

## Determinants of Life Insurance Demand, Consumer Perspective - A Case Study of Ayeduase-Kumasi Community, Ghana

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### Abstract

This study finds out the determinants of life insurance demand in the Ayeduase-Kumasi community from the perspective of consumers. The study adopted Logistic regression modeling technique with 256 cross section observations. Income, higher education, number of dependents, employment by someone else and better perception about insurance firms improved the chances of taking life insurance. Age however, has negative relationship with the odds of taking life insurance. Number of dependents was statistically significant at 1%. Age and Type of employment were both significant at 5% while's income and education level were significant at 10%. Overall the Chi-Square showed that the model was statistically significant at less than 0.001. This study had similar results to previous studies and deviates as well. Çelik and Kayali found a positive relationship between income and odds of taking insurance and that was not different from the results of this study. Contrary to Çelik and Kayali, higher education influences positively the odds of taking life insurance. Moreover, segmenting customers into different groups by using the type of employment as basis of segmentation could help insurance firms to prescribe policies that customers may patronize.

**Keywords:** Financial; Inflation; Insurance; Income; Wealth

### Introduction

Insurance is a tool by which a small number are compensated out of funds (premium payment) collected from plenteous. Insurance company pays back for financial uses arising out of occurrence of insured evidence. Insurance is protecting against uncertainties. It provides financial restart for sufferers insured within policy of insurance. Insurance essentially, is an arrangement where the losses experienced by few are extended over several who are exposed to similar risks. Insurance is a protection against financial loss arising on the happening of an unexpected event. Insurance companies collect premium to provide security for the purpose. As loss is paid out of the premium collected from the insuring public and the insurance companies act as trustees to the amount collected (RANI, 2007).

The financial sector in Ghana over the years has significantly improved. This has helped in the growth of the service sector (Budget of Ghana, 2013). Life insurance market of transition economies had experienced a rapid growth over the last decade, indicating the increased importance of this sector as a financial intermediary [1]. The insurance traditions of the Ghanaian society is significantly less mature compared to the western developed countries, where the life insurance business, for instance, substantially increased its importance as a financial intermediary over the last 40 years and became one of the leading sources of investment in the capital market [1].

A key decision the individuals or families take is whether to buy life insurance or not. The reason behind considering such a decision is to protect against possible loss of income [2]. Life insurance provides individuals and the economy as a whole with a number of important financial services. In the face of escalating urbanization, mobility of the population, and formalization of economic relationships between individuals, families, and communities, life insurance has taken increasing significance as a way for individuals and families to manage income risk. Also, life insurance products encourage long-term savings and the re-investment of substantial sums in private and public sector projects.

In spite of the increasing importance that life insurance has in

managing income risk, facilitating savings, and providing term finance, factors that determine its demand are not totally unveiled. A number of authors have alerted series of socio-economic and institutional factors that determinant life insurance demand. Inadequate data samples and variables on the other hand, have impeded the fullness of their study. This paper improves on the existing literature by using cross section data with stretched out sample size and variables.

### Literature Review

Rani (2007) used probit regression modeling technique with 172 sample households on determinants of demand for insurance in Suler Special Panchayat, Coimbatore District, India. From the analysis it was found that most of the respondents clearly explained that for their savings only they have demanded the insurance policies. In case of non-insurer, lack of income is one of the important economic factors for this non-demanding of insurance policies. Further, from the probit regression analysis, it was inferred that age, income and value of property have emerged significantly as determinants of demand for insurance. It was therefore concluded that the demand for insurance is not the purpose of risk aversion and savings. But people want to enjoy maximum benefit by paying minimum premium during their lifetime.

Nesterova [1], on determinants of demand for life insurance: evidence from selected Commonwealth of Independent States and Central and Eastern European countries using panel data analysis techniques for 14 countries over the period 1996-2006, find that countries with higher life expectancy at birth, income level, old

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dependency ratio and countries (members of the European Union) have higher levels of life insurance consumption, while financial development indicator, inflation and real interest rate reduce the demand for life insurance across countries.

