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A rank-order analysis of Psychometrics, Risk Perceptions, and Travel Behaviour among Selected Motorists in Lagos State, Nigeria

Ogochukwu Ugboma[1*], Sunday Stephen Ajemunigbohun[2], Kehinde Emmanuel Abiodun[3]

[1]Department of Transport Management and Operations, School of Transport and Logistics, Lagos State University, Ojo, Lagos, Nigeria. Email: ogochukwu.ugboma@lasu.edu.ng

[2]Department of Insurance, Faculty of Management Sciences, Lagos State University, Ojo, Lagos, Nigeria. Email: sunday.ajemunigbohun@lasu.edu.ng

[3]Department of Insurance, Faculty of Management Sciences, Lagos State University, Ojo, Lagos, Nigeria. Email: kehinde.abiodun@lasu.edu.ng

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Abstract

Psychometrics and risk perceptions influence motorists' travel modes. Driver conduct is crucial to calculating travel cost, distance, and time. This study examined Lagos State motorists' Psychometrics, risk perception, and travel behavior. Using the survey approach with the multiphase sampling techniques comprised of quota and convenience, data were gathered through a structured questionnaire from the selected registered motorists. The sample size of two hundred and eighty-nine (289) was estimated. The data analytical techniques employed were descriptive statistics and the Friedman rank test. The findings revealed rank tests of psychometrics, risk perceptions, and travel behavior of selected motorists in Lagos State. It is also established that risk perception metrics such as roads' vulnerabilities, choices, trusts, and fears are quantity while the motorists are on the Lagos roads. Conclusively, the study ensures that motorists are conscious of their travel behavior regarding travel quality, costs, distance, modes, and times for effective transport systems. The study recommended that traffic authorities use psychometrics to detect high-risk drivers and train them for their psychological characteristics. As psychometric evaluations indicate, the government should reward safe drivers with public acknowledgment, lower insurance premiums, or other incentives.

Key Words: Risk Perceptions, Psychometrics, Travel Behaviours, Motorists, Nigeria

Introduction

Adequate transportation is crucial for the progress and advancement of humanity. Human factors, regardless of the mode of transportation, have a significant impact, as they contribute to 90% of road accidents that result in loss of life and property damage due to their lack of sensitivity, carelessness, and recklessness (Ahmed et al., 2022; Dangisso, 2023; Musa et al., 2020). Examples of such studies include Bucsuhazy et al. (2020), Lakhan et al. (2020), and Luke (2023); hence, it was asserted that the insensitivities and irresponsibility of human elements resulted in a minimum of 3.5 million deaths and 50 million injuries worldwide. The aforementioned factor has consistently influenced drivers' psychometrics, risk perceptions, and travel behavior in the road environment. The psychometrics of motorists, including their attitude, personality, knowledge, and driving skills, influence their ability to navigate the road environment. Hence, it is crucial to underscore that they significantly influence traffic accidents. Nevertheless, road traffic accidents are significant anticipated consequences of driving system dysfunction, which can be attributed to various factors, including vehicles, road infrastructure, road users, and their interactions (Abdul-Azeez & Ajemunigbohun, 2022; Mostem et al., 2024; Tapia & Dunabeitia, 2023).

Empirical studies (e.g., Casado-Sanz et al., 2020; Chan et al., 2022; Zhizhuo et al., 2023) have established that human errors play a substantial role in road accidents, leading to injuries, physical harm, deaths, and other types of damage. Human errors thus impact

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drivers' driving performance by influencing their assessment of the level of danger associated with road environmental conditions. The perceived risk value of drivers is influenced by factors such as overconfidence, lack of experience, negative attitude disposition, and low-level cognitive quotient (Chen et al., 2022; McCarty & Kim, 2024). These numerous risk factor indicators influence drivers' driving behavior. The driving pattern of the individual driver is key to enhancing their traveling methodology. To this end, travel behavior refers to allocating resources towards engaging in activities and moving between locations where these activities occur. It is more suitable to view travel behavior as the comprehensive amalgamation of activity participation and movement between different places (Dewi, 2021). Travel characteristics are contingent upon the factors that affect travel be ours. The behavior includes several elements, such as environment, infrastructure, time, cost, and other related considerations. Key determinants of trip characteristics include geographical location, land users, and distance (Oluwakoya & Ogundipe, 2019; Wei et al., 2018).

While it is widely acknowledged that roads may be improved and motor vehicles can be fitted to withstand accidents, it is impossible to eliminate road hazards. While significant emphasis may have been placed on creating more favorable conditions for road transport to thrive, diverting drivers' attention toward managing their psychometrics and cultivating a high degree of risk perception remains a formidable issue (Ederer et al., 2023). Hence, it is crucial to educate motor users on psychometric methodologies, risk perception metrics, and travel behavior metrics to avert road accidents and guarantee adherence to road safety regulations. Previous and ongoing studies (e.g., Chen et al., 2022; Kenesei et al., 2022; Najmi et al., 2023) have found several psychometric characteristics of drivers, such as their personalities, abilities, skills, experiences, attitudes, and risk perceptions concerning fear, trust, and vulnerability. These approaches are suitable for mitigating unwanted travel conduct by drivers, such as avoidable road accidents. So, there appears to be a scarcity of research undertaken to investigate the impact of psychometrics and risk perception strategies on the travel behavior of road users in Lagos, Nigeria. Hence, