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UPTAKE OF HEALTH INSURANCE IN KENYA: AN EMPIRICAL ANALYSIS USING 2005/06 KENYA NATIONAL HEALTH ACCOUNTS SURVEY

Doris Syombua Philip
The University of Nairobi, Kenya
dorissyombua@gmail.com

Abstract

A healthy population makes a wealthy nation. Health insurance is crucial to the health of the population because it facilitates access to health care insulating individuals from out of pocket payments. The main objective of this paper was to analyze the determinants of the uptake of health insurance with a focus on the role played by household income. The data set used is from Kenya National Health Accounts survey for 2005/06. The analytic sample consists of 8571 households with 35974 individuals and is drawn from 1260 clusters, 540 of which are from urban areas. A logistic model is used to estimate the parameters of the decision to take up health insurance. The estimation results indicate that income, marital status, education, health status and awareness about insurance are the main determinants of health insurance uptake in Kenya. The study recommends that health insurance membership is made compulsory for all citizens and with subsidization of the premiums for the poor being undertaken by the Government. Further, there is a need to sensitize the public on types of health insurance schemes available.

Keywords: Health insurance uptake; Out-of-pocket payments; Private health insurance, National Health Insurance Fund; Kenya

INTRODUCTION

It is believed that a healthy nation is a wealthy nation (Pritchett and Summers, 1996). Accessibility to health care is crucial to any country as it is translated to good health which increases individuals' productivity. Accessibility to healthcare also has a positive externality to the society as it prevents infection of diseases to other members of the society since they can

access healthcare. In addition, individuals with poor health tend to be less productive and this affects the entire economy negatively.

Health care services are very expensive for individuals especially in developing countries to afford. This is the reason why the government has to heavily subsidize the health sector so as to increase affordability and accessibility by all its citizens (Schenone, 2012). The Kenyan government spends approximately 6% of her Gross Domestic Product (GDP) on healthcare sector (Kenyan healthcare sector, 2016).Despite the government getting extra finances from Nongovernmental Organizations (NGOs) and donations to support health care sector, this has not been enough to sustain the sector.

Due to the government revenue limitation, it came up with a cost-sharing mechanism on health expenditure. User fees and health insurance schemes came about as an additional source of finance for the healthcare sector. The user fee, however, proved to be a burden to most of the citizens and was later reduced and even abolished for some groups such as pregnant women, children below 5 years and vulnerable groups attending public hospitals. This further led to a revenue limitation for the sector (Kenyan healthcare sector, 2016).Health insurance acts as a hedging mechanism to those individuals who cannot afford medical services and also as a way of avoiding unnecessary out of pocket paymentswhich can render one poor in the event of sickness or even prevent one from accessing health care.

Health insurance is a form of a common fund where the members pool funds which are used to meet healthcare expenditure. Health insurance in Kenya consists of the National Hospital Insurance Fund (NHIF), Private Insurance Companies, Employer's Schemes and Community Based Health Insurance Scheme. The health insurance schemes are voluntary except for the NHIF which is compulsory to all individuals in a formal employment.

Health insurance has however not been so successful in the country. By mid of the year 2015, only 20% of Kenya's population had enrolled in health insurance. This percentage is far below the expectation given that about 42% of her population lives below the poverty line (UNICEF, 2009). Several empirical studies have also shown that the poor are less likely to undertake health insurance yet they are more exposed to diseases because of the environmental conditions they live in and are also highly prone to malnutrition. In addition, their affordability level of health care is lower compared to the rich. Bearing in mind that substantial proportion of the Kenyan population is poor, this study will be of importance in unveiling the factors that individuals consider in undertaking the decision to take up or not take up health insurance (Mitullah (2003).

In addition to the health insurance schemes, the Kenyan government has been seen to put great emphasis on the importance of good health to all citizens since her independence.

The government has come up with various strategies in an effort of ensuring universal accessibility to health healthcare by all its citizens. Universal Health Coverage has been outlined in Kenya's Vision 2030, Millennium Development Goals which came to an end in 2015 and also in the Sustainable Development Goals which were put in place in the year 2015. An extensive program among World Bank Group, Ministry of Health and NHIF came into conclusion that NHIF has the potential to deliver the Universal Health Coverage Goal (Mwaura et al,2015).

