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# THE DETERMINANTS OF DEMAND FOR MICRO INSURANCE SERVICES IN KENYA

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## Abstract

**Purpose:** The purpose of this study was to determine the factors which influence the demand for micro insurance services in the insurance industry in Kenya.
**Methodology:** The study adopted cross sectional survey design. The target population was insurance service providers in Kenya licensed by the Insurance Regulatory Authority (IRA). Sampling technique was stratified random sampling. A questionnaire was used in the collection of primary data which was analyzed using Statistical Package of Social Sciences (SPSS). Analysis of data was done using descriptive and inferential statistics. Regression and correlation analysis was done to test the relationship between the study variables.
**Results:** The study findings indicated that risk exposure, price, access to credit and income level are significant determinants of micro insurance demand. Gender, age and level of education were found to have a positive and significant influence on the demand for micro insurance. The study concluded that micro insurance demand is affected by economical and structural factors and that the potential is yet to be exploited.
**Unique contribution to theory, practice and policy:** The study recommended that awareness and education be conducted to the public; flexible and convenient payment option be availed; easy access to credit; the regulator to put in place a framework for micro insurance and the government to offer subsidies and incentives towards micro insurance services.

**Key Words:** *Micro insurance, demand, determinants, Insurance companies in Kenya.*

## 1.0 INTRODUCTION

### 1.1 Background of the Study

Insurance is a product of risk transfer where a business enterprise assumes and shoulders the uncertainty of another business in return of the payment of a premium, Waugham (1989). Micro insurance is a product or service that is designed to protect low income individuals against household risks (Churchill, 2006). Micro insurance services are demanded in a similar manner to any other service and the prices associated with the issuance of such services are the prime determinants of demand. The evolving prospect of micro insurance is not only to support business perceptions but also social improvement and safety to the poor people (Srijanani 2013). Micro insurance service has concentrated on the development of business models that can enable the poor households to engage in profitable commercial activities. Hence, insurance firms require designing their products in line with the demands of the households in informal settings (Van Ginneken, 1999). The main reason behind micro insurance is that, most households have been excluded from existing formal insurance schemes. Most of the formal insurers have not engaged closely with informal establishment and rural households; making the excluded group lack access to empowerment and capacity to effectively engage in formal insurance offering. A study by Fin Access (2009) showed that the rate of insurance penetration is below 3% of GDP, with only 7% of the Kenyan population having any form of insurance. Thus, there is need for a new concept of insurance that can tap in the underserved sector and enhance economic growth.

### 1.2 Statement of the Problem

Micro insurance deals with many problems which are deep rooted in the socio economic structure; it mitigates extreme poverty and hunger through provision of micro insurance products such as agriculture insurance for farmers, life assurance cover and funeral cover (Chummum, 2012). The underprivileged face two types of risks specifically; idiosyncratic (explicit to household) and covariate (mutual to all), (Tadesse & Brans (2012)). To address risks, the underprivileged have customarily used risk pooling through informal insurance or risk sharing arrangements. The local insurance industry is largely small, leaving a wide portion of the population unserved by any formal insurance company. The development and sustainability of micro insurance within the country may come in hand in supporting the insurance industry stability since this will take into account the small groups. Given the size and potential of the untapped market and lack of mass information; the insurers have to place most of the risk with reinsurers (Makove, 2011).

Cohen and Sebstad (2005) are of the view that supply and demand are the main drivers of insurance penetration. Despite numerous advancements being achieved in the financial sector there has been little that has been done in expanding the inclusivity of low income households (Randhawa and Gallardo, 2003). Most studies that have examined demand for micro insurance services have been done in Asia, (Churchill, 2006) and the main focus appears to be the consumers of micro finance products, (Cohen & Sebstad, 2005: Gine, Townsend & Vickery 2008).

Studies have been conducted on insurance and micro-insurance in Kenya. Onduso (2014) conducted a research on factors influencing penetration of micro insurance in Kenya and established that low income, poor distribution channels and lack of sufficient education affected the uptake of insurance service and products. Njuguna and Arunga (2012) examined the risk management practices by service providers of micro-insurance. Njihia (2013) undertook a study on challenges of market penetration of general insurance firms in Kenya. Ndalu (2011)

researched on the relationship between economic growth and insurance penetration in Kenya. Simba (2002) conducted an assessment of the demand for micro insurance in Kenya and concluded that low income communities have a variety of coping mechanisms for risks such as health, thefts and burglaries. Mugo and Okibo (2015) researched on factors influencing Micro insurance penetration among middle and low income earners in Kenya.

However, a fundamental gap exists on determinants of demand for micro insurance services thus this study sought to examine these determinants. This gap in knowledge is fundamental owing to the large contribution of micro insurance in the economy of developing nations and concurring with Kenya's vision 2030 manifesto.

