DETERMINANTS OF PRIVATE HEALTH INSURANCE DEMAND: A CASE OF INSURANCE COMPANIES IN KENYA

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DECLARATION

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

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DEDICATION

I dedicate this work to my husband, whose unwavering support and shared commitment to personal and professional growth have provided a nurturing environment for me to pursue my aspirations. To my mother, whose example and encouragement have instilled in me the belief that with dedication and perseverance, dreams can be realized. And to all the remarkable women who, like me, are balancing motherhood, career, and academic pursuits - may our resilience and determination inspire future generations.

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ABSTRACT

Health insurance is an important tool for promoting health and reducing the burden of healthcare costs for individuals and households. In Kenya, health insurance coverage remains low, with only about 20% of the population covered. This study aims to investigate the factors influencing private health insurance demand in Kenya, with a focus on the effects of education, employment status, and household disposable income. This study is anchored on the Grossman's model of healthcare demand and also leans on the Nyman's model of private health insurance. Nyman's model emphasizes the role of income and price elasticity in determining healthcare demand, while Grossman's model proposes that an individual's health investment decisions are influenced by their human capital, time preference, age, environmental factors, and expected benefits of investing in health. The study adopted a longitudinal survey design, utilizing secondary data from various sources including the Kenya National Bureau of Statistics, the Insurance Regulatory Authority, and the World Bank Development Indicators. The data covered the period from 2002 to 2022, allowing for the analysis of trends and changes in health insurance demand over time. Descriptive statistics were used to summarize the data and examine the distribution of health insurance coverage across educational levels, employment statuses, and income levels. Linear regression analysis was conducted to determine the relationship between health insurance demand and the independent variables of education, employment status, and household disposable income. Using the F-Statistic and R-squared the research concluded that education level, unemployment rate, and household disposable income jointly influenced health insurance demand significantly. Education was not a significant determinant, contrary to expectations and previous research. On the other hand, unemployment rate and household disposable income played crucial roles in shaping health insurance demand. A notable limitation of this study was the confined time frame. This limitation arose from the unavailability of data for the years preceding 2002 for certain data series.

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter sets the ground for the essential elements of the paper. It includes the background of the study, the statement of the research problem, the research objectives, the scope of the study, and the significance of the research.

1.2 Background of the Study

Insurance contributes to social and economic growth of a nation by allowing risks to be managed efficiently, encouraging risk mitigation, and providing alternatives to the social security systems that are provided by the government (Grant, 2012). Insurance provides a social protection mechanism by mitigating the effects of exogenous events which an individual has no control over like death, illness or job loss. It also relieves or limits the financial burden allowing individuals to recover from the unexpected misfortune (Grant, 2012). Through Insurance an individual or corporation can absorb, manage, and diversify their risks.

The main aim of health care systems is ensuring that its citizenry has access to high quality health care. While attempting to achieve this objective, the health systems should ensure that households are protected from spending a larger proportion of their income on health care services. Such action of protecting the population from spending much on health care is referred to as financial protection goal of the health system (Cristián Baeza, 2006). Households with low-income experience harsh economic conditions in countries where out of pocket expenditure is the main source of financing health care (Cristián Baeza, 2006). The government accounts for 52 percent of the total health expenditure, donor funds account for 18 percent of the total health expenditure, households' contributions account for about 24 percent of the expenditure on average and corporations account for 6 percent of the expenditure (Giorgio et al., 2022). The significant level of household payments means that financial risk protection is inadequate. The incidence of catastrophic healthcare expenditure in Kenya is estimated to be 4.52%, with 453 470 individuals pushed into poverty annually due to out-of-pocket healthcare payments (Maina, 2015).

Health insurance is important to protect families from being impoverished by high out of pocket healthcare payments when one of the family members becomes sick Institute of Medicine (US) Committee (2001). The role of health insurance in society is multifaceted. First, insurance offers protection against any loss arising from an unexpected event that may cause financial distress. This coverage is implemented when insurance companies collect premiums from the insured in exchange for security (Muawya, 2019). Second, health insurance reduces the amount of capital needed by the state to cover those individuals who are not insured and contributes to a change in the lifestyle of those who are insured. Third, insurance plays a crucial role in supporting a sustainable economy by protecting governments and consumers from losses (Martin, 2014). The Health insurance demand has increased rapidly over the past few decades, significantly outpacing worldwide income growth (Suman, 2014). In addition, waves of globalization and privatization have profoundly influenced the insurance market worldwide, increasing direct trade and portfolio investment, as a result, there has been a growing demand for insurance services, particularly in emerging markets (Suman, 2014).

1.2.1 Insurance Demand

Demand refers to the amount of a good or service that consumers are willing and able to purchase at a given price, in a given place and time. Over time, several economists have defined demand in different ways. John Bates Clark, in his paper "The Distribution of Wealth," defined demand as the relationship between the quantities of two commodities that are exchanged for each other (Clark, 1899). Lionel Robbins defined demand as the amount of a commodity that will be bought at a given price per unit of time (Robbins, 1932), while Paul Samuelson defined it as the quantity of a commodity that people are willing and able to buy at various possible prices during some time period (Samuelson, 1948). Kenneth Arrow defined demand as the willingness of consumers to purchase a good at various prices (Arrow, 1951). Milton Friedman, in his paper "A Theory of the Consumption Function," defined demand as the amount of a good or service that people are willing to buy at a given price in a given period of time (Friedman, 1957).The requisites of demand from the above given definitions can be summarized to four key points, the desire for a good or service, the availability of the resources required to purchase the good or service, the willingness to spend those resources on the said good or service and lastly the availability of the good or service at a

certain price, place and time (Ohri, 2021). In this study demand is thus defined as the ability and willingness to purchase a desired good or service at a given price holding other factors constant as defined by Milton Friedman.

In economics, market demand refers to the total demand for a product or service by all individuals in a given market (Keat et al, 2014). The concept of demand can be measured at both an individual level, as the quantity demanded, and at the economy level, as aggregate demand. Quantity demanded represents the specific number of units of a product that an individual is willing and able to purchase at a given price. On the other hand, the aggregate demand is the total demand for all goods and services in an economy at a particular time. This is often measured by the total amount of money that consumers are willing to spend on these goods and services (Keat et al, 2014). In this study, we will focus on analyzing the aggregate demand for private health insurance in the economy rather than the quantity demanded by individuals.

Insurance demand has no single measure, two proxy variables are commonly used to define insurance demand, these are insurance penetration and insurance density (Beck & Webb, 2003). The insurance penetration rate is defined as a country's total insurance premiums represented as a percentage of the Gross Domestic Product (GDP) (Okonkwo, 2019). It measures the contribution of the insurance sector to the national economy. It's a good numeric basis when comparing insurance companies within different jurisdictions or regions. However, given that it's a product of quantity and price is not a perfect measure for demand (Beck & Webb, 2003). The insurance density is the ratio of gross premium written in given year to the total population in a given country/region and it expresses the average premium per capita (Andronic, 2020). It helps determine the amount an average consumer spends on insurance. A growth in the insurance density is an indication of stronger demand and spending on insurance products (Ramanathan, 2019). In this study health insurance demand will be measured as both the health insurance penetration rate (the ratio of total health insurance premiums to gross domestic product in a given year), and health insurance density (the ratio of total health insurance premiums to the whole population in a given year) (Podoabă, 2015).

1.2.2 Determinants of Demand

The demand for a good or service is influenced by a multitude of factors, including price, income, future expectations, preferences, and the prices of related goods among others (Upadhyay, 2015). These factors are also referred to as determinants of demand. There are five main determinants of demand, as outlined by Keat (2014). Tastes and preferences, which encompass an individual's personal likes and dislikes for a given good or service. This factor can be influenced by factors such as advertising, promotions, and government reports. Disposable income, which refers to the amount of money that an individual has left after paying for necessities. The price of related products, which includes both substitute and complementary goods. Future expectations of price movement, and the number of buyers in the market, are also significant determinants of demand (Keat, 2014).

In Kotler, Keller and Chernev (2022) model of consumer demand, they list three main consumer characteristics cultural, social and personal. They define cultural factors as shared values, beliefs, and customs that influence the behavior of a particular group of people. The cultural factors are further split to subculture and social class. Subcultures provide its members with more specific identification and socialization like nationalities, racial groups, religions and geographical regions. Social class members show distinct product and brand preferences. They define social factors as social interactions and networks that have an impact on consumer behavior. The social factors include family and reference groups. They define personal factors as individual characteristics that influence buyer's decisions. These characteristics include stage in life cycle, occupation, self-concept and lifestyle (Kotler, Keller, & Chernev, 2022).

The outreville's insurance demand framework (Eling, 2014) categorizes demand characteristics into four factors: Economic factors, demographic factors, socio-cultural factors and structural factors. Economic factors: disposable income (disposable personal income) and permanent income have a positive expected effect on insurance demand while price, inflation rate and unemployment rate have a negative expected effect on insurance demand. Demographic factors: population size/density has positive expected effect; urbanization has positive expected effect with some exceptions. Age (working age), dependency ratio and life expectancy had an ambiguous expected effect on insurance demand. Social and cultural factors: education has a positive expected effect, religion (Islam) has a negative effect and risk aversion has an ambiguous expected effect on

insurance demand. Structural factors: financial development, degree of openness, legal environment and enforcement of property rights/law have a positive expected effect on insurance demand. Monopolistic markets, market concentration and political risks have a negative expected effect on insurance demand. Social security has ambiguous expected effect on insurance demand (Outreville, 2013).

Segodi (2022) documented income, unemployment, inflation, interest rates, financial freedom and economic growth as determinants of life insurance demand. An individual's income is a major determinant of health insurance demand and the middle class and the rich are more likely to utilize health insurance compared to people who are poor (Medard, 2022). Frostin (1997) documents the area of residence as another determinant of health insurance demand. Those who reside in urban areas are expected to purchase health insurance since they can easily access the facility. This is because individuals who reside in urban areas have relevant information than their rural counterparts. Kiplagat (2011) showed that more years of schooling are associated with higher salaries and a higher value of time. Duku (2018) argues that demand for care may be higher for the more educated who may possess a better understanding of modern medicine and the intricacies of insurance. In addition, employed individuals are more likely to have health insurance which may be mostly work related compared to unemployed, the high coverage may be attributed to workplace insurance policies (Akokuwebe, 2022). Comparative studies have shown that most unemployed people rely heavily on out of pocket payments when in need of health services, they lack the resources to pay regular premiums. (Akokuwebe, 2022).
Alasane (2018) concludes that socio demographic characteristics like sex, literacy, age and household size affect the demand of health insurance in Ghana. Grossman (2010) argues that the demand for medical care increases as one grows older. As people age their health degenerates and increases their need for healthcare utilization. Older people prefer to invest in their health through the purchase of health insurance (Duku, 2018).

This study will operationalize determinants of demand according to Outreville (2013) and will adopt education, employment status and household disposable income of the individuals as determinants of health insurance demand. Education, which falls under social and cultural factors, as a variable will focus on Kenyans who have acquired basic education, the best measure for this is the primary school completion rate because it can be proven (Abagi & Odipo, 1997). Household

disposable income, which falls under economic factors, is defined as the combined gross income of all members of the household in a given year (Jenkins, 2000). Employment, which falls under economic factors, will take the form of annual employment rate defined as the percentage of the available labor force who are already working (Brandolini & Viviano, 2016).

1.2.3 Insurance Companies in Kenya

Insurance is a financial product that manages and mitigates risks based on the principle of shared responsibility between the insured and the insurer (Grant, 2012). The risks covered include but are not limited to property damage, illness, disability, accidents and death. Insurance provides a social protection mechanism by mitigating the effects of exogenous events which an individual has no control over like death, illness and job loss. It also relieves or limits the financial burden allowing individuals to recover from the unexpected misfortune (Grant, 2012). Through Insurance an individual or corporation can absorb, manage and diversify their risks. The insurance industry contributes to the economy through people employed in insurance and related services, income and premium taxes paid to the government and extensive charitable work (Welsbart, 2018).

Health insurance is a vital component of modern healthcare systems, providing individuals and families with financial protection against the high costs of medical and surgical expenses (Guindon, 2014). The fundamental purpose of health insurance is to mitigate the financial risks of unpredictable health events and ensure access to quality medical care. By paying monthly premiums, insured individuals can receive coverage for a broad range of medical services, including routine doctor visits, hospitalization, prescription drugs, and medical procedures (Spaan et al, 2012). Health insurance can be obtained through employers, private insurers, or government programs. The availability and affordability of health insurance has important implications for population health, healthcare utilization, and healthcare spending, making it a crucial area of study and policy concern (Wagstaff, 2007).

Health Insurance in Kenya is provided through private health insurance and through a social fund set up by the National Health Insurance Fund (NHIF) Act No 9 of 1998. The NHIF provides health insurance cover to both individuals in the formal and informal sector. Formal sector individuals

pay an income-rated monthly premium that is deducted automatically from their salaries and remitted to the NHIF by their employer (Barasa et al., 2017). Private health insurance which is provided by the private sector requires members to pay premiums depending on the package they want in the cover (Orayo, 2014).

The gross direct premium income for medical insurance in Kenya in 2020 was KES 45.06 billion (IRA, 2021). Although there is an increase in insurance premiums, quite a large proportion of Kenyan population is not insured. According to the Ministry of Health 2019 report only 11% of Kenyans are insured. In addition, with over 70% of the Kenyan workforce working in the informal sector, the majority of them are either not eligible or cannot be able to afford the premiums set by the government and private insurance companies to maintain health insurance provision. Kenya has 56 insurance companies and 5 reinsurance companies. Of the 56 insurance companies only 21 offered medical insurance (IRA, 2021). This study will focus on the medical insurance gross premium income as recorded by IRA.

1.3 The Statement of Research Problem

Dragos (2014) argued that health insurance is attractive to the middle classes but may be unaffordable in lower-income countries. Moreover, health insurance demand is influenced differently by institutional indicators from the worldwide governance indicator database in emerging and transitioning markets than in developing ones. Dragos (2014) further argued that even though literature has been devoted to explaining the determinants of health insurance, there is still a vast difference between underdeveloped and developed countries. For example, Kenya's health insurance market has seen significant growth, although income level remains relatively low compared to other developed countries (IRA, 2021). This offers an attractive incentive to examine several key factors affecting the Health insurance demand in Kenya.

Arpah, Angappan, Syed, and Mohd (2012) conducted a study to analyze the factors affecting individual health insurance demand in Malaysia. The study employed logistic regression to examine the impacts of various predictive variables, including social demographic characteristics, on health insurance purchasing decisions. Results revealed that income level, race-religion,

education level, gender, risk attitude, age, and job sector significantly influenced health insurance purchase decisions among salaried individuals.

Kullberg, Blomqvist, and Winbald (2019) conducted a study on the determinants of voluntary health insurance uptake in Sweden. The data used was from a national survey (Risk-SOM 2016) which captures the estimate of coverage in different population groups. A qualitative content analysis of the voluntary health insurance plan from the largest seven insurance companies in Sweden was conducted. The study concluded that work related factors such as income, employment sector and occupation appeared to be key determinants for voluntary health insurance in Sweden. The results indicated that voluntary health insurance is for the wealthy and health in Sweden.

Mhlanga and Dunga (2020) conducted a study on the determinants of Health insurance demand in South Africa using the 2018 general households survey data. They used the logistic regression model to evaluate the determinants of demand. The results from the study showed that health insurance uptake in South Africa is low. The regression indicated that health insurance uptake is affected by: race, whites are more likely to take up insurance; gender, men are more likely to take up insurance; marital status, married individuals take up insurance more than those who are not; and education level, those with a higher education level are more likely to take up insurance.

Medard, Yawe and Bosco (2022) conducted a study on the determinants of demand for private health in Uganda. In this study they examine seven demand determinants using the 2016 Uganda demographic health survey data. A logistic regression model was used to identify the determinants of demand. The results showed that level of education, marital status, access to information, wealth index, age of the individual and residence were significant factors that affect uptake of health insurance in Uganda. Wealthy individuals were more likely to have a health insurance cover compared to poor individuals. Also, individuals who had access to information were more likely to demand health insurance compared to those without access

Kiplagat, Muriithi and Kioko (2013) conducted a study on the determinants of health insurance choice in Kenya. They utilized the 2008-2009 Kenya Demographic Health Survey (KDHS) to estimate a multinomial logit model. The findings from the study indicated that wealth index,

education level, employment status and household size are important determinants of health insurance ownership and choice. The study also pointed to lack of awareness as a hindrance to enrolment to a health insurance scheme for many individuals.

Nkatha (2020) researched on the determinants of health insurance demand in Kenya with a focus on macroeconomic factors. The research used the Auto-regressive Distributed Lag (ARDL) Model using secondary data spanning over 1980-2018. The study established that income levels and education levels have a positive effect on health insurance demand in the long run, inflation and unemployment have a negative effect on health insurance demand in the long run and financial development had no effect on health insurance demand.

While research on the need for health insurance has attracted much attention since the 1960s, most studies (e.g. Dragos, 2014; Arpah, Angappan, Syed, and Mohd, 2012; and Kullberg, Blomqvist & Winblad, 2019) have focused on cross-country studies or well-established markets in developed countries. The studies by Nkatha (2020) and Kiplagat, Muriithi and Kioko (2013) have investigated insurance demand, but their studies focused on different factors and adopted a different measurement of demand creating a gap in understanding the determinants of health insurance demand in Kenya. This study aims to fill this gap by exploring the influence of education, household disposable income and employment status on private health insurance demand in Kenya.

1.4 Research Objectives of the Study

The General objective of the study is to establish the determinants of health insurance demand in Kenya.

1.4.1 Specific Objectives

The specific objectives are as follows:

i. To examine the correlation of education on health insurance demand in Kenya
ii. To examine the correlation of employment status on health insurance demand in Kenya.

iii. To establish the correlation of household disposable income on health insurance demand in Kenya.

1.4.2 Research Questions

i. What is the correlation of education on health insurance demand in Kenya?
ii. What is the correlation of employment status on health insurance demand in Kenya?
iii. What is the correlation of household disposable income on health insurance demand in Kenya?

1.5 Scope of the Study

The study will focus on analyzing three factors that affect private health insurance demand in Kenya. The study will consider all the medical insurance gross written premium as recorded by IRA.

The study will analyze the influence of employment, education level, and household disposable income on the insurance penetration rate and the insurance density rate using secondary data collected from the Kenya National Bureau of Statistics (KNBS), Insurance Regulatory Authority (IRA), and World Bank. The study will cover the period from 2002 to 2021. The data collected will be used to develop a regression model to establish the relationship between the study variables.

1.6 Significance of the Study

Establishing the influence of education, employment and household disposable income factors on health insurance demand in Kenya would help inform policy decisions in improving the low health insurance penetration in Kenya. The findings will be useful to the government, in particular the IRA where the findings can inform policy decisions and regulatory interventions that promote equitable access to quality healthcare services for all Kenyans. The regulator can collaborate with other stakeholders, such as the government and insurance companies, to implement evidence-

based strategies that enhance health insurance uptake and address the underlying factors affecting demand.

Empirically, the study guides insurance companies by identifying demand determinants as a step to effectively design and market health insurance products. With this understanding these companies can develop and execute strategies that will increase the uptake of health insurance in Kenya.

The study will offer added knowledge and push forward the enhancement of already existing literature in the field of health economics. The study contributes to the grossman model of health demand by building on the prevailing theoretical framework and enhancing a better understanding of the traits of individuals who seek improve their health status.

1.7 Chapter Summary

This chapter starts with a brief background to the study clearly brings out the study variables. It also documents the statement of the problem, the research objectives the scope of the study and the significance of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter includes theoretical literature review as well as past empirical studies touching on Health insurance demand. The literature review will cover the key variables identified from the objectives of the study. At the end of the chapter, overview of the literature is presented.

2.2 Theoretical Review

This section introduces the theoretical foundation of the study, which rests upon the Grossman model of health demand as the primary framework. In addition to the Grossman model, the study also incorporates Nyman's model of private health insurance and the consumer demand theory to explore the factors influencing health insurance demand.

2.2.1 Grossman Model of Health Demand

The model was developed by Michael Grossman who detailed it in a monograph in 1972. The monograph title was "The demand for health: A theoretical and empirical investigation" (Grossman, 2017). The model posits that each person inherits an initial stock of health which decreases over time (at an increasing rate after some stage in the life cycle), but can be increased through investments (Grossman, 2010). Death is assumed to occur when the health stock falls below a certain level. Grossman (2010) argues that health care is different from other commodities, given what a person is actually buying is good health. Grossman thus argues that increased health increases the total amount of time that one spent on producing earnings and commodities. Therefore, this means that health is demanded as a consumption commodity and thus can directly enter the individual's utility function. In typical consumer demand theory, each person has a utility function by which the various combinations of goods and services that can be purchased are ranked. The individual will choose the combination that maximizes utility function, subject to income constraint (Grossman, 2010). The gross investment in health capital is produced by household production functions whose direct input include the consumer's time and market goods like diet, housing, recreation, medical care and exercise. The production function is also dependent on environmental variables such as level of education. Grossman (2010) argues that an individual's

stock of knowledge affects their market and non-market activity while their stock of health determines the total amount of time spent producing earnings and commodities health.

The model predicts three key things. The rate of depreciation of health stock increases with age. The health capital quantity demanded would decline over the life cycle. If the elasticity of the marginal efficiency of capital schedule is less than unity, expenditure on medical care would rise with age. A consumer's demand for health and medical care is positively correlated with their wage rate. If education increases the efficiency with which gross investments are produced, then individuals with higher levels of education would demand a larger optimal stock of health (Grossman, 2010).