The government through World Bank has also collaborated with NHIF which happens to be the largest health insurance provider in ensuring universal accessibility of health care services to all. The recent move will involve a pilot study whereby 23,000 households consisting of the poor, elderly and disabled drawn from each County will be provided with the cover fully by the government. Health insurance providers have also partnered with the media with the aim of providing civic education to the public. Another move involved an introduction of a new package for the individuals suffering from chronic diseases (Mwaura et al, 2015).

There are limited studies in Kenya that focus on health insurance uptake. The few existing studies focus on either NHIF as the only health insurance, on informal sector, case studies or even on women. Unlike the previous studies, this study focuses on health insurance uptake among all individuals in the society by use of empirical analysis regardless of the sector they are in and also based on all the health insurance schemes existing in the country using a nationwide data.

This study, therefore, aims to find out whether the level of household income influences individuals' decision to take up health insurance in Kenya controlling for other determinants of health insurance ownership such as health insurance awareness, age among other factors such as gender, marital status, health status and education level. The findings of the study will be useful in sensitizing the insurance stakeholders on the whether their recent moves are of significant impact and also on other factors which are of importance on health insurance uptake. The findings will also be useful in helping in redesigning the health insurance products such that they fit almost all individuals in the society.

LITERATURE REVIEW

About 6% of Kenya's GDP is spent on the healthcare sector. This amount is not enough to cater for all health care expenses. Despite the chipping in of donors and nongovernmental organizations (NGOs) in subsidizing the health sector, individuals still have to incur out of pocket (OOP) expenses to cater for their health. The OOP expenses are usually very high as the majority of the Kenyan citizens are below the poverty line.

Health insurance came in as a way of hedging against the OOP expenses that one is likely to incur in the event of sickness. Health insurance providers in Kenya can be categorized into the National Hospital Insurance Fund (NHIF), Private Insurance Companies, Employer's Schemes, and Community Based Insurance Scheme. These health insurance providers cover both the principal member and the dependents. By the year 2015, only 25% of the Kenyan population had enrolled in health insurance schemes. This proportion is low as compared to other African countries like Rwanda and Ghana whose health insurance coverage was 91% and 60% by the same time respectively (Kenyan healthcare sector, 2016).

NHIF is the largest of the health insurance providers covering about 88.4% of those enrolled in health insurance schemes. It was established in 1966 and is a compulsory scheme for all individuals in formal employment. Any citizen who has attained 18 years of age is eligible for enrollment in NHIF (Mwaura et al, 2015). Those in informal employment contribute Kshs 500 monthly while the contribution for those in formal sector depends on their level of income.

Initially, NHIF covered only the inpatient services but it has currently expanded to cover outpatient services. From the year 1966, NHIF has undergone tremendous transformations in ensuring that it is accessible to all the citizens. Some of the remarkable transformations include the use of Information Technology to ensure efficient communication and faster enrollment of the members. It has also partnered with various organizations in order to subsidize its services and opened its branches countrywide so as to ease accessibility by the citizens (Kenyan Healthcare Report, 2016).

Private insurance companies are the second largest health insurance providers in Kenya. Although private health insurance companies have been in existence from time in memorial, they become popular in Kenya around 1980s. By the year 2016, private insurance companies covered only 9.4% of the individuals enrolled in health insurance schemes. The country had 51 registered private insurance companies with only 29 offering health insurance by the year 2013 (Ndungu T.W,2013).

Despite a large number of these companies, only a small percentage of the population is enrolled. This may be attributed to the high premiums charged by the insurers and lack of awareness of its existence which blocks out the poor and those in rural areas from taking up health insurance from the private insurance companies (Mwaura & Pongpanich 2012).

The top most medical insurance providers in Kenya include Jubilee, Madison, Resolution and AAR insurance companies. Private insurance companies have also undergone several transformations in an effort to capture a large market base. Some of the transformations include partnering with financial institutions especially the banks so as to increase the availability of its services to the public. Private insurance companies have also improved in consumer awareness

of their existence through rigorous advertisement as most people are unaware of the products they offer. They are also educating people on the importance of health insurance as the insurance industry is still viewed with a negative perception among individuals (Gitau,2013).

Employer-based insurance schemes can be grouped under private insurance since the employers enter into a contract with the private insurance companies on behalf of their employees. It is also voluntary among the employees.