## 2.0 LITERATURE REVIEW

### 2.1 Theoretical Framework

#### 2.1.1 Demand theory

The law of demand holds that the rate of consumption is inversely associated with the price levels; in a condition known as the substitution effect. Demand is always described sketchily as a negatively sloping curve to the x-axis (which is a characteristic of product quantity needed). Consistent with the law of demand; the demand curve is a downward sloping curve; implying that as the price decreases, consumers will buy more of that good. Demand curves are subject to the effect of marginal utility. Consumers will continue to exhibit their willingness to buy a particular quantity at a given price in line with the marginal utility of the alternative choices.

#### 2.1.2 Risk theory

Filip Lundberg (1903) is the proponent of the risk theory. The theory was projected as a way of adopting decision making in uncertainty (Kahneman & Tversky, 1979). Risk is the probability of an event occurring that has a negative outcome. The theory seeks to lay foundation for decision making among people when faced with uncertainty about the future. The cost arising from a risk can be measured in terms of the frequency of risks, the financial cost as well as the human cost incurred in terms of pain and suffering. There is need to actively manage risk; which has led to different people coming up with varying mechanisms for managing and coping with risks. Some end up preferring insurance as a mechanism of protecting themselves against risk. Through the concept of risk pooling insurance firms offer the best solution to risk management. In the informal sector some households consider self-insurance mechanisms and communal mechanisms such as savings and welfare groups (Hintz, 2009). The risk theory assist insurance companies' administration in integrating ruin probabilities into their decision making process. The vital problem in risk theory is to scrutinize the ruin possibility of the risk business (Grandell, 2012).

#### 2.1.3 Expected utility theory

Expected Utility (EU) theory holds that preferences for consumers are fixed hence utility is not a testable assumption. Friedman and Savage (1948) suggest that a person having a steady set of preferences in an event containing risk would prefer the substitute that has the highest expected utility. Through the expected utility theory, demand is denoted using the insurance products characteristics such as the disbursements and premiums, and makes the assumption that individuals are able to objectively assess the probability of risk. Expected utility theory also describes demand by; the features of insurance products (premium and benefits) and socio-economic characteristics and assumes that individuals are capable of assessing the probability of

risk. The expected utility theory is also used to understand decision making about insurance. The extent to which an individual is willing to do so depends on his or her preferences and is subjective and specific to each decision maker and is reflected in his or her utility function. The Majority of individuals are presumed to have a preference for eluding at least some level of risk. Ambiguous expenditures to which families are exposed inhibit them from maximizing utility and therefore, under certain circumstances, it is ideal for families to insure against them (Feldstein, 1973; Mossin, 1968; Arrow, 1964). Economic theory assumes that rational individuals try to maximize their expected utility of scarce resources.

In this respect it looks at utility in economic or monetary terms. Schwarcz (2010) posited that the expected utility theory is a poor theory of highlighting how individuals purchase insurance. The researcher observes that changes in the expected utility theory may emanate from mistakes in that the consumers may act differently if they had in possession adequate information and cognitive capabilities. From observation of the existing analysis, the study embraced the expected utility theory as the theoretical framework to study the influence of financial factors on the demand for micro insurance services in the insurance industry in Kenya.

### 2.2 Empirical review

Gine, Townsend, and Vickery (2007) studied the demand for micro insurance. In their study in India they analyzed factors affecting demand for rainfall insurance. Most of the respondents cited the main reason for not subscribing to insurance covers as their lack of product knowledge and money to pay off insurance premiums. The study also established positive association between demand for insurance and technology adoption, membership in financial services and participating households. The general insurance underwriting was at 4.6% at the time of insurance demand. Subsequent studies mainly centered on an exploration of insurance uptake lags (Ito and Kono, 2010; Dercon, Gunning and Zeitlin (2011)). Most of these concentrated on the role of financial literacy, levels of liquidity and trust on demand for micro insurance.

Households with low financial strength coupled with constrained liquidity levels have low demand for micro insurance products as a risk management tool (Cole *et al*., 2010). In studies conducted in India and Indonesia it was established that there is a positive association between shocks and liquidity, shocks has a positive effect on insurance demand (Cole *et al*., 2010). In the similar study education level was identified as a positive determinant of demand for formal financial services which include insurance products and services. The same study established that education levels had a negative effect on informal insurance arrangements.

In another study in China, it was established that social networks had an effect on insurance demand. It was also proven that in groups where people participated in micro insurance marketing there was a higher intake of insurance than in individual insurance uptake (Cai, Chen, Fang & Zhou 2010). Dercon *et al.,* (2011) conducted a study in Kenya and established that individuals trust levels on the product on offer had a large influence on insurance uptake.

In micro insurance demand study conducted by Dercon (2002), Hulme and Shepherd (2003) postulated a link between risk, vulnerability and poverty on households. Park and Lemaire (2011) concluded that factors such as the culture of households could explain the demand for insurance in some nations. Hofstede (1995: 2001) pointed out that insurance demand levels within a country widely depended on the culture of the people, their willingness to purchase

insurance and their means of mitigating risk. Esho, Kirievsky, Ward and Zurbruegg (2004) conclude that an increase in the national income levels increased the demand for life insurance among poor households. The study also established a strong causal link between national income and the increases in demand for non-life insurance. Similarly, Enz (2002) developed a model that showed an association between the increases in insurance intake levels and the GDP per capita within countries. The insurance growth models formed the basis for the development of the s-curve model. The model shows that micro insurance penetration levels will rise with increase in GDP per capita but at different levels of GDP there is a different penetration levels. The model further exhibited that at a certain level of GDP expansion the penetration level remains the same.

