise	Positive Kigiria et al., (2005)
	Health facility visit	1 visited 0 otherwise	Positive Asenso-Okyere et al., (1997) Fang, Shia & Ma (2012)
CONTROL FACTORS	Frequency of reading newspaper or magazine	1 at least once a week 0 none	Positive Nketiah-Amponsah (2009)
	Frequency of listening to the radio	1 at least once a week 0 none	Positive Nketiah-Amponsah (2009)
	Frequency of watching television	1 at least once a week 0 none	Positive Nketiah-Amponsah (2009)
	Internet usage	1 at least once a week 0 none	Positive Vellakkal (2013)

Source: Author's own construction

3.4 Diagnostic Tests

3.4.1 Normality Test

This tested if the data set is normally distributed. Shapiro-Wilk test was used to test for normality based on the assumption that the data is not significantly different than a normal population and alternative assumption stating that data is significantly different than a normal distribution (Ruxton, Wilkinson & Neuhauser, 2015).

3.4.2 Multicollinearity

Collinearity means there is a relation between two explanatory variables due to different reasons including model specification and the population being sampled. Multicollinearity occurs in regression model whereby two or more explanatory variables are strongly linearly related, this reduces the statistical power of the regression model causing wrong interpretation. Variation Inflation Factor was used to confirm the presence of multicollinearity. The value of the factor is below 10 for the perfect regression (Gujarati, 2004).

3.4.3 Heteroscedasticity

Heteroscedasticity means unequal scatter that the variances of the error terms are constantly varying from one observation to another. This can be due to different factors including incorrect model specification and outliers leading to inefficient estimates. To test for heteroskedasticity, scatter plots method of residual-square against the fitted values of the dependent variable was used (Kaufman, 2013).

3.5 Data Type and Source

The study used cross-sectional data derived from the Tanzania Demographic and Health Survey and Malaria Indicator Survey 2015-2016 (TDHS-MIS). The survey highlights the demographic, socio-economic and other characteristics such as sex, age, marital status, education, place of residence, employment, wealth status, exposure to media, internet usage and health insurance coverage in relation to health care.

CHAPTER FOUR: DATA ANALYSIS, INTERPRETATION AN DISCUSSION

4.1 Introduction

The section presents descriptive statistics and probit model estimates on the socio-demographic, economic, health status-related factors influencing the uptake health insurance in Tanzania.

4.2 The Profile of Health Insurance Scheme in Tanzania

The first objective was to examine the profile of health insurance scheme in Tanzania. Following table 4.1, the study examined four schemes; Mutual Health Organization/Community-based insurance, Social Security, Privately Purchased/Commercial Insurance and Employer-based Insurance. More than 50 percent were under mutual or community-based health insurance while only 2 percent purchased insurance cover privately.

Table 4. 1 Health Insurance Schemes

Health Insurance type	n = 3041	Percentage
Mutual/community organization	1,719	56.53
Provided by employer	701	23.05
Social security	548	18.02
Private/commercially purchased	73	2.40
Total	3,041	100.00

Source: Computation based on TDHS-MIS 2015-2016

4.3 Descriptive Statistics of the variables used in the study

The data of 37,169 variables were extracted from Tanzania Demographic and Health Survey and Malaria Indicator Survey 2015-2016. The characteristics associated to Health Insurance Participation are; education level, age of the household head, place of residence, gender of the household head, employment status, marital status, wealth index, occupation, cigarette smoking, previous history of visiting health facility and frequency of watching television, listening to the radio, reading newspaper or magazine and using internet.

Following table 4.2, only 8.2 per cent were covered by health insurance leaving more than 90 percent without health insurance. Women account for 21 percent of the household heads making men the heads of most households surveyed. 65 percent aged between 35-54 years with an overall range of 17 years to 95 years. More than 60 percent were married with the average of primary education and only 23 percent lived in urban areas. Approximately 90 percent were employed, more than half participated in agricultural activities with the majority in middle wealth quintile. Concerning health status-related characteristics, 68 percent went to the health facility in the last 12 months and the majority did not smoke cigarette. Other factors were exposure to media and internet usage, whereby 32 percent read newspaper or magazine, 73 percent listened to the radio, 40 percent watched television and 3 percent used the internet at least once a week.

