

Risk Attitude and Demand for Motor Insurance: An examination of selected motorists in Lagos State, Nigeria.

ABSTRACT

Aims: This research aimed at drawing the attention of motorists and insurance practitioners in Nigeria to risk occurrences, drivers' risk attitude, and demand for motor insurance. For this reason, the researcher has evaluated the significant influence of drivers' risk attitude on risk occurrence and thus, examined the significant relationship between motorists' risk attitude and motor insurance demand

Study design: The study employed cross-sectional survey design

Place and duration of study: Study was carried out in Lagos Metropolis. Duration of study was from December, 2012 to August, 2013.

Methodology: The research commenced with gathering of literature survey. The study employed stratified random sampling technique and also, gathered data through the use of structured interviewed schedule. The sample population consisted of 270 respondents made up of motorists of private, commercial and company-used drawn from Six Local Government Council Areas of Lagos State. The statistical instruments employed for this study were Simple linear regression and Kolmogorov-smirnov test.

Results: Two hypotheses were tested in this study. For hypothesis 1, the use of Kolmogorov-smirnov test evidenced that driver's attitude has significant influence on risk occurrence. For hypothesis 2, the simple linear regression presented that risk attitude of motorists has significant relationship with the demand for motor insurance.

Conclusion: The research evidenced a significant interrelationship between the understudied constructs .i.e. drivers' risk attitude, risk occurrence and motor insurance demand

Keywords: Drivers' risk attitude, motor insurance demand, moral hazard, risk occurrence, Lagos State, Nigeria

1. INTRODUCTION

Drivers' habit on Nigeria's roads has been an awful experience compared to driving tenets in some other developed countries. Government, on its part, had made series of efforts to curtailing the number of road accidents experienced year in year out.

Nonetheless, the driving attitude of motorists in Nigeria is still put to question with respect to the enormous motor risks they are exposed to. In years past, Nigeria had been placed as one of the countries of the world that recognizes the need for motor insurance at least for the coverage of third party motor risks [1]. This is, therefore, a more cogent reason why insurance, as a scientific technique, has been seen as suitable tool for managing driver's risk attitude, driving pattern, behaviour and perception.

The united nation's medium projection of world population in 2030 is 8.1 billion, nearly 35% increase over the present. More so, substantial per capita income growth is expected to, and combined population and income growth will very likely produce unprecedented increase in vehicle ownership and use [2]. Dargay and Gately [3] had earlier applied their model of income elasticity to World Bank GDP growth estimates, extrapolated to 2015, and found that the world vehicle fleet would nearly double between 1992 and 2015. In their study, China, being the world's most populous country as well as an economic dynamo, was examined; and they projected vehicle ownership to increase from 2 to 60 vehicles per 1000 population, for a total of 78 million vehicles. This explains therefore the demographic advantages and economic growth prospects of many other emerging countries such as Nigeria, Brazil, Russia, India and many others.

However, the Nigeria's insurance market is dominated by non-life segment, driven by mandatory third-party motor insurance. The growth in motor insurance (especially third-party policies) had also been fueled by the rapidly emerging middle class in Nigeria as private cars are fast becoming a necessity rather than luxury [4]. In 2008, NAICOM introduced the Market Development and Restructuring Initiative (MDRI), a medium term reform plan (covering 2009 to 2012), aimed at improving capacity of the industry, efficiency of the market and protection of consumers in the insurance market environment in Nigeria. The reform plan principally focuses at the implementation of compulsory insurance covering six areas, with motor third party insurance inclusive. According to a report by Zimolo [5], 42.3% of the total circulating vehicles in Nigeria were commercial vehicles; while 1.0% was registered vehicles per resident population, 0.6% was for registered motor cars per resident population. In another related report by Chidoka [6], there was an estimated 7.7 million drivers in Nigeria. Also reported was the compliance level of vehicle insurance which was noted to remain unknown in Nigeria due to factors such as: (i) most drivers drive without insurance papers and do not patronize insurers; (ii) most people do not have confidence in insurance claims; (iii) some drivers drive with expired insurance papers; (iv) most drivers use touts to obtain fake/forged insurance documents; and (v) compliance is at a level of near non-compliance.

In August 2012, researchers at MIT published results from a study that found that drivers who frequently used cell phones behind the wheel were more likely than those who did so infrequently to report or be observed engaging in other risky behavior, such as frequent lane changing, speeding and hard acceleration [7]. Additionally, the National Highway Traffic Safety Administration [8] reports that more than 3,000 people are killed and nearly half a million are injured each year in distraction-related crashes. Hendrick, Fell and

Freedman [9] had earlier performed a study on unsafe driving acts in serious traffic crashes to determine the specific driver behaviour and unsafe driving acts that lead to crashes, and the situational driver and vehicle characteristics associated with these behaviours. It was also reported that driver behaviour contributed to 99% of the crashes investigated, with the six causal factors that accounted for most of the problem behaviour in decreasing order of frequency, being driver inattention, vehicle speed, alcohol impairment, perceptual errors, decision errors and incapacitation.

