

# **AN INVESTIGATION INTO BANKERS' PATRONAGE OF LIFE INSURANCE PRODUCTS IN GHANA**

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## **Abstract**

*This study aims at examining the patronage level of bankers of life insurance products and also identifying key determinants of the demand for life insurance in Ghana. A quantitative technique based on primary data sampled randomly from 60 bankers from different banks in Accra, Ghana, was adopted and Logit regression modeling was used. The study found out that the patronage level of life insurance policies among bankers is high and also identified the main factors which influenced bankers demand for life insurance as their gender, marital status, educational level, income level and perceived cost of policy. Marital status, educational level and income level were found to have significant positive relationship with demand for life insurance whilst premium and gender of respondent have negative significant relationship. Age, number of dependents and family type were however, insignificant in influencing demand for life insurance. On the reasons why Ghanaian bankers demand life insurance, the following were identified: protection for home and family, benefits from the policies serve as replacement income for the family, it helps cover funeral or burial costs and also for charitable purposes. The study provides the first comprehensive analysis and discussion of the penetration of life insurance into the Ghanaian banking sector and also serves as tool for insurance companies to provide products to suit the needs of clients especially bankers.*

*Keywords: Insurance, bankers, demand, Logit regression, Ghana*

## INTRODUCTION

The Ghanaian culture is one where there is high dependence on external families and communism. For this reason, years back there has not been much of life insurance taken by the citizenry. In the extended family system when the breadwinner of a family dies, the dependents of the deceased were helped by other members of the family. For the reason, people did not see the urgency in taking a life insurance policy. In general, insurance penetration in Ghana is not as high as it is other African countries with a low patronage level of about 1.5 per cent as compared to countries like Ivory Coast with a patronage level of 5 per cent, Namibia with 8 per cent and South Africa 16 per cent (National Insurance Commission, 2008). But in recent times due to modernization and migration, the Ghanaian is moving away from the family way of life to individualism. There are more of the nuclear family tides than extended ones and people are beginning to see the essence of life insurance and even insurance in general.

In literature, there have been dozen of reasons that are explained to be accounting for the demand for life insurance especially in the developing world. The topic of life insurance is not new concept for most researchers in the west but it was brought to light in the seminal work of Yaari (1965), who explained the demand for life insurance from a theoretical background. Yaari pointed out the issue of uncertainty in the life insurance demand, namely, the uncertainty of life span of a consumer. In his paper, Yaari underscored the models of utility functions developed by Fisher (1930) and Marshal (1920). Later Karni and Zilcha (1986) implemented the measure of risk aversion in the model. They followed Fisherian model, which was used by Yaari (1965) in his derivations, because it does not account for bequests, so the individual is free in accumulating debt, which helps to properly model the improvement in borrowing conditions, which in turn leads to higher consumption of life insurance.

Several research papers are written on the base of household surveys' data, where the theoretical life-cycled models were developed and empirically supported to investigate the behavior of households in the demand for life insurance (Bernheim et al. 2001 and Lin and Grace, 2006). In all these, the main reason of purchasing the life insurance is to handle the possible future risks of lifetime, of earnings etc. Bernheim et al. (2001) and Lin and Grace (2006) both highlighted the issue of the linkage between the life insurance demand and financial vulnerability of the households of an older age. Vulnerability indicates the degree of household sensitivity to the loss of income as a result of death of a spouse. Bankers, on the other hand, are one group of people who have diverse severance benefits which makes them less financially vulnerable. Also they already have social security which reduces the vulnerability of their families in the event that they pass away. Given these benefits, this research seeks to find answers to the following questions: do bankers demand life insurance? What are the

determinants of their demand for life insurance? It is against this backdrop that the study seeks to investigate into bankers' patronage of life assurance products in Ghana.

The rest of the paper is divided as follows: Section 2 reviews the literature on the determinants of life insurance. Section 3 deals with the methodology of the paper while Section 4 discusses the results. Conclusion is delineated in Section 5.

## **LITERATURE REVIEW**

### **The Concept of Life Insurance and Its Importance**

Over the years, the growth of the insurance industries around the world and especially in developing countries has been remarkable. The influx of privately owned insurance firms and the desire by the people and businesses in these developing countries, to acquire one form of insurance policy or the other, can be seen as tremendous. Considering the varied risk levels and events in most developing countries, many insurers are inclined to have quite a portfolio of insurance policies, despite few compared to most developed countries, which are deemed to cushion the insured and any other beneficiary should there be the occurrence of any unfortunate event.

The insurance industry is one of the most successful service industries that developed economies have used to achieve their spectacular development heights. By affording protection to life and property it brings security to person and property with accompanying peace of mind which promotes and encourages entrepreneurship (Jack, 2003).

Despite the numerous benefits of the insurance industries, one of its major economic functions is to promote the mobilization of funds thus, offering a basis for financial intermediation to commerce, trade and industry. As an industry, it is a source of employment to many and its loss prevention function also contributes immensely to the measures of risk avoidance and mitigation. The insurance industry contributes as substantial revenue to government coffers taxes, as well as the creation of jobs, providing educational and health facilities. There are various types of insurance policies that seek to provide financial support for the insured in areas that are prone to unfortunate disaster, Life, health, auto and long term disability. The most popular among these is the auto insurance policy, however the most important, considering the lifestyle of the citizens of developing countries, is the life insurance policy. Generally, life insurance policies can be seen as a protection against the loss of income that would result should the insured pass away. The named beneficiary or beneficiaries receive the proceeds from the insurance and is thereby safeguarded from the adverse financial impact from the death of the insured. The goal of life insurance is to provide a degree of financial security for the family of the insured should he, the insured, be deceased. Prior to the

purchase of any financial policy, there should be a thorough consideration the financial situation and the standard of living of the intended beneficiaries.

Haberman (2004) postulates that life insurance or life assurance as in some economies is a contract between the policy owner and the insurer, where the insurer agrees to pay a designated beneficiary a sum of money upon the occurrence of the insured individual's or individuals' death or other event, such as terminal illness or critical illness. In return, the policy owner agrees to pay a stipulated amount know as premiums at regular intervals or in lump sums. "The value for the policyholder is derived, not from an actual claim event, rather it is the value derived from the 'peace of mind' experienced by the policy holder, due to the negating of adverse financial consequences caused by the death of the life assured" (Haberman, 2004).