Saqware (2012) conducted a study in Tanzania on micro insurance and established that competition between informal arrangements and formal insurance services affected the demand for micro insurance. In their study in Kenya Njuguna and Arunga (2012) established that the risks that face insurance providers as a result of low penetration, unsupportive regulatory framework and lack of strategies largely affected the uptake of insurance. Gikonyo (2014) undertook a research on the effects of mobile technology on the growth of insurance in Kenya and reported that growth in mobile technology enhanced micro insurance uptake in the country. The researcher recommended that the regulatory framework should be designed to support better integration of mobile technology and insurance products/services in order to foster insurance uptake. Onduso (2014) conducted a study on factors affecting penetration of insurance in Kenya and established that low income, poor distribution channels and lack of sufficient education affected the uptake of insurance service and products.

## 3.0 METHODOLOGY

This study adopted both qualitative and quantitative approaches. Data analysis was undertaken by means of standard statistical procedures. Questionnaires were used to capture qualitative and quantitative data. The researcher used a cross-sectional survey research design. According to Saunders, Lewis and Thornhill, (2009) this research design focuses on a particular research concern at a definite time. This research design assisted the researcher in determining the study objectives, the sampling techniques and sample size, the data collected to test the hypothesis and interpretation of the collected data (Nachmias, 1996).

## 4.0 RESULTS AND DISCUSSIONS

### 4.1 Diagnostic test on the instrument

Factor analysis was used for dimension reduction to help assess the validity of the instrument used to collect the data. Factors are underlying unobserved structures of smaller sets of composite dimensions relative to the larger set of observed indicators. Factor analysis reduces the dimensions from the larger se of observed variables to the smaller set of unobserved variables. This study used Confirmatory Factor Analysis techniques to assess the validity of the questionnaire measurements and for dimension reductions. CFA is adopted when the underlying structures of the observed variables are based on existing theories. CFA confirms that the observed indicators belong to the constructs based on the theories. Factor loadings which are the extracted variances of the indicators to the factors are used to assess relationship between indicators and their factors. An observed indicator belongs to the construct if it loads the construct with a factor loading above 0.4. All the indicators were found to load the constructs with loadings above 0.4 thus none of the indicators were expunged. Further to the factor

loadings, factor scores were extracted that were used as weight to generate total scores used the latent variables of the constructs for inferential analysis.

**4.1.1 Construct validity**

The measure of construct validity is a measure of both convergent and discriminant validity using factor analysis. Convergent validity was conducted to confirm that constructs that are expected to be related are related while discriminant validity tested whether constructs that are expected to have no relationships are truly not related.

**4.1.2 Convergent validity**

To measure convergent validity, the researcher computed the average extracted variances from the factor loadings for each construct. The computed average variances were then compared with the threshold of 0.5. Each construct has an average variance extracted above 0.5 as shown in table 4.2 implying convergent validity of the instrument used to collect data

**Table 1.1: Average Variance Extracted**

| Construct | AVE |
|---|---|
| Risk Exposure | 0.684 |
| Price | 0.683 |
| Credit Accessibility | 0.772 |
| Income Level | 0.720 |
| Characteristics | 0.672 |
| Demand for micro insurance | 0.687 |

**4.1.3 Discriminant validity**

Discriminant validity is the confirmation of non-relationship between the items measuring the constructs. To confirm this, the average variance extracted for each construct is compared with the squared correlations. Table 1.2 shows the computed and tabulated squared correlations while table1.3 shows the comparison with the AVE on the diagonal and highlighted. As shown, all the AVEs are greater than the squared correlations between the constructs implying that the instrument exhibits discriminant validity.

**Table 1.2: Squared Correlations**

| | Risk Exposure | Price | Credit Accessibility | Income Level | Customers' Personal Characteristics | Demand For Micro Insurance |
|---|---|---|---|---|---|---|
| Risk Exposure | 1 | 0.198 | 0.279 | -0.228 | 0.41 | 0.146 |
| Price | 0.198 | 1 | -0.028 | -0.204 | 0.101 | 0.249 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Credit Accessibility | 0.279 | -0.028 | 1 | -0.012 | 0.381 | 0.155 |
| Income Level | -0.228 | -0.204 | -0.012 | 1 | -0.187 | 0.278 |
| Customers' Personal Characteristics | 0.41 | 0.101 | 0.381 | -0.187 | 1 | 0.041 |
| Demand For Micro Insurance Services | 0.146 | 0.249 | 0.155 | 0.278 | 0.041 | 1 |