A given consumer faces a probability distribution of depreciation rates in each period. This uncertainty gives the consumer incentive to protect themselves against the "loss" associated with higher-than-expected depreciation rates by purchasing insurance and holding excess health stock (Mhlanga, 2021). In this model, an individual seeks health services because they improve health status (Mhlanga, 2021). This therefore suggests that Health insurance demand is derived from demand for health. The decision to seek health insurance is to enable a person access health care which is an input to counter the natural depreciation of the health stock (Grossman, 2010). Other inputs include education, exercise, nutrition, and lifestyle choices (Mhlanga, 2021). Health insurance demand fits into this model because the model takes the health capital as both a consumption and a capital good. Thus, health enters the consumer's utility function as a consumer good.

The theory is selected because it brings about the concept of utility that measures the individual's satisfaction derived from the consumption of a given commodity. Taking health insurance as a commodity, the consumer will consume what will satisfy them subject to their budget constraint and other factors. Thus, health enters the consumer's utility function as a consumer good.

$$\mu_t = u(H_t Z_t)$$

In this case, H_t is the health of the individuals and Z_t is the consumption of other goods and services.

The Grossman model of health demand introduces the concept of utility, measuring an individual's satisfaction derived from consuming a particular commodity. Considering health insurance as such a commodity, individuals consume it to fulfill their preferences within their budget constraints and other relevant factors.

2.2.2. Consumer Demand Theory

Consumer demand can be described as the willingness and ability of a consumer to buy a given commodity at a given prevailing price and within a given time period. This means that the consumers consider price of a commodity alongside other factors that can affect their purchase behavior. The purchase behavior of a consumer is affected by other factors such as price of other related commodities, income level, taste and preference, availability of a product among others. Thus, the consumer demand theory can describe the demand of a commodity in terms of the factors that determine the willingness and ability of the consumer to buy. In the consumer behavior theory, the purchase behavior of the consumer describes; how they made decision to allocate their income to various commodities within their consumer basket. In the Grossman theory of health insurance demand, health insurance is classified as consumer good. It is consumed alongside other goods to derive consumer satisfaction. Health enters the consumer utility function as a consumer good (Grossman, 2010). Thus, consumer demand theory would treat health insurance the same way it treats other commodities.

This study adopts the consumer demand theory to evaluate the determinants of health insurance demand. However, it considers non-price determinants of health insurance demand. Thus, the health insurance is expressed as a function of its determinants as shows below:

$$H = f(x_i)$$

Where H is the amount of Health Insurance consumed and x_i defines the determinants of health insurance consumed. The determinants in x_i are derived from the Outreville's insurance demand framework (Eling, 2014) which categorizes demand factors in terms of economic factors (disposable income and employment), demographic factors, social cultural factors (Education), and structural factors (Outreville, 2013). In this study, household disposable income (disposable income), employment status and education will be considered as the determinants of health insurance demand.

Thus,

$$H = f(x_1, x_2, x_3)$$

Where x_i can take the values x_1 = household disposable income, x_2 = employment status, x_3 = education.

The Health Insurance Demand is thus expressed as a function of household disposable income, employment status, and education.

The consumer demand theory, which provides a comprehensive framework for analyzing the determinants of health insurance demand. Unlike traditional economic models that focus solely on price as the primary determinant of demand, consumer demand theory acknowledges the multifaceted nature of consumer behavior. The theory recognizes that consumer choices are influenced by a multitude of factors beyond economic considerations, including psychological, social, and cultural influences.

2.2.3. Nyman's model of Private Health Insurance Demand

The theory was developed by John A. Nyman, an economics professor at the University of Minnesota (Nyman, 2001). The theory states that people purchase health insurance to transfer their income earned during their health state to their ill state (Nyman, 2001). The argument is that the transferred income is more valuable during the ill state. Since the insured people do not all fall ill during the contract year, the insurance companies take advantage of that, and they transfer the income from the healthy to the ill beneficiaries. The Nyman's model suggests that as individuals' income increases, they will demand more health insurance coverage. In relation to the demand for health insurance, it would mean based on Nyman (2001) theory that as the income of people increases, they would consider transferring a higher amount of it to health insurance, increasing the demand for health insurance. The theory, however, does not classify the kind of good or service health insurance is. Also, it only considers income increase as the only factor that can make one purchase more health insurance, ignoring other possible factors such as education and employment rate.

The incorporation of Nyman's model in the study offers valuable insights into the determinants of health insurance demand. Nyman's model, developed within the context of the United States'

advanced healthcare system, provides a theoretical framework that emphasizes the significance of income in influencing consumption of health insurance. By examining the relationship between income levels and health insurance demand, the study aims to assess the universality of Nyman's principle and its applicability across diverse socio-economic contexts. Additionally, Nyman's model underscores the importance of considering demand-side factors in shaping healthcare consumption patterns, offering a valuable theoretical perspective to inform policy interventions aimed at enhancing healthcare access and equity.

Nyman's model serves as a foundation for understanding the relationship between income and consumption. By investigating income levels' influence on health insurance demand, the study aims to validate Nyman's fundamental principle, which suggests that higher income leads to increased consumption of goods, including healthcare services.

2.3 Empirical Literature Review

This section reviews previous research examining the factors influencing health insurance demand. It explores existing literature on education, employment status, and household disposable income in relation to demand for health insurance. The literature encompasses studies conducted both within Kenya and Africa, as well as those conducted outside the African continent.

2.3.1. Education and demand

Education is taken as the level within the education system of a country that an individual has attained (Mpuuga, 2019). A study by Mehta, Sharma and Jain (2020) investigated how consumer buying behavior is impacted by the education status. The study revealed that educational qualification was a significant determinant of the buying decision of a consumer. Highly educated people engaged in a lot of research before they can accept a given product or its brand.

The significance of education in consumer purchase decision is further supported by IONCiCĂ, et al (2012)'s study on the role that education plays in influencing consumer behavior specifically in the insurance market. The study was carried out in Romania and it revealed that education influences insurance purchase decision. The education level of a person was found to influence their interest I purchasing insurance and this may have been influenced by two factors; firstly,

educated people have a better understanding of insurance products and they will be interested in purchasing the, secondly, educated people are more likely to get well-paying jobs which also give them the income they need to purchase insurance in general (IONCiCĂ, et al., 2012).

Another study by Berning & Hogan (2014) investigated the impact that education has on the purchases of fruits and vegetables in the United States, and found out that families that are headed by a college graduate were purchasing nine more servings of fruits and vegetables per week for each person than the households headed by a high school graduate (Berning & Hogan, 2014). The findings were consistent both to married and single households, and irrespective of whether it is the husband or the wife who has a college degree. Another dimension of this study was that the households headed with a person with higher education purchases higher quality fruits and vegetables (fresh ones) compared to those with lower education. This demonstrated that higher education resulted to better planning and management of diet (Berning & Hogan, 2014). The study further found that education level had a higher impact on the purchase behavior of the consumers than income.

Education is likely to influence Health insurance demand because an individual that is able to read and write is likely to enroll for a health insurance scheme than that who is unable to read and write. Mpuuga, Yawe and & Muwanga (2020) while studying the factors that determine demand for health insurance in Uganda found that those who were able to read and write had higher chance of enrolling for the health insurance as compared to those who could not read and write.

Another study that found education to be important determinant uptake of health insurance is Salari et al. (2019). This study was investigating the factors influencing enrollment in health insurance scheme of Ghana. The study used secondary data sourced from Ghana Demographic Health Survey data. Duku (2018) in estimating determinants of uptake of health insurance using logistic regression found that education was found to be an important determinant.

In another study, Salari, Akweongo, Aikins and Tedios (2019) investigated the socio-economic determinants of National Health Insurance Scheme (NHIS) enrolment in Ghana. The study used Ghanaian Demographic and Health Survey conducted in 2014. The study used multilevel logistic regression models to estimate the probability of enrolment for women and men separately. The

study used three levels of analysis namely individual units, household and geographical clusters. The study found that education positively influence enrolment.

Rotating savings and credit associations (ROSCAs) are common in many sub-Saharan African (SSA) countries. The ROSCAs serve as important gateway for coping with financial risk among low income individuals. In taking into consideration the role of ROSCAs as source of finance among members, government targeted ROSCAs member for enrolment in NHIF. It is light of this that Oraro and Wyss (2018) sought to investigate whether ROSCA membership influences the determinants of voluntary health insurance enrolment. To achieve the objective, the study used a cross-sectional survey of 444 households from Kisumu City between July and August 2016. The study found that education was associated with NHIF demand regardless of ROSCA membership.

2.3.3. Employment Status and Demand

Employment Status is defined as the employment rate in a given year describing the percentage of people within the labor force who are employed (Nkatha and Machio, 2020). Depersio (2020) argued that during the period of high low unemployment, more people are working and their purchasing power is high because they have an income. This means they will demand more goods and services because they have more discretionary income. Takudzwa, Thabani, and Smartson (2020) employed a probit regression model to investigate the factors that influence demand for a health insurance cover by the public service employees in Zimbabwe. The findings showed that premium, employment type, place of residence, education level and access to information were significant predictors of participation in health insurance schemes.

Nshakira-Rukundo et al. (2019) also examined the determinants of enrolment and renewing of community-based health insurance by households with children below five years in rural South-Western Uganda. The results showed that household welfare, husband's employment, access to information, and knowledge of health insurance premiums were significant determinants for enrolment and renewal decisions.

Nguhiu et al (2017) in their study in Kenya also found that employment in the formal sector,

marital status, gender, age, exposure to media and household welfare were significantly associated with health insurance coverage. Nkatha et al. (2020) analyzed macro-economic determinants of demand for health insurance in Kenya using macro data. The results showed that income levels, education level, inflation and unemployment affected Health insurance demand in Kenya. The results further indicated that unemployment had a negative effect on Health insurance demand.

2.3.4. Household Disposable Income and Demand

Household Disposable Income is defined as the aggregate income of the members of a given household (Nkatha and Machio, 2020). A study by Khan (1995) based in Karachi, Pakistan, focusing on the effects of household income on the demand of transport and communication, found out that as house hold incomes increased, the demand for more sophisticated means of transportation and communication increased. This is to mean that income is positively correlated with demand. This can be confirmed by a study by Ferguson (2005) in Utah, United States, on the effects of household income on the demand for residential internet services. The study found out that low income households demanded less internet services in their residential areas and also demanded less quality. High income households demanded more residential internet services of higher quality. In Nigeria, Ewubare & Onah (2022) sought to investigate the effects of income household expenditure. It was found out that as household income increased, the purchasing power also increased, enabling the households to spend more on consumer goods and services. The more they consume the higher the demand of those goods and services.