Community-based health insurance scheme (CBHIS) is the smallest and newest in the country. It was established in 1999 and covers only 1.2% of those enrolled in health insurance schemes. This scheme involves people coming together and voluntarily agreeing to pool funds. The funds are used to meet medical expenses in the event sickness strikes one of its members or dependents. These schemes are registered under the Ministry of Gender and Youth Affairs (Kenya Healthcare Report, 2016). An example of such community-based insurance scheme in the country is the Jamii Bora Health Insurance scheme (Mwaura & Pongpanich 2012).

CBHIS is common in countries like Rwanda, Tanzania, Burkina Faso and Ghana perhaps unveiling the reason as to why the uptake of health insurance in these countries is high. Studies undertaken in these countries reveal that CBHIS is popular among the poor, marginalized, women and children (Mathauer, Schmidt &Wenyaa, 2008).

Kenya health insurance providers offer two types of covers; outpatient and inpatient cover. It is worth noting that the insurance providers do not meet all the cost involved but cover the majority of the expenses incurred in the treatment. The extent of the cost met depends on the type of insurance and package one has.

Several studies have been undertaken to investigate factors that influence uptake of health insurance in Kenya and all over the world. Kimani et al (2014) study on the ownership of health insurance scheme among women revealed that demographic factors, wealth level and the form of employment have an influence on the uptake of health insurance. Women employed in the formal sector were more likely to own health insurance. The aged, married, those with high levels of education and the households headed by females had a higher level of health insurance ownership. The main advantage of this study was the data source; Kenya Demographic and Health Survey 2008/09 which was a nationwide data. The shortcoming of this study is that it concentrated on health insurance uptake of women only.

Ndung'u T. T. (2015) argued that uptake of NHIF in the informal sector was influenced by age, gender, education level, income and awareness level. The study used descriptive statistics to arrive at its conclusion. Uptake was high among the aged, females, those with a high level of education and income. Majority of the people (91.0%) were aware of the existence of NHIF. The main limitation of this study is that it was based on a case study of one division;

Ithanga division and concentrated on people in the informal sector which might not be a representative of the whole country. The study did not also consider the uptake of other health insurance providers like private insurance and CBHIS.

Mutinda (2015) study argued that the uptake of NHIF among individuals depended on their level of awareness, the amount of premium charged and the consistency of their income. The study was based on a case study of Kibera slums which targeted 3 out of the 12 villages in the slum. The respondents were chosen through purposive sampling. The main shortcoming of this study is that it was not a nationwide study and might not have represented the situation in the whole country.

Adebayo et al (2015)were of the view that the uptake of community-based health insurance in low and middle-income countries as being determined by demographic and systematic factors of CBHIS. The study was carried out through careful review of eligible studies based on CBHIS that were available in both published and unpublished form by October 2013. The study included 14,506 records. Qualitative and quantitative analysis was used to undertake the study. Those with low income, low levels of education, the aged, females and those with a small household size were less likely to undertake CBHIS. Low uptake was also associated with mistrust of the CBHIS and poor health care quality. This was, however, a more general conclusion and might not fully apply to the case of Kenya. In addition, the conclusion was based on CBHIS which is the least popular in the country.

Fenny et al (2016) study on factors influencing the low uptake and renewal of health insurance in Ghana found out that sociocultural and systematic factors were the main determinants of uptake. The study was conducted through interviews whereby the key stakeholders of health insurance at both local and national level were interviewed. From the interviews, low uptake was likely to be high among the aged and disabled and in the regions were the religion and cultural norms forbade uptake. Low uptake was also associated with weak National Health Insurance System and inadequate health facilities within the vicinity of the individuals. This outcome may however not be true for the Kenyan case.

A number of theoretical literature incorporate health insurance into their framework. According to consumer theory, health care is a normal good like any other good and is derived from medical care. The utility is maximized subject to consumer's preferences, income and relative prices of other goods. A consumer will, therefore, choose a health care provider who will give him maximum utility. One is, therefore, more likely to choose to uptake health insurance if the price of the substitutes like user fee increases and if his income increases.

State-dependent theory suggests that consumers maximize their utility subject to their tastes, health status, expected pay off, socioeconomic factors and the degree of risk

averseness. The less risk-averse individuals are less likely to own health insurance. The poor are less likely to own health insurance as their expected pay off are less in the event they are sick since they can comfortably use self-treatment which can be cheaper than premiums they ought to pay. Consequently, those with good health status and low income are also less likely to insure as the cost of the premiums is higher than the expected out of pocket payments and also that their affordability level is low (Schneider, 2004).

