RISK AVERSION AND SELF INSURANCE UTILIZATION: EVIDENCE FROM SMALL AND MEDIUM SCALE BUSINESS OWNERS IN LAGOS STATE

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Abstract
This study is to examine the influence of risk aversion on the adoption and utilization of self-insurance among Small Medium Enterprises (SME) owners in Lagos State. This study employed cross sectional class of survey research design. Three hundred and fifty SME owners were selected using Taro Yamane formula and the data obtained was analyzed using correlation and t-test inferential statistics. Questionnaires were administered through convenience sampling method. The result of the study revealed a significant relationship between risk aversion and self-insurance utilization among SME owners in Lagos State. Additionally, the result of this study also revealed that there is no significant difference between preference for conventional insurance and self-insurance among Lagos State SME owners. Based on the findings of this study, it is recommended that conventional insurers should endeavor to develop products that address the actual needs of SMEs. It is also recommended that SME owners should be highly disposed to risk improvement measures as this would help to reduce the cost of market insurance and self-insurance even if both are taken up contemporaneously.

Introduction

In daily life, individuals and firms take up insurance cover to manage various kinds of risks (Lee & Fung, 2021). Entities can either invest in reducing the extent of a potential loss or in reducing the frequency of a hazardous event while making efforts to manage risks (Hofman & Peter, 2012). Aside the utilisation of conventional insurance, risk management techniques also incorporate self-protection and self-insurance mechanisms (Pannequin & Corcos, 2017). In consideration of a number of foreseeable risks, individuals and firms often expend great efforts to reduce the severity/consequence of losses or to minimize the frequency of losses (Lee & Fung, 2021).

Because of the rapid rate of technological advancement and the globalisation of markets, the business climate is becoming increasingly risky and challenging for businesses (Zoghi, 2017). As a result, in today's corporate climate, learning how to detect, assess, and respond to different categories of risks is critical for business survival. When compared to large corporations, Small Medium Enterprises are more impacted by the effect of numerous risks due to their limited resources and structural peculiarities (Zoghi, 2017). In this regard, risk-averse entrepreneurs tend to choose safer enterprises, while risk-seeking entrepreneurs tend to opt for riskier ventures (Chodokufa, 2014). However, increased risk aversion leads to increased self-insurance expenditure if only the loss state is the worst condition, as intuition implies. (Lee, 2010; Hofman & Peter, 2012; Dionne & Eeckhoudt 2012; Hurley, 2014).

The decision to expend efforts in managing risk involves the consideration of risk and uncertainty (Huber, 2021). Given that an entity is confronted with such quandary, the risk management component of self-insurance is more likely to dominate especially for those who are risk averse (Hofman & Peter, 2012). Theoretical findings further corroborate this notion by showing that greater risk aversion brings about optimal self-insurance (Huber, 2021). However, theoretical research into market interactions between conventional insurance and self-insurance has not been developed extensively (Pannequin & Corcos, 2017).

Furthermore, the behavioural tendencies of SME owners in the light of expressing their preference for the utilisation of either conventional insurance or

self-insurance calls for a serious concern and needs to be empirically unraveled. For example, where there is no compulsory insurance in respect to a class of risk, will an entrepreneur choose to transfer his risks or retain them given that he has the capacity to retain the risk? Also, if self-insurance truly correlates positively with risk aversion as posited by earlier studies, what implication would such have on conventional insurance given that a substantial number of SME owners who are risk averse decide to self-insure? Although, Pannequin and Corcos (2017) found that self-insurance opportunities act as a threat on the insurance market and therefore reduce insurer market power and market share. However, an empirical investigation may be necessary to substantiate this finding. Taking a cue from Yaari's model insurance and self-insurance remain substitutable. However, one of the arguments advanced for some risk management techniques, such as self-insurance, is that investment in some of these risk management techniques and their induced risk reduction are assumed to occur concurrently, but in the real sense, they frequently occur temporally separated (Huber, 2021).

Several studies have established that a nexus exists among self-insurance, self-protection and risk aversion. For example, Menegatti (2009) examined self-protection in a two-period environment and discovered that prudence is linked to self-protection investments. Peter (2017) replicates the one-period result and explains his findings through the substitution effect between self-protection and saving by incorporating endogenous saving (Menegatti & Rebessi, 2011). Alary, Gollier and Treich (2013) revealed how ambiguity aversion might increase the demand for self-insurance. In a two-period anticipated utility framework with and without saving, Hofmann and Peter (2016) investigated self-insurance and self-protection utilisation. However, having perused several other literatures, it appears that little study has been carried out on the implication of higher demand for self-insurance by the risk averse on the conventional insurance market. This study therefore aims to fill this empirical gap. The rest of this paper therefore includes; literature review, methodology, data analysis and interpretation and conclusions together with recommendations.