Greene and Trieschmann (2005) defined life insurance as a method by which a group of people may co-operate to ease the loss resulting from premature death of members of the group. The insuring organization collects contributions from each member, invests these contributions, guarantees both their safety and a minimum interest return, and distributes benefits to the estates of the members who die or become disabled. They further emphasize that, viewed from an individual standpoint, life insurance is a method of creating an estate. It is a method of seeing to it that plans for accumulating property or providing income for the benefit of others, chiefly the family, are realized regardless of whether the bread winner dies prematurely or lives to a ripe old age.

According to Han et al. (2010), the main roles that are basically performed by the insurance are to promote financial stability and security at the personal levels, industry level and national as a whole. The industry mobilise savings and provide channel for the efficient use of capital, facilitate credit by providing security for bank lenders, encourage the efficient management of risk mitigation through diversification and "enable personal responsibility for certain insurance provision, thus relieving the government welfare programmes of this burden such as life insurance, workers' compensation or medical health cover." (Han et al., 2010),

### **Types of Risk**

Risk, for insurance purposes, can be categorized into two kinds, speculative risk and pure risk (Power, 2006). This distinction is important because, in general, only pure risks are insurable. Speculative risk involves three possible outcomes which are loss, no loss or profit. Investing in the stock market is an example of exposing oneself to speculative risk. One might profit when the value of the stock rises, lose when it declines or break even if no change occurs. Speculative risks are not insurable by insurance firms but financial markets have hedging strategies to mitigate the exposure of speculative risk.

Pure risk involves only two possible outcomes which are loss or no loss, with no possibility of gain or profit. The risk associated with the chance of being involved in any natural misfortune such as death is an example of pure risk. No opportunity for gain exists if the event does not occur, only an opportunity for loss if it does. Only pure risks are insurable. A pure risk involves only the chance of loss, never the chance of a gain. The insurance industry is in existence to protect against such pure risk that may befall an individual or a company. However, for the purposes of this study, the researcher concentrates on insurance at the individual level, particularly life insurance.

### **Types of Life Insurance**

The unpredictable nature of events has led to the creation of many types of life insurance products available to meet the varied needs of many individuals and families. This is to say life insurance policies are of many variations but these are classified into three basic types as postulated by Redja (2003). According to Redja (2003), the three types are: Term insurance, whole life insurance and endowment insurance.

#### ***Term Insurance***

Term Life insurance provides a specific amount of life insurance coverage for a designated time period. Presently, the available policy lengths for Term Life insurance are one year, five years, ten years and fifteen years. Term life insurance covers the mortality risk for a stated length of time. It is the simplest type of life insurance according to Redja (2003). If the insured person dies within the time frame in which the policy is in effect, the insurance company pays out the face value of the policy to the beneficiaries. If the insured person lives longer than the term of the policy, the policy expires and would pay nothing.

According to Redja (2003), term life insurance does not build any type of equity however, it is often one of the least expensive types of insurance and is available in several forms. Term life insurance is typically purchased as a means of temporary protection or when an individual can't afford the cost of other forms of Life insurance. Some people prefer to invest their own money elsewhere and feel they can obtain higher yields without having to use a life insurance plan.

According to literature, the term life insurance has several characteristics. It provides protection for a temporary period such as one, five, ten or twenty years or until insured reached a certain age such as 65 years or 70 years. Redja (2003) accentuated that the policies can be renewed for additional periods without evidence of insurability. The premium is increased at each renewal.

Zietz (2003) identified the following Term life insurance policies: Decreasing Term Policy which provides the beneficiary with less proceeds each year the policy is in force. That is, if death occurs in the policy year, the beneficiary receives the full-face amount, if death occurs in a succeeding year, the proceeds will be less, Increasing Term Policy where the proceeds increase each year. If death occurs in the first year, the insurer pays the face amount of the policy and Re-Entry Term and the Level-Term Policy where the same amount of benefits is paid if death occurs while the policy is in force.

Redja (2003) in discussing types of term insurance products or policies varies a bit from Zietz's categorization of products. He identified five types of term insurance policies. The first three types of the term insurance policies are the same as those discussed by Zietz. However, Redja considers re-entry term as another type of term insurance, which was left out by Zietz. In the opinion of Redja (2003), the re-entry term policy (also called revertible 20 term), the renewal premiums are based on select mortality rates (lower rates) if the insured can periodically demonstrate acceptable evidence of insurability. To remain on the low rate schedule, the insured must periodically show that he or she is in good health and is still insurable. Evidence of insurability generally is required at intervals of one to five years, depending on the company, amount of insurance and type of policy.

### ***Whole Life Insurance***

Whole Life Insurance is a permanent insurance that provides lifetime protection. The policies promise to pay the beneficiary whenever death occurs, "Till death do us part" is the insurance promise. Redja (2003) in his study identified two different types of whole life insurance namely Ordinary Life and Limited-Payment Life Insurance. Ordinary Life Insurance (also called straight life and continuous premium whole life) provides lifetime protection to age 100 and the death claims are a certainty. If the insured is still at age 100, the face amount is paid to the policy owner. Limited life policy on the other hand is permanent, and the insured has life time protection. The premiums are level but they are paid only for a certain period. The most common limited payment policies are for 10, 20, 25, or 30 years. A policy paid up at age 60 or 70 is another form of limited-payment insurance.

### ***Endowment Policy***

Endowment contracts are primarily savings contracts with an element of pure protection incorporated into the policy, so that is the uninsured dies before the savings plan is completed, the insurer completes it. Endowment policy is further divided into two namely; Limited-Term Endowment Contract and Retirement Income Policy.

Similar to the endowment contract is the Retirement Income Policy, except that, the former is arranged so that its cash values amount to a sum sufficient to provide specific amount of income a month at retirement age usually 65 years. Endowment policies are purchased for varying periods, such as a 10 years endowment, 20 and 30 years endowments and endowments at age 65(Greene and Trieschman, 2005).

***Factors that influence the demand for Life insurance policies.***

Potential life insurance applicants choose to buy life insurance policies for several reasons. These reasons may include but not limited to replacement of lost income for the family, protection of home and business, savings or investment plan to create inheritance, funeral and burial costs and also for charitable purposes for which an individual may endeavour to purchase an insurance policy(Lewis, 1989).