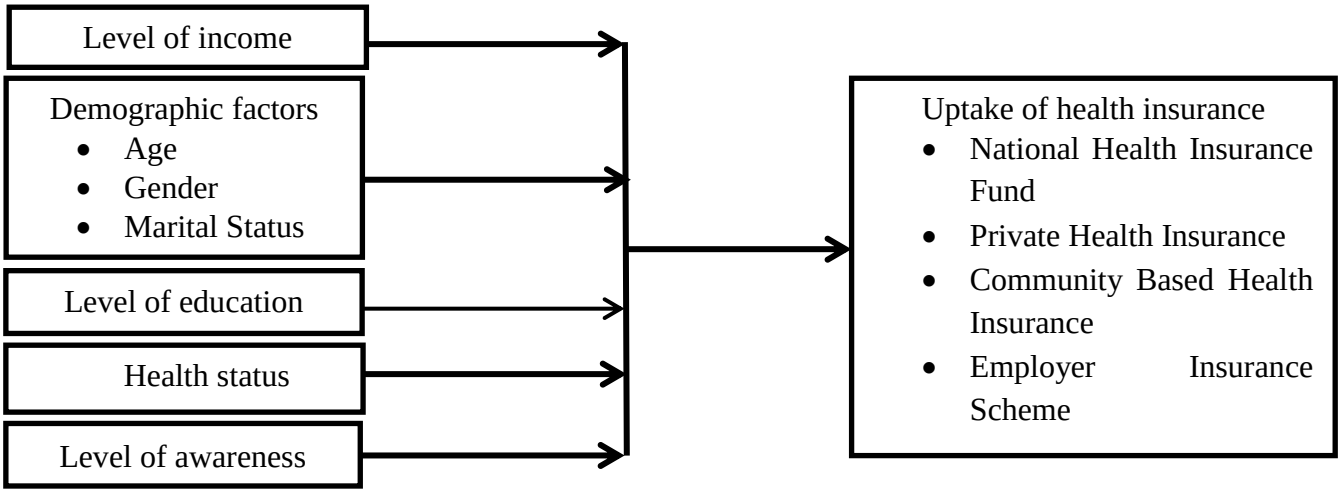
Endowment effect theory is of the view that individuals care more about their current position relative to their previous position; a loss is weighed more heavily than a gain. Individuals will therefore only acquire health insurance coverage if the benefit from it is greater than the cost that will be incurred if health care is met through out of pocket payments. Individuals will also prefer health insurance if the cover fully caters the medical expenses (Schneider, 2004).

According to expected utility theory, individuals are uncertain about their health. They will, therefore, have to make choice between the out of pocket payment incurred if they are uninsured in the event they fall sick or the loss from premium payment if they do not fall sick. Since individuals are risk averse, they will end up acquiring health insurance (Marquis and Holmer, 1996).

RESEARCH METHODS

The model in figure 1 is derived from the literature (Orodho, 2009) and shows the key variables associated with health insurance uptake. According to Orodho (2009), the model can be diagrammatically depicted as shown in figure 1.

Figure 1: Determinants of Health Insurance Uptake



To estimate the coefficients of the determinants of health insurance uptake, the binomial logistic equation was used, whereby individuals can either own health insurance or not.

Let 1 represent the uptake of health insurance and 0 be otherwise.

$$Y_i = \begin{cases} 1 & \text{if individual i is insured} \\ 0 & \text{otherwise} \end{cases}$$

P=1/(1+exp(-Z)

Where Z=βx+ε

The log-likelihood function is given as;-

$$\text{In L} = \sum yi \; In\left(\frac{e^{\beta iXi}}{1+e^{\beta iXi}}\right)^{+} (\text{n-}\sum yi) \; In\left(1-\frac{e^{\beta iXi}}{1+e^{\beta iXi}}\right)$$

The above equation was then estimated using maximum likelihood estimation to obtain a vector of the coefficients (β) that maximize the likelihood, L, of observing the sample data; the values of all the variables used in the model (Gujarati, 2014).

The data used in this study is from Kenya National Health Accounts survey of 2005/06, collected in September and October 2007. The sample size included 8,844 households obtained in all the districts in the country. Of the 8,844 households, 6,060 of them were from rural areas while 2,784 of the households were from urban areas. The 8844 households consisted of 38,235 individuals with 35,974 of them responding. The data was obtained through the issuance of questionnaires and interviewing of the households.