Objectives of the study

The aim of this is study is to examine the effect of risk aversion on self-insurance among Small and Medium Scale Enterprises Owners in Lagos State. The specific objectives are to;

i. assess if risk aversion has significant relationship on self-insurance utilisation among SME owners in Lagos State.

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ii. examine if there is any difference between preference for self-insurance and conventional insurance among SME owners in Lagos State.

Literature Review
Concept of Self- Insurance and Risk Aversion

The purpose of risk management is to determine the optimum effort that is expected to be expended in risk prevention and insurance operations (Zhang, 2017). In order to combat risks, individuals could lower the severity of prospective losses (self-insurance or loss reduction) or limit the likelihood of a risk occurring (self-protection or loss prevention) (Lee & Fung, 2021). Self-insurance is defined as a situation in which a person or a business does not enter into insurance arrangements with commercial insurers and instead relies on alternative risk management strategies (Holly, 2016). The idea of self-insurance is that an entity bears consequence of an unanticipated event when the entity decides to bear the risk on its own. When an organisation fails to self-insure, it may fall into great loss when awareness about an exposure is low and in consequence fail to address it (Outreville, 1998). In this sense, self-insurance provides a means of transferring wealth from lower-marginal-utility states to higher-marginal-utility states, whereas self-protection just improves the likelihood of higher-utility states at the price of losing wealth in all states (Zhang, 2017).

It seems to reason that as people become more risk adverse, they would make more efforts to decrease risk (Zhang, 2017). Risk aversion is at the heart of insurance, and it is seen as the phenomenon which makes insurance feasible. This is because policyholders prefer the certainty of a lesser loss (the amount of an insurance premium) to the chance of a greater loss, which is why insurance transactions occur (Abraham, 2015).

In this regard, a risk averter would therefore be ready to pay premium that is greater than the expected value of their exposures (Abraham, 2015). In consequence, risk-averse entities would be more likely to employ self-insurance (Hurley, 2014). The reason for this is that as self-insurance improves, so does the amount of insurance available for all types of loss exposures faced by businesses (Lee, 2010). Self-insurance, like insurance, reduces final wealth in a good condition with no loss by raising solely the cost, while increasing final wealth in a poor state with a loss by lowering the loss rather than raising the cost (Lee, 2010). However, it appears that the question of whether insurance and self-insurance are also public-policy alternatives is crucial (Pannequin & Corcos, 2017).

Theoretical Review

This study is anchored on the expected utility theory. The expected utility framework laid the foundation for the behavior analyzed above. Ever since the development of the expected utility theory as an axiomatic theory of choice under risk from von Neumann and Morgenstern (1944), expected utility theory has become a prominent tool in analyzing individuals' choices and economic behaviour (Lee & Fung, 2021). This theory identifies that there are three categories of human disposition to risk; risk aversion, risk neutrality and risk preference. A risk averse individual is an individual who hates the existence of risk. Such individual will most likely insure and are often ready to pay an amount greater than their loss exposures in order to minimize their losses. A risk preferer on the other hand, is an individual who seeks out risk. Such an individual will rarely insure since he is not prepared to pay an amount greater than his expected loss. Risk neutrality, however, relates to an individual's indifference to risk.

According to the Expected Utility Theory (EUT), a decision maker (DM) may choose between risky and uncertain prospects based on expected utility values, which are weighted sums produced by summing the utility values of occurrences multiplied by their respective probabilities (Mongin, 1997). People's wealth is evaluated in terms of their utility function rather than merely their wealth, according to this theory. Decision making using expected utility theory involves comparing $E[u(wX)]$ and $E[u(wY)]$ and to choose the result that has the greatest expected utility.

The expected utility theory is a fundamental theory that is relevant in the discussion of possibility of an individual to purchase insurance considering their perception of risk. This theory is however relevant to the utilisation of self-insurance by entities as one of the tools of risk management. This is because self-insurance and insurance have been established to be substitutes. Therefore, ceteris paribus, an increase in the price of insurance could induce a risk averter to search for other cheaper methods of handling risk and in consequence, such an entity may consider self-insurance as a prudent option.

Empirical Review

Empirical findings have revealed that insurance and self-insurance are related in such a way that, when the unit price of insurance rises, demand for insurance falls while demand for self-insurance comes up (Pannequin, Corcos & Montmarquette, 2016). The former reduces the market power of the insurer while it has no impact on the policyholder's well-being (Pannequin & Corcos, 2017). However, the

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discussion of demand for self-insurance is grasped without unraveling its interactions with conventional insurance (Pannequin, Corcos & Montmarquette, 2016). Hence, self-insurance opportunities may weaken the monopolistic power of an insurer and enable the policyholder to claw back a portion of the rent (Pannequin & Corcos, 2017). Therefore, controlling what may appear to be a crowding-out effect due to the fact that self-insurance becomes a major issue for the insurer (Hurley, 2014). At equilibrium, it is expected that self-insurance opportunities will reduce the insurance market, whereas conventional insurance contracts saturate policyholder's participation constraint allowing the insurer to maximize his market power on the residual insurance market (Pannequin & Corcos, 2017).