This study is concerned with ascertaining the significant influence which driving attitude of motorists has on risk occurrence; and thus, to examine the significant relationship between motorist's risk attitude and motor insurance demand.

Research Questions and Research Hypotheses

For the purpose of this research, the following relevant research questions were set:

- i. Does driver's attitude has significant influence on the occurrence of risk?
- ii. Is there any significant relationship between motorists risk attitude and demand for motor insurance?

Thus, to provide answer to the questions highlighted above, the following testable hypothetical statements were considered:

- i. Ho: Driver's attitude has no significant influence on risk occurrence.
- ii. Ho: Risk attitude of motorists has no significant relationship with the demand for motor insurance.

Theoretical and empirical framework

Risk has been seen as a multidimensional concept. It is a necessary evil that permeates every facet of life. According to Vaughan and Vaughan [10], risk is being seen as a condition of the real world in which there is an exposure to adversity. Thus, stressed further, it is a condition in which there is a possibility of an adverse deviation from a desired outcome that is expected or hoped for. Atkins and Bates [11] see risk as the combination of the probability of an event occurring and its consequences. However, Hillson [12] earlier came up with a working definition for risk attitude when he described 'risk' as 'uncertainty that could have a positive or negative effect on one or more objectives; and 'attitude' as chosen state of mind, mental view or disposition with regard to a fact or state. He posited therefore that risk attitude is a 'chosen state of mind with regard to those uncertainties that could have a positive or negative effect on objectives' or more simply 'chosen response to perception of significant uncertainty'.

Many studies in the past have underpinned the concept 'risk attitude' within certain frameworks. From the Expected Utility (EU) framework, according to Kahneman and Tversky [13], risk attitude is nothing more than a descriptive label for the shape of the utility function presumed to underlie a person's choices. Risk attitude, thus, has been considered to be a personality trait, and that greater risk taking is sometimes found to be

associated with greater personal and corporate success [14]. The terms 'risk averse' and 'risk seeking' within the Expected Utility framework technically refer only to the curvature of the utility function [15]. Other researchers have also argued that risk attitude is more typically conceptualized in the risk-return framework of risky choice used in finance [16]. Within the risk-return framework, the perceived-risk attitude, a term coined by Weber and Milliman [17] was operationalized as the risk trade off coefficient and thus earlier regarded as 'risk repugnance' [18]. This reflects the assumption that 'pure' attitude towards risk is always negative and that apparent evidence to the contrary is always the result of discrepancies between perceptions of risks or benefits between the decision maker and some objective external observer.

A report of a panel committee constituted between the year 1993 and 2002 in Hong to review the major contributory factors of traffic accidents had noted that, on average, about 65% of accidents are driver related. The report of the panel revealed that the inappropriate driving behaviour commonly exhibited by drivers includes: driving too close to the vehicle in front; turning or reversing negligently; careless lane changing; driving at an inappropriate speed; failing to obey traffic signals and late use of or failing to use indicators. Among the road transport mechanism such as: road environment, vehicles, road users and the likes, the human factor has been seen as the most complex and dynamic. According to a study conducted by the Federal Road Safety Commission, Nigeria [19] on road traffic crashes (RTC); it has shown that there are three major causes of these crashes namely: human factor, mechanical factor and environment factor. While human factor was noted to constitute about 90% of the RTC (out of which drivers' actions or reactions make up 80%), 10% was said to be mechanical.

A road traffic collision is the outcome of interaction among a number of factors; some of which may not appear to be directly related to road traffic injuries. The prime risk factors have been categorized, according to the Training Manual for Road Traffic Injury Prevention [20], into four groups, viz: (i) factors influencing exposure to such as demographic and economic factors, level of motorization, and land use planning practices; (ii) factors influencing crash involvement such as inappropriate and excessive speed, drinking and driving, unsafe road design, fatigue, and lack of effective law enforcement and safety regulations; (iii) factors influencing crash and injury severity, such as the non-use of seat belts, child restraints or crash helmets, insufficient vehicle crash protection for occupants and for those hit by vehicles, and presence of alcohol; and (iv) factors influencing post-crash injury outcomes, such as delay in detecting the crash and providing life-saving measures and psychological support, lack of appropriate pre-hospital care, among others.

A number of studies explored also gave divergent contributions into risk factors for road accidents among drivers; which are: drivers' recklessness and negligence, mechanical defects in vehicle, drivers' overconfidence and tiredness, carelessness in road crossing by pedestrians, bad roads [19,21,22]; use of alcohol, kolanut, Indian hemp [23]; poor sight [24,25]; cataract [26,27]; and medical condition and crash severity [28].

