

Factors Influencing Demand for Micro Insurance Services in the Insurance Industry in Kenya

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Abstract

This article assessed the factors influencing demand for micro insurance services in the insurance industry in Kenya. In research 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. The research instrument was a questionnaire. Analysis of the data was done using (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. The study findings indicated that there was a positive and significant influence between factors and 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. The study recommended that awareness and education be conducted to the intended mass; flexible and convenience 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.

Keywords: Micro insurance, demand, determinants, financial factors, Insurance companies in Kenya.

Introduction

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 and Matul, 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.

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 and 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 and Matul, 2006) and the main focus appears to be the consumers of micro finance products, (Cohen and Sebstad, 2005: Gine, Townsend and 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. Wairimu and Okibo (2015) researched on factors influencing Micro insurance penetration among middle and low income earners in Kenya.

However, a fundamental gap exists on the financial determinants of demand for micro insurance services thus this study sought to examine these financial 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.

Research Objective

To establish the influence of financial factors on the demand for micro insurance services in the insurance industry in Kenya.

Hypothesis

H1: There is a positive significant influence of financial factors on the demand for micro insurance services in the insurance industry in Kenya.

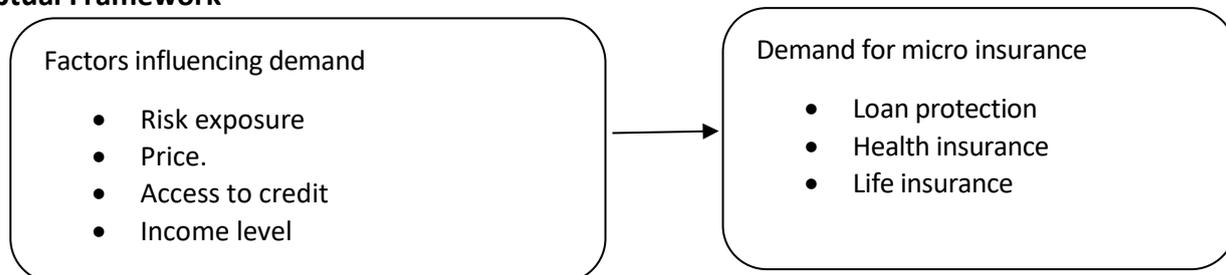
Theoretical Framework

Theory of demand; 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. 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.

Conceptual Framework



Review of literature on Variables

Factors influencing demand

Risk exposures are important mostly where the occurrence of a risk exposure leads to poverty or disrupts on the livelihood. People faced with higher risk are more likely to purchase an insurance cover (Rothschild and Stiglitz, 1976). Bardhan, Bowles, and Gintis, (2000), Carter and Barrett (2006); show that there is a relationship that exist between risk and poverty, and that when households exhibit a reduction in the absolute risk aversion; that is prosperity increasing as risk declines then poor households will pay a higher premium to avoid risks than more affluent persons will do.

Arun, Bendig and Arun (2012) showed a strong positive relationship between past shocks and rising probability of using micro insurance; however, Cole, Gine, Tobacman, Topalova, Townsend, and Vickery (2013) find no such evidence. Studies in advanced economies show that people are likely to contribute to insurance covers after a loss has occurred' this is in line with the view of accessibility preference (Johnson, Hershey, Meszaros, and Kunreuther, 1993). At a national wide level measures such as the GDP show a positive link to insurance acquisitions (Browne and Kim, 1993).

Dercon (2006), Carter, *et al.*, (2007), and Jalan and Ravallion, (1999) found that there are substantial effects of risk exposure midst the underprivileged. The research showed that during key risk exposures the reclamation is quite slow and commended that health risk exposures appear to have significant effects. As cited by Saqware (2012), Yakub (2002) and McPeak (2004) show that households with assets risks maybe at a higher risk of falling into abject poverty. Being the main reason why families embroil in trading off for assets smoothing and consumption smoothing when faced with risk such as asset and income risk. i.e. when lack of sufficient rainfall affects both herd mortality (asset risk) and productivity among livestock producers in northern Kenya.

A study conducted in Kenya by Cenfri (2010), found out that small business owners face substantial asset risks such as asset loss due to political uncertainty and fires in informal settlements and concluded that without an efficient distribution and management system, asset insurance will remain a challenge.