The life-cycle models have remained a supreme model over the years when it comes to theoretically explaining the demand for life insurance where households or individuals tend to maximize their expected utility of lifetime consumption. The subject of life insurance demand is not new among researchers and Yaari is one of the early researchers who ignited the flame in this area. He worked out a theoretical background to explain the reasons for the demand for life insurance. Yaari (1965) postulated the issue of uncertainty in the life insurance demand, namely, the uncertainty of life span of a consumer.

Quite few researchers, arguably, have paid very little attention to the aspect of life insurance especially among researchers in Africa. As insurance is regarded to be a mechanism of reducing the consumption volatility of a household, the uncertainty of a life expectancy determines the life insurance consumption.

A number of studies have used household surveys' data to investigate the behavior of households in the demand for life insurance and come out with findings consistent with the theoretical life-cycled models (e.g. Lewis (1989), Bernheim et al. (2001), Lin and Grace (2006)). Lewis (1989) extended Yaari's life insurance framework by including the preferences of other members of the household into his model which to a large extent is logically since an insured normally take into consideration those who depend on him in his insurance decision. This implies that the amount of insurance a husband can purchase is influenced by the consumption level of wife and children.

Developed models postulate that life insurance purchase is directly proportion present value of beneficiaries' consumption, risk aversion and probability of policy holder's (husband's) death. Yaari's theoretical framework runs through the work of almost all researchers who have investigated the life insurance demand. Enz (2000) in his study of the relationship between

demand for insurance and economic development contended that all other models with constant income elasticity of life insurance demand are artificial in the sense that they do not take into account different restrictions in insurance penetration growth such as tax system and stringent regulation.

Enz (2000) showed an S –curve relationship between insurance penetration and income per capital level and that was his way of allowing income elasticity to vary in his model. The S-curve relationship indicates that the consumption of life insurance tends to grow as the economic level of the developing country rises, but as the time passes and the economic level of that country is reaching the level of developed countries the insurance consumption slows down. Using his model it is possible to build a long-term forecast for insurance demand and investigate the reasons for countries (so-called outliers) to be located away from the S-curve on the plot. There are several reasons why people buy insurance product but the fundamental among them is to enable them deal with possible lifetime uncertainties such as of earnings and the like. Lin and Grace (2006) agreed with Bernheim et al. (2001) when they both indicated that there is a link between the life insurance demand and financial vulnerability of the households of an older age.

Financial vulnerability refers to the degree of households' responsiveness to the loss of income as a result of death of a spouse. Different results were found based on different models used. Bernheim *et al.* (2001) discovered that people with greater vulnerabilities tend to insure less, and those who experience smaller vulnerabilities purchase larger amounts of insurance which is very fascinating. They, however, did not find any significant relationship between demand for life insurance and financial vulnerability. Bernheim *et al.* (2001) presented a modified model by controlling for several factors that influence the demand of life insurance such as composition of household, details of tax system of the country and the like.

Lin and Grace (2006) took to the discussion to a different level by dividing the overall demand for insurance into two thus demand for term life and whole life insurance and in addition included an index for financial vulnerability. Lin and Grace (2006) unlike Bernheim *et al.* (2001) found a significant relationship between demand for life insurance and financial vulnerability and also concluded that the elder the household the less life insurance it demands to cope with the certain level of financial vulnerability.

Apart from income driven factors found by earlier studies, Peter Fortune (1973) initiated a different dimension to the demand for insurance argument by focusing on the sensitivity relationship between life insurance purchase and financial variables, and linked his implications with the monetary policy and capital markets using US insurance market data for 1964 to 1971.

He discovered a high degree of responsiveness between the optimal amount of insurance, wealth and the inflation adjusted interest rate.

Outreville (1996) assessed how financial development of the country affects the demand of insurance product and discovered a significantly positive relationship between life insurance purchase and the financial development. Beck and Webb (2002) following Outreville (1996) also highlight the role of financial development and price stability in the insurance market of the country.

Beck and Webb (2002) investigated what accounts for disparity in life insurance consumption between different countries and arrived at the conclusion that countries with higher income per capita level, more developed banking sector and lower inflation tend to consume larger amounts of life insurance.

They further observed that private savings rate and real interest rate have direct impact on life insurance consumption but demographic factors as education, life expectancy, young dependency ratio appear not to have any robust influence on the life insurance consumption. Ward and Zurbruegg (2002) discovered that improvement in political stability and civil rights increases the patronage of life insurance product.

Sen (2007) is said to have included more variables in his model than all earlier researchers on this topic. He evaluated the impact of GDP per capita, GDS (gross domestic savings) per capita, financial depth, urbanization, dependency ratio, adult literacy, population, life expectancy at birth, crude death rate, inflation, real interest rate and insurance price on the demand for life insurance. His findings were consistent with earlier ones as he discovered a significant direct relationship between life insurance consumption and income, financial development and gross domestic savings, but rather an indirect relationship to inflation. Real interest rate was, however, insignificant in the cross-country analysis. Sen (2007) also incorporated time-series analysis on India for the period 1965-2004 and real interest rate there appeared significant. Comparing to Beck and Webb (2002) results demographic factors such as life expectancy and young and old dependency ratio turned to be significant, together with adult literacy rate and rate of urbanization.

So, basically, there is no one "right" quantity of determinants to include in the model, because as was mentioned above the determinants depend on the particular country's environment and vary due to different socio-economic systems across countries. For example, the presence of influence of banking sector development on the demand depends on whether savings and investment function of life insurance is completely fulfilled in the country (Beck, 2002).

Summing up the previously mentioned theoretical and empirical researches, life insurance demand is determined by both micro and macroeconomic variables as income level, interest rate, wealth, inflation and financial development, various demographic and social factors.

This study is however different from previous studies in that it seeks to find out the patronage level of bankers when it comes to life insurance policy and also finds out the factors that influence their demand.

## METHODOLOGY

### Data

The primary data for the study was obtained through a questionnaire. The respondents comprised of 60 bankers who were randomly selected from Accra, the capital city of Ghana. The questionnaire was pre-tested among some bankers and this informed the final design of the questionnaire.