**Table 1.3: Squared correlations and AVE**

| | **Risk Exposure** | **Price** | **Credit Accessibility** | **Income Level** | **Customers' Personal Characteristics** | **Demand For Micro Insurance** |
|---|---|---|---|---|---|---|
| Risk Exposure | 0.684 | 0.198 | 0.279 | -0.228 | 0.41 | 0.146 |
| Price | 0.198 | 0.683 | -0.028 | -0.204 | 0.101 | 0.249 |
| Credit Accessibility | 0.279 | -0.028 | 0.772 | -0.012 | 0.381 | 0.155 |
| Income Level | -0.228 | -0.204 | -0.012 | 0.720 | -0.187 | 0.278 |
| Customers' Personal Characteristics | 0.41 | 0.101 | 0.381 | -0.187 | 0.672 | 0.041 |
| Demand For Micro Insurance Services | 0.146 | 0.249 | 0.155 | 0.278 | 0.041 | 0.687 |

### 4.1.4 Results of Reliability Tests

Reliability is the measure of the instrument's ability to produce consistent and stable measurements. The study used Cronbach's alpha statistics to measure the reliability of the questionnaire. An alpha coefficient of 0.8 or higher indicates that the collected data are reliable and have relatively high internal consistency and can be generalized to reflect opinions of all respondents in the target population.

**Table 1.4: Reliability**

| **Variable** | **Number of Items retained** | **Cronbach's Alpha** | **Comment** |
|---|---|---|---|
| Risk Exposure | 11 | 0.975 | Accepted |
| Price | 6 | 0.851 | Accepted |

| | | | |
|---|---|---|---|
| Credit Accessibility | 4 | 0.895 | Accepted |
| Income Level | 6 | 0.844 | Accepted |
| Customers' Personal Characteristics | 15 | 0.956 | Accepted |
| Demand For Micro Insurance Services | 7 | 0.864 | Accepted |

### 4.1.5 Sampling Adequacy

The KMO and Bartlet's test are sampling adequacy tests. They help confirm the reliability of the results from factor analysis. This tests the compactness of the results. The KMO is the proportion of variance that is caused by underlying factors. A value zero or close to zero indicate that the factor analysis results are likely to be inappropriate due to diffusion in the patterns of correlation. The KMO value for this study was found to be equal to 0.814 which is close to 1. This implies the correlations are relatively compact and thus factor analysis yielded reliable factors. Bartlett's test is a test of sphericity. The test uses a chi-square statistic to check if the correlation matrix of the observed variables are an Identity matrix which would imply that they are not related and would not be suitable for factor analysis. The p-value of the chi-square statistic for the Bartlett's test was found to be 0.000 which is less than 0.05. This implies that the observed indicators are related and would therefore be suitable for factor analysis.

**Table 1.5: KMO and Bartlett's Test**

| Test | Value | |
|---|---|---|
| Kaiser-Meyer-Olkin measure of sampling adequacy. | | 0.814 |
| Bartlett's Chi-square | Approx. Chi-square | 2640.195 |
| Bartlett's test of sphericity df | df | 780 |
| Bartlett's Sig. | sig. | .000 |

### 4.2 Descriptive results

i. Risk exposure and demand

The study sought to examine the respondent's level of extent with the variable concerning influence of demand on micro insurance. The findings in table 1.6 indicate that majority of the respondents (60%) agreed that the company prefers agency and brokerage in selling traditional insurances than micro insurance with a mode of 4. 49% of the respondents agreed that there are high transactional costs of managing micro insurance in the company with a mode of 3. 50% of the respondents agreed that the company associates micro insurance with fraudulent activities. 43% of the respondents strongly agreed that micro insurance attracts high risk individuals leading to adverse selection. 54% of the respondents agreed that the company has a rigid regulatory framework. 51% of the respondents agreed that there is a mismatch between affordability and suitability in the services offered by the company. 57% of the respondents also agreed that the company has appropriate tools for data collection especially in weather

forecasting for index based weather insurance. 47% of the respondents agreed that there are adequate distribution channels of insurance services in the company and 48% of the respondents agree that the product offered by the company usually meet the clients' needs. 56% of the respondents agree that the Micro-Insurance has a high prevalence of premium defaults (policy lapse) in the company while 55% of the respondents agree that Micro-Insurance experiences low penetration hence diseconomies of scale in the company.

**Table 1.6 Risk Exposure and Demand**

| | SD (1) | D (2) | N (3) | A (4) | SA (5) | Mode |
|---|---|---|---|---|---|---|
| The company prefers agency and brokerage in selling traditional insurances than micro insurance | 3 | 13 | 47 | 60 | 34 | 4 |
| There are high transactional costs of managing micro insurance in the company | 3 | 14 | 52 | 49 | 39 | 3 |
| The company associates micro insurance with fraudulent activities | 6 | 7 | 49 | 50 | 45 | 4 |
| Micro insurance attracts high risk individuals leading to adverse selection | 4 | 12 | 63 | 35 | 43 | 3 |
| The company has a rigid regulatory framework | 6 | 15 | 38 | 54 | 44 | 4 |
| There is a mismatch between affordability and suitability in the services offered by the company | 3 | 16 | 49 | 51 | 38 | 4 |
| The company has appropriate tools for data collection especially in weather forecasting for index-based weather insurance | 6 | 15 | 44 | 57 | 35 | 4 |
| There are adequate distribution channels of insurance services in the company | 2 | 16 | 48 | 47 | 44 | 3 |
| The products offered by the company usually meet the clients' needs | 2 | 12 | 50 | 48 | 45 | 3 |
| Micro-Insurance has a high prevalence of premium defaults (policy lapse) in the company | 4 | 11 | 41 | 56 | 45 | 4 |
| Micro-Insurance experiences low penetration hence diseconomies of scale in the company | 5 | 12 | 39 | 55 | 46 | 4 |