Beck and Webb (The World Bank, 1818 H St., N.W., Washington, D.C. 20433.) [3]. On determinants of life insurance consumption across countries using a cross-sectional sample of 63 countries averaged over 1980-96 found that educational attainment, banking sector development, and inflation are the most robust predictors of life insurance consumption, while income is only a weak predictor. The results on educational attainment and inflation were confirmed in 23 countries over the period 1960-96. The results strengthen the case for promoting price stability, financial sector reform, and an efficient education system if life insurance and its many benefits are to be fully realized in an economy.

Hammond [4] makes a study on the impact of economic and demographic factors of demand for life insurance by using regression analysis. They find that income, net worth holdings, stage in the life cycle, education, occupation significantly affect life insurance consumption.

Neumann [5] investigates the impact of inflation on life insurance consumption by using time series regression for the period of 1946-1964. However, other explanatory variables such as income, number of marriages, births and urban households are used to prevent spurious correlation. As a result, it is found that inflation has no significant effect on life insurance consumption.

Berekson [6] analyzes the impact of age, marital status, number of children financially responsible, gross income, birth order among siblings and parent's divorced on life insurance consumption by using regression analysis in 1969. They find that while age, number of children and birth order variables have significant effects on demand for life insurance, income is not significant for one survey and significant for another.

Fortune [7] studies the determinants of life insurance consumption by using multiple regression analysis for the period between 1964 and 1971. As a result of multiple regression analysis, non-human wealth held, wages, discount rate and consumer confidence variables are found significant. While non-human wealth held affects life insurance consumption in negative way, wages and discount rate affect in positive way.

Anderson and Nevin [8] investigated life insurance purchasing behavior of young newly married couples by conducting survey of young married couples for the period of 1968-1971. They use twenty independent variables and three different dependent variables (life premium expenditures, amount of life insurance purchased, type of life insurance purchased). They find that following six independent variables are statistically significant in explaining the amount of life insurance purchased; education, current household income, expected household income, net worth of household, husband's insurance before marriage and wife's insurance before marriage. Three of the independent variables are significant in explaining type of life insurance purchased; net worth, wife's insurance portfolio before marriage, influence of insurance agent.

Burnett and Palmer [9] analyzed the impact of demographic and psychographic variables on demand for life insurance. They observe that in psychographic variables work ethic, fatalism, socialization preference, religion salience, and assertiveness are the most important

factors that affect life insurance consumption. In addition, education, number of children and income are the best demographic factors.

Truett and Truett (1990) compared the demand for life insurance in Mexico with that in the United States by applying time series regression. As a result, they find that age, education and level of income are the significant factors positively related with life insurance consumption. In addition, they stress that income elasticity of demand for life insurance is much higher in Mexico [10].

Çelik and Kayali [2], investigated the determinants of demand for life insurance in cross section of 31 European countries. As a result, they find that income is the central variable which affects life insurance consumption. In addition, while the impact of population and income on demand for life insurance is positive, education level and inflation affect life insurance consumption in negative way [11,12].

## Model Specification

This study adopts logistic regression modeling technique. The choice of this methodology stems from the fact that the regressand of the model is binary. The logistic regression is specified as

$$\ln\left[\frac{P_i}{(1-P_i)}\right] = \lambda_0 + \lambda_1 A + \lambda_2 Y + \lambda_3 E + \lambda_4 T + \lambda_5 D + \lambda_6 O_1 + \lambda_7 O_2 + \lambda_8 O_3 + \lambda_9 G + \lambda_{10} I + \mu$$

Where:

A=age of respondent

Y=Average monthly income of respondent.

E=Education of respondent {E=1 if has at least SHS education equivalence, E=0 if has at most JHS education equivalence}

T=Type of employment {T=1 if self-employed and T=0 if otherwise}

D=Number of dependents of respondents

O<sub>i</sub>=Opinion on insurance firm(s) { O=1 if Excellent, O=2 if Very good O=3 if good, and O=4 if bad}.