According to Barone (2011), perception of a household's exposure to risk is associated with the decision to purchase health insurance hence access to health care providers and use of health care services appears to be moderately relates to the uptake of health insurance by the household. Eling, Pradhan and Schmit, (2014) evidenced that, health insurance has a

positive link between service quality and insurance demand. Dercon, Gunning, Zeitlin, Cerrone and Lombardin (2012) assess the influence of peer recommendations for health insurance involvement in Kenya and find that the recommended incentive has a negative influence on insurance demand.

In line with the economic theory; the price of goods is inversely related with the demand for the said product (Eling, Pradhan and Schmit, 2014). Cole *et al.* (2013) showed that there is a high price sensitivity towards demand for rainfall insurance in India. Mobarak and Rosenzweig (2012) conclude that there with a 50% price decline increases the insurance intake by 17.6%. Dercon *et al.*, (2012) report that decreasing price of health insurance leads to an increase in the insurance demand by 12%.

Most of the studies on insurance demand utilize the premiums, policy price as a price measure (De Bock and Gelade, 2012). Thornton, Hatt, Field, Islam, Sol'Diaz, and Gonzalez (2010) identify the cost and time of premium payments as a determinant of insurance demand. More so, decreasing the prices of micro insurance may increase demand however, the uptake rates may still remain low. Cole *et al.* (2013) shows that even when the prices are set below the market prices fewer than half of households purchased the rainfall insurance. There is further evidence showing that lack of knowledge on insurance affects the demand. Thornton *et al.* (2010), Fitzpatrick, Magnoni, and Thornton, (2011), Bauchet (2013) are of the view that retention of purchases drops significantly when subsidies of the insurance uptake expire. However, it is evident that use of subsidies affects the overall informal arrangements for uptake of insurance.

It is evident that price plays a key role in directing the demand for micro insurance product. This can be enhanced further through availing low premiums. The differences between traditional insurance markets and micro insurance markets premium levels should be widened such that lower premiums associated with loss are not segmented towards micro insurance (Eling *et al.* 2014).

Several studies show a higher probability of insurance uptake when the price of product decreased or vouchers or subsidies were disbursed (Brouwer and Akter 2010; Cole *et al.*, 2013; Gine *et al.*, 2008; Mobarak and Rosenzweig 2012). In a research done in Kenya, Obura (2016) established that there is a relationship between product pricing and demand for micro insurance. Product pricing point out a major contributing factor on underwriting of micro insurance products and its demand can only be known if micro insurance products a company offers are taken up/bought by the target market. Clarke and Kalani (2011), found out that insurance company faces high costs, small pool of insured risk when there is low underwriting. Mosley (2009) argues that, there is a the negative relationship between break-even premium and the portfolio size, noting that this relation suggests that one can either raise premium and hence limit access by the poor or increase access by keeping the premium low and reach the uptake level.

NGOs/MFIs define premiums by rule of thumb, making premium rate much higher or lower than the actuarially fair premium (Hasan, 2006). The premium rate is fixed either based on approximation of the anticipated losses accustomed by high risk loading factor or to match the readiness to pay of the target population (Beiner, 2011). Comparing the household readiness to pay with the anticipated guarantee and insurance conveyance costs, Akter *et al.*, (2011), showed that a standalone crop insurance scheme is likely to suffer 25% to 50% loss each year.

Njuguna and Arunga (2012), finds that pricing represents significant challenges due to need to balance prices, cost, sustainability and accessibility.

Regardless of whether the household has the capacity and is willing to purchase insurance depends on the level of utility expected with insurance against the utility expected without insurance (Kirigia *et al.*, 2005). Numerous research findings have supported the idea that there exists a relationship between the level of wealth and purchase of micro insurance. This is based on the argument that wealth leads to higher levels of liquidity and access to credit; thus purchase of insurance is only possible beyond what is needed for daily household basic purchases. Gine, *et al.*, (2008) argues that uptake of rainfall insurance in India is high among wealthier households. Similarly, in another research in India, Cole *et al.*, (2013), establish that more affluent families have a higher chance of buying rainfall insurance. In both studies, the least wealthy families are assumed to have little margin for insurance purchase after paying off their expenses. Even though the households may have a higher demand for insurance, however, they don't have the resources needed to meet the insurance purchase. In general, the wealth effect in micro insurance is different from the wealth effect in traditional insurance.