Motor vehicles first appeared on the roads during the 1880s and the first motor insurance policies were issued during the 1890s [29]. By and large, it is noteworthy to mention that the early years of the twentieth century saw the formation of insurance companies in which the main emphasis was upon motor insurance and thus, the motor tariff came into operation within the framework of the Accident Offices' Association. Chen and Baker [30] stipulate that motor users are exposed to some fundamental risks, which they mention as: (i) cost of repairing the vehicle following an accident; (ii) cost of procuring a new vehicle if stolen or damaged above economic repair; and (iii) legal liability claims against the driver or owner of the vehicle due to injury or damage to the third-party.

However, the Nigeria's motor tariff prescribes the standard format for underwriting motor insurance and general regulations applicable to all types of motor vehicle including those belonging to or held in trust by motor trade. According to Akintayo [31], some of the general regulations are: value of vehicles; period of insurance; short period rates; cancellation of policies; No claim discount; joint insureds/policies; vehicles paid-up; and vehicles hire under contract for not less than twelve months and not being a hire purchase contract. Ngwuta [32] thus posited that motor insurance is usually grouped according to the usage of vehicles, i.e. private cars; commercial vehicles; passenger carrying vehicles; goods carrying vehicles; public authorities vehicles; agricultural and forestry vehicles; and mechanical plants of special design.

A market where pricing is tariff-driven without sufficient proof or statistics to back up the adequacy of charges is bound to suffer the fate of our motor insurance pricing [33]. The essential attributes of insurance operation is such that the insurer in pricing a specific risk or group of risks need to make basic assumptions concerning the expected cost of assuming such risk; which then implies that some degree of uncertainty is involved in the cost of insurance operation. Insurance premium, according to Trieschmann, Hoyt and Sommer [34], is described as the total cost of insurance, found by multiplying the rate by the number of units covered. Asokere and Nwankwo [35] argued that the workability of insurance pricing is hinged upon certain factors which they mentioned as: adequacy, reasonableness, equity, technical profitability and induced loss prevention. In an earlier related study, insurance premium had been said not to be excessive, inadequate, or unfairly discriminatory [36]. According to Kiseok and Kang [37], the excessiveness and the adequacy are in relation to the aggregation of insurance premium portfolio held by an insurance company and the fairness is in association with the individual premium of an insurance contract. As suggested by Ligon and Thistle [38], an increased volatility of insurance prices due to insurers' overconfidence may be a contributing factor in insurance cycles; and that changes in prices in response to information may be asymmetric.

Four key issues, according to Nyce [39], had been said to affect how insurance markets function with regard to pricing: adverse selection, moral hazard, actuarial compared with social equity, and timing. With adverse selection knowledge, appropriate insurance pricing requires that the insurer be able to gather sufficient information about the applicant to adequately assess and price a particular policy. Moral and morale hazard problems are common in motor insurance and they are behavior problems that affect insurance

markets when providing insurance to individuals and organizations. More so, actuarial equity and social equity affect insurance pricing. While actuarial equity is founded in cost-based pricing, social equity involves two concepts. The first of which is that insurers should relate the amount each person should pay for insurance to his or her ability to pay rather than to the person's loss exposure or expense factor. The second concept is that insurers should not increase an insured's insurance premium because of criteria that are beyond that individual's control. Lastly, one final significant issue in insurance pricing is timing.

An earlier study of Dahlby [40] demonstrated that as the price of coverage increases, the percentage of drivers who purchase insurance decreases. From the perspective of ensuring a sustainable commercial supply of the insurance contract, it is vital that certain components are reliably measurable at low cost and that their effect not be influenced by the behaviour of any insured individual or by which subset of individuals' purchase of insurance. As the 'supply-side' considerations clearly vital, so are the 'demand-side' considerations are equally important if insurance is to provide a sustainable solution to the development problems created by uninsured risk [41]. Seog [42] had argued that the driving force of insurance demand is of strategic consideration.

Market failure occurs when supply and demand do not intersect at a sustainable price and quantity. Several factors, according to Nyce [39], affect the demand for insurance. These factors are: insurance mandates and regulation; risk tolerance; financial status; real services rendered; and tax incentives. The earlier work of Bouzouita and Bajtelsmit [43], and Tennyson [44] focused on the effect of rate regulation on the automobile insurance industry. Bouzouita and Bajtelsmit establish a positive relationship between rate regulation and the relative size of the residual market, while Tennyson demonstrated that rate regulation itself has little if any effect on insurance market structures but that stringent rate regulation reduces incentives for insurers to participate in the automobile insurance market. Their work was in support with earlier studies (such as Harrington [45]; Grabowski, Viscusi, & Evans [46]) who demonstrated the mixed effects of rate regulation on insurance prices.