G=Gender of respondent {G=1 if Male, G=0 if otherwise}

I=An idea on what insurance is {I=1 if yes and I=0 if no}

μ=Error term

λ<sub>0</sub>, λ<sub>1</sub>,....., λ<sub>10</sub>=The parameters to be estimated.

[P<sub>i</sub>/(1-P<sub>i</sub>)] =The Odds of taking Life Insurance.

## Data and Sampling

The study relied purely on cross sectional and primary data collected from 256 inhabitants chosen through simple random sampling from the Ayeduase-Kumasi community. The Data was obtained through questionnaires.

## Results and Discussion

### Descriptive analyses

The descriptive statistics of the study are shown in Table 1a. Table 1a also indicates that there are 256 observations. The Age of respondents is wide spread with a minimum age of 19 years and a maximum of 79 years. This gives average age of respondents to be approximately 38 years. Income had the biggest spread with the minimum of Gh¢200 and a maximum of Gh¢2000. The average income of respondents stood at Gh¢939.95. Table 1a also shows that the number of dependents per

	N	Minimum	Maximum	Mean	Std. Deviation
Age	256	19.00	79.00	37.5391	10.77827
Income	256	200.00	2000.00	939.952	286.01742
Number of Dependants	256	.00	12.00	3.6250	2.63014

Source: Authors' construction, 2014.

Table 1a: Descriptive statistics for continuous variables (N=Observations).

		Frequency	Parameter coding		
			(1)	(2)	(3)
Opinion About Insurance Firms	excellent	4	1	0	0
	very good	19	0	1	0
	Good	124	0	0	1
	Bad	109	0	0	0
Idea on Insurance	No	12	1		
	Yes	244	0		
Education Level	at most JHS	56	1		
	at least SHS	200	0		
Type of Employment	employed by other	202	1		
	Self employed	54	0		
Gender	Female	73	1		
	Male	183	0		

Source: Authors' construction, 2014.

Table 1b: Descriptive statistics of categorical variables.

Variables	Score	Df	Sig.
Age	0.001	1	0.977
Income	4.396	1	0.036
Number of Dependants	3.650	1	0.056
GENDER	0.259	1	0.610
Education Level	0.349	1	0.555
Type of Employment	0.590	1	0.442
Idea on Insurance	0.037	1	0.847
Opinion	9.002	3	0.029
Excellent	7.244	1	0.007
Very good	0.825	1	0.364
Good	0.803	1	0.370
Overall Statistics	26.341	10	0.003

Source: Authors' construction, 2014

Table 1c: Contribution of Variables to model fit.

each respondent stood at approximately four (4) dependents.

Table 1b indicates that seventy-three (73) of the respondents are females and one hundred and eighty three (183) respondents are males. Out of total respondents of 256, fifty-four (54) were self-employed and two hundred and two (202) being employed by someone else. The "someone else" here could be the government or a private entrepreneur. The table also shows that two hundred (200) of respondents have at least Senior High School (SHS) Education whiles Fifty-six (56) had at most Junior High School (JHS) Education. Two hundred and Forty-four (244) had idea on what insurance is about whiles twelve (12) indicated ignorance of insurance. Four (4) respondents rated insurance firms as providing excellent services, nineteen (19) indicated very good services; one hundred and twenty-four (124) tagged insurance firms as providing good services and one hundred and nine (109) indicated that insurance firms' services are bad. This in fact, tells that the people have low confidence in the insurance firms [13,14].

### Logistic regression results

The Table 1c indicates that almost all variables in the model

contributed to the explanation of the Odds of taking insurance. Average monthly Income, Number of dependents and opinion contributed at significance of less than 0.036, 0.056 and 0.029 respectively with one (1) degree of freedom for income and number of dependents whiles opinion has 3 degrees of freedom. Even though Gender, Education Level, Type of employment, and Age contributed to the model fit, they were not significant. The test for overall model significance is shown in Table 1c.