Within the market for micro insurance; wealth is viewed as a status of access to credit and high levels of liquidity. Families that do not have ample access to credit have slight capacity in leveling their consumption in periods of shock and thus may place higher values on insurance as a mean of eliminating unforeseen income volatility. Cole *et al.*, (2013) found out that take up of insurance increases 1.4 times when households have enough cash to buy one policy handed to them.

Mosley (2009) found out that micro insurance improves customers' loan repayment amounts and have an impact on expenditures, and that micro insurance makes expenditures more constant and expectable as a result reduces dependence on emergency borrowing. A number of alternative insurance models have developed to resolve affordability issue such as the interlinked credit and insurance market (Carter, Cheng and Sarris, 2011). With the interlinked credit insurance agreement, farmers borrow money at a higher interest rate that embraces a weather insurance premium. If a natural disaster or calamity occurs, the farmers repay only a part of the loan, while insurer pays the balance to the bank (Akter, 2012).

Study of Plateau and Abraham (1987) shows a hybrid transaction, halfway between credit and insurance as quasicredit. The repayment depends on situation of borrower and lender, whereby transactions are personalized and reimbursement negotiated following shocks. Morduch (1998) evidenced that access to credit decreases vulnerability and credit might essentially crowd out demand for insurance.

Homes with limited or lacking access to credit have fewer capabilities to smooth consumption in case of a shock or event and they may place greater significance on insurance as a means to diminish income volatility (Gine *et al.*, 2008). On the other hand, homes lacking access to credit may not have enough funds to purchase insurance even though a shock may be devastating on them than to homes less constrained.

Access to credit only will not increase micro insurance demand significantly. Clarke and Kalani (2011), shows that for non-credit constrained farmers with actuarially fair premiums, basis risk makes them purchase less of insurance. Ito and Kono (2010) and Karlan *et al.*, (2011) find little or no effect of credit constraint on micro insurance demand.

Income is defined as the payment received in exchange for labor or services or from the sale of goods or properties (Zeller, 2001). Within the economic space higher income levels are widely acknowledged as indicators of higher demand for financial services (Ando, 1963). Modiglian and Brumberg (1990) are of the view that the individual levels of income have an influence of the purchase of certain insurance products. Individuals start with low income

during their professional career and when that income rises to its peak before retirement and income during retirement is substantial (Saquare, 2012).

Bendig and Arun (2011) and Giesbert, Steiner and Bendig (2011) studied the relationship between demand for insurance and level of income; affording an insurance premium is directly connected to one's level of income. They argued that lack of money is the reason why households do not purchase micro insurance products. Jutting (2003), perceives that low income plays an important part in non-involvement in a community based health insurance organization in countryside Senegal; Fitzpatrick *et al.*, 2011 and Thornton *et al.*, 2010, find no conclusion of income on insurance take up tariffs.

Beenstock (1986), Browne and Kim (1993) and Outreville (1996), argued that the affordability of an insurance premium is directly related to ones' level of income. Nevertheless, the ability of low-income homes to meet the expense of insurance services is not only related to one's level of income but as well as the appropriate control of their financial wealth has a significant impact on their access to micro insurance (Matul, 2005). In a study by Savage and Wright (2001), Bhat and Jain (2006) shows that an increase in income level does not guarantee a decrease in poverty but focus should be on sustainability by providing products which improve their net wealth and income security. It is also possible that this reflects the fact that incomes enables household handle risk exposures using other means. According to Mayoux (2001) the impact of micro insurance can be due to granting small loans to enhance income and sustainable income level to help the poor plan and save towards unforeseen emergencies and shocks. Without micro insurance, people will only concentrate on undertakings with minimal risk elements which do not yield higher returns but yields an income level adequate for their family (Maleika and Kuriakose 2008).

According to Leftley and Mafumo (2006), the role of micro insurance is to stabilize income levels through provision of safety net. Ackah and Owusu, (2012) revealed that one of the variables for low insurance uptake is as a result of low income levels. Though income is foreseen to affect a household's capability to afford insurance, it is difficult to measure in communities where wage/income is insignificant and past history measures of income are unreliable. Crayen, Hainz and de Martinez (2013) empirical analysis of payments/remittances in South Africa showed that irrespective of income levels, remittance worked as an option to conventional insurance when budget constraints were obligatory. Study by Aliero and Ibrahim (2011), suggested that income level of the rural households should be taken into account while setting premium rates. As income increases, households can afford insurance. The need for life insurance increase with income as it protects dependent relative against the loss of anticipated upcoming income due to premature death of the bread winner.