2. METHODOLOGY

The study made use of a cross-sectional survey research design. The involvement of survey design was due to its ability to predict behaviour [47]; and assist in collecting the same information about all the cases in a sample [48]. This study, therefore, made use of an interview survey method in gathering data. The interview method involves questioning and discussing issues with people. It can be very useful technique for collecting data which would likely not be accessible using techniques such as observation or questionnaire [49]. The interview is scheduled and structural-typed so as to call for less versatility and on-the-spot adaptability on the part of the interviewer [50]. The use of interview survey is advantageous due to its ability to generally produce fewer incomplete questionnaires, achieve higher completion rates than self-administered questionnaires, and more effective for complicated issues [51]. The views of respective interviewees (i.e.

respondents) to the understudied issues were coded to enhance the completion of the interview schedule which was drawn using a Likert-type scale measurement of 'Agree', 'Undecided' and 'Disagree'. More so, each response must be assigned a numerical code before it can be entered into SPSS [52]. Accordingly, Agree = 3, Undecided = 2, & Disagree = 1.

Six Local Government Council Areas chosen in Lagos Metropolis comprised of: Alimosho, Ajeromi-Ifeelodun, Mushin, Ojo, Surulere, and Shomolu. The choice of these sample areas was due to their high population density and industrial activities that require frequent vehicular movement of both human and material resources. This research employed a stratified sampling technique. Therefore, 3 strata of the sample population were considered which comprised of private, commercial and company use of motor vehicles. Each stratum generated 15 responses making up 45 responses (i.e. 15×3) in each of the 6 sample areas bringing the total sample size to 270 (i.e. 45×6). The essence of this is to ensure that the number is proportional to the stratum's share of the total population [53].

This study looks into the validity of the research instrument which comprises construct, content and predictive validity. However, while the construct validity confirmed the extensive use of well-grounded literatures from relevant studies, the content validity thus confirmed the distribution of a set of draft structured interview schedule to few selected risk management experts and members of the academia in the field of transport management and insurance. These experts were able to go through the items on the instrument and came up with necessary suggestions which assisted the researcher to present the items to respondents for better understanding. The third validity, (i.e. predictive), explained the soundness of the study via an approached adopted by Oyedijo [54]. This involved a relentless and in-depth discussion of the results of the study with sound-minded, knowledgeable and experienced drivers who are outside the sample population; and more so, their level of agreement with the result provided a high degree of evidence of the predictive validity.

Test of Hypotheses

The need for hypotheses is to provide direction for this study and prevent the review of irrelevant literature and the collection of useless or excessive data [50]. A test of hypothesis has been described as a statistical technique that uses sample data to ascertain a hypothesis about the parameter of a population [55]. Two hypotheses test technique were employed in this research. For hypothesis 1, the kolmogorov-Smirnov test was employed, while simple regression technique was adopted in the test for hypothesis 2. The kolmogorov-Smirnov one sample test is suitable due to its non-parametric nature which helps to test the goodness of fit of; and thus, compares the distribution on an ordinal scale [56]. The kolmogorov-Smirnov is described as:

$$D = \max |F_o(X) - S_n(X)|$$

282

283 Where $F_0(X)$ = the specific cumulative frequency distribution under H_0 for any value of x
 284 and is the proportion of cases expected to have scores equal to or less than x . $S_n(X)$ =
 285 the observed cumulative frequency distribution of a random sample of N observations
 286 where X is any possible score. The H_0 is the specification of the null hypothesis. The null
 287 hypothesis is such that is set up as a logical counterpart of the alternative hypothesis
 288 such that if the null hypothesis is untrue, the alternative hypothesis must be true [57]. The
 289 decision rule is such that null hypothesis (H_0) will be rejected once the calculated D (i.e.
 290 D_{cal}) is greater than the tabulated D (i.e. D_{tab}) under the divergence level of 0.05. The
 291 tabulated D from the kolmogorov-Smirnov test table is always represented by $(\alpha/\sqrt{N})$;
 292 where $\alpha=1.36$ and N =number of observation. The critical value of D for sample size of N
 293 must be greater than thirty-five (i.e. $N>35$ - for large samples).

294

295 A linear regression technique is suitable for the test of hypothesis 2 because of its
 296 simplicity which involves only two variables Y (dependent variable) and X (independent
 297 variable); where

$$298 Y = a + bx + e$$

299 Y = Demand for motor insurance

300 X = Drivers' risk attitude

301

302 While 'a' is the intercept, 'b' is the regression coefficient. The regression analysis is
 303 appropriate because it helps predict the variable of interest (i.e. dependent variable), and
 304 thus improve on the knowledge of the variable of interest [58]. The regression analysis is
 305 computed via the use of statistical package for social sciences (SPSS).

306

307 3. RESULTS AND DISCUSSION

308 3.1. Presentation and analysis of Data

309 In the presentation and analysis of data gathered, simple frequency percentage tables
 310 have been utilized; while formulated hypotheses had been tested via the use of
 311 kolmogorov-Smirnov test and simple regression statistical technique.