In the health sector also, lack of income may have adverse effects on one's health and this has the potential of stopping an individual from living a fulfilling life (Macharia, Mwangi and Oluoch, 2017). Aregbeshola and Khan (2018) showed that women from the middle income, the richer and the richest households were 10.8, 21.4 and 57.7 times more likely to enroll for health insurance coverage as compared to women from the poorer and the poorest households. Nkatha and Machio (2020) noted that Kenyan government had made strides to ensure many Kenyan are insured but the uptake was not as expected. By the time their study was carried out, only 4 percent of Kenyan were enrolled in the private insurance while only 16 percent had enrolled in the National Health Insurance Fund (NHIF). It this based on this low level of enrollment in the health insurance

schemes that informed the authors to investigate the macroeconomic determinants of uptake of health insurance. The study's findings showed that household income was one of the major determinants of the uptake of health insurance.

Otieno, Wambiya, Mohamed, Donfouet and Mutua (2019) carried out a study in Viwandani slums of Nairobi with an aim of determining the prevalence of the health insurance in the region. To achieve this objective, the author performed a cross-sectional survey involving a sample of 300 households that were randomly selected in the Viwandani slums. The study found that income influence Health insurance demand.

In studying the link between ROSCA membership and enrollment in health insurance, Oraro and Wyss (2018) found that ROSCA and non-ROSCA households with high socioeconomic status showed stronger health insurance demand compared with poorer households. The results also showed that participants who were self-employed were less likely to enroll into the NHIF if they were not members of ROSCA.

2.4 Research Gap

The reviewed literature has shown that quite a lot of research work has been carried out to investigate determinants of health insurance. However, this research work has been carried out in different geographical regions. Those done in Kenya have focused on narrow geographical areas. The ones carried out on Kenya focused on macroeconomic determinants of the health insurance demand or focused on a specific region besides defining the dependent variable as a binary variable (1 for having insurance cover and 0 for not having a cover). A study measuring the health insurance demand in terms of health insurance penetration and health insurance density is missing. Due to defining dependent variable as a binary variable, most of the studies relied on logit or probit model in the regression analysis. The determinants of health insurance demand that are conspicuous in these studies include sex, age, income status, area of residence, education level, form of employment (formal and informal) and travel time to nearest health facility.

Studies on microeconomic determinants of demand for health insurance for instance Masengeli et al. (2017), Macharia et al. (2017) and Oraro and Wyss (2018) are narrow in scope since they focus

on Bungoma, Nyeri and Kisumu city respectively. In addition, the studies have not exhausted on all the determinants of health insurance as observed in studies carried outside Kenya.

In bridging the literature gap, the study will focus on the actual variable that measure health insurance demand from the sellers of insurance premiums, the insurance companies. Of the 56 insurance companies in Kenya, only 21 offer health insurance and the study will focus on all of them. This means that since the study is focusing on private health insurance demand, considering the 21 companies' means having the data that includes all the health insurance premiums in the private insurance sector. That is, the employer-based health insurance and the privately purchased commercial covers. The study is therefore taking a national scope as opposed to narrow scope in the literature reviewed. The measurement of health insurance demand will be done using health insurance penetration and insurance density.

Table 2.1

Summary of Knowledge Gaps

Study	Focus of Study	Findings	Research Gap	Focus of Current Study
Alesana and Anang (2018)	Determinants of uptake of health insurance in rural Ghana	Age, literacy level, sex and household size determine uptake of health insurance.	Focus of the study was on uptake of health insurance in rural Ghana. Narrow Scope of date (two microfinances). Dependent variable taken as a binary variable instead of focusing on the actual data about uptake in terms of premiums.	The study will focus on uptake of health insurance in Kenya. 21 private insurance companies and focusing on value of premiums.
Mhlanga & Dunga (2020).	Determinants of demand for health insurance in South Africa	health insurance uptake is affected by: race, gender, marital status and education level	Focus of the study was on uptake of health insurance in South Africa. Dependent variable taken as a binary variable instead of focusing on the actual data about uptake in terms of premiums.	The study will focus on uptake of health insurance in Kenya. Dependent variable is an actual statistic: Health Insurance Penetration and Health Insurance Density.
Zerriaa, et al. (2017)	determinants of life insurance demand in Tunisia	level of income and financial development, life expectancy at birth, dependency, country's level of urbanization was found to stimulate life insurance demand	Focus of the study was on uptake of health insurance in Tunisia. Did not include factors such as education and age which play a major role in the purchase of health insurance.	The study will focus on uptake of health insurance in Kenya. Dependent variables are income, age, education, and employment status.

Turyamureba and Oryema (2022)	determinants of demand for private health in Uganda	level of education, marital status, access to information, wealth index, age of the individual and residence were significant factors that affect uptake of health insurance in Uganda.	Focus of the study was on uptake of private health insurance in Uganda. Used binary dependent variable (with or without health insurance) but considering the volume or value of premiums purchased would be a better measure.	The study will focus on uptake of health insurance in Kenya. Considers penetration rate for health insurance and health insurance density.
Otieno et al. (2019)	Prevalence and factors associated with health insurance coverage in resource-poor urban settings in Nairobi, Kenya: a cross-sectional study	income and perception of health status as a good influence demand for health insurance	Focus of the study was on uptake of health insurance in residents of Viwandani slum. Enrolment to health insurance is the measured variable but it is a stronger variable to use value of premiums. Could not use ordinary least squares because of the binary nature of independent variable. Also data is primary.	The scope of this study is wide as it focuses on the entire Kenya. Value of premiums is the dependent variable. Regression done using ordinary least square method for secondary data.
Kiplagat et al (2013)	Determinants of health insurance choice in Kenya	Wealth index, education level, employment status and household size are important determinants of health insurance ownership and choice.	The study utilized the 2008-2009 Kenya Demographic Health Survey (KDHS). Dependent variable is the categories of different insurance schemes. Does not take into account the volume or premiums	The study will focus on KDHS 2014 data. Used ordinary least square method for regression analysis.

			purchased. Employs legit model.	
Nkatha (2020)	determinants of health insurance demand in Kenya with a focus on macroeconomic factors	The study established that income levels and education levels have a positive effect on health insurance demand. inflation and unemployment have a negative effect on health insurance demand	Operationalized determinants of demand with a focus on macroeconomic factors. Health Insurance Demand is measured as the total number of people insured per year. However, the quantity demanded (value of premiums) may decline even when the number of insured increase. Some people may take basic cover when other premium covers are maturing.	Operationalization will be based on macroeconomic factors but value of premiums is what will be used to define health insurance demand.

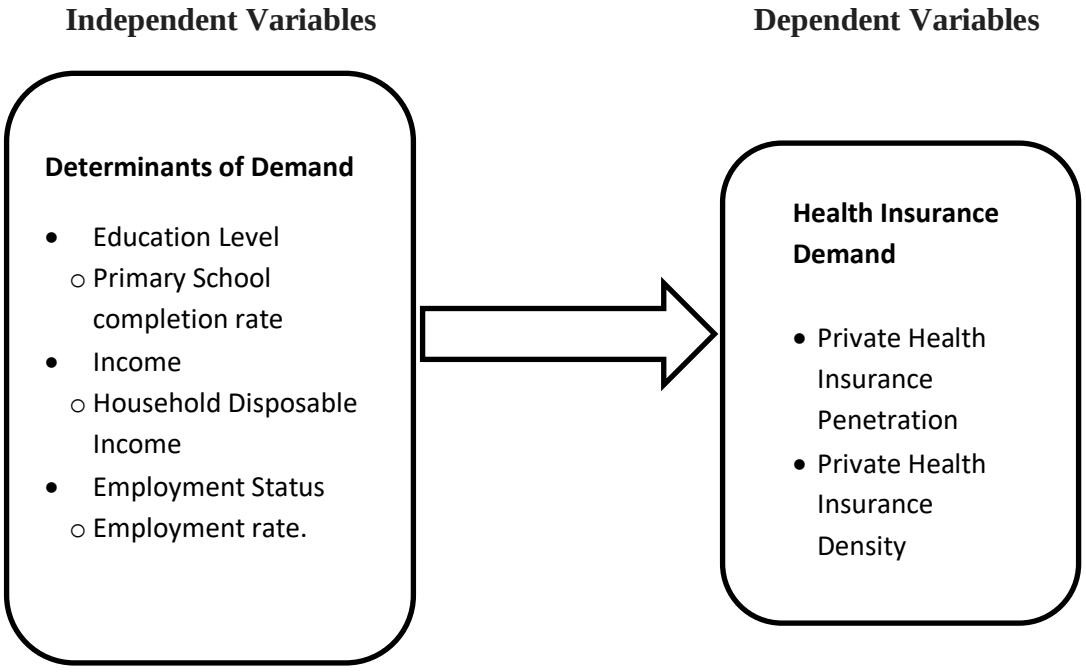
Source: **Researcher (2023).**

2.5 Conceptual Framework

The conceptual framework shown in Figure 2.1 shows the relationship between health insurance demand and its determining factors. In this study health insurance demand was measured in terms of insurance penetration and insurance density (Beck & Webb, 2003). While the determinants of demand were measured in terms of Age, employment status, income, and education (Kotler et al, 2022).

Figure 2. 1

Conceptual Framework



Source: Researcher (2023)

Based on the literature reviewed, Figure 2.1 shows the relationship between demand for health insurance and its determinants. It hypothesizes that the independent variables included significantly influence demand for health insurance.

2.6 Operationalization of Study Variables

Operationalization shows how variables will be measured. The measurement scale and source of data for each variable considered in study is shown in Table 2.2.

Table 2. 2

Operationalization of Variables

Variable	Constructs	Operational Definition	Measurement Scales	Source (s)
Independent Variable (Determinants of Demand)	Education	The level within the education system of a country that an individual has attained.	Primary school completion rate	Mpuuga (2019)
	Household Disposable Income	Aggregate income of the members of a given household.	Household Disposable Income	Nkatha and Machio (2020)
	Employment Status	Whether an individual has a job or not.	Employment rate.	Nkatha and Machio (2020)
Dependent Variable	Insurance Penetration	The country's total insurance premiums represented as a percentage of the gross domestic product GDP	Ratio	(Beck & Webb, 2003).
	Insurance Density	The ratio of gross premium written in given year to the total population in a given country/region	Ratio	(Beck & Webb, 2003).

Source: Researcher (2023).

2.7 Chapter Summary

This chapter discussed the theories on which the study was anchored as well as the empirical studies scholars have carried out on determinants of health insurance demand. The research gaps arising from previous studies were identified. The conceptual framework was derived showing the relationships between the variables.

CHAPTER THREE

METHODOLOGY

3.1. Introduction

This chapter will discuss the methodology used to realize the objectives of the study. It contained several sections including research philosophy and design, study population and sampling design, data collection methods and analysis, validity and reliability tests and ethical considerations.