The main social-economic features of a household are determined by the income levels, age, marital status and the family sizes. In many research studies on micro insurance purchase age has been adopted as a control variable. Cohen and Einav (2007), concluded that there is a u-shaped relationship between risk attitudes and age which is depicted in the choices of deductible levels. Age has a significant positive effect on the demand for micro insurance (Chen, Hu, Xiao and Xing 2013), Gine *et al* 2008, on the other hand established a negative inference between demand for insurance and age. Arun *et al.* (2012) found no link between demand for insurance and the age of household members.

Other research studies have shown that within households headed by women have higher chances of subscribing to insurance products Chankova, Sulzbach and Diop (2008); Bendig and Arun (2011), Outreville (1996) and Giesbert, *et al.* (2011) all undertook studies on insurance

demand. The findings of the studies showed that insurance premiums have an association to household's income levels. And that lack of income led to lack of insurance demand amongst households. Matul (2005) concluded that education does not have a significant effect on access to micro insurance. The researcher pointed out that the level of education does not require insurance mostly due to lack of confidence on the insurance industry and lack of knowledge on the workings of the insurance industry.

Demand for micro insurance

An analysis of demand for micro insurance is quite complicated among households than in researching on the traditional insurance (Islam & Mamun, 2005). The demand for micro insurance is highly dependent on the ability to service premium payments. Micro insurance supply is high within developing countries; however, the demand for insurance is low within developing countries as depicted in the expected utility theory. Empirical literature shows that micro insurance purchases within developing countries is highly dependent on the risk aversion of consumers (Gine *et al.*, 2008; Ito and Kono, 2010). However, this is against the assumptions of expected utility theory that holds demand for micro insurance among risk averse households to be high (Arrow, 1963; Mossin, 1968).

According to Kirigia (2005) the choice to purchase insurance among households is highly dependent on the perceived tradeoff between the expected utility between owning an insurance cover and not having an insurance cover. On the other hand, the consumer theory holds that with perfect information consumers will maximize their utility as a function of the relative prices and their income and preference levels. However, with little information the future of micro insurance purchases cannot be pegged on utility alone but also the consumer characteristics (Cameron, Trivedi, Milne, and Piggott (1988). For households to purchase micro insurance there should be a balance between the returns expected from insurance and the contributions made in terms of premiums. With limited consumer rationality there will be little demand for insurance; Akotey, Osei and Gemegah (2011) and Norton (2000).

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 questionnaires were chosen due to its ability to collect concise data on the factors influencing demand for micro insurance products/services. The researcher used a cross-sectional survey research design to determine the factors influencing demand for micro insurance in Kenya. 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).

Results and Discussion

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 set 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.

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.

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

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 table 1.3 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

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' Characteristics	15	0.956	Accepted
Demand For Micro Insurance Services	7	0.864	Accepted

Sampling Adequacy

The KMO and Bartlett'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

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	6	15	44	57	35	4

forecasting for index-based weather insurance						
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

Inferential Analysis Findings

This section forms the basis of drawing conclusions for the objectives. The study sought to determine the factors influencing demand for micro insurance services in the insurance industry in Kenya. 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.

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 ρ	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 ρ	-.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 ρ	.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 ρ	-.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).

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 R² 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 R² 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 Services

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

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

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:

H₀: The Residuals exhibit homoscedasticity

	Breusch-Pagan statistic	P-value	Conclusion
Residuals	5.334	0.255	Fail to reject H ₀

Multicollinearity

Multicollinearity refers to the situation where the independent variables exhibit significant association amongst themselves. According to Mugenda and Mugenda (2003), multicollinearity 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. multicollinearity 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 1.18

Multicollinearity

	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

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.

Discussion of Research Findings

The result on the factors influencing demand for micro insurance services in the insurance industry 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 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.

Conclusion

The study findings indicated that there was a positive and significant relationship between independent variables; risk exposure, price, access to credit, income level and the dependent variable; demand for micro insurance. Moreover, it can be concluded that these variables have direct and strong influence on demand for micro insurance. Also, customers' characteristics such as age, gender and educational level plays a crucial role in deciding on insurance uptake.

Recommendation

Micro insurance service providers should enhance awareness and education on micro insurance services/products through campaigns and advertisement so as to reach a wider audience. Insurers should offer flexible and convenience payment options of insurance premium to the low income earners so as to attract and retain them. Credit facilities should be made available to all irrespective of earnings. 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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