The sampling procedure involved the use of clusters whereby 1,800 clusters were used with 540 of them representing the urban areas and 1,260 represented rural areas. Information on socio-demographic characteristics, income, expenditure on health care and other expenditures and the pattern of seeking health care was obtained from the household head (Kenya National Health Accounts, 2009).

From table 1, the average number of individuals who had health insurance cover was 10.05%. The average income was Kshs12.51 per month while the average age of the individuals was about 17 years. Income had the highest standard deviation of about 121.45. This is because 76.4% of the individuals were reported to have zero income. The average male individuals comprised about 49.05% while those who were married were 34.76%. About 20.55% on average of the households were aware of health insurance. 97% of the individuals reported that their health status was good while 3% reported poor health on average. 71.6% of the individuals had attained primary level education while 22.27% and 6.13% of the individuals had attained secondary and tertiary education on average respectively.

Table 1 :Summary Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Insurance Uptake	33,997	.1005383	.3007208	0	1
Logincome	35,974	2.652693	4.799514	0	16.59122
Logage	35,490	2.856147	0.958283	0	4.70953
Gender	35,688	.4905851	.4999184	0	1
Marital status	35,088	.3475547	.4762005	0	1
Level of awareness	8,571	.2055769	.4041462	0	1
Health Status	35,428	.9699108	.1708352	0	1
Primary	25,488	.7159448	.4509721	0	1
Secondary	25,488	.2227323	.4160882	0	1
Tertiary	25,488	.061323	.2399265	0	1

Table 2: Definition and Explanation of Variables

Variable	How it is measured
Health insurance uptake	It is the dependent variable. It is a discrete variable where individuals can choose either to uptake health insurance, represented by1 or not to uptake, represented by 0. Insurance here includes NHIF, private medical insurance, employer insurance scheme and CBHIS.
Income	The proxy used for income is the total household expenditure for the last one month.
Age	It is the number of years the household members have already lived.
Gender	It is defined as either male or female. 0 is used for the females and 1 for the males.
Marital status	It is defined as either married or unmarried. 0 is used for the unmarried and 1 for the married.
Level of awareness	The proxy for level of awareness is measured in terms of ownership of mass media devices such as radio or television or mobile phone. 1 is used for those who own radio, television or mobile phone and 0 otherwise.
Health status	It can either be good or poor. 0 was used for poor health and 1 for good health. The classification was based on how the households rated their health status. Households who reported their health as either very good, good or satisfactory were classified to have good health.
Education	It was measured based on the level of education one had attained. It was presented as 0 for preschool and primary level, 1 for secondary and 2 for tertiary level.

RESULTS

The study sought to establish the factors that determine uptake of health insurance in Kenya by drawing evidence from empirical analysis. The variables used in this study included uptake of health insurance, income, age, gender, marital status, level of awareness, health status and level of education. The results are depicted in table 3.

Table 3: Estimated Results; Logistic Regression and Marginal effects. The dependent variable is health insurance uptake *(standard errors in brackets)*

Variables	**Coefficients (Logit Regression)**	**dy/dx (Marginal Effects)**
Logincome	0.1201782**	.0107744**
	(.0414396)	(.00369)
Gender	.0311944	.0027782
	(.1144674)	(.01013)
Marital Status	-.2622458**	-.0250386**
	(.1032151)	(.01125)
Level of Awareness	.449247***	.0435412***
	(.1032151)	(.01095)
Health Status	-.3789349	-.029618*
	(.259361)	(.01745)
Secondary Education	.3990392***	.0376391***
	(.0987937)	(.00986)
Tertiary Education	.4641442***	.0474861***
	(.1404372)	(.01642)
Logage	-.1911294	-.0171354
	(0.0033628)	(.01249)
_constant	-2.941483	
	(.650692)	
Pseudo R2: 0.0317	**Number of obs.: 6,036**	
Prob>Chi2: 0.0000		
Log likelihood: -1996.9172	**LR Chi2(9): 130.59**	
(P Value=0.0000)		

*P<0.1, **P<0.05, ***P<0.01

The results show that the coefficients on income, marital status, level of awareness, secondary and tertiary education are statistically significant at 5%. A one percentage increase in income

increases the log odds of health insurance uptake by 0.1201782 controlling for other variables. The log odds of owning health insurance for the married is 0.2633345 lower compared to the unmarried adjusting for other variables.