### Model Specification

The study adapted the model of Truett and Truett (1990) where demand for life insurance is dependent on *price* of insurance, income level of individual, availability of substitute and other individual and environment specific characteristics. Further, they experimented with demographic variables like age of individual insured(s) and also considered education level to have some bearing on insurance consumption decision.

The problem is that the desire of a bank worker to buy life insurance cannot be observed but what can be ascertained is whether a banker has purchased a life insurance or not. That is, a bank worker buys life insurance products or not. Therefore, dummy variable  $Y_i$  can be defined as follows.

$$Y_i = \begin{cases} 1, & \text{if a bank worker has a life insurance} \\ 0, & \text{if a bank worker has no life insurance} \end{cases}$$

Therefore, the probability  $p(y)$  of buying a life insurance policy is given as;

$$P(Y_i = 1/X_1, X_2, \dots, X_n) = F(\beta_0 + \beta_1 X_1 + \dots + \beta_x X_x)$$

Where  $F(x) = \frac{1}{1+e^{-x}}$ ,  $X = DDLINS_i$

$$DDLINS_i = \beta_0 + \beta_1 PX_i + \beta_2 INCL_t + \beta_3 AGE_i + \beta_4 EDU_i + \beta_5 MRST_i + \beta_6 GENDER_i + \beta_7 NDEP_i + \beta_8 FMLTYP_i + \varepsilon_i$$

### Definition and measurement of the variables

$DDLINS_i$  = Demand for life assurance (dummy variable 1 if member patronize life assurance; 0 otherwise) for respondent  $i$

$PX_i$  = perceived level of price levels of life assurance policies for respondent  $i$

$INCL_i$  = income level for respondent  $i$

$AGE_i$  = age of respondent  $i$

$EDU_i$  = education level of respondent  $i$

$MRST_i$  = marital status of respondent  $i$  (dummy variable 1 if respondent is single; 2 if respondent is married)

$GENDER_i$  = gender of respondent  $i$  (dummy variable 1 if respondent is male; 2 if respondent is female)

$NDEP_i$  = Number of dependents of respondent  $i$

$FMLTYP_i$  = Family type of respondent  $i$  (dummy variable 1 if respondent belongs to extended family; 2 if respondent belongs to nuclear family)

## EMPIRICAL RESULTS

### Descriptive statistics

A total of 60 questionnaires were administered across twelve (12) banks and they were all responded and returned indicating a 100% response rate.

Most of the respondents, 40 or 66.7 percent, were male, compared with 20 or 33.3 percent who were female with 73.3 percent representing 44 of the sixty respondents having been married whereas 26.7 percent (sixteen respondents) were single.

With regard to academic qualification, most of the respondents surveyed had first degree qualification, made up of 65 percent first degree holders (thirty-nine respondents), 21.7 percent of the respondents had post-graduate education (thirteen respondents), 11.7 percent were diploma graduates (seven respondents) and only 1.7 percent (1 respondent) had graduated from senior secondary school. These figures indicate that the sample surveyed were well-educated.

The average age of the respondents was 42.33 years. A more in-depth analysis of the results showed that the majority of respondents were between the ages of 25 and 35 years which formed 56.7 percent (thirty-four respondents). 36.7 percent of the respondents' surveyed (twenty-two respondents) were above 35 years with 3.3 percent (two respondents) below the age of 25 years.

The majority of the respondents, 41 respondents (68.3 percent) received monthly income of less than GH¢ 2,000 with 18 respondents (30 percent) receiving between GH¢ 2,000 and GH¢ 4,000. Only 1 respondent (1.7 percent) received a monthly income of above GH¢ 4,000.

On working experience, 35 percent (twenty-one respondents) had less than five years working experience with additional 33.3 percent (twenty respondents) having between 5 to 10 years working experience whereas 31.7 percent (nineteen respondents) had more than 10 years working experience. This indicates that the sample surveyed had relative experience in the banking industry.

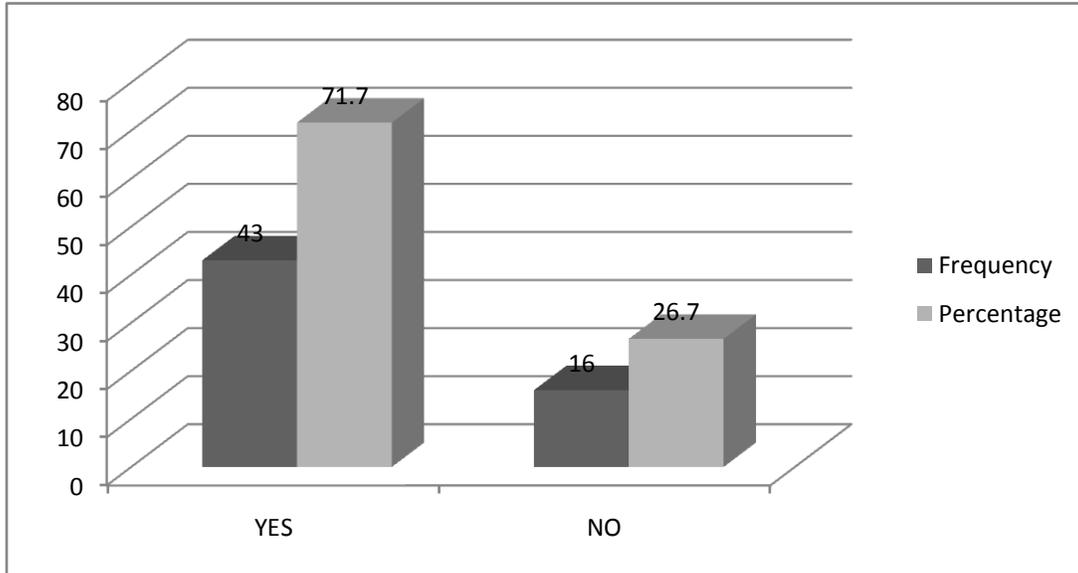
Table 1: Respondent Characteristics

	<b>RESPONSE</b>	<b>FREQUENCY</b>	<b>PERCENTAGE</b>
GENDER	MALE	40	66.7
	FEMALE	20	33.3
MARITAL STATUS	SINGLE	16	26.3
	MARRIED	44	73.3
WORK EXPERIENCE	LESS THAN 5 YEARS	21	35.0
	BETWEEN 5-10 YEARS	20	33.3
	MORE THAN 10 YEARS	19	31.7
ACADEMIC QUALIFICATION	BECE	1	1.7
	HND	7	11.7
	DEGREE	39	65.0
	MASTERS	13	21.7
MONTHLY INCOME	LESS 2000	41	68.3
	BETWEEN 2000 AND 4000	18	30.0
	MORE THAN 4000	1	1.7
AGE	LESS THAN 25	2	3.3
	BETWEEN 25-35	34	56.7
	MORE THAN 35	22	36.7

### **Life Insurance Patronage**

This survey sought to find out the extent of life insurance patronage among workers in the Ghanaian banking industry. Of the sixty respondents surveyed, 71.7 percent representing forty-three of the respondents surveyed had a life insurance policy whereas 26.7 percent made up of sixteen respondents had no life insurance policy. One respondent representing 1.6 percent, however, did not answer this question. Based on the sample surveyed, this indicates that there is high patronage of life insurance among Ghanaian bank workers.