Table 4. 2 Descriptive Statistics

Variable	Observations	Mean	Std.dev	Min	Max
Health Insurance Participation	37,169	0.082	0.274	0	1
Age of the household head	37,169	2.028	0.659	1	5
Gender of the household head	37,169	0.210	0.408	0	1
Marital status	37,169	0.638	0.481	0	1
Education level	37,169	1.881	0.603	1	4
Place of residence	37,169	0.229	0.420	0	1

Employment status	37,169	0.883	0.373	0	1
Occupation	37,169	2.589	1.432	1	8
Wealth index	37,169	2.901	1.377	1	5
Cigarette smoking	37,169	0.004	0.060	0	1
Visited health facility last 12 months	37,160	0.683	0.466	0	1
Reading newspaper or magazine	37,159	0.322	0.467	0	1
Listening to a radio	37,169	0.734	0.442	0	1
Watching television	37,169	0.407	0.491	0	1
Using internet	37,169	0.025	0.156	0	1

Source: Computation based on TDHS-MIS 2015-2016

4.4 Diagnostic tests

4.4.1 Normality test

Shapiro-Wilk test was used to test the hypothesis that the distribution does not differ from the normal distribution. If the probability is less than 0.05 (test is significant) then the data is different from a normal distribution. If the probability greater than 0.05 (test is non-significant) then the distribution of the data is not different from a normal distribution (Ruxton, Wilkinson & Neuhauser, 2015).

Table 4. 3 Shapiro-Wilk W test for normal data

Variable	W	V	Z	Prob>z
Health Insurance Participation	0.99939	9.025	6.069	0.00000
35-54 years	0.99998	0.304	-3.285	0.99949
55-74 years	0.99972	4.158	3.932	0.00004
75-94 years	0.99778	32.622	9.614	0.00000
95-114 years	0.96331	539.872	17.356	0.00000

Gender of the household head	0.99984	2.375	2.387	0.00850
Marital status	0.99998	0.249	-3.834	0.99994
Primary education	0.99998	0.235	-3.991	0.99997
Secondary education	0.99960	5.820	4.859	0.00000
Higher education	0.98648	198.855	14.601	0.00000
Place of residence	0.99986	2.005	1.919	0.02750
Employment status	0.99982	2.695	2.735	0.00312
Agriculture	0.99999	0.100	-6.350	1.00000
Domestic services	0.99843	23.091	8.661	0.00000
Unskilled manual	0.99975	3.659	3.579	0.00017
Skilled manual	0.99838	23.902	8.756	0.00000
Sales and services	0.99807	28.425	9.234	0.00000
Clerical	0.97977	297.711	15.714	0.00000
Professional/technical/managerial	0.99747	37.254	9.980	0.00000
Wealth quintile				
Second	0.99982	2.579	2.614	0.00447
Middle	0.99984	2.320	2.322	0.01012
Fourth	0.99984	2.311	2.311	0.01041
Highest	0.99974	3.815	3.694	0.00011
Cigarette smoking	0.98532	216.061	14.830	0.00000
Health facility visit	0.99997	0.496	-1.935	0.97351
Frequency of reading newspaper or magazine	0.99994	0.826	-0.528	0.70113
Frequency of listening to the radio	0.99994	0.942	-0.164	0.56499
Frequency of watching television	0.99998	0.283	-3.482	0.99975
Frequency of using internet	0.99782	32.085	9.568	0.00000

Source: Computation based on TDHS-MIS 2015-2016

From the table 4.3, variables 35-54 age group of household head, marital status, primary education level, participating in agricultural activities, health facility visit, reading

newspaper, watching television and listening to the radio, were normally distribution while variables health insurance participation, age groups 55-74 years, 75-94 years and 95-114years, gender, secondary and higher education, place of residence, employment status, individuals who participated in domestic services, unskilled and skilled manual, sales and services, clerical, professionals, second, middle, fourth and highest wealth index, cigarette smoking and internet usage were not normally distribution.

4.4.2 Multicollinearity test

Variance Inflation Factor was used to identify correlation between variables and to determine the strength of the relationships as indicated in table 4.4. With the values of less than 10, multicollinearity is considered absent (Gujarati, 2004).