3.2. Research Philosophy

According to Saunders et al (2020), research philosophy can be described as the development of knowledge and characterization of the researcher's view of the world. Research philosophy is classified into either positivism or interpretivism.

This study adopted positivism as the research philosophy. Positivism is a research paradigm that is concerned with objective measurement of phenomena and focuses on the use of empirical evidence to explain social reality. The research questions in this study sought to determine the influence of level of education, employment, and household disposable income on health insurance demand in Kenya. These variables were objectively measured through quantitative research methods, which align with the positivist research paradigm.

3.3. Research Design

Research design is a framework which gives the researcher methods and techniques of conducting a study (Creswell,2009). It is used to find the answers to research questions and prove or falsify the hypotheses.

This study was designed with a quantitative research approach. Quantitative research is a methodology that involves the investigation of relationships between variables that are measured numerically and are analyzed using a variety of statistical and graphical techniques to draw meaningful conclusions (Saunders Lewis & Thornhill, 2019). The study adopted an explanatory nature. The study aimed to examine the influence of employment, household disposable income and education and insurance demand. The independent and dependent variables were all numerical

in nature. This study adopted longitudinal research design. The longitudinal design enabled the researcher to collect data over time and track changes in health insurance demand among different demographic groups in Kenya (Gronmo, 2019). The study utilized 21 annual observations over the period 2002 to 2022.

The archival and documentary research strategy was adopted in this study to obtain various data sets. These data sets were then be subjected to econometric analysis, and the findings of this analysis presented and discussed in subsequent chapters.

3.4. Population of the Study

The population of the study is the targeted population that the study is interested in (Hedges, 2009). The study's populations are all Kenyans aged 18 and above. These are individuals who can be accepted to be protected by insurance companies upon paying the premiums.

3.5. Sampling Design

Sampling design entails a method used to select the representative of the population of study that is appropriate for the study (Singh & Masuku, 2014). In this study, there are 56 insurance companies in Kenya, and there are 21 which offer medical insurance covers. The sampling design used in this study is non-probability sampling technique where the data is collected from the most convenient institution which aggregates the data of interest to the study (Singh & Masuku, 2014). Other data was collected from other secondary source such as Kenya National Bureau of Statistics, World Bank Development Indicators and UNESCO.

3.6. Data Collection Methods

The study utilized secondary data for the period between 2002 and 2022 which gives 21 observations for each variable.

Table 3.1

Variables used in the analysis and sources of data.

Variable	Variable	Measurement	Source
Dependent Variables			
	Health Insurance Penetration (HIP)	PHIP = (Health Insurance Premium Volume) /(Gross Domestic Product)	IRA KNBS World Bank Development Indicators
	Health Insurance density (HID)	PHID = (Health Insurance Premium Volume) /Population	IRA KNBS World Bank Development Indicators
Independent Variables			
	Education	Primary school completion rate (PSCR)	UNESCO
	Employment Status	Employment rate = Employed (% of total labor force) ER	World Bank Development Indicators
	Household Disposable Income	Household Disposable Income (HDI)	World Bank Development Indicators

3.7. Data Analysis

Data analysis entails applying statistical tools systematically to transform raw data into meaningful insights (Lewis-Beck, 1995). The data collected was analyzed to achieve the objectives of the study. The study used both descriptive and regression analysis to analyze the data. The time series data collected was analyzed using Eviews statistical software to get the outcome of multiple regression analysis based on equation 4 and equation 5. The two linear models were estimated using Ordinary Least Square (OLS) method which is a linear regression technique that is used to determine the unknown parameters in the regression equation (de Souza & Junqueira, 2005). The unknown parameters are coefficients of the regression variables, defined as β_i in equation 4 and equation 5. In the case of multiple regression analysis, the OLS method determined whether each variable is a significant determinant of the dependent variable and measure whether all factors combined are significant (de Souza & Junqueira, 2005).

The consumer utility function can be represented as follows:

$$\mu(X,H) = f(X_i, H) \quad \ldots\ldots 1$$

The amount of each of the consumer commodities in the utility function is determined by several factors that affect the purchase decision of the consumer. In the case of health insurance demand H, its demand function can be expressed as follows:

$$H(x) = \beta_0 + \beta_i(x_i) + \varepsilon \quad \ldots\ldots 2$$

Where:

x_i are the factors affecting health insurance demand, and i = 1, 2, 3… n.

β_0 represents the value of H when β_i = 0, and ε is the error term.

In this study, the determinants of health insurance demand considered were Education, Household Disposable Income, and Employment Status. These variables were fitted in the demand function as follows

$$H(x) = \beta_0 + \beta_i(Education + Household\ Disposable\ Income + Employment\ Status) + \varepsilon$$

The variables Education, Household Disposable Income, and Employment Status took the values x1, x2, and x3 respectively. Thus, the empirical model was represented as follows

$$H(x) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \mathcal{E} \ldots\ldots\ldots\ldots\ldots\ldots\ldots 3$$

Since H(x) was defined by two variables, the health insurance penetration, and the health insurance density, then two regression equations were estimated.

i) Health Insurance Presentation (PHIP)

$$PHIP = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \mathcal{E} \ldots\ldots\ldots\ldots\ldots\ldots\ldots 4$$

ii) Health Insurance Density (PHID)

$$PHID = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \mathcal{E} \ldots\ldots\ldots\ldots\ldots\ldots\ldots 5$$

3.8. Validity and Reliability Tests

This section presents the validity and reliability test of the study.

3.8.1. Validity Tests

Validity refers to the suitability of the measure used, accuracy of the analysis and generalizability of the findings. Validity of data has three aspects that include measurement validity, internal validity and external validity (Saunders et al, 2020).

The data that was used in the study is of time series nature, diagnostic tests were carried out to ensure that the data is suitable for use in the study.

3.8.1.2 Unit Root Test

The stationarity of the data is determined by conducting a Unit Root Test on each variable. If the data is found to be non-stationary, the subsequent regression analysis would result in a spurious regression. A spurious regression, which often yields a higher coefficient of determination (R-

Squared) and smaller variance of the variables, may lead to inaccurate conclusions in hypothesis testing as the computed test statistics tend to be unusually small (Pedace and Roberto, 2012).

3.8.1.2. Co-Integration Test

If it is established that there is unit root (or the variable is non- stationary), then the test of co-integration is carried out to determine whether there is a relationship between variables in the long-run. Unit Root determines if the variables are related in the short-run (are non-stationary). If the data is related in the short-run, then it will bring no problem in regression if they are related in the long-run. Thus, if there is co-integration, the data that is non-stationary can still be used in regression analysis (Nkatha, 2019).

3.8.2. Reliability Tests

Reliability refers to the ability of a researcher to replicate an earlier research design and attain the same findings. Research that is unreliable will prove to be invalid. Any error or bias will affect the results and the subsequent interpretation of the results and may cast doubt on the means to measure the phenomenon being measured (Saunders et al, 2020). The reliability of secondary data can be tested by checking the reliability of the organization that collected the data, the procedure for collecting and compiling data and the precision needed by the primary user (Saunders et al, 2020).

The secondary data was collected from KNBS, IRA, World Bank and UNESCO. These organizations publish data periodically and the data is deemed to be credible.

3.9. Data Results

Year	Insurance Premiums *(KES Millions)*	Population *(Millions)*	Nominal GDP Prices *(KES Millions)*	PHIP	PHID	Primary School Completion Rate (PSCR)	Household Disposable Income (HDI) *(KES Billions)*	Unemployment Rate (UER)
2002	1,774	32.780	1,035,374	0.0017	54.11	85.76%	1157.80	3.090%
2003	2,207	33.767	1,131,783	0.0019	65.35	85.98%	1257.20	3.042%
2004	2,529	34.792	1,274,328	0.0020	72.70	86.32%	1357.30	2.997%
2005	3,062	35.843	1,415,823	0.0022	85.43	86.94%	1552.30	2.968%
2006	3,582	36.925	1,622,565	0.0022	97.01	87.36%	1747.30	2.942%
2007	4,227	38.037	1,833,511	0.0023	111.13	88.68%	2006.52	2.919%
2008	4,541	39.187	2,107,589	0.0022	115.88	90.00%	2265.73	2.976%
2009	5,653	40.364	3,275,642	0.0017	140.04	92.23%	2622.18	2.920%
2010	6,864	41.518	3,597,630	0.0019	165.33	94.45%	2978.62	2.846%
2011	8,515	42.635	4,162,514	0.0020	199.72	95.62%	3581.00	2.859%
2012	16,141	43.726	4,767,191	0.0034	369.14	96.78%	3996.72	2.844%
2013	20,507	44.792	5,311,322	0.0039	457.83	96.99%	4396.46	2.831%
2014	25,315	45.832	6,003,835	0.0042	552.35	97.20%	4905.89	2.796%
2015	29,516	46.851	6,884,317	0.0043	630.00	99.14%	5727.70	2.774%
2016	38,520	47.895	7,594,064	0.0051	804.27	99.68%	6879.00	2.760%
2017	38,337	48.948	8,483,396	0.0045	783.22	99.70%	7692.70	3.520%
2018	40,196	49.953	9,340,307	0.0043	804.67	99.72%	8459.30	4.245%
2019	42,348	50.951	10,237,727	0.0041	831.15	99.74%	9264.60	5.010%
2020	45,062	51.986	10,715,070	0.0042	866.81	99.76%	9760.80	5.616%
2021	47,586	53.006	12,027,662	0.0040	897.76	99.78%	11208.30	5.644%
2022	54,892	54.027	13,368,340	0.0041	1016.01	99.80%	12455.50	5.502%

Source: Researcher (2023).

3.10. Ethical Considerations

Research ethics provides guidelines to the researcher on how to handle the data collected, evaluate and review of the research and establish of the enforcement mechanism to ensure the credibility and quality of the research (Berzonsky, 2002).

The conduct of this research was guided by Strathmore University's code of ethics. Permission to collect the data was sought from Strathmore Business School through the Institutional Ethics Review Committee by receiving an ethical clearance certificate. In addition, a permit, and ethics approval from NACOSTI was obtained.

In this research, the secondary data gathered was publicly available in the website of the respective sources.

3.11. Chapter Summary

The chapter has addressed the following topics research philosophy and design, population of the study, sampling design, data type, sources and analysis, ethical considerations, and validity and reliability tests.

CHAPTER FOUR

PRESENTATION OF RESEARCH FINDINGS

4.1 Introduction

This chapter entails the results and findings of the study in relation to the study objectives. It represents descriptive statistics, correlation analysis, and regression analysis used to determine the effects of the independent variables on the dependent variable. In all the test statistics, the study will adopt a 95% level of confidence, and this means that the level of significance will be 5% or 0.05.