312

313

314

315

316 3.2. Responses to Research Questions

317 3.2.1. Significant influence of drivers' attitude on the occurrence of risk (Statement 6)

318 **Table 1: simple frequency percentage table showing respondents' responses to research question 1**

319 Alternatives	Responses	Percentage (%)
320 Agree	23	8.52

321	Undecided	58	21.48
322	Disagree	189	70
323	Total	270	100

324 **Sources: Author's Fieldwork, 2012-2013**

325 **3.2.2. Significant relationship between motorists' risk attitude and motor insurance demand**
 326 **(Statement 7)**

327 ***Table 2: simple frequency percentage table showing respondents' responses to research question 2***

328	Alternatives	Responses	Percentage (%)
329	Agree	31	11.48
330	Undecided	47	17.41
331	Disagree	192	71.11
332	Total	270	100

333 **Sources: Author's Fieldwork, 2012-2013**

334

335 ***Table 3: Kolmogorov-Smirnov frequency table for Hypothesis 1***

336		Rank of view of respondents		
337	Hypothesis	Agree	undecided	Disagree
338	F= Driver's attitude has no significant influence on risk			
339	Occurrence	23	58	189
340				
341	F_o(X) = Theoretical cumulative distribution of choices	0.3333	0.6666	1
342	under Ho			
343				
344	S_n(X) = Cumulative distribution of observed choices	0.0851	0.3000	1
345	 F_o(X) – S_n(X) 	0.2482	0.3666	0

346 **Source: Author's Fieldwork, 2012-2013**

347

348 **Hypothesis 1**

349 Driver's attitude has no significant influence on risk occurrence. From the Kolmogorov-
 350 Smirnov frequency table for the hypothesis, the calculated D value is the point of greatest
 351 divergence between the cumulative theoretical distribution and cumulative observed
 352 which is 0.2701. The tabulated D from the Kolmogorov-Smirnov test table at ($\alpha/\sqrt{N} = 1.36/\sqrt{270}$)
 353 $\sqrt{270}$) is given as:

354 $D = \alpha / \sqrt{N} = 1.36 / \sqrt{270} = 0.0827$

355

356 In this case, since calculated D value (0.3666) exceeds the critical value of 0.0827, the
 357 null hypothesis (Ho) stating that driver's attitude has no significant influence on risk
 358 occurrence is rejected at $\alpha=0.05$ (see table 3). This, therefore, indicates that driver's
 359 attitude, according to the respondents' view, has significant influence on risk occurrence.
 360 This result confirms the earlier study of Avineri and Goodwin [59] who stipulated that
 361 behavioural changes is said to affect drivers' health and their transportation.

Table 4. Responses to the testing of hypothesis 2

	Responses (%)
Motorists' risk attitude (statement 3)	
Agree	137
Undecided	85
Disagree	48
Demand for motor insurance (statement 9)	
Agree	83
Undecided	36
Not agree	151

Source: Author's Fieldwork, 2012-2013

Table 5: A simple linear regression analysis of contribution of independent variable to the dependent variable

Linear R	0.737
R Square	0.543
Adjusted R square	0.541
Standard Error	0.6080

Table 6: Analysis of Variance Table

	DF	Sum of Square	Mean Square	F-ratio
Regression	1	117.80	117.80	318.65
Residual	268	99.074	0.3700	

Hypothesis 2

Table 5 indicates that the independent variable (i.e. drivers' risk attitude) yielded a coefficient of linear regression (R^2) of 0.543 accounting for 54.3% of the variance that evidence the relationship between driver's risk attitude and demand for motor insurance. The table thus shows that the analysis of variance for the linear regression data produced F-ratio value of 318.65 which significant at 0.05. The result from hypothesis 2 shows a positive significant relationship between driver's risk attitude and demand for motor insurance. This result, according to the respondents' view, shows that an appreciable level of significance exist between drivers' risk attitude and demand for insurance. This, then, confirms an earlier study who noted that the Nigeria's insurance market is dominated by non-life segment, driven by mandatory third-party motor insurance [4]. This result, again, concurs with respondents' view when many claimed to comply with demand for third party motor insurance policy; reason being its compulsory nature, cheap among others.

4.0. CONCLUSION AND RECOMMENDATIONS

This study has been able to confirm the significant influence of drivers' risk attitude on the occurrence of risk and thus, the significant relationship that subsist between drivers' risk attitude and motor insurance demand with the Nigeria's road network as a research ground for its empirical analysis. However, the study found that drivers' attitude has a

high level of influence on, and contribute hugely to risk occurrence as human element was noted to constitute a large part of road traffic crashes. The research thus established that many drivers are unconscious of risk occurrence, reckless, careless and restless. This characterizes the poor risk attitude evidenced among commercial vehicle drivers. Other Finding from this study also gave supporting evidence between drivers' risk attitude and demand for motor insurance as an appreciable level of significance explained their relationship. According to a report by RAC [60], drivers who currently take the pass plus course are offered a financial incentive by some insurance companies in Netherland. It has also been reported that one way of encouraging uptake of such learning could be achieved through rewards of cheaper insurance.

Conclusively, this study reveals that pricing is an essential element of the demand for motor insurance. More so, this study is consistent with others [such as Cummins, Philips & Tennyson [61], Harrington [62], Grace & Philips, [63], Thomas & Patricia [64], Huang & Query [65] among others]; it presents evidence that advances in regulation of motor insurance pricing via non-tariff technique may have positive impact on the demand for motor insurance which will in turn attract more drivers to approaching insurance companies as well as maintaining risk-free attitude when driving.