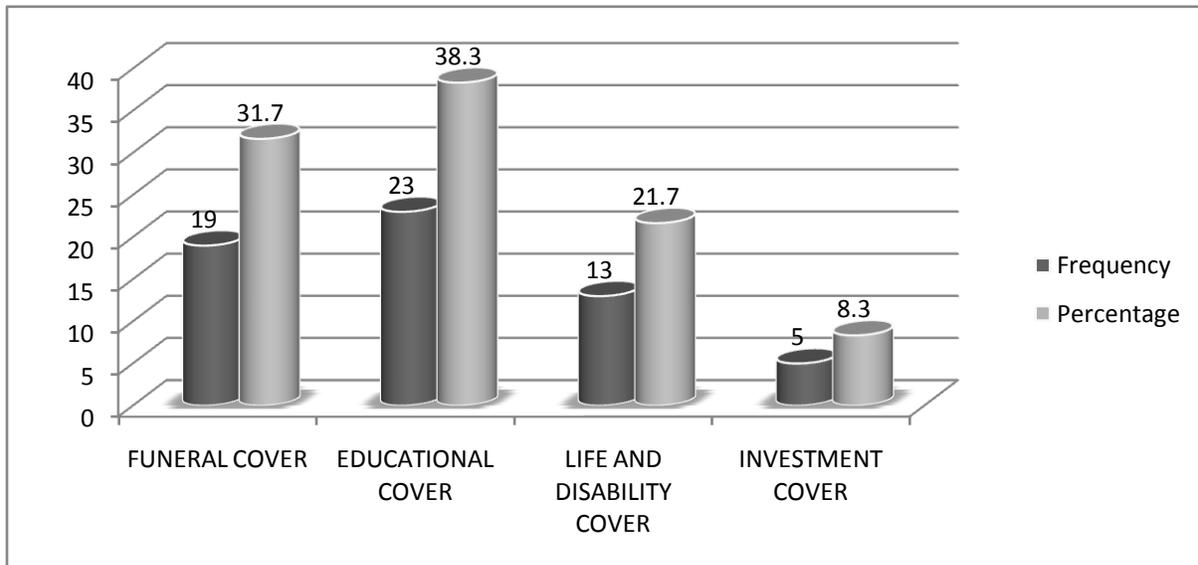
Figure 1: Extent of Life Insurance Patronage



**Type of Insurance Policy**

On the type of insurance policies mostly bought by the bank workers surveyed, majority of the respondents, approximately 38.3 percent of the respondents had purchased an educational cover policy with an additional 31.7 percent also owning a funeral cover policy. 21.7 percent also had a life and disability insurance cover with only 8.3 percent having ownership of an investment cover policy.

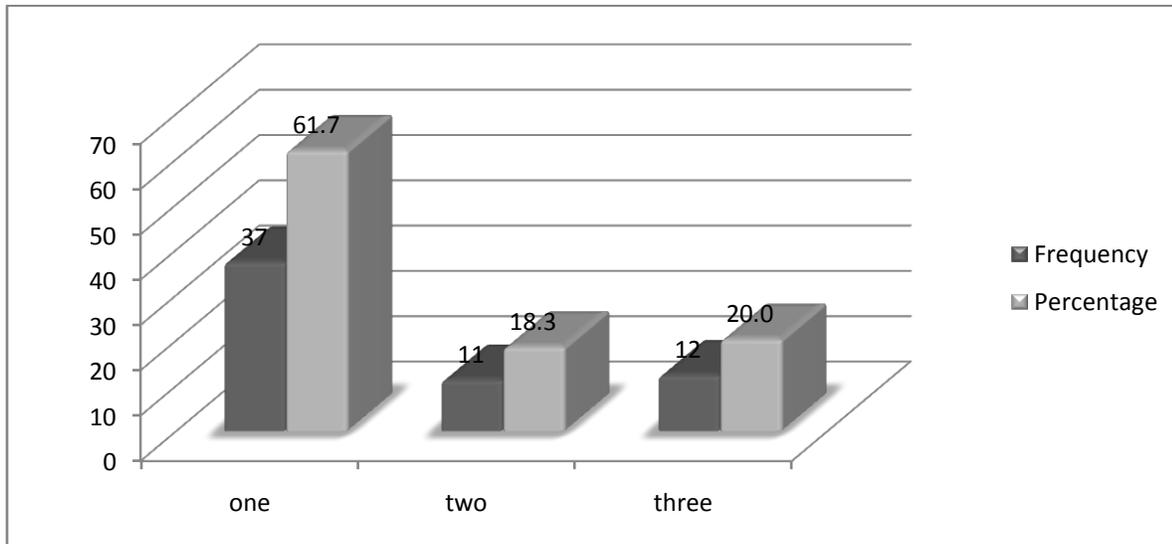
Figure 2: Insurance policies



### **Policies**

Of the forty-three respondents who had life insurance policy, most of them had only one insurance policy. As shown in figure 4.3 below, 61.7 percent of the respondents representing 37 respondents had only one life insurance policy and 20 percent holding three life insurance policies made up of 12 respondents. Additional 18.3 percent, 11 respondents owned two life insurance policies.