4.2 Response Rate

According to Sataloff and Vontela (2021), a response rate is the number of usable responses expressed as a percentage of the sample size used in the study. Since this study used secondary data, the response rate applicable is the number of years the study covered. The study targeted the period between 2002 and 2022, and the data for all 21 years were used in the study. Thus, it can be translated that the rate of response for the targeted years was 100%. In the case of the data on medical insurance premiums collected from the Insurance Regulatory Authority (IRA) captured the data for all the insurance companies that offer medical insurance, meaning the response rate was 100% in this respect. Table 4.1 shows the response rate for the study.

Table 4.1

Response Rate

Category	**Frequency**	**Percentage**
Number of years studied	21	100%
Number of years missed from the target	0	0%
Total	**21**	**100%**

Source: Researcher (2023)

4.3 Descriptive Statistics

According to Mishra et al. (2019), descriptive statistics are measures that describe the features of a data set and entail computing summaries about the sample in terms of mean, median, standard deviation, extreme values, and the Jarque-Bera Test of normal distribution of data series. The descriptive statistics, as shown in Table 4.2, described the characteristics of the data sets without making any inferences.

Table 4.2.

Descriptive Statistics

	PHID	PHIP	PSCR	UER	HDI
Mean	434.2814	0.003152	0.943633	0.034810	5.01E+12
Median	369.1400	0.003400	0.967800	0.029680	4.00E+12
Maximum	1016.010	0.005100	0.998000	0.056440	1.25E+13
Minimum	54.11000	0.001700	0.857600	0.027600	1.16E+12
Std. Dev.	347.6533	0.001163	0.055525	0.010337	3.55E+12
Skewness	0.287230	0.051321	-0.455244	1.345878	0.676048
Kurtosis	1.422247	1.332055	1.546233	3.084600	2.186952
Jarque-Bera	2.466894	2.443504	2.574622	6.346120	2.178060
Probability	0.291287	0.294713	0.276012	0.041875	0.336543
Sum	9119.910	0.066200	19.81630	0.731010	1.05E+14
Sum Sq. Dev.	2417257.	2.70E-05	0.061660	0.002137	2.52E+26
Observations	21	21	21	21	21

Source: Researcher (2023)

4.3.1. Private Health Insurance Demand (PHID)

The mean for the PHID was 434.2814 with a standard deviation of 347.6533. The high standard deviation suggests that the data values are widely dispersed from the mean, indicating variability in the data. In terms of skewness, the values between -0.5 and 0.5 This suggests that the data values are approximately normally distributed and are equally distributed above and below the mean. The skewness for PHID was 0.287230 which is within the range, meaning that the data set has normal skewness. The kurtosis is 1.422247, it can be considered platykurtic because 1.422247 is less than

3, meaning it has lighter tails and is less peaked compared to a normal distribution. Kurtosis is a measure of the degree of peakedness or how close the data values are from the mean. The Jarque-Bera test is a measure of normality and assesses if a data set assumes a normal distribution. The null hypothesis for Jarque-Bera Test is that the data set is normally distributed, and the alternative hypothesis is that it is not normally distributed. The Probability of the PHID's Jarque-Bera Test was 0.291287 which was greater than the 0.05 level of significance. Thus, the data set is normally distributed.

In summary, the data analysis suggests that the PHID variable is approximately normally distributed, with some variability and light tails (platykurtic). The Jarque-Bera test results support the conclusion that the data set can be considered normally distributed.

4.3.2. Private Health Insurance Penetration (PHIP)

The mean of PHIP is 0.003152 with a standard deviation of 0.001163. The standard deviation indicates that the data values are relatively scattered from the mean, suggesting some degree of variability. The skewness value for PHIP is 0.287230, which falls within the normal range of -0.5 to 0.5. This indicates that the data values are approximately normally distributed and are equally distributed above and below the mean. The kurtosis value for PHIP is 1.332055, which is below 3. This indicates that the data set is platykurtic, meaning it has lighter tails and is less peaked compared to a normal distribution. The probability of the Jarque-Bera test was 0.294713 which was below 0.05, meaning that the data series is normally distributed.

In summary, the analysis suggests that the PHIP variable is approximately normally distributed, with some variability and light tails (platykurtic). The Jarque-Bera test results support the conclusion that the data series can be considered normally distributed.

4.3.3. Primary School Completion Rate (PSCR)

The mean (0.943633) and standard deviation (0.055525) for PSCR suggest that the data values are not highly scattered from the mean. This implies that, on average, there may not be significant variations in health insurance demand related to primary school education levels. The skewness of -0.455 falls within the normal range of -0.5 to 0.5. This indicates that the data values are evenly distributed above and below the mean. It suggests that there might not be a strong

skew in health insurance demand based on primary education levels. The kurtosis value of 1.546 indicates that the data set is platykurtic, meaning it has lighter tails and is less peaked compared to a normal distribution. This implies that there may not be extreme outliers or significant deviations from the average health insurance demand associated with primary education levels. The p-value of the Jarque-Bera Test probability is 0.2760, which is greater than the commonly used significance level of 0.05. This suggests that the data set is normally distributed across primary education levels.

In summary, based on the descriptive statistics, it appears that there may not be substantial variations or skewness in health insurance demand concerning education levels in Kenya. The data set is approximately normally distributed, indicating that education may not strongly influence health insurance demand, at least in terms of the specific primary school completion rate variable.

4.3.4. Unemployment Rate (UER)

The mean of 0.0348 and the standard deviation of 0.010337 indicate that the data values are highly scattered from the mean. This suggests that there may be significant variability in health insurance demand associated with employment status. The higher standard deviation implies that there may be substantial differences in health insurance demand across different employment categories. The positive skewness of 1.3459 indicates that the data is positively skewed, meaning that the distribution of health insurance demand with respect to employment is skewed to the right. This suggests that there might be a higher concentration of individuals with relatively higher health insurance demand within certain employment categories. The kurtosis value of 3.0846 is higher than 3, indicating that the data set is leptokurtic. Leptokurtic distributions have heavier tails and are more peaked compared to a normal distribution. This suggests that there may be extreme values or outliers in health insurance demand within specific employment groups. The probability of the Jarque-Bera Test is 0.041875, which is less than the commonly used significance level of 0.05. This indicates that the distribution may deviate significantly from a normal curve.

In summary, the descriptive statistics for the variable UER suggest that employment status may have a substantial influence on health insurance demand in Kenya. The high variability, positive

skewness, and leptokurtic distribution imply that there are significant differences in health insurance demand among various employment categories, potentially with some categories having notably higher demand than others. Additionally, the rejection of the normality hypothesis suggests that the distribution of health insurance demand is not well-approximated by a normal distribution in the context of employment status.

4.3.5. Household Disposable Income (HDI)

HDI has a very high standard deviation meaning that its data values were highly scattered from the mean. This suggests that there is significant variability in health insurance demand associated with different levels of household disposable income. The high standard deviation implies that there may be substantial differences in health insurance demand across households with varying income levels. The positive skewness of 0.676 indicates that the distribution of health insurance demand concerning household disposable income is positively skewed. This means that there are more values lying above the mean than those below the mean. In the context of the objective, this suggests that health insurance demand may be relatively higher among households with higher disposable income. The kurtosis value of 2.187 is below 3, indicating that the data set for HDI is platykurtic. Platykurtic distributions have lighter tails and are less peaked compared to a normal distribution. This suggests that there may not be extreme values or outliers in health insurance demand based on household disposable income. The probability of the Jarque-Bera Test is 0.3365, which is above the commonly used significance level of 0.05. This suggests that the data set for HDI is normally distributed.

In summary the household disposable income (HDI) data showed a wide range of values from the average, indicating significant variation in health insurance demand across different income levels. This suggests that households with different incomes may have notably different levels of interest in health insurance. The positive skewness indicates that more households with higher income levels tend to have higher health insurance demand. However, the data distribution for HDI is less peaked and has lighter tails compared to a typical distribution, suggesting that extreme values or outliers are less common. Overall, the data for HDI appear to be normally distributed, indicating a balanced representation across different income levels in the study.

4.4. Testing Time Series Properties

4.4.1. Unit Root Test

The Unit Root Test is used to test for the stationarity of time series data before regression analysis is conducted using the Ordinary Least Square method. A non-stationary series would lead to spurious regression results, that is, regression results that show that a variable is significantly determined by the dependent variable when in reality there is no relationship. The stationarity of variables was done using Augmented Dick-Fuller (ADF) test. The test assesses if a time series has a unit root, that is, there is a short-run association between time series variables. Thus, the null hypothesis is that the series has a unit root.

Table 4.3:

Stationarity Test Results

Variable		ADF Test Statistic	ADF Critical Value (5%)	Conclusion
Private Health Insurance Density (PHID)	Level	0.935098	-3.020686	Non-Stationary
	1st Difference	-3.118258	-3.020686	Stationary
Private Health Insurance Penetration (PHIP)	Level	-1.099612	-3.020686	Non-Stationary
	1st Difference	-3.632024	-3.020686	Stationary
Primary School Completion Rate (PSCR)	Level	-1.627786	-3.020686	Non-Stationary
	1st Difference	-4.949287	-3.020686	Stationary
Unemployment Rate (UER)	Level	-2.201843	-3.020686	Non-Stationary
	1st Difference	-1.627571	-3.020686	Non-Stationary
	2st Difference	-3.380244	-3.020686	Stationary
Household Disposable Income (HDI)	Level	6.656935	-3.020686	Stationary

Source: Researcher (2023)

The ADF test results in Table 4.3 indicate that series PHID, PHIP, and PSCR are stationary at the first difference at a 5% level of significance because their test statistics were greater than the critical value of ADF's first difference. The series UER is stationary at second difference. The series HDI was the only one stationary at levels. This means that the series PHID, PHIP, PSCR, and UER have to be differenced to make them stationary before they can be used in regression analysis. Differencing removes or minimizes the seasonality and trend of a time series.

4.4.2. Co-Integration Test Results

The co-integration test follows the Stationarity test and is meant to establish whether there is a genuine long-run relationship between the variables (Johansen-Juselius, 1990). If the long-run relationship exists, it means that even for variables that were not stationary at levels, they will not lead to spurious regression results and the regression model will be well specified. The co-integration test cannot be carried out if all variables are non-stationary at levels or have different orders of co-integration (Shrestha & Bhatta, 2018). This is the case with this study based on the ADF Test results in Table 4.3. As a result, the study will adopt the data series at their first difference (Shrestha & Bhatta, 2018).

4.5. Inferential Statistics

4.5.1. Correlation Analysis

The study sought to determine whether education, household disposable income, and unemployment rate are determinants of health insurance demand. The health insurance demand is measured in terms of private health insurance density and private health insurance penetration. Thus, inferential statistics entailed assessing the correlation between each of the independent variables and the dependent variables as shown in Table 4. According to Curtis et al. (2016), correlation is a measure of the degree of association between variables. It was assessed using Pearson's Correlation coefficient.