The Table 1d shows that the Chi-Square is statistically significant at less than 0.001 with 10 degrees of freedom. Average monthly Income had a positive impact on the odds of taking life insurance. It adds 0.001 to odds of taking insurance and statistically significant at 0.10 level. That is when income is high people are able to afford the cost of taking insurance. The table shows that a male adds 0.458 to the odds of taking life insurance more than females. This suggests that males are more likely to take life insurance. The coefficient of Gender (male) was not statistically significant. Persons with at least SHS education are more likely to take life insurance policy than persons with at most JHS education. From Table 1e persons with at least SHS education add 0.658 to the odds of taking life insurance than persons with at most JHS education. Persons employed by others also add 0.821 to the odds of taking life insurance than self-employed persons. This variable was statistically significant at 0.05 level. Age had negative relationship with the odds of taking life insurance. That is from the Table 1e, age reduces the odds of taking life insurance by -0.044. That is as age increases persons are more likely not to take life insurance. The age variable was statistically significant at 0.05 level. Number of dependents influenced the odds of taking insurance positively. It had a positive influence of 0.213 on the odds of taking life insurance. Table 1e also indicates that if persons have idea about what insurance is then they are more likely to take life insurance. That is those with idea on insurance add 0.379 to the odds of taking life insurance than those without idea on insurance. Table 1e moreover shows that the opinion people can

		Chi-square	df	Sig.
Step 1	Step	28.642	10	0.001
	Block	28.642	10	0.001
	Model	28.642	10	0.001

-2 Log likelihood (305.7236751713324).

Source: Authors' construction, 2014.

Table 1d: Omnibus tests of model coefficients.

	B	S.E.	Wald	df	Sig.	Exp(B)
Age	-0.044	0.019	5.576	1	0.018***	0.957
Income	0.001	0.001	2.818	1	0.093***	1.001
Number of Dependants	0.213	0.075	8.138	1	0.004*	1.237
Gender	0.458	0.317	2.091	1	0.148	1.581
Education Level	0.658	0.361	3.311	1	0.069***	1.930
Type of Employment	0.821	0.385	4.552	1	0.033**	2.273
Idea of Insurance	0.379	0.693	0.300	1	0.584	1.461
Opinion			1.841	3	0.606	
Excellent	23.582	1.895E4	0.000	1	0.999	1.743E10
Very good	-0.052	0.586	0.008	1	0.929	0.949
Good	0.381	0.302	1.591	1	0.207	1.463
Constant	-1.766	0.794	4.954	1	0.026**	0.171

B=Coefficients of logistic regression; SE: Standard Error; df: Degrees of Freedom; Sig: Significance level Exp (B)=odds ratio of taking insurance. (\*significant at 1%) (\*\*significant at 5%) (\*\*\*)significant at 10%).

Source: Authors' construction, 2014.

Table 1e: Logistic regression coefficients.

affect their decision of taking or not taking life insurance. Those who perceive insurance firms to be of better standing are more likely to take life insurance than otherwise, though this variable was not statistically significant.

### Implications of the study

The study implied that insurance firms should reduce premium to attract aged customers. Also, market segmentation could help insurance firms to maximize their premium charges. Moreover, insurance firms must be proactive in dealing with customers since the perception of customers hugely influences the chances of taking insurance.

### Summary and Conclusion

The determinants of life insurance were investigated in this study. This study had similar results to previous studies and deviates as well. Çelik and Kayali [2] found a positive relationship between income and odds of taking insurance and that was not different from the results of this study. Contrary to Çelik and Kayali [2] higher education influences positively the odds of taking life insurance. Life insurance demand also increases if people have better perception about insurance firms. Age had a negative relationship with the odds of taking life insurance while number of dependents had positive relationship with the odd of taking insurance.

It is recommended that insurance firms take into consideration variables such as income, age, and type of employment in determining premium to be paid and not only the degree of risk exposure the individual has, though that has been the theoretical basis for determining premium as shown in "Advanced Microeconomic Theory by Jehle and Reny". These variables as could be observed from the results hugely determine whether an individual could take life insurance. Moreover, segmenting customers into different groups by using the type of employment as basis of segmentation could help insurance firms to prescribe policies that customers may patronize.

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