Having pondered these findings, this research recommends thus that:

- i. Insurance companies in Nigeria are encouraged to unravel the composition of motor insurance tariff to the knowledge of the motorists;
- ii. Insurance companies should ensure that there is flexibility in the various motor insurance policies;
- iii. Insurance companies and regulators should ensure they provide a convenient payment mode to encourage more patronage for insurance companies;
- iv. Insurance companies, regulators and government should create more awareness frequently on risk control measures and the need for motorists to purchase motor insurance;
- v. Government should drive a policy to combat poor risk attitude among motorists and ensure that motor insurance is seen as a need among drivers; and
- vi. Periodic enlightenment on road risk situations should embark upon help curtail the number of risk occurrences on our roads

4.1. Research Limitations and Further Studies

There are a number of limitations to this research study. First, data were gathered from drivers of commercial vehicles, private vehicles and company-use vehicles without considering drivers of special-type of motor vehicles. Secondly, the study was unable to evidence the database of the customers of motor insurance policies in the different strata in different insurance companies in Nigeria. Thirdly, the views of insurance practitioners with respect to motor insurance were not considered.

More so, future researches are expected to investigate reasons why many motorists find it convenient to patronage non-insurance firms in getting their vehicle insurance. More efforts should be dedicated by future researchers to the composition of the motor insurance tariff in Nigeria.

COMPETING INTERESTS

The author declares that no competing interests exist.

REFERENCES

1. Serap OG. Motor third-party liability insurance in developing countries: Raising awareness and improving safety. Washington: The International Bank for Reconstruction and Development / The World Bank; 2009.
2. Harrington W, McConnell V. Motor vehicles and the environment. REF REPORT. 2003. Available: <http://www.rff.org>
3. Dargay J, Gately D. Income's effect on car and vehicle ownership worldwide: 1960-2015: Transportation Research. 1999; 33A: 101-138.
4. Afrinvest. Nigerian insurance sector reports. Lagos: Afrinvest (West) Africa Limited; 2011.

5. Zimolo A. Motor insurance group: Normative and management characteristics of motor third party liability insurance in the world. XIII World Congress. 2010; May: 17-20.
6. Chidoka, S. Transportation and insurance policy in Nigeria. A paper presentation held at Ayo Ajomo Lecture Theatre, University of Lagos, Akoka. 2011; January 13.
7. Zhoa N, Reimer B, Mehler B, D'Ambrosio LA, Coughlin JF. Self-reported and observed risky driving behaviours among frequent and infrequent cell phone users. Accident Analysis and Prevention. 2012; August, 6.
8. National Highway Traffic Safety Administration. Distraction. Gov: key facts and statistics. US Department of Transportation. 2012; September 5. Available: <http://www.distarction.gov/content/get-the-facts/facts-and-statistics.html>.
9. Hendricks DL, Fell JC, Freedman M. The relative frequency of unsafe driving acts in serious traffic crashes. National Highway Traffic Safety Administration, US Department of Transport Summary Technical Report. 1999; Available:<http://www.nhsta.dot.gov/people/injury/research/UDAShortrpt/index.html>.
10. Vaughan EJ, Vaughan TM. Fundamentals of risk and insurance. 10th ed. USA: John Wiley & Sons, Inc; 2008.
11. Atkins D, Bates I. Insurance. London: Global Professional Publishing; 2008.
12. Hillson D. Understanding and managing risk attitude. Risk Doctor Briefing. 2005; (April). Available: <http://www.risk-doctor.com>.
13. Kahneman D, Tversky A. Prospect theory: an analysis of decision under risk. Econometrica. 1979; 47:263-291.
14. MacCrimmon KR, Wehrung DA. Characteristics of risk taking executives. Management Science. 1990; 36:422-435.
15. Weber EU, Blais A, Bert NE. A domain-specific risk-attitude scale: Measuring risk perceptions and risk behaviours. Journal of Behavioural Decision Making. 2002; 15: 263-290.
16. Sarin RK, Weber M. Risk-value models. European Journal of Operation Research. 1993; 70: 135-149.
17. Weber EU, Milliman R. Perceived risk attitudes: Relating risk perception to risk choice. Management Science. 1997; 43: 122-143.
18. Yates JF, Stone ER. *The risk construct*. In risk-taking behaviour, Yates JF (ed.). New York: John Wiley; 1992.
19. Federal Road Safety Commission. Nigeria Highway Code. 2nd ed. Port-Harcourt: DICES Consulting Limited; (2008).
20. Training Manual for Road Traffic Injury Prevention (n.d.)
21. Oyemade A. Epidemiology of road traffic accidents in Ibadan and its environs. Nigerian Medical Journal. 1973; 3: 174-177.
22. Asogwa SE. Some characteristics of drivers and riders involved in road traffic accidents in Nigeria. East African Medical Journal. 1980; 57: 399-404.
23. Asogwa SE. Kolanut and road traffic accidents in Nigeria. American Journal of Public Health. 1978; 68: 1228.