Table 4. 4 Variance Inflation Factors (VIF)

Variable	VIF	1/VIF
Agricultural activities	7.96	0.125584
Unskilled manual	5.15	0.194086
Employment status	3.47	0.287850
Highest wealth quintile	2.98	0.335637
Domestic services	2.02	0.494532
Fourth wealth quintile	2.01	0.497916
Skilled manual	2.01	0.498393
Professional/technical/managerial	1.89	0.528585
Sales and services	1.84	0.542327
Secondary education	1.83	0.546773
35-54 years	1.69	0.590645
Middle wealth quintile	1.66	0.603432
Place of residence	1.63	0.614045
55-74 years	1.60	0.625804
Second wealth quintile	1.57	0.635462
Primary education	1.54	0.648310

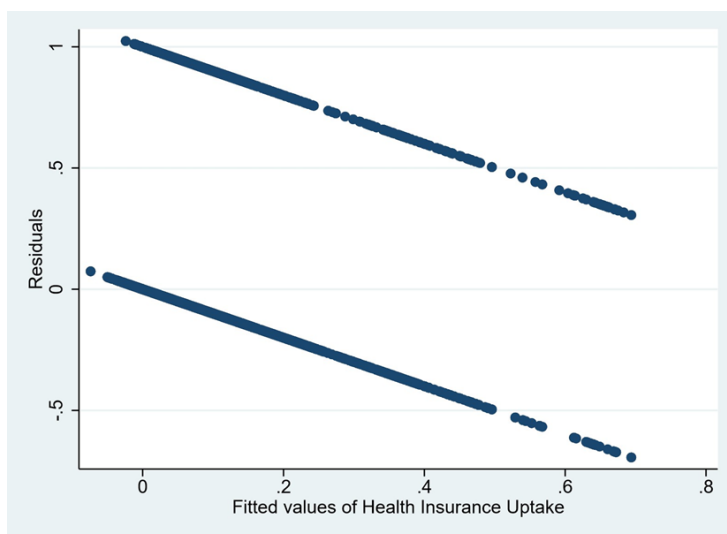
Watching television	1.48	0.677665
Internet usage	1.34	0.749006
Higher education	1.26	0.791229
Reading newspaper/magazine	1.26	0.792368
Marital status	1.24	0.808015
Gender of the household head	1.21	0.829567
Listening to the radio	1.20	0.831660
75-94 years	1.12	0.889923
Clerical	1.12	0.894635
Health facility visit	1.02	0.979020
95-114 years	1.01	0.986795
Cigarette smoking	1.01	0.991394
Mean VIF	1.97	

Source: Computation based on TDHS-MIS 2015-2016

4.4.3 Heteroscedasticity Test

Scatter plots method of residual-square against the fitted values of the dependent variable was used.

Figure 4. 1 Residual Square against the Fitted Values of the Health Insurance Uptake



Source: Computation based on TDHS-MIS 2015-2016

The specific pattern indicates decreasing variance of the error terms with the progression of the linear production. The variance of error terms is affected by explanatory variables, hence there is Heteroskedasticity. The robust standard error is performed to fix the problem by adjusting the standard error.

4.5 Probit Model Estimation and Results discussion

4.5.1. Probit Model Estimation

The second objective was to inspect the influence of socio-demographic, economic and health related factors on health insurance uptake.

From table 4.5, the output shows that 37,097 variables were used in the model estimation. The likelihood ratio chi-square of 1667.42 and p-value of 0.0000 indicates that the model entirely is statistically significant. Pseudo R2 explains that 7.93 percent of the variation of dependent variables (Health Insurance Participation) can be explained by changes in explanatory variables (socio-demographic, economic, health and other factors). Therefore, the general fit of the model is good.