ii. Price of micro insurance

The study sought to examine the respondent's response to indicators of price that were measured on an interval scale. The findings in table 1.7 indicate that the mean average proportional reduction in insurance premium to accommodate products under micro insurance was found to be 30.3% across the firms with a standard deviation of 6.7%. The mean proportion of subsidies and benefits of insurance products reduced to accommodate the reduced prices for micro insurance was found to be 44.3%. The standard deviation of the proportion of subsidies and benefits of insurance products reduced to accommodate the reduced prices for micro insurance was found to be 13.3%. The average monthly interest rate attracted from premium financed micro insurance products ranged between 8% and 15%. This shows that the firms use homogeneous interest which is also shown by the very low standard deviation of 2.3%. The mean average monthly interest rate attracted from premium financed micro insurance products was found to be 11.4%. The study also sought to measure price of micro insurance product by the payment mode. The researcher therefore sought to determine the proportion of payments for micro insurance products that are made and accepted in non-liquid payments such as post-dated cheques. This was found to have a mean of 55.1% with a standard deviation of 9.1%. The mean maximum acceptable loss ratio above which the micro products premiums are loaded up was found to be 83.9% with a standard deviation of 14.4%.

**Table 1.7 Price of Micro Insurance**

| | Mean | Standard deviation |
|---|---|---|
| The average proportional reduction in insurance premium to accommodate products under micro insurance | 0.303 | 0.067 |
| Proportion of subsidies and benefits of insurance products reduced to accommodate the reduced prices for micro insurance | 0.443 | 0.133 |
| The average monthly interest rate attracted from premium financed micro insurance products | 0.114 | 0.023 |
| Proportion of payments for micro insurance products that are made and accepted in non-liquid payments such as post-dated cheques | 0.551 | 0.091 |
| The maximum acceptable loss ratio above which the micro products premiums are loaded up | 0.839 | 0.144 |
| The average rate of premium loading with every increase in loss ratio exceeding your acceptable loss ratio for micro insurance products | 0.098 | 0.031 |

iii. Credit Accessibility

The study sought to examine the respondent's level of extent with the variable concerning influence of credit accessibility on demand for micro insurance. The findings in table 1.8 indicate that majority of the respondents (51%) strongly agreed that Micro insurance clients can access loans against their policies in the company. 57% of the respondents agreed that access to potential risk-coping possibilities, other than credit, correlate with insurance take up. 62% of the respondents agreed that there is limited eligibility to credit services amongst the low income earners in the company and 46% strongly agreed that Credit facilities available in the company are economically sustainable beyond the project period.

**Table 1. 8 Influence of Credit Accessibility**

| | SD (1) | D (2) | N (3) | A (4) | SA (5) | Mode |
|---|---|---|---|---|---|---|
| Micro insurance clients can access loans against their policies in the company | 4 | 15 | 45 | 42 | 51 | 5 |
| Access to potential risk-coping possibilities, other than credit, correlate with insurance take up | 3 | 13 | 48 | 57 | 36 | 4 |
| There is limited eligibility to credit services amongst the low income earners in the company | 2 | 18 | 43 | 62 | 32 | 4 |
| Credit facilities available in the company are economically sustainable beyond the project period | 3 | 18 | 46 | 44 | 46 | 3 |

iv. Income Level

The study sought to examine the respondent's level of extent with the variable concerning influence of income on demand for micro insurance. The findings in table 1.9 indicate that majority of the respondents (55%) strongly agreed that Seasonal flows of income and expenditures of low end clients affect premium payments. 60% of the respondents agreed that Micro insurance prospects are mainly in informal employment and this affects the uptake of insurance and 59% of the respondents agreed that Most micro insurance do not meet insurance requirements of cash and carry.