24. Toczolowski J, Gerkowicz M, Pracka A, Rycerz H. Vision defects in two age groups of drivers who caused road accidents. *Klinika Oczna*. 1996; 98: 221-224.
25. Bener A, Ahmad MF, El-Tawil MS, Al-Bakre S. Visual impairment and motor vehicle accident. *Middle East Journal of Emergency Medicine*. 2004; 4: 1-9.
26. Owsley C, Stalvey B, Wells J, Sloane ME. Older drivers and cataract: driving habits and crash risk. *Journal of Gerontology, Biological Sciences and Medical Sciences*. 1999; 54 (4): 203-211.
27. West CG, Gildengorin G, Haegerstrom-Portnoy G, Lott LA, Schneck ME, Brabyn JA. Vision and driving self-restriction in older adults. *Journal of American Geriatric Society*. 2003; 51: 1348-1355.
28. Laberge-Nadeau C, Dionne G, Maag U, Desjardins D, Vanasse C, Ekoe JM. Medical conditions and the severity of commercial motor vehicle driver's road accidents. *Accident Analysis and Prevention Journal*. 1996; 28: 43-51.
29. Ellis R. *Insurances of transportation*. Cambridge: The Burlington Press (Cambridge) Limited; 1983.
30. Chen LH, Baker SP. Carrying passengers as a risk factor for accidents fatal to 16 & 17 years old drivers. *JAMA*. 2000; 283 (12): 1578-1582.
31. Akintayo LA. *Introduction to general insurance underwriting*. 2nd ed. Lagos: CSS Bookshops Limited; 2004.
32. Ngwuta O. *Modern insurance business management*. Lagos: Nigerian Insurers Association; 2007.
33. Ozioko EM. *General insurance companion*. Lagos: Chimoke Printing & Publishing Company Limited; 2007.
34. Trieschmann JS, Hoyt RE, Sommer DW. *Risk management and insurance*. 12th ed. USA: South-Western Thomson Corporation; 2005.
35. Asokere AS, Nwankwo SI. *Essentials of insurance: A modern approach*. Lagos: Fevas Publishing; 2010.
36. Nahum B, Kahane Y. Risk consideration in insurance ratemaking. *Journal of Risk and Insurance*. 1978; 45 (March): 121-132.
37. Kiseok OH, Kang HB. A discrete time pricing model for individual insurance contracts. *Journal of Insurance Issues*. 2004; 27 (1): 41-65.
38. Ligon JA, Thistle PD. A behavioural model of insurance pricing. *Journal of Insurance Issues*. 2007; 30 (1): 46-61.
39. Nyce CM. *Foundations of risk management and insurance*. 2nd ed. Pennsylvania: American Institute for Chartered Property Casualty; 2007.
40. Dahlby BG. Adverse selection and statistical discrimination. *Journal of Public Economics*. 1983; 20:121-130.
41. Chantarat S, Mude AG, Barrett CB, Carter MR. Designing index-based livestock insurance for managing asset risk in Northern Kenya. *The Journal of Risk and Insurance*. 2013; 80 (1): 205-237.
42. Seog SH. The strategic role of insurance: The warranty case. *Journal of Insurance Issues*. 2006; 29 (1): 33-50.

43. Bouzouita R, Bajtelsmit VL. The impact of rate regulation on the residual market for automobile insurance. *Journal of Insurance Regulation*. 1997; 16: 61-72.
44. Tennyson S. The impact of rate regulation on state automobile insurance markets. *Journal of Insurance Regulation*. 1997; 15: 502-523.
45. Harrington SE. 1991 Presidential Address-rate supervision. *Journal of Risk and Insurance*. 1992; 59: 185-202.
46. Grabowski H, Viscusi WK, Evans WN. Price and availability trade offs of automobile insurance regulation. *Journal of Risk and Insurance*. 1989; 56: 275-299.
47. Bordens SK, Abbott BB. *Research design and methods: Processes approach*. 5th ed. New York: McGraw-Hall; 2002.
48. Aldridge A, Levine K. *Surveying the social world: Principle and practice in survey research*. Buckingham: Open University Press; 2001.
49. Blaxter L, Hughes C, Tight M. *How to research*. 3rd ed. Berkshire: Open University Press; 2006.
50. Osuala EC. *Introduction to research methodology*. 3rd ed. Onitsha: African-First Publishers Limited; 2005.
51. Babbie E. *The basic of social research*. 3rd ed. Canada: Thomson Learning Inc; 2005.
52. Pallant J. *SPSS survival manual: A step by step guide to data analysis using SPSS* (4th ed.). China: Everbest Printing Company; 2011.
53. Asika N. *Research methodology in the behavioural sciences*. Lagos: Longman Nigeria Plc; 2008.
54. Oyedijo A. Strategic agility and competitive performance in the Nigerian telecommunication industry: an empirical investigation. *Business and Management Review*. 2012; 1 (2): 39-50.
55. Gravetter FJ, Wallnau LB. *Statistics for the behavioural sciences* (5th ed.). Stanford: Thomson Learning Inc; 2000.
56. Cooper DR, Schindler, PS. *Business research methods* (9th ed.). New York: McGraw-Hill/Irwin; 2006.
57. Pagano PR. *Understanding statistics in the behavioural sciences* (4th ed.). USA: West Publishing Company; 1994.
58. Mojekwu JN. *Business statistics*. Ilaro: IPS Educational Press; 1996.
59. Avineri E, Goodwin P. *Individual behaviour change: Evidence in transport and public health*. Bristol: Center for Transport & Society; 2009.
60. RAC. Pass Plus: Improving your driving further. (2009); Available: <http://www.rac.co.uk/know-how/learning-to-drive/after-the-driving-test/pass-plus-improving-your-driving-further.htm>
61. Cummins JD, Phillips RD, Tennyson S. Regulation, political influence and the price of automobile insurance. *Journal of Insurance Regulation*. 2001; 20: 9-50.
62. Harrington SE. Effects of prior approval rate regulation of auto insurance, In: J.D. Cummins, ed., *Deregulating property-liability insurance: restoring competition and increasing market efficiency*. Washington, DC: AEI-Brookings Joint Center; 2002.