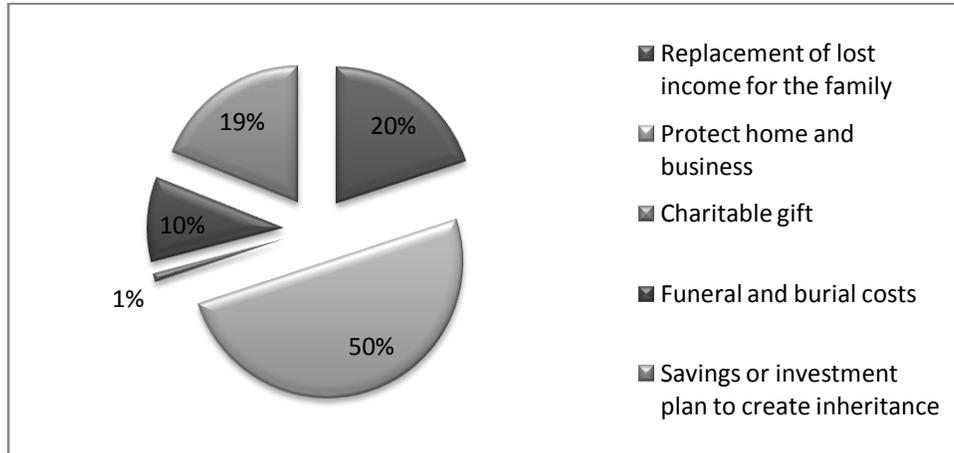
Figure 3: Number of Insurance Policies



### **Reasons for demanding Life insurance policy**

Literature on life insurance has identified different several reasons why individuals demand life insurance policy and as such this study sought to identify the reasons why Ghanaian bankers in particular demand life insurance. 50% of the respondents indicated that their reason for buying life insurance is for protection for home and family, 20% identified replacement of lost income for family as their reason. This was followed by 19% indicating saving and investment plan to create inheritance as their reason. Funeral or burial costs and charitable purposes were identified by 10% and 1% of respondents respectively. From these, it can be seen that among Ghanaian bankers, protection for home and family is the reason given by most for demanding life insurance, this followed by replacement of lost income for family whereas funeral or burial costs and charitable purposes are reasons for just a few bankers for demanding life insurance policies.

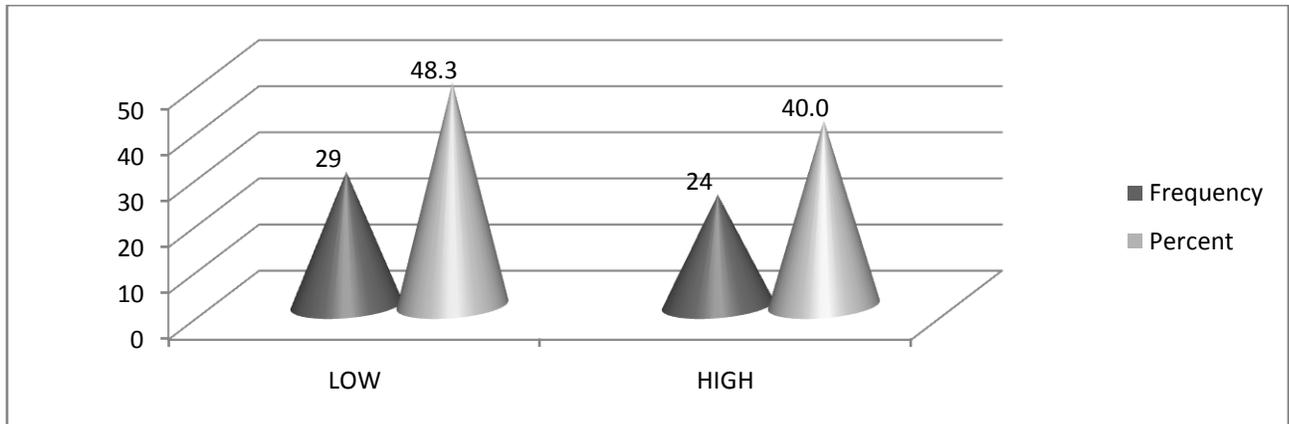
Figure 4: Reasons for demanding Life insurance policy



**Perceived Price of Premiums**

The respondents surveyed were asked about their perceptions on the premiums paid for their life insurance policies on the market. Out of the sixty respondents, 48.3 percent representing 29 respondents perceived life insurance premiums as low whereas 40 percent made up of 24 respondents perceived that the life insurance premiums where high.

Figure 5: Perceived Price of Life Insurance



**Test for Multicollinearity**

The correlation coefficient is a measure of the degree of linear relationship between two or more variables. Table 2 shows the correlation matrix for the variables defined in the previous section. With regard to the correlations between the independent variables to test for the presence of multicollinearity, correlation coefficients of less than 0.5 was found among pairs of the independent variables giving an indication that potential multicollinearity problems will not be encountered in using all the independent variables in the regression equation.

Table 2: Correlation Matrix

	GENDER	MRST	EDU	INCL	AGE	NDEP	FAMTYPE	PX
GENDER	1							
MRST	-0.0533	1						
EDU	0.102	0.2065	1					
INCL	-0.0029	-0.1789	0.2736	1				
AGE	-0.1726	0.1575	0.3802	0.0769	1			
NDEP	-0.1981	0.2845	0.3442	0.323	0.2864	1		
FAMTYPE	0.3424	-0.1668	-0.0549	-0.2754	-0.1935	-0.3131	1	
PX	0.0245	-0.31	0.0704	0.2545	-0.2726	-0.0033	-0.0567	1

### Determinants of Life Insurance

A logistic regression model was estimated to identify the factors that influence the demand for life insurance policy among bank workers. As explained in chapter three, the factors identified by literature to influence an individual's demand for life policy were gender, marital status of respondents, educational qualification, the income level, age, number of dependents, family type and the perceived cost of the policy. With a likelihood ratio  $\chi^2$  with eight (8) degrees of freedom of 32.44 having a probability greater than  $\chi^2$  of 0.0002 less than 0.05, the estimated model is significant in explaining the determinants of life insurance policy. The pseudo R-squared of 0.5603 indicates that 56.03 percent of the changes in an individual ability to purchase life insurance policy is determined by changes in the independent variables.