Table 4.4

Correlation of Independent Variables and Dependent Variable

	PHID	PHIP	PSCR	ER	HDI
PHID	1.0000				
PHIP	0.9200	1.0000			
PSCR	0.9037	0.8655	1.0000		
UER	0.7257	0.4473	0.5107	1.0000	
HDI	0.9692	0.8024	0.8595	0.8463	1.0000

Source: Researcher (2023)

Table 4.4 shows that primary school completion rate (PSCR) and household disposable income were highly correlated with private health insurance penetration (PHIP) with correlation coefficients of 0.8655 and 0.8024 respectively. A correlation of 0.8 and above is considered high. PSCR and HDI were highly correlated with PHID with a correlation of 0.9037 and 0.9692 respectively. The correlation between the unemployment rate (UER) and PHID, unemployment and PHIP, and unemployment and PSCR were not very high. High correlation only indicated there is a high degree of association between any two variables. However, it cannot explain the nature of association, which is only described by regression analysis.

4.5.2. Regression Analysis

There are two regression analyses that were carried out in this study because there are two dependent variables but the same independent variables. The two regression equations are specified as follows:

$$PHID = \beta_0 + \beta_1 PSCR + \beta_2 UER + \beta_3 HDI + \varepsilon \quad \text{.....1}$$

$$PHIP = \alpha_0 + \alpha_1 PSCR + \alpha_2 UER + \alpha_3 HDI + \varepsilon \quad \text{.....2}$$

Where:
PHID = private health insurance density
PHIP = private health insurance penetration
PSCR = primary school completion rate as a proxy for education
UER – the unemployment rate
HDI = household disposable income

De Menezes et al (2021) describe regression analysis as an important tool for investing the effects of the explanatory variable on the response or dependent variable. In this study, the explanatory variables are primary school completion rate, unemployment rate, and household disposable income. The response variable is health insurance demand which is broken down into two variables private health insurance density, and private health insurance penetration. The results of the regression analysis are shown in Tables 4.5 and 4.6.

Table 4.5

Regression Results for Equation 1

Dependent Variable: PHID
Sample: 2002 2022
Included observations: 21

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	317.2693	812.4704	0.390500	0.7010
PSCR	-110.0871	836.3671	-0.131625	0.8968
UER	-11667.02	4310.586	-2.706596	0.0150
HDI	1.25E-10	2.11E-11	5.927156	0.0000

R-squared	0.970989	Mean dependent var	434.2814
Adjusted R-squared	0.965869	S.D. dependent var	347.6533
F-statistic	189.6610	Durbin-Watson stat	0.703407
Prob(F-statistic)	0.000000		

The estimated regression equation for equation 1 is as follows

$$PHID = 317.27 - 110.09\,PSCR - 1167.02\,UER + (1.25E-10)\;HDI \quad \text{.....1}$$

Source: Researcher (2023)

Table 4.6

Regression Results for Equation 2

Dependent Variable: PHIP
Sample: 2002 2022
Included observations: 21

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.004173	0.006511	0.640971	0.5301
PSCR	-0.000282	0.006703	-0.042089	0.9669
UER	-0.093063	0.034545	-2.693986	0.0154
HDI	4.96E-16	1.69E-16	2.930834	0.0093

R-squared	0.833393	Mean dependent var	0.003152
Adjusted R-squared	0.803992	S.D. dependent var	0.001163
F-statistic	28.34547	Durbin-Watson stat	0.834424
Prob(F-statistic)	0.000001		

The estimated regression equation 2 is as follows:

$$PHIP = 0.004173 - 0.000282\,PSCR - 0.09063\,UER + (4..96E-16)\,HDI \quad \text{.....2}$$

Source: Researcher (2023)

4.5.2.1 Education as a Determinant of health insurance demand

In both regression analyses, education is not proven to be a statistically significant determinant of health insurance demand. In Table 4.5, the p-value for education (PSCR) in the regression analysis was 0.8968 and was 0.9669 in Table 4.6 which was greater than the level of significance of 0.05. Thus, the null hypothesis that education is not an important determinant of health insurance demand could not be rejected at a 0.05 level of significance.

Based on the results of the regression analyses presented in Tables 4.5 and 4.6, it appears that education level does not have a statistically significant impact on health insurance demand. The lack of statistical significance suggests that, in this particular study, education may not be a strong predictor of individuals' decisions to purchase health insurance. Therefore, other factors not considered in these analyses may play a more influential role in determining health insurance demand. Further research may be needed to explore additional variables or factors that could better explain variations in health insurance uptake among different populations.

4.5.2.2. Unemployment Rate as a Determinant of health insurance demand

In Table 4.5, the p-value of the unemployment rate (UER) was 0.0150 and in Table 4.6 it was 0.0154. In both cases, the p-values were less than 0.05 level of significance. It means that the null hypothesis that the unemployment rate is not a significant determinant of private health insurance density and private health insurance penetration as proxies of health insurance demand was rejected. It had a negative coefficient of -11667.02 and -0.093063 in Table 4.5 and Table 4.6 respectively, meaning that an increase in unemployment rate leads to a decrease in health insurance demand.

Based on the results presented in Tables 4.5 and 4.6, it can be concluded that the unemployment rate is a statistically significant determinant of private health insurance density and private health insurance penetration, which serve as proxies of health insurance demand. The rejection of the null hypothesis indicates that variations in the unemployment rate are associated with changes in the levels of health insurance density and penetration. This suggests that economic factors such as unemployment play a crucial role in shaping individuals' decisions regarding health insurance uptake. Therefore, policies aimed at addressing unemployment may have implications for enhancing health insurance coverage and accessibility.

4.5.2.3. Household Disposable Income as a Determinant of health insurance demand

Household disposable income (HDI) was found to be an important determinant of health insurance demand in both Table 4.5 and Table 4.6. In Table 4.5, the coefficient of HDI had a p-value of 0.0000 and in Table 4.6 it was 0.0093, meaning they were both less than the level of significance of 0.05. This meant that the null hypothesis that HDI is not a significant determinant of health insurance demand is rejected at a 0.05 level of significance.

Based on the analysis conducted in Tables 4.5 and 4.6, it is evident that household disposable income (HDI) plays a pivotal role as a determinant of health insurance demand. The statistically significant coefficients associated with HDI underscore its substantial impact on individuals' decisions regarding health insurance uptake. These findings highlight the intricate relationship between economic factors and healthcare access, emphasizing the critical role of income levels in shaping health insurance coverage. As such, addressing income disparities and enhancing affordability should be key priorities for policymakers and stakeholders in the healthcare sector.

4.5.2.4. Combination of education, unemployment rate, and household disposable income as determinants of health insurance demand.

The test of overall significance is done using F-Statistic. It investigates whether explanatory variables are jointly statistically significant determinants of the response variable. Another

measure, in this case, is the Coefficient of determination (R-squared) which assesses the joint strength of explanatory variables in causing response variables.

In Table 4.5, the adjusted R-squared was 0.965869 or 96.59% which meant that education level (PSCR), unemployment rate (UER), and household disposable income (HDI) were responsible for 96.59% variation in private health insurance density or they jointly influenced 96.59% of the health insurance demand over the past 21 years in Kenya. Their influence was statistically significant as indicated by the p-value of the F-statistic of 0.0000 which was less than 0.05 level of significance. This means the null hypothesis that education level (PSCR), unemployment rate (UER), and household disposable income (HDI) are not jointly important determinants of private health insurance density was rejected at 0.05 level of significance.

In the same way, Table 4.6 shows an adjusted R-squared of 0.803992 or 80.40% which meant that education level (PSCR), unemployment rate (UER), and household disposable income (HDI) were responsible for 80.40% variation in private health insurance penetration in Kenya over the past 21 years. Their influence on private health insurance penetration was proven significant by F-statistics p-value of 0.000001 which was less than 0.05 level of significance. This meant that the null hypothesis that education level (PSCR), unemployment rate (UER), and household disposable income (HDI) weren't jointly statistically significant determinants of private health insurance penetration was rejected.

4.6 Chapter Summary

The chapter presents findings derived from the collected data, encompassing descriptive statistics, testing the time series properties of the data regression analysis, and correlation. Moreover, the chapter expounds on the study's results and discoveries, prominently displayed in tables with detailed explanations provided for each table.

CHAPTER FIVE

DISCUSSIONS, CONCLUSIONS, AND RECOMMENDATIONS

5.1. Introduction

The chapter presented a summary discussion of the study findings, conclusion, and recommendations for further research.

5.2. Discussion of Findings

The study sought to investigate the determinants of health insurance demand using a case of insurance companies in Kenya. The study has three objectives: to examine the correlation of education on health insurance demand in Kenya; to examine the correlation of employment status on health insurance demand in Kenya; and to establish the correlation of disposable income on health insurance demand in Kenya. The findings for each of the three cases are discussed below.

5.2.1. Education as a Determinant of health insurance demand

The study sought to investigate whether education determines private health insurance demand in Kenya. Education for purposes of this study was taken as the attainment of basic education and therefore primary school completion rate (PSCR) was used as the proxy. The study found that there was very weak evidence of association between education and demand for private health insurance.

The study contradicted the studies such as Mehta, Sharma & Jain (2020), IONCiCĂ, et al (2012), and Berning & Hogan (2014) which all found that education plays a significant role in consumer buying behavior. It is expected that health is a critical consumer good that would be purchased more by those who are educated because they would value health insurance more and understand how it works. The study further contradicted a study by Mpuuga, Yawe, and & Muwanga (2020) on the influence of education on the health insurance demand in Uganda which found that the educated population is more likely to buy health insurance than the uneducated one. The finding of the study that education has no correlation to health insurance demand are however expected because insurance health coverage is very low in Kenya despite the literacy level being over 80%.

According to Jattani and Ochieng (2021), only about 18% of Kenyans have some form of health insurance with the National Health Insurance Fund (NHIF), and all private health insurers collectively cover only 1% of the population. The uptake of health insurance is very low in Kenya, and it should be much higher if education was a critical determinant because Kenya has over 80% literacy level, and the recent statistics on primary school completion rate is over 98%. More training needs to be done to encourage people to purchase health insurance products.

In Grossman Model of Health Demand, education is often considered a key determinant influencing health-seeking behavior and the decision to purchase health insurance (Grossman, 2010). This model suggests that individuals with higher levels of education tend to have better health literacy, understand the benefits of health insurance, and are more likely to invest in preventive healthcare measures. Therefore, the finding of very weak evidence of association between education and demand for private health insurance may challenge the assumptions of these models. It could indicate that factors other than education play a more significant role in shaping health insurance demand within the context of the study, or that the relationship between education and health insurance demand is more nuanced than previously theorized. This finding prompts a reevaluation of the factors driving health insurance demand and underscores the complexity of individual decision-making processes in healthcare utilization and insurance uptake.