Table 4. 5 Determinants of Health Insurance Uptake

Explanatory Variables	Coef.	Std. Err.	Z	P>z	[95% Conf.	Interval]
Age of the household head (ref 15-34)						
35-54 years	.2711864	.0293518	9.24	0.000	.213658	.3287148
55-74 years	.1860966	.0371513	5.01	0.000	.1132814	.2589119
75-84 years	.1987138	.0712312	2.79	0.005	.0591031	.3383244
Gender of the household head	.0374459	.0266503	1.41	0.160	-.0147878	.0896796
Marital status	.0668285	.023253	2.87	0.004	.0212535	.1124036
Education (ref no education)						
Primary	.2883799	.0290972	9.91	0.000	.2313505	.3454094
Secondary	.1710799	.0428013	4.00	0.000	.0871909	.254969
Higher	.6475311	.1253524	5.17	0.000	.401845	.8932172
Place of residence	-.164128	.0293371	-5.59	0.000	-.2216276	-.1066284
Employment status	-.0636446	.0477761	-1.33	0.183	-.157284	.0299947
Occupation(ref none)						
Agriculture	.2565198	.0565606	4.54	0.000	.145663	.3673766

Domestic services	.0922129	.0754164	1.22	0.221	-.0556005	.2400263
Unskilled manual	.0828748	.0602327	1.38	0.169	-.035179	.2009287
Skilled manual	.042362	.0774206	0.55	0.584	-.1093796	.1941036
Sales and services	.2158035	.0759102	2.84	0.004	.0670223	.3645848
Clerical	.5794655	.1514104	3.83	0.000	.2827066	.8762244
Professional/technical/managerial	1.005137	.076694	13.11	0.000	.8548194	1.155454
Wealth quintile (ref lowest)						
Second	.1797421	.0351326	5.12	0.000	.1108834	.2486007
Middle	.3057776	.0341365	8.96	0.000	.2388712	.372684
Fourth	.4012156	.0362208	11.08	0.000	.3302242	.472207
Highest	.5929627	.0465456	12.74	0.000	.501735	.6841905
Cigarette smoking	.0498359	.1625603	0.31	0.759	-.2687764	.3684482
Health facility visit	.1698313	.022288	7.62	0.000	.1261476	.213515
Reading newspaper/magazine	.0568762	.0223292	2.55	0.011	.0131119	.1006406
Listening to radio	.0768805	.0262673	2.93	0.003	.0253976	.1283634
Watching television	.1349859	.0239994	5.62	0.000	.0879479	.182024

Internet usage	.3800885	.0559126	6.80	0.000	.2705019	.4896751
_cons	-2.59197	.0586033	-44.23	0.000	-2.70683	-2.477109

Log likelihood = -9685.6998

Number of obs = 37,097

LR chi2(14) = 1667.42

Prob > chi2 = 0.0000

Pseudo R2 = 0.0793

Source: Computation based on TDHS-MIS 2015-2016

4.5.2 Discussion of the Results

Based on the estimation results, being in the age group 35-54 years increases the likelihood of purchasing in a health insurance compared to the age group 15-34 years by 27 percent holding other factors constant. Individuals in age group 55-74 years had stronger possibility of participating in a health insurance scheme unlike those in age group 15-34 years by 18.6 percent holding other factors constant. Individuals in the age group 75-94 years had an increased probability of participating in a health insurance scheme compared to age group 15-34 years by 19.9 percent holding other factors constant. Z and p values indicate that these variables influence health insurance uptake significantly. Increase in age brings greater sense of responsibilities and people become more aware of their health. Possible higher income can be linked to these groups and that older people are seen to have accumulated enough wealth to invest in health care hence affordability the premiums. Age is also associated with increased medical consumption due to lifestyle diseases hence individuals take up insurance to cover additional healthcare needs. This is supported by Ying et al., 2007 who examined the demand for private health insurance in China. Nketiah-Amponsah & Hiemenz, 2009 and (Masengeli et al., 2017) also supports these findings. Mhere, 2013 showed that age influenced health insurance uptake in both positively and negatively. Increased age positively influenced participation in health insurance due to older people having a sense of responsibility and desire to care for their health needs. But age had a negative influence on the fact that people get beyond productive age and become less careful with their health needs.

Households with a female head had an increased likelihood of participating in health insurance schemes by 3.75 percent holding other factors constant. Z and p values indicate that the influence of the household head gender to health insurance uptake is insignificant. This can be linked to the fact that women are considered a vulnerable group that they occasionally need to access health care more compared to men, especially in reproductive health services. This can be supported by the study that examined women's need to be insured in Ghana and revealed that women had a greater possibility of taking up health insurance (Nketiah-Amponsah & Hiemenz, 2009). Household headed by female had more attachment value to Community Based Health Insurance program in Ghana, Mali and Senegal while in Nigerian and Burkina Faso households with men as the head were more likely to enrol in Community Based Health Insurance plan (Adebayo et al., 2015).