The coefficients can also be interpreted in terms of the odds ratio. For instance, the odds ratio of owning health insurance for the informed individuals is $e^{.3964095}$ times higher compared to uninformed individuals after adjusting for the other variables. The odds ratio of owning health insurance for those who have attained secondary education is $e^{.4451382}$ higher than those who have attained primary education.

The marginal effects on income, marital status, level of awareness and education are statistically significant. The coefficient on poor health is statistically significant at 10%. Those who have attained tertiary education have a 4.7% higher probability of owning health insurance as compared to those with primary education. The probability of those with poor health owning health insurance is 3.048% smaller compared to those with good health. The coefficients on age, gender and satisfactory health are however statistically insignificant at 10%.

The findings showed that income level was a significant factor in the uptake of health insurance. Insurance uptake increases as the level of income increases. This was consistent with previous studies; Adebayo et al (2015) and Ndung'u(2015). This can be explained by the fact that as income increases the level of affordability also increases prompting individuals to uptake the insurance.

The study also found out that education level, health status, and marital status were significant factors in health insurance uptake. Uptake of health insurance increases as the level of education increases. This is consistent with Adebayo et al 2015, Kimani et al 2014 and Ndung'u, T. T 2015 study both conducted in Kenya. Education brings about awareness and enlightenment of individuals on important issues like health. This prompts the educated individuals to undertake health insurance as they understand more on the importance of good health.

Contrary to Kimani et al 2014 study and other previous studies like Bernstein et al (2008), the married were found to be less likely to uptake health insurance. This can be explained by the sample size whereby about 66% of the individuals were unmarried. Also, married women are more likely to own private insurance which has a small coverage as compared to public insurance (NHIF), (Bernstein et al 2008).

Those with poor health were less likely to uptake health insurance as compared to those with good health. Those with poor health were more likely to be the poor in the society as they live in an unconducive environment with high exposure to diseases. They also suffer from malnutrition as they cannot afford a balanced diet and health insurance cover is a luxury good to

them. This can explain the low uptake among those with poor health. Gender, age,and satisfactory health status were however insignificant factors in determining the uptake of health insurance in the country (Mitullah, 2003).

Health insurance awareness was measured by ownership of mass media devices such as radio, television and mobile phones. Those who owned these gadgets were found to be more likely to uptake health insurance and the findings were consistent with Kimani et al (2014) study. Ownership of mass media devices is more likely to increase the level of awareness of the existence of the various health insurance schemes and also learn the essentiality of being under an insurance scheme.

DISCUSSION AND CONCLUSIONS

The general objective of this study was to establish the determinants of health insurance uptake using control function analysis. This is essential as the productivity of a country is determined by the health status of the individuals among other factors. It will also contribute to the attainment of healthy lives for all individuals as outlined in the sustainable development goals and Kenya's Vision 2030.

Only about 10.05% of the individuals owned health insurance. This is so worrying given the uncertainty associated with health. Around 89.95% of the individuals were not covered implying that they would easily suffer from out of pocket payments in the event catastrophic diseases strike them. The study found out that the coefficients on income, education, marital status, poor health and level of awareness were statistically significant.

Health insurance is so crucial to the country and the study, therefore, recommends that it should be made compulsory that individuals own at least one insurance cover. There is a need for subsidization of the health insurance premiums especially to the poor and the aged so as to make the cover affordable to all individuals in the country. There is aneed for education emphasis to everyone in the society as the attainment of education enlightens people on the importance of having good health and also the reason as to why health insurance cover is essential. The level of awareness was found to positively influence health insurance uptake. There is a need to sensitize the public through barazas and open-air meetings on the existence of the health insurance covers and their importance.

As the government makes a move to subsidize the poor and aged individuals on the NHIF cover, this might have a positive impact to the poor and aged as they are seen to be less likely to uptake health insurance. Civic education through mass media will also have a positive impact on health insurance. The government should also be aware that the level of education,

marital status and health status especially poor health are also significant factors in influencing the decision to uptake health insurance.

The study did not, however, establish how the form of employment and price of the insurance influences the uptake of health insurance. This was due to lack of data on these variables. The study was also limited to availability of recent data that captures the discussed variables in the study. Given the recent transformations in the health insurance sector and especially in NHIF, the study recommends the use of recent data to ascertain whether the transformations have had an impact on the decision of health insurance uptake.

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