**Table 1.9 Income Level**

| | SD (1) | D (2) | N (3) | A (4) | SA (5) | Mode |
|---|---|---|---|---|---|---|
| Seasonal flows of income and expenditures of low end clients affect premium payments | 7 | 12 | 39 | 55 | 44 | 4 |
| Micro insurance prospects are mainly in informal employment and this affects the uptake of insurance | 3 | 16 | 40 | 60 | 38 | 4 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Most micro insurance do not meet insurance requirements of cash and carry. | 3 | 12 | 38 | 59 | 45 | 4 |

v. Demand for micro insurance

The objective of the study was to establish factors influencing demand for micro insurance services in the insurance industry in Kenya. From the summary in table 1.10, indicate that majority of the respondents (59%) agreed that the company has successfully been achieving sales target for micro insurance products. 51% of the respondents agreed that the teams understand the concepts of waiting. 66% of the respondents agreed that the company has gradually been increasing the year after year sales for micro insurance products . 62% of the respondents agreed that the company has decreased its transaction costs when selling the micro insurance products. 47% of the respondents agreed that the company has successfully been increasing its market share for micro insurance products. 53% of the respondents agreed that the company has increased its profit margin due to the micro insurance products. 50% of the respondents agreed that the company has increased its number of clients due to micro insurance products and 57% of the respondents agreed that the company has shown an increase in the growth rate of micro insurance products.

**Table 1.10 Demand for Micro Insurance Services**

| | **SD (1)** | **D (2)** | **N (3)** | **A (4)** | **SA (5)** | **Mode** |
|---|---|---|---|---|---|---|
| Has successfully been achieving sales target for micro insurance products | 1 | 16 | 39 | 59 | 42 | 4 |
| Has gradually been increasing the year after year sales for micro insurance products | 6 | 14 | 48 | 51 | 38 | 4 |
| Has decreased its transaction costs when selling the micro insurance products | 5 | 11 | 40 | 62 | 39 | 4 |
| Has successfully been increasing its market share for micro insurance products | 3 | 15 | 51 | 47 | 41 | 3 |
| Has increased its profit margin due to the micro insurance products | 3 | 10 | 61 | 53 | 30 | 3 |
| Has increased its number of clients due to micro insurance products | 2 | 15 | 46 | 50 | 44 | 4 |
| Has shown an increase in the growth rate of micro insurance products | 4 | 15 | 38 | 57 | 43 | 4 |

**4.3 Inferential Analysis Findings**

This section forms the basis of drawing conclusions for the objectives. The inferential analysis was done with the aim of achieving each set objective to determine the relationships between the independent variables and the dependent variable - demand for micro-insurance. The inferential analysis methods used involved parametric estimations for continuous variables. The indicators that were measured on likert categorical scales were used to generate latent variables by dimension reduction techniques of factor analysis. The resulting latent variables from factor scoring were continuous which were thus used for parametric estimations in the inferential stage of analysis.

**4.3.1 Correlation Analysis**

Correlation analysis is the measure of the strength of relationship between 2 variables. The strength of relationship between the dependent variable and the independent variables was measured using Pearson correlation coefficient. Table 1.11 shows the results of the Pearson product moment correlation matrix. The correlation coefficients between the demand for micro insurance and the independent variables risk exposure, price, credit accessibility and income level were found to be .546, -.589, .629 and .566 respectively. These show moderate and strong relationships between the demand for micro insurance and the determinants. The relationship between price and demand is negative while the remaining independent variables have positive relationships with demand for micro insurance. The correlation coefficients are all significant due to the p-values of each that were all found to be equal to 0.000 which is less than 0.05 implying significance of the correlation statistics.

**Table 1.11: Correlation matrix**

| | | Risk Exposure | Price | Credit Accessibility | Income Level | Demand for micro insurance |
|---|---|---|---|---|---|---|
| Risk exposure | Pearson's $\rho$ | 1.000 | -.036 | .094 | -.182* | .546** |
| | 2-tailed Sig. | | 0.256 | 0.130 | 0.023 | 0.000 |
| | N | 157 | 157 | 157 | 157 | 157 |
| Price | Pearson's $\rho$ | -.036 | 1.000 | -.033 | 0.071 | -.589** |
| | 2-tailed Sig. | 0.256 | | 0.082 | 0.374 | 0.000 |
| | N | 157 | 157 | 157 | 157 | 157 |
| Credit accessibility | Pearson's $\rho$ | .094 | -.033 | 1.000 | 0.051 | .629** |
| | 2-tailed Sig. | 0.130 | 0.082 | | 0.528 | 0.000 |
| | N | 157 | 157 | 157 | 157 | 157 |
| Income level | Pearson's $\rho$ | -.182* | 0.071 | 0.051 | 1.000 | .566** |

| | | | | | | |
|---|---|---|---|---|---|---|
| | 2-tailed Sig. | 0.023 | 0.374 | 0.528 | | 0.000 |
| | N | 157 | 157 | 157 | 157 | 157 |
| Demand for micro insurance | Pearson's ρ | .546** | -.589** | .629** | .566** | 1.000 |
| | 2-tailed Sig. | 0.000 | 0.000 | 0.000 | 0.000 | |
| | N | 157 | 157 | 157 | 157 | 157 |

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

### 4.3.2 Multiple regressions

The aim of the study was to establish the factors influencing demand for micro insurance services in the insurance industry in Kenya focusing on the variables risk exposure, price, credit accessibility and income level. The multiple regression technique was used to fit the model to investigate the joint influence of these variables. Table 1.14 presents the model summary statistics.