Marital status increases the possibility of participating in a health insurance scheme by 6.68 percent holding other factors constant. Z and p values indicate that the influence of the marital status to health insurance uptake is significant. This is because having a family creates a sense of responsibilities and couples become more interested in investing in health. Spousal financial support increases access to health insurance coverage especially from the schemes that provide cover to spouses. This is supported by the study from Ghana evaluating members' perception and factors influencing health insurance policy renewal revealed marital status as the essential determinant in joining a health insurance scheme (Boateng&Awunyo-Vitor, 2013). The study exploring uptake and perceptions of health insurance /for maternal care in rural also indicated a positive relationship between marriage and uptake of health insurance and that (Maina, Kithuka & Tororei 2016). Masengeli et al., 2017 also pointed out that marriage increased the need for health insurance as financial protection in purchasing health services also combined income made it possible to pay for premiums.

Primary education increases the possibility of participating in a health insurance scheme compared to no education by 28.8 percent when other factors are held constant. Secondary education increases the possibility of participating in a health insurance scheme compared to no education by 17.1 percent holding other factors constant. Individuals with higher education had increased probability of participating in a health insurance scheme unlike those with no education by 64.8 percent holding other factors constant. Z and p values indicate that these variables influence health insurance uptake significantly. Education promotes knowledge and enlightens individuals about the wellbeing of the families and learning includes some aspects of healthcare. These was supported by Mhere, 2013, Adebayo et al., 2015 and Alesane & Anang, 2018 that, individuals with higher education had a strong possibility to be registered in an insurance scheme and were also linked to better behaviour in health-seeking. This was different from the study done by Ghosh, 2013 which revealed that education decreases the possibility to enrolling in health insurance program since educated person may prefer investing in other modes with greater returns.

Living in urban areas influenced health insurance uptake negatively by 16.4 percent holding other factors constant. Z and p values indicate that the influence of the place of residence to health insurance uptake is significant. This means households from rural areas had greater possibility of being registered in an insurance scheme. This can be linked by evidence of greater coverage of the Community Based Health Insurance program in Tanzania that caters for individuals from rural areas. This is supported by the review of the determinants of uptake

of community-based health insurance in less developed countries, whereby rural dwellers were more ready to enrol and pay for premiums (Adebayo et al., 2015). This is different from the study done in Kenya that individual who lived near the urban centres were more likely to know where to purchase and afford the cover hence stronger possibility of owning health insurance cover (Masengeli et al., 2017).

Employment status influenced health insurance uptake negatively by 6.4 percent when other factors are constant. Z and p values indicate that the influence of the employment status to health insurance uptake is insignificant. This means employment decreases the possibility of taking up health insurance. Employment is associated with an increase in income, individuals may prefer investing in other modes with greater returns hence decrease likelihood of enrolling to the health insurance scheme. Being employed can also create confidence in the affordability of future medical expenses. This was different from the study by Masengeli et al., 2017 that indicated employment increases the possibility of taking up health insurance uptake.

Individuals who were involved in agricultural activities had greater possibility of purchasing health insurance unlike those with no occupation by 25.7 percent given that other factors remain unchanged. Participating in domestic services increases the likelihood of being insured compared to those with no occupation by 9.22 percent given other factors are held constant. Unskilled manual activities increase the likelihood of being insured compared to those with no occupation by 8.29 percent given that other factors remain unchanged. Skilled manual activities increase the likelihood of being insured compared to those with no occupation by 4.24 percent given other factors remain unchanged. Sales and services increase the likelihood of being insured compared to those with no occupation by 21.6 percent given other factors remain unchanged. Clerical jobs increase the likelihood of being insured compared to those with no occupation by 58 percent holding other factors constant. Professional/technical/managerial jobs increase the likelihood of being insured compared to those with no occupation by 100 percent holding other factors constant. The relation to health insurance uptake was significant with agricultural activities, sales and services, clerical and professional activities while domestic services, unskilled and skilled manual activities portrayed insignificant influence. People from higher occupation class have stronger possibility of purchasing health insurance due to the increase in income hence affordability of premiums. Also, some occupations provide health insurance cover as the benefit to employees. This is supported by Kapur (2019) in Ireland, that people who reported higher

occupational class (professionals) had a strong possibility of participating in the private health insurance scheme, unlike unskilled individuals.