Self-insurance pricing changes have some effects on market insurance demand; a scale effect and two substitution effects. The scale effect refers to the impact of a change in the price of self-insurance on indemnification demand. Demand for market insurance tends to rise as demand for indemnification rises (Dionne & Eeckhoudt, 2012). The first substitution impact indicates how changes in the price of self-insurance affect demand for self-protection and, eventually, market insurance prices. The second substitution impact indicates how a rise in the cost of self-insurance encourages people to switch to market insurance rather than self-insurance (Alary, Gollier & Treich, 2013). When the price of self-insurance rises, it discourages indemnification or self-protection, since these sorts of demand reductions implicitly discourage market insurance, despite the direct incentive offered by the higher price of self-insurance (Hurley, 2014).

Several anomalies have been identified in the literature on this subject, where the application of self-protection and self-insurance produce quite different outcomes. Ehrlich and Becker (1998), for example, establish that self-insurance is necessarily an alternative for market insurance (the indemnification of a loss by an insurance firm). Although, self-protection and conventional insurance might be complementary. A more risk averse customer will expend more on self-insurance activities, but not necessarily more in self-protection activities (Dionne & Eeckhoudt, 2012).

Ehrlich and Becker (1972) were the earliest researchers who investigated people's desire to insure themselves and protect themselves from risk. Their research focused on the interaction between market insurance and preventive measures. According to this study, an insurer's increased degree of protection is projected to reduce the investment of a rational decision maker in self-insurance. Also, Boyers and Dionne (1989) argued that increasing risk had an ambiguous

impact on self-protection activities when they examined the association between increased external risk and self-protection behaviors.

The study of Briys and Schlesinger (1990) shows that the association between risk aversion and self-insurance remains significant in diverse scenarios, but that this relationship is not true for self-protection. However, there was no consideration of guaranteed dependability in the study conducted by Briys, Schlesinger, and Schuenburs (1991) into the link between conventional insurance, self-insurance, and self-protection. The inductive connection between high risk and high self-insurance and the replacement relationship between market insurance and self-insurance were shown to be flawed as a consequence, leading to the dissolution of multiple initial linkages.

Sweeney and Beard (1992) examined the effect that changes in loss probability and magnitude have on optimal self-protection. Loss severity and loss frequency were shown to have a mixed impact on self-protection, with benchmarks corresponding to the absolute risk aversion function in both circumstances. Self-insurance and self-protection were explored from the perspective of loss distribution and it was found that if the initial loss frequency is low enough, risk-averse agents are more likely to choose a higher level of self-insurance.

A study by Chiu (2000) found that people's tendency to self-protect is linked to their real loss likelihood and risk aversion. Based on the result of this study, it was found that as the likelihood of loss increases, the average inclination to protect oneself diminishes, and the same is true for the marginal propensity under a certain amount of restriction. However, increased self-protection efforts were found to be a direct result of higher levels of risk aversion. In the same vein, the impact of risk preference on self-insurance and self-protection was examined by Hofmann and Peter (2015) using a two-period model. Based on the result of the study, it was found that risk aversion causes increased self-insurance and self-protection actions when the initial probability of loss is low enough.

Lee and Fung (2021) studies self-insurance-cum-protection using Yaari's dual theory. The comparative statics of increased risk aversion was analyzed. In this study, two different sufficient conditions were found in the two-state model, from which an increase in the level of risk aversion will lead to an increase in the level of self-insurance cum-protection. Comparative statics was also studied in the continuous model and it was found that the results are similar to that in the two-state model. In addition, the study considered how the availability of conventional insurance affects the self-insurance-cum-protection level. The study concludes that

when the probability of loss is small, the self-insurance-cum-protection and conventional insurance are substitutes.

Andre, Bommier and Grand (2021) analyzed the impact of risk aversion and ambiguity aversion on the competing demands for annuities and bequeathable savings using a lifecycle recursive utility model. It was found that risk aversion and ambiguity aversion have similar effects i.e an increase in either of the two reduces annuity demand and enhances bond holdings. Pannequin, Corcos, and Montmarquette (2021) also looked at the two levels of insurance and self-insurance substitution. The outcomes of this study reveal that a higher unit price leads to quantity-based and between-tools substitution, but a higher fixed cost has only one effect: it reduces the insurance market.