63. Grace MF, Phillips RO. Regulator performance, regulatory environment and outcomes: An examination of insurance regulator career incentives on state insurance markets. *Journal of Banking and Finance*. 2008; 32: 116-133.
64. Thomas RB, Patricia B. The effect of regulation on insurance pricing: the case of Germany. *The Journal of Risk and Insurance*. 2012; 79 (1): 129-164.
65. Huang D, Query TJ. Designing a new automobile insurance pricing system in China: Actuarial and social considerations. *Casualty Actuarial Society Forum*. 2007; winter: 67-102.

Appendix

Research Methodology Details

<i>Sample population</i>	<i>Motorists of private, commercial and company-used</i>
<i>Geographic location</i>	<i>Six selected Local Government Council Areas in Lagos Metropolis, Nigeria</i>
<i>Research design</i>	<i>cross sectional survey</i>
<i>Survey instrument</i>	<i>Structured interview schedule</i>
<i>Sampling technique</i>	<i>stratified sampling</i>
<i>Sample size</i>	<i>N= 270</i>
<i>Level of significance</i>	<i>0.05</i>
<i>Period of study</i>	<i>December, 2012 – August, 2013</i>
<i>Procedure for data analysis</i>	<i>Simple frequency percentage tables, Kolmogorov-Smirnov & Simple linear regression</i>
<i>Validity test</i>	<i>Theoretical, content & predictive</i>

Key statements to research constructs (interview schedule)

- 1) Most drivers are unconscious of risk occurrences
- 2) Recklessness, carelessness and restlessness are the driving norms among many drivers on our roads
- 3) Many drivers' attitude towards risk are very bad
- 4) Many vehicles on our roads do not have the required motor insurance policies
- 5) Drivers of motor vehicles have no specific coverage designed for them in the provision of the motor insurance policies
- 6) Drivers' attitude have no significant influence on risk occurrences on our roads
- 7) Motorists' risk attitude do not have significant relationship with the demand for motor insurance policy

- 639 8) Most drivers do not usually patronize insurance companies whenever they are in
640 need of motor insurance policy
- 641 9) Compliance level, among drivers, to vehicle insurance is still on its decrease
- 642 10) Many drivers do not have adequate knowledge of the benefits of motor insurance
643 policy; thereby increases the risk situations on our roads
- 644 11) Periodic enlightenment on road risk situations can help curtail the number of risk
645 occurrences on our roads
- 646 12) The demand for and periodic enlightenment on the need for motor insurance
647 policies can serve as better pedestal towards good driving attitude.
- 648 13) A poor risk attitude can be evidenced among drivers of
649 a) Commercial vehicles -----
650 b) Private vehicles -----
651 c) Company-used vehicles -----
- 652 14) Most vehicles on our roads are not well covered because
653 a) Hike in insurance premium -----
654 b) Inadequate and irregular enlightenment -----
655 c) Lack of trust and confidence in insurance companies -----
- 656 Please state other cause (s) -----
657 -----
- 658 15) Drivers' attitude towards the demand for motor insurance policies can better be
659 encouraged via
660 a) Trust & confidence in insurance companies -----
661 b) Flexibility in insurance product -----
662 c) Customer delight -----
663 d) Payment mode -----
664 e) Courtesy of contact staff -----
- 665 16) Many motorists are conversant with which of these vehicle insurance policies on
666 our road
667 a) Motor third party insurance -----
668 b) Fire and theft insurance -----
669 c) Comprehensive insurance -----
-