The R and $R^2$ of the multivariate model were found to be 0.996 and 0.992 respectively. This implies a high joint positive relationship between the determinants and demand for micro insurance. The $R^2$ value of 0.992 implies a very high predictive power of the joint model. It shows that the variation in the predictors in the model explain 99.2% of the variation in the dependent variable.

**Table 1.12 Model Summary multiple regression**

| R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|
| .996a | 0.992 | 0.992 | 0.099 |

a. Predictors: (Constant), Income Level, Credit Accessibility, Price, Risk Exposure

ANOVA in multiple regression shows the general significance of the model. It is used to test if at least one of the estimated parameters in the model is not equal to zero. Table 4.33 shows the ANOVA results for the multivariate model. The P-value of the F-statistic is equal to 0.000 which is less than 0.05. This implies that not all estimated coefficients are equal to zero. At least one of them is not equal to zero implying that the model is generally significant.

**Table 1.13: ANOVA table multiple regression**

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Regression | 182.768 | 4.000 | 45.692 | 4661.115 | .000b |
| Residual | 1.480 | 151.000 | 0.010 | | |
| Total | 184.249 | 155.000 | | | |

a. Dependent Variable: Demand For Micro Insurance Services

b. Predictors: (Constant), Income Level, Credit Accessibility, Price, Risk Exposure

A further analysis of the estimated coefficients of the model shows that the multiple regressions are all significant. The parameters of the variables risk exposure; price, credit accessibility and income level were found to be 0.341, -0.44, 0.491 and 0.643 respectively with t statistics 33.97, -49.696, 41.287 and 84.845 respectively. All the p-values were equal to 0.000. With all the p-values being equal to 0.000, it implied that all the coefficients estimated were significant. The p-value for the constant is however greater than 0.05 implying that the model should pass through the origin. The resulting regression model that predicts the level of demand for micro insurance is significantly influenced by all the independent variables jointly is given by the equation below:

$$Y = -0.006 + 0.341X_1 - 0.44X_2 + 0.491X_3 + 0.643X_4$$

**Table 1.4: Coefficients table Multiple regression**

| Variable | β coefficient | Std. Error | t | P-value. |
|---|---|---|---|---|
| (Constant) | -0.006 | 0.008 | -0.695 | 0.488 |
| Risk Exposure | 0.341 | 0.010 | 33.970 | 0.000 |
| Price | -0.440 | 0.009 | -49.696 | 0.000 |
| Credit Accessibility | 0.491 | 0.012 | 41.287 | 0.000 |
| Income Level | 0.643 | 0.008 | 84.845 | 0.000 |

a. Dependent Variable: Demand for Micro Insurance Service

### 4.3.3 Normality Test

Fitting an unbiased OLS model assumes that the residuals have a mean of zero and follow a normal distribution. A statistical test was carried out on the residuals from the model to confirm normality with statistical significance. The Shapiro-Wilk statistic was calculated with its p-value which was found to be 0.152 that is greater than 0.05 implying that the residuals follow a normal distribution.

**Table 1.15: Normality test**

| Kolmogorov-Smirnov[a] | | | Shapiro-Wilk | | |
|---|---|---|---|---|---|
| Statistic | Df | Sig. | Statistic | Df | Sig. |
| 0.058 | 156.000 | .200* | 0.987 | 156.000 | 0.152 |

### 4.3.4 Auto correlation

Fitting OLS models also assumes that the residual terms are not auto correlated. With violation of the serial correlation assumption, the model may have predictors with underestimated the

standard errors. The calculated Durbin Watson value is 2.070, while the upper limit of the tabulated Durbin Watson for 5 predictors including the constant is 1.809 and the lower limit is 1.728. The calculated value 2.070 is higher than the upper limit implying that the residuals are not auto correlated.

**Table 1.16: Autocorrelation**

| Durbin-Watson statistic | Tabulated lower limit | Tabulated Upper limit |
|---|---|---|
| 2.070 | 1.728 | 1.809 |

### 4.3.5 Homoscedasticity

Homoscedasticity is the measure of constant variance. OLS regression models are fitted with the assumption that the variance of the residual term is constant. The study tested for homoscedasticity based in statistical significance. The researcher performed a Breuch-pagan test on the residuals. This tested the null hypothesis that there is a constant variance of the residual terms. The results of the BP test are shown in table 1.12. From the results the P-value of the Chi-square statistic is 0.255 which is greater than 0.05. The null hypothesis was therefore not rejected and conclusion drawn is that the residuals were homoscedastic.

**Table 1.17: $H_0$: The Residuals exhibit homoscedasticity**

| | Breusch-Pagan statistic | P-value | Conclusion |
|---|---|---|---|
| Residuals | 5.334 | 0.255 | Fail to reject $H_0$ |

### 4.3.6 Mulitcollinearity

Multicollinearity refers to the situation where the independent variables exhibit significant association amongst themselves. According to Mugenda and Mugenda (2003), multi-collinearity can occur in multiple regression models where some of the independent variables are significantly correlated between themselves. OLS regression model fitting requires the independent variable not to be multicollinear. The multicollinearity statistics of the predictors is shown in table 1.13. mulicollinearity was tested using the variance inflation factors (VIF) and the tolerance. The tolerance is the reciprocal of the VIF. Multicollinearity is exhibited if one or more variables can be expressed in terms of the other independent variables that is shown by one or more VIFs being greater than 0.5. From the results, all the VIFs are less than 0.5 implying that the independent variables of the model do not exhibit multicollinearity.