Individuals in the second wealth quintile had a greater possibility of purchasing health insurance unlike those from the lowest wealth quintile by 18 percent holding other factors constant. Individuals in the middle wealth quintile had a greater possibility of purchasing health insurance unlike those from the lowest wealth quintile by 30.6 percent holding other factors constant. Individuals in the fourth wealth quintile had a greater possibility of purchasing health insurance unlike those from the lowest wealth quintile by 40 percent holding other factors constant. Individuals in the highest wealth group had a greater possibility of purchasing health insurance unlike those from the lowest wealth quintile by 59.3 percent holding other factors constant. Z and p values indicate that these variables influence health insurance uptake significantly. Income increases the willingness and ability to pay for premiums. This is supported by Mhere, 2013 who revealed that higher rates of enrolment in health insurance scheme were seen among individual with high income due to affordability of premiums. Vellakkal, 2013 also explained how the economic status of the household played bigger on influencing health insurance enrolment in India. An individual from the richest household was more likely not only to enrol but also buy higher premiums compared to individuals from the poorest household. Limited financial means was a primary cause for not enrolling, wealthier households are shown to be ready and able to pay for the premiums. This is shown by Adebayo et al., 2015 & Dror et al., 2016.

Smoking cigarette increases the probability of enrolling in a health insurance scheme by 5 percent holding other factors constant. Z and p values indicate that the correlation between cigarette smoking and health insurance uptake is statistically insignificant. Since cigarette smoking is a risk behaviour putting health in danger, individuals might prefer to purchase health insurance to prevent future catastrophic health expenditure. This is supported by the study done in South Africa that examined women who owned health insurance concluded that smoking was strongly correlated with purchasing health insurance (Kirigia et al., 2005).

The previous history of health facility visit increases the possibility of participating in a health insurance scheme by 17 percent holding other factors constant. Z and p values indicate that the influence of the history of previous hospital visit to health insurance uptake is significant. This is supported by a review of the determinants of uptake of community health

insurance in less economically developed countries. Health insurance uptake was strongly influenced by illness history, individuals/households with illness experience, higher illness rates or more sick household members (Adebayo et al 2015). Dror et al., 2016 also revealed that previous history of hospitalization and high rate of long-term illness in less developed countries were also strongly associated with participation in the scheme. According to Kapur (2019) in Ireland, people who reported to be very unhealthy had a strong possibility of participating in the private health insurance plan, unlike those who were considered healthy. In India, individuals who reported to be registered in the health insurance plan is had a previous history of being hospitalized (Ghosh, 2013).

Individuals who read newspaper or magazine at least once per week had stronger possibility of participating in a health insurance scheme by 5.7 percent holding other factors constant. Z and p values indicate that the influence of reading a newspaper or magazine to health insurance uptake is significant. Individuals who listened to the radio at least once per week had stronger possibility of participating in a health insurance scheme by 7.7 percent holding other factors constant. Z and p values indicate that the influence of listening to the radio to health insurance uptake is significant. Individuals who watched television at least once per week had stronger possibility of participating in a health insurance scheme by 13.5 percent holding other factors constant. Z and p values indicate that the influence of watching television to health insurance uptake is significant. This is in harmony with Nketiah-Amponsah, 2009 revealing that access to health information through television and newspaper were significantly associated with participation in the health insurance plan among women in Ghana.

Individuals who used internet at least once per week had stronger possibility of participating in the health insurance scheme by 38 percent holding other factors constant. Z and p values indicate that the influence of using internet to health insurance uptake is significant. Informed consumers are more likely to participate in a health insurance plan compared to uninformed consumers. This is supported by Vellakkal, 2013 who examined the factors influencing the uptake of voluntary health insurance in India. This is different from the study done in Kenya by Mathauer, Schmidt &Wenyaa, 2008 revealed that despite several advertisements in Kenya people didn't know what health insurance was although positive words such as "support/assistance" were used. People did not have information about how health insurance works, where and how to enrol.