Methodology

The study adopted a cross sectional class of survey research design. This class of research design was employed owing to the fact that the variables in the study reflects just one moment in time. This study adopted primary source of data through the use of an adapted questionnaire to obtain important information from SME owners in Lagos State who happen to be the respondents. The population of the study consists of 11,663 SMEs in Lagos State (SMEDAN & National Bureau of statistics, 2013). A sample size of 372 was derived from the population, using Yamane sample size formula. Out of 372 questionnaires, only 350 were returned. The Chief Executives of SMEs were used as the key respondents because they are the major decision makers. Purposive sampling technique was adopted in selecting 350 SMEs from major markets in Lagos state. These markets include; Computer Village in Ikeja Local Government Area, Ladipo market in Isolo Local Government Area, Oshodi market in Oshodi Isolo Local Government Area, Trade Fair Complex in Amuwo-Odofin Local Government Area, Owode Onirin in Kosofe Local Government Area, Idumota market in Lagos Island Local Government Area, Tejuosho market in Yaba Local Government Area, Alaba International Market in Ojo Local Government Area, Akodo market in Ibeju-Lekki Local Government Area and Apongbon in Lagos Island Local Government Area. The questionnaire was grouped into two sections: Section 'A' was designed to obtain information related to the bio-data of the respondents, while section 'B' was designed to obtain information relating to the dependent and independent variables of the study. A well-structured adapted questionnaire was employed for the purpose of this study. A five-point Likert scale of measurement was infused into

the questionnaire to measure the strength of the respondents' opinion about each question in the questionnaire.

Data Analysis, Interpretation and Discussion of Findings

Table 1: Model Summary of the relationship between risk aversion and self-insurance among SME owners in Lagos state

Correlations

		SI	RA
SI	Pearson Correlation	1	.139**
	Sig. (2-tailed)		.007
	N	372	372
RA	Pearson Correlation	.139**	1
	Sig. (2-tailed)	.007	
	N	372	372

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

Table 1 above shows that there is a weak positive relationship between Insurance companies' honesty and Claims settlement satisfaction in Nigeria (R = 0.139). This result is statistically significant because the p-value of the result (0.007) is less than 0.01 which is the level of significance in the model summary. The research hypothesis is therefore rejected. Hence, risk aversion has positive and statistically significant relationship with self-insurance among SME owners in Lagos state. This implies that as the level of abhorrence for risk taking continues to increase among SME owners in Lagos state, more pragmatic and decisive steps might have been sought to handle risks. Leaning on the results in the model summary, one of the risk managements tools that was employed by these SME CEOs in reducing their exposures is self-insurance. The result of this study conforms to Hofmann and Peter (2015). Based on the result of this study, it was found that increased risk aversion induces higher self-insurance activities and higher self-protection activities when initial probability for loss is small enough.

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Table 2: Model Summary of the relationship between risk aversion and self insurance among SME owners in Lagos state

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	SI	2.5753	372	1.11458	.05779
	CI	2.4946	372	1.15741	.06001

Paired Samples Test

| | | Paired Differences | | | | | | | |
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper	T	df	Sig. (2-tailed)
Pair 1	SI CI	−.08065	1.60490	.08321	-.08298	.24427	.969	371	.333

Table 2 above shows that there is no significant statistical difference between preference for self-insurance and conventional insurance among SME owners in Lagos state. This is because the p-value of the result (0.333) is greater than 0.05 which is the level of significance in the model summary. Based on this result, the research hypothesis is accepted. This implies that SME CEOs in Lagos state considers conventional insurance and self-insurance as close substitutes and do not view any of this risk handling technique to be superior or better than the other. Hence, aside self-insurance, SME CEOs in Lagos state adopt some other techniques of risk management such as the conventional insurance, in treating their exposures.

Conclusion and Recommendation

Businesses are not immune from risks. Small and Medium Scale businesses in particular are considered to be highly vulnerable to the detrimental flux of various risks affecting all classes of business in the society. The resultant effect of such risks could wield debilitating effects on the performance of businesses in this industrial sector and in addition threaten their survival. Owing to the need to ensure

survival, various techniques of risk management may be adopted to combat the aftermath of exposures of this class of business to losses. However, the propensity to utilize some of this risk handling tools such as self-insurance depends on the aversion of individual owners of SMEs for risk. In the light of the findings of this study, it is plausible to draw conclusion that SME owners who are risk averse will most likely utilize self-insurance as a technique of handling risk. Additionally, based on the findings of this study, it is safe to conclude that SME CEOs in Lagos state who are risk averse would willingly utilize either conventional insurance or market insurance depending on the availability of each of this risk handling methods.

It is therefore recommended, in the light of the findings of this study that conventional insurers should endeavor to develop products that address the actual needs of these firms, since they do not have preference for risk retention over conventional insurance. Also, it is recommended that SME CEOs should be highly disposed to risk improvement measures as this would help to reduce the cost of market insurance and self-insurance even if both are taken up contemporaneously.

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