**Table 1.18Mulitcollinearity**

| | Tolerance | VIF |
|---|---|---|
| Risk Exposure | 0.615 | 1.627 |
| Price | 0.801 | 1.248 |
| Credit Accessibility | 0.742 | 1.349 |

| | | |
|---|---|---|
| Income Level | 0.940 | 1.063 |

### 4.3.7 Hypothesis testing

The results from the multivariate model were used to test the hypothesis of the study and draw conclusions on the objectives.

**Table 1.19 Model Summary**

| | R | R Square | Adjusted R Square | Std. Error of the Estimate | R Square Change | F Change | df1 | df2 | Sig. F Change |
|---|---|---|---|---|---|---|---|---|---|
| **1** | .996[a] | 0.992 | 0.992 | 0.099 | 0.992 | 4661.115 | 4 | 151 | 0.000 |
| **2** | .996[b] | 0.992 | 0.992 | 0.098 | 0.000 | 4.440 | 1 | 150 | 0.037 |
| **3** | .997[c] | 0.993 | 0.993 | 0.093 | 0.001 | 4.760 | 4 | 146 | 0.001 |

a. Predictors: (Constant), Income Level, Credit Accessibility, Price, Risk Exposure

b. Predictors: (Constant), Income Level, Credit Accessibility, Price, Risk Exposure, Customers' Personal Characteristics

c. Predictors: (Constant), Income Level, Credit Accessibility, Price, Risk Exposure, Customers' Personal Characteristics, X1nZ, X4nZ, X2nZ, X3nZ

Table 1.17 shows the analysis of the coefficients table for the 3 stage hierarchical MMR. Stage one of the MMR only includes the estimates of the 4 independent variables of the study. The coefficients showed significant influences of all the independent variables risk exposure, price, credit accessibility and income level. All the variables had p-values that are equal to 0.000 which is less than 0.05 implying significance of all the predictors.

## 5.0 CONCLUSIONS AND RECOMMENDATIONS

The result on the determinants of demand for micro insurance services in Kenya has shown a relatively strong positive relationship. The overall model was found to have a fit with a high Pearson's correlation coefficient. The research found that that the insurance organizations in Kenya preferred agency and brokerage in selling traditional insurances than micro insurance. It also found out that, pricing, access to potential risk-coping possibilities, moderately correlate with insurance take up. The study established that there is limited eligibility to credit services amongst the low income earners and the seasonal flows of income and expenditures affect premium payments.

According to the correlation test results, there is a moderate positive and significant correlation between factors influencing demand for micro insurance in the insurance industry in Kenya. The null hypothesis which stated that there is no positive significant influence of financial factors and demand for micro insurance was rejected and the alternative accepted.

### 5.1 Conclusion

The objective of the study was to establish the determinants of demand for micro insurance services in the insurance industry in Kenya. The study findings indicated that there was a positive and significant relationship between the variables and the demand for micro insurance.
The study sought to examine how risk exposure influences demand for micro insurance services and it was established that micro insurance attracts high risk individuals leading to adverse selection and the insurance service providers have a rigid regulatory framework for micro insurance services offering, increases in the levels of risk exposure inclines the customers to take up micro insurance products. The study therefore concluded that risk exposure positively influence the demand for insurance by customers. The study also established the influence that price has on the demand for micro insurance services and showed that the micro-insurance pricing presents significant challenges (need to balance prices, costs, sustainability and affordability). Credit accessibility has a great influence on the demand for micro insurance services. Customers with high levels of access to credit seem to have higher demand for micro insurance as compared to those with low levels of credit accessibility. With access to credit a household increases its wealth and hence uptake of insurance. The study concluded that credit accessibility has a positive influence on the demand for micro insurance in Kenya. The study also found that income level has influence on the demand for micro insurance in Kenya. However, micro insurance prospects are mainly in informal employment and this affects the uptake of insurance services in Kenya. The study concluded that there is a positive influence of customers' level of income on the demand for micro insurance.

### 5.2 Recommendation

Continuous awareness and education on micro insurance services which can assist in alleviating poverty. Strengthening of informal sector and SMEs' where the bulk of uninsured are and offering alternative from mainstream/conventional insurance. Insurers should offer flexible and convenience payment options of insurance premium to the low income earners so as to attract and retain customers. Individual should be able to access credit in other forms, such as insurance premium finance tailored to the suit the low income cadre. Government should offer subsidies on micro insurance services and encourage uptake of insurance by offering tax incentives. Insurance regulator should come up with legislation and framework regarding micro insurance.

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