CHAPTER FIVE: SUMMARY AND POLICY RECOMMENDATIONS

5.1 Introduction

The section explores the findings concerning the objectives, review of the literature and variables employed in the study. The conclusion is made based on established relationship between the determinants and health insurance uptake where key recommendations are drawn. Fields of further studies are suggested to fill identified study gaps.

5.2 Summary of the study findings

Health insurance is one of the advocated policy to mobilize funds for the health system, despite low coverage being the significant challenge facing the scheme. The study aimed at examining the determinants of health insurance uptake in Tanzania with specific objectives; to examine the profile of health insurance schemes in Tanzania, to inspect the influence of socio-demographic, economic and health status-related factors on health insurance uptake and to draw key policy recommendations to improve health insurance uptake in Tanzania. Different theoretical and empirical evidence were reviewed concerning the decision to enrol in the health insurance scheme. Descriptive statistics and Probit model have been used to analyse data retrieved from Tanzania Demographic and Health Survey and Malaria Indicator Survey (TDHS-MIS 2015-2016).

From the findings, only 8.2 per cent were covered by health insurance leaving more than 90 percent without health insurance. More than 50 percent of the household were registered under mutual or community-based health insurance scheme while only 2 percent purchased insurance cover privately. Women account for 21 percent of the household heads making men the heads of most of the households surveyed, 65 percent aged between 35-54 years with an overall range of 17 years to 95 years. More than half 60 percent were married with the average of primary education and only 23 percent lived in urban areas. Approximately 90 percent were employed, more than half participating in agricultural activities with the majority in middle wealth quintile. Concerning health status-related characteristics, 68 percent went to the health facility in the last 12 months and the majority did not smoke cigarette. Other factors were exposure to media and internet usage, whereby 32 percent read newspaper or magazine, 73 percent listened to the radio, 40 percent watched television and 3 percent used the internet at least once a week.

Model estimation used health insurance uptake as the dependent variable and socio-demographic, economic and health factors as the explanatory variables. The estimated model showed that older age, being married, higher education, living in rural areas, higher rank with regard to occupation and wealth index, reading newspapers, health facility visits, listening to the radio, watching television and using the internet were positively significantly correlated with health insurance uptake. The influence of gender, employment status and cigarette smoking on health insurance uptake was insignificant.

5.3 Conclusions

In Tanzania, health insurance has been proved to provide the basis for Universal Health Coverage by creating a route towards increase availability and accessibility of resource as well as equal distribution. The government committed directly and indirectly towards improving operation mechanisms of health insurance schemes through different policies and campaigns. Based on the study results, more than 90 percent of the households had no insurance, this exposes the population to the difficulties in accessing health care including direct payment that may lead to catastrophic health expenditure. With the commitment to expand health insurance coverage, it is important to focus on factors identified as the determinants of the uptake that will drive an increase in health care utilization and eventually better health outcomes.

5.4 Policy Recommendations

These are the recommendations as a strategy to increase coverage of health insurance in Tanzania.

- (i) Competent mechanisms should be put in place involving outreach activities and campaigns incorporating different information, communication and education materials to ensure sufficient population coverage are achieved.
- (ii) Group-specific campaigns targeting consumers from different socio-demographic and economic characteristics should be employed to ensure inclusive health insurance scheme.
- (iii) Different premium levels should be set up for different groups with regard to wealth index to ensure the affordability in purchasing health insurance. Premiums subsidization can also be used for a household from the lowest wealth quintile.

- (iv) Intensifying mass media through radio, televisions and newspaper as well as internet as the strategy to increase awareness of health insurance program and access to health insurance information.

5.5 Areas of Further Study

Further studies are needed in the following areas to ensure health insurance system objectives are achieved

- (i) Exploring motivation, attitude and expectation of the population towards the health insurance system as well as scheme related factors such as limited funds, benefits package and poor administration system.
- (ii) Influence of the health insurance scheme on health care utilization, and analyzing mandatory versus voluntary health insurance in facilitating accessible and affordable health care services.

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