Table 3: Logistic Regression for Demand for Life Insurance

DEPENDENT VARIABLE: DEMAND FOR LIFE INSURANCE					
	Odds Ratio	Coefficients	Std. error	z	p > z
Constant	1.1331	0.1249	0.1352	0.92	0.355
2.GENDER	0.9998	-0.0002	0.0001	-2.21	0.027
2.MARITAL	1.1055	0.1003	0.0532	1.89	0.059
EDU	0.6869	0.3756	0.0607	6.19	0.000
INCOME	1.1085	0.1031	0.0593	1.74	0.083
AGE	1.0077	0.0077	0.0080	0.97	0.334
DEPENDENTS	0.2993	-1.2062	0.9777	-1.23	0.217
2.FAMTYPE	3.0218	1.1059	2.5448	0.43	0.664
PREMIUM	0.9996	-0.0004	0.00014	-2.59	0.010
LR $\chi^2(8)$	32.44				
Prob> $\chi^2$	0.0002				
Pseudo R2	0.5603				
Number of observations	51				

On the factors that influence a bank workers decision to demand for life insurance or not, gender, marital status, educational qualification, income and the perceived price of the policy (life insurance premiums) were found to be significant determinants of life insurance among the sample studied.

Gender of the respondents was found to be significant but negatively related to a bank workers decision to demand for life insurance policy or not. This indicates that female respondents are less likely to purchase a life insurance policy than a male. The estimated odd that a female will demand for life insurance is 0.9998 less than the corresponding odds for a male worker.

On the marital status of respondents, positive relationship indicates that married couples are more likely to purchase insurance policies compared to singles. The estimated odds that married workers will demand for life insurance is 1.1055 greater than the corresponding odds for unmarried worker.

The logistic regression also found a positive relationship between educational qualification and demand for life insurance implying that highly educated workers have a high likelihood of purchasing life insurance policies. This is as a result of their awareness of the benefits of insurance given that they are educated. This relationship was significant at 1% with an odds ratio of 0.6869.

High earning workers were also found to have a high probability of purchasing life insurance compared to low earning workers. This is indicated by significant positive relationship between income and demand for life insurance. As shown by the odds ratio of 1.1085, for each increase in a unit of monthly income, the estimated odds of purchasing a life insurance increases by 10.85 percent higher for high earning workers implying that probability of having a life insurance policy increases at higher levels of income. This was significant at 10%.

The perceived premiums paid for life insurance was also found to negatively impact on workers decision to either demand for life insurance or not indicating a perceived high premium for life policies reduces the likelihood of a worker purchasing life insurance policy. This relationship was significant at 1% with an odds ratio of 0.9996.

A stepwise regression was done by alternating between two variables, age and family type. The results are shown in table 4.4. In determining which of the model best explains the relationships being examined, a comparison is made of the pseudo R-squares. The addition of any variable which improves the pseudo R-squares provides a better model. As shown by the regression results, using family type by dropping the variable age from the regression equation reduces the pseudo R-square from 56.03 percent in table 4.3 to 28.2 percent in model 1 in table 4.4. However, when age was introduced in place of family type into Model 2, the pseudo R-

square was 55.22 percent much higher than 28.2 percent for Model 1. This indicates that in model 2 with the variable age, it provides a better fit compared to the model 1 with family variable. Additionally, education of respondents, income, age and the perceived premium were the significant determinants of demand for life insurance among Ghanaian bank workers. All the two models passed the requisite diagnostic tests.

Table 4: Other Regression Models

DEPENDENT VARIABLE: DEMAND FOR LIFE INSURANCE				
	MODEL 1		MODEL 2	
	odds Ratio	Coefficients	Odds Ratio	Coefficients
Constant	0.000388	-7.854(-2.2)**	2.73E-15	-33.53(-2.73)***
GENDER.2	0.155276	-1.862(-1.48)	0.1299	-2.040(-1.33)
MARITAL STATUS.2	1.939967	0.663(0.51)	42.996	0.761(1.64)
EDUCATION	8.751753	2.169(2.35)**	138.74	0.093(2.49)**
INCOME	1.346881	0.2971(1.67)*	1.4067	0.034(1.85)*
DEPENDENTS	0.654519	-0.423(-0.82)	0.2308	-1.466(-1.54)
FAMTYPE.2	1.414757	0.347(0.32)		
AGE			154.65	0.041(2.13)**
PREMIUM	1.248239	-0.222(0.21)	18.526	-0.919(2.15)**
<b>DIAGNOSTICS</b>				
LR $\chi^2$ (7)		17.26		31.97
Prob> $\chi^2$		0.0158		0.0000
Pseudo R2		0.282		0.5522
Number of observations		53		51

Note: z statistics in parenthesis, \*, \*\* and \*\*\* denotes significance levels at 10%, 5% and 1%

Based on the Pseudo R-squared of the three regression estimations, the model with all the independent variables in table 3 provides the better model to explain the determinants life insurance products among Ghanaian bank workers compared to the models in table 4 with pseudo R-squares of 28.2 percent and 55.22 percent compared to that of 56.03 percent in the table 3.

### Goodness-of-fit Test

The Pearson chi-square goodness-of-fit test compares the observed against the expected number of responses using cells defined by the covariate patterns. When the number of covariate patterns approaches the number of observations the Pearson chi-square test is not appropriate, hence a preference for the Hosmer and Lemeshow goodness-of-fit test. However,

since the number of covariate patterns is wide off from the number of observations, the Pearson chi-square test was used for the goodness-of-fit test of the logistic model.

Table 5: Pearson Goodness-of-fit Test

Number of observations	51
Number of covariate patterns	25
Pearson $\chi^2(16)$	115.51
Prob> $\chi^2$	0.0000

As shown above, the goodness-of-fit test suggests that the model fits reasonably well as the probability value greater than  $\chi^2$  of 0.0000 is less than 0.05.

## CONCLUSIONS

The study aimed at ascertaining the level of life insurance patronage among bankers, investigate bankers reasons for taking life insurance or otherwise and finally to examine the various determinants of life insurance. The study identified a high patronage level among bankers of life insurance policy. It also found out that the determinants of life insurance that significantly influence bankers' demand are gender, marital status, educational level, income, and perceived cost of policy.