5.2.2. Unemployment Rate as a Determinant of health insurance demand

The study sought to examine whether the unemployment rate is an important determinant of health insurance demand. The results indicated that there's a strong association between unemployment rate and health insurance demand. The results concurred with earlier studies such as Takudzwa, Thabani, and Smartson (2020), Nshakira-Rukundo et al. (2019), Kazungu and Barasa (2017), and Nkatha et al. (2020) which all found employment rate is a determinant of health insurance demand or increases the purchasing power of consumers, making them purchase more goods.

The Grossman Model considers health a consumer good and therefore more health insurance would be purchased when more people are employed. Higher unemployment rates may indicate

heightened financial vulnerability (Grossman,2010). While the desire to safeguard against potential healthcare costs persists, the practical realities of limited financial resources may result in individuals prioritizing essential expenses over the acquisition of health insurance.

Therefore, the finding of a strong association between unemployment rate and demand for private health insurance corroborates the notion that economic factors, particularly employment status, play a significant role in shaping individuals' decisions regarding health insurance uptake. It underscores the importance of considering socio-economic factors in understanding patterns of health insurance demand and highlights the practical implications of economic fluctuations on healthcare utilization behaviors.

The majority of Kenyans depend on out-of-pocket to pay for health expenditures and this could be because they do not have an income to budget for health expenditures. The government should prioritize increasing employment opportunities for people so that they can have money to spend on health insurance.

5.2.3. Household disposable income as a Determinant of Health insurance demand

Household disposable income is the amount of money the individuals or households are left with for use in the purchase of goods and services as well as other household budget items after paying taxes. In this study, household disposable income was found to be an important determinant of health insurance demand.

The study concurred with Khan (1995) and Ferguson (2005) who found that household disposable income significantly influences demand. There are so many household budget items competing for the household's disposable income, and health is one of them. Thus, when the household disposable income increase, then more money can be allocated to health as a consumer good. This means that more health insurance will be demanded and purchased when household disposable income is increased and less will be demanded when it decreases (Nigeria, Ewubare & Onah, 2022). A study by Aregbeshola and Khan (2018) revealed that rich households were more likely

to enroll in private health insurance than poor households. The rich have higher household disposable income than the poor and thus they can afford health insurance.

The finding of a strong association between household disposable income and demand for private health insurance is closely aligned with both Nyman's model of Private Health Insurance Demand and the Grossman Model of Health Demand.

In Nyman's model, household income is considered the only factor that can make one purchase more health insurance. Higher levels of disposable income typically afford individuals and households greater financial capacity to purchase health insurance coverage (Nyman, 2001). Therefore, the finding of a strong association between household disposable income and demand for private health insurance reinforces the model's proposition that income is a key driver of insurance uptake.

Similarly, the Grossman Model posits that individuals' decisions regarding health-related investments, including health insurance, are influenced by economic considerations such as income. According to this model, a consumer’s demand for health and medical care is positively correlated with their wage rate (Grossman, 2010). Thus, the finding of a strong association between household disposable income and demand for private health insurance aligns with the Grossman Model's assertion that income plays a significant role in shaping healthcare utilization behaviors.

Overall, the finding underscores the importance of income as a determinant of health insurance demand, as postulated by both Nyman's model and the Grossman Model. It highlights the crucial role that economic factors play in shaping individuals' decisions regarding insurance coverage and emphasizes the need for policymakers and healthcare stakeholders to consider income levels when designing and implementing strategies to enhance access to healthcare services.

5.3. Conclusions

The unemployment rate and household disposable income are important determinants of health insurance demand. When the unemployment rate is high, more people have an income, and they can afford to purchase health insurance products. An increase in household disposable income means that people have more money to spend on consumer goods and services, health being one of them. When people are concerned about health, they would purchase health insurance products because they can afford it when their income is increased. Education in Kenya was not found to be an important determinant of health insurance demand, though it was important in previous studies reviewed. In Kenya, it is possible that other factors such as income and unemployment overshadow education when it comes to choosing to purchase health insurance. Education ceases to be an important factor when the educated have no employment, and those who have employment have low household disposable income. They are left with too little or nothing to spend on health insurance because there are many other consumer goods such as food, clothing, and shelter which are given priority.

5.4. Implications of the study

5.4.1. Contribution to Policy

Kenya is working on implementing a universal health care policy which has been in the trial stage over the past two years. The existing government-provided health insurance framework, while commendable in its objectives, is currently insufficient to comprehensively cater to the healthcare needs of the entire populace. To bridge this coverage gap, it is imperative to underscore the significance of fostering and supporting private health insurance mechanisms.

The research established that the household disposable income and unemployment rate are determinant of private health insurance. A prominent strategy in this regard, that the government can adopt, is the elevation of the minimum wage, which can substantially increase the financial resources available to individuals. This enhanced financial capacity, in turn, can be channeled towards the acquisition of private health insurance coverage. Complementing this, it is equally vital to advocate for policies that promote employment opportunities, as a discernible correlation exists between reduced unemployment rates and heightened demand for health insurance. By addressing these dimensions in the policy landscape, Kenya can fortify its healthcare system and

make a tangible stride toward universal healthcare coverage, thus amplifying the policy's overarching impact.

5.4.2. Contribution to Management

The research findings provide valuable insights that can benefit healthcare management. Specifically, they shed light on the crucial determinants of health insurance demand, including factors like disposable income, employment and education. This knowledge equips healthcare managers with the information needed to refine their approaches and better address the needs of their client base. Understanding the role of these economic factors in shaping insurance decisions allows healthcare managers to design more effective strategies, allocate resources efficiently, tailor marketing and outreach efforts, and consider the interconnectedness of education and employment. This, in turn, can lead to improved consumer engagement, more strategic resource allocation, and the development of insurance packages that resonate with the local population's spending priorities, ultimately enhancing healthcare management practices.

5.4.3. Contribution to Knowledge

This study significantly enriches the body of knowledge related to the determinants of private health insurance demand in Kenya, particularly when viewed from a macroeconomic perspective. It comprehensively investigates and analyzes critical determinants, namely, education level, unemployment rate, and household disposable income. A notable revelation emerging from this research is the nuanced understanding that education's significance as a determinant of health insurance demand may not be consistent across all scenarios, thereby shedding light on the complex dynamics influencing healthcare decisions. These findings, therefore, contribute to the evolving discourse on healthcare economics and provide a more nuanced understanding of how various factors interact to shape private health insurance demand in Kenya.

5.5 Suggestions for Further Studies

In the context of future research, it is imperative to delve deeper into the reasons behind the observed phenomenon in Kenya, where education does not seem to be a decisive factor in determining health insurance demand. This disparity is noteworthy, particularly when juxtaposed with theoretical expectations and findings from studies conducted in different countries where

education plays a substantial role. Given that Kenya boasts a literacy rate exceeding 80% and an impressive primary school completion rate of over 98%, there arises a compelling need to explore the underlying factors that influence educated individuals' decisions to abstain from health insurance acquisition. Consequently, it is essential to embark on investigations aimed at uncovering the nuanced motivations and barriers that educated individuals in Kenya face, which deter them from purchasing health insurance despite the apparent educational advantages.

5.6. Limitations

This study encountered certain limitations during its execution. One of these limitations pertained to the sourcing of data for specific variables. It was challenging to obtain all the required data from a single source, and, in some instances, data, such as the primary school completion rate, had to be collected from multiple sources. Nevertheless, every effort was made to ensure the data's accuracy and reliability by consolidating information from reputable sources, including UNESCO and the Kenya National Bureau of Statistics, among others.

Another limitation pertained to the temporal scope of the study. Due to data availability constraints, the study was confined to a specific time frame, covering the period between 2002 and 2022. This limitation arose from the unavailability of data for years preceding 2002 for certain data series. Despite these limitations, the study rigorously utilized the data that was accessible, enabling a comprehensive analysis within the given temporal and data sourcing constraints.

Using secondary data for a macroeconomic study spanning 20 years presents several challenges, including potential inconsistencies, missing data, and variations in quality across sources. These issues can compromise the reliability and validity of findings, as researchers have limited control over data collection methods and may encounter difficulties ensuring comparability across different time periods. Furthermore, the presence of missing or incomplete data can introduce bias and inaccuracies into the analysis, undermining the robustness of the study's conclusions.

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APPENDICES

Appendix 1: Secondary Data Collection Sheet

Period	Dependent Variables			Independent Variables		
	Health Insurance Premium	Population Size of Kenya	GDP	Employment Rate	Primary School completion rate	Household Disposable Income
2002						
2003						
2004						
2005						
2006						
2007						
2008						
2009						
2010						
2011						
2012						
2013						
2014						
2015						
2016						
2017						
2018						
2019						
2020						
2021						
2022						

Appendix 2: Ethical Review Letter

Strathmore UNIVERSITY

3rd July 2023

Ms Njoroge Anne,
anne.njoroge@strathmore.edu

Dear Ms Njoroge,

RE: Determinants of Private Health Insurance Demand: A Case of Insurance Companies in Kenya

This is to inform you that SU-ISERC has reviewed and **approved** your above **SU-masters** research proposal. Your application reference number is **SU-ISERC1810/23**. The approval period is from **3rd July 2023 to 2nd July 2024.**

This approval is subject to compliance with the following requirements:

i. Only approved documents including (informed consents, study instruments, MTA) will be used.
ii. All changes including (amendments, deviations, and violations) are submitted for review and approval by SU-ISERC.
iii. Death and life-threatening problems and serious adverse events or unexpected adverse events whether related or unrelated to the study must be reported to SU-ISERC within 72 hours of notification.
iv. Any changes anticipated or otherwise that may increase the risks or affected safety or welfare of study participants and others or affect the integrity of the research must be reported to SU-ISERC within 72 hours.
v. Clearance for the export of biological specimens must be obtained from relevant institutions.
vi. Submission of a request for renewal of approval at least 60 days prior to the expiry of the approval period. Attach a comprehensive progress report to support the renewal.
vii. Submission of an executive summary report within 90 days of completion of the study to SU-ISERC.

Before commencing your study, you will be expected to obtain a research license from National Commission for Science, Technology, and Innovation (NACOSTI) https://research-portal.nacosti.go.ke/ and obtain other clearances needed.

Yours sincerely,

for: **Mr Ambrose Rachier,**
Chairperson; SU-ISERC

STRATHMORE UNIVERSITY INSTITUTIONAL SCIENTIFIC AND ETHICAL REVIEW COMMITTEE
(SU-ISERC)
03-Jul-2023
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Appendix 3: NACOSTI Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Ref No: 233534

Date of Issue: 18/July/2023

RESEARCH LICENSE

This is to Certify that Ms.. Anne Njeri Njoroge of Strathmore University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Nairobi on the topic: DETERMINANTS OF PRIVATE HEALTH INSURANCE DEMAND: A CASE OF INSURANCE COMPANIES IN KENYA for the period ending : 18/July/2024.

License No: NACOSTI/P/23/27721

233534

Applicant Identification Number

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See overleaf for conditions