Ghanaian bankers ascribed protection for home and family as the main reason for demanding life insurance; this was followed by replacement of lost income for the family whereas funeral or burial costs and charitable purposes are reasons for just a few bankers demanding life insurance policies. Based on the findings of the study the following are recommended:

- Insurance companies should improve their marketing strategies in order to increase bankers patronage of life insurance policies.
- Insurance companies should developed specialized products which meet the need of their clients as from the study it was identified that policy holders are more concerned about the benefit their family will derive in their absence.
- More also insurance companies should make the insurance premiums affordable so that as many Ghanaian families as possible obtain life insurance.
- The process involved in accessing claims should be easy and convenient so as to encourage a lot of people to patronize insurance products.

## REFERENCES

- Beck, T. and Webb I (2003), Economic, Demographic and Institutional Determinants of Life Insurance Consumption across countries, *World Bank Economic Review* 17(1); 51 – 88
- Beenstock, M., Dickinson G. and Khajuria S. (1988). “The Relationship between Property Liability Insurance Premiums and Income: An International Analysis”, *Journal of Risk and Insurance*, Vol. 55; pp 259-272.
- Bernheim, B. D., L. Forni, J. Gokhale and L. J. Kotlikoff (2001) “The Mismatch between Life Insurance Holdings and Financial Vulnerabilities: Evidence from the Health and Retirement Study”, *American Economic Review*, Vol. 93; pp 354-365.
- Bernheim, B. D., Carman, K.G., Gokhale J., and Kotlikoff L.J. (2001). The Mismatch between Life Insurance Holdings and Financial Vulnerabilities: Evidence from the Survey of Consumer Finances. NBER Working Paper No. W8544. Available at SSRN: <http://ssrn.com/abstract=287742> accessed on October 20,2014
- Enz, R. (2000) “The S-curve Relationship Between Per-Capita Income and Insurance Penetration”, *Geneva Papers on Risk and Insurance*, Vol. 25; pp 396-406.
- Fisher, I. (1930). *The Theory of Interest*. The Macmillan Company. New York.
- Fisher, S. (1930) “A Life Cycle Model of Life Insurance Purchases”, *International Economic Review*, Vol. 14; pp 132-52.
- Fredrick A. C. (1999) “*Insurance, Principals and Practice*”. 2nd Edition, John Wiley & Sons
- Greene D. and Treschman R. T., (2005), “*Risk & Insurance*” South Western Publishing Company, Cincinnati, Ohio
- Han, L., Li, D., Moshiran,F. and Tian,Y. (2010), “Insurance Development and Economic Growth”, *The Geneva Papers on Risk and Insurance –Issues and Practice*,35(2): 183-199
- Hakansson N.H., (2009) “Optimal Investment and Consumption Strategies under Risk and Uncertain Lifetime and Insurance”, *International Economic Review*, 10; 443 -466.
- Headen, R. S. and Lee J. F. (1974). “Life Insurance Demand and Household Portfolio Behaviour”, *Journal of Risk and Insurance*, Vol. 41; pp 685-698.
- Headen R. S. and Lee J. F., (2007) The Demand for Life Insurance in OECD countries (organization for Economic Cooperation and Development), *Journal of Risk and Insurance*.
- Hussel et al (2005), Stimulating the Demand for Insurance, *Risk Management & Insurance Review* 8(2); 257-278
- Jack C. F (2003) “*Investment Analysis and Management* Company Edition McGraw Hill international edition..
- Jack C. F (2005) “*Management of Investment*” 7th Edit ion M.C. Graw Hill Book
- Karni, E. and Zilcha I. (1986). Risk Aversion in the Theory of Life Insurance: The Fisherian Model. *The Journal of Risk and Insurance*, Vol. 53, No. 4, pp. 606-620.
- Karni, E. and I. Zilcha (1985) “Uncertain Lifetime, Risk Aversion and Life Insurance”, *Scandinavian Actuarial Journal*, pp 109-123
- Lewis, F.D. (1989) “Dependents and the Demand for Life Insurance”, *American Economic Review*, Vol. 79; pp 452-466
- Lim, C. C. and S. Haberman (2004) “Modeling Life Insurance Demand from a Macroeconomic Perspective: The Malaysian Case”, Research Paper: *The 8<sup>th</sup> International Congress on Insurance, Mathematics and Economics*, Rome.
- Lin Y. and Grace M.F. (2006). Household Life Cycle Protection: Life Insurance Holdings, Financial Vulnerability and Portfolio Implications. Available at SSRN: <http://ssrn.com/abstract=974914> accessed on October 20,2014

Manson J.E., Willett W.C., Stampfer M.J., Colditz G.A., Hunter D.J., Hankinson S.E., Hennekens C.H., Speizer F.E., (1998), Body weight and mortality among women. *N Engl J Med*; 333:677-685.

Marshall, A. (1920). Principles of Economics. Eighth edition. London: McMillan Press.

National Insurance Commission (2008), "The state of micro insurance in Ghana", paper presented by the Insurance Commissioner at a Stakeholders Meeting on Micro Insurance in Ghana, 7 August 2008, Accra.

Outreville, J. F. (1990) "The Economic Significance of Insurance Markets in Developing Countries," *Journal of Risk and Insurance*, Vol. 62; pp 487-498.

Outreville, J. F. (1996) "Life Insurance Markets in Developing Countries", *Journal of Risk and Insurance*, Vol. 63; pp 263-278.

Powers, M. R., (2006) "Pure vs speculative risk: False choice; sham marriage", *The Journal of Risk Finance*, Vol. 7 Iss: 4, pp.345 - 347

Redja E. (2003), "*Principle of Risk Management & Insurance*" Harier Collins Publishers incorporated

Truett, D. B. and L. J. Truett (1990) "The Demand for Life Insurance in Mexico and the United States: A Comparative Study", *Journal of Risk and Insurance*, Vol. 57; pp 321-328.

Ward, D. and R. Zurbruegg (2002) "Does Insurance Promote Economic Growth? Evidence From OECD Countries", *Journal of Risk and Insurance*, Vol. 67; pp 489-506

Yaari, M. E. (1964) "On Consumer's Lifetime Allocation Process", *International Economic Review*, Vol. 5; pp 304-317.

Yaari, M. E. (1965) "Uncertain Lifetime, Life Insurance, and the Theory of the Consumer", *Review of Economic Studies*, Vol. 32; pp 137-150.

Zietz, E.N. (2003) Perspectives of an Evaluation of the Demand for Life Insurance, *Risk Management & Insurance Review* 6(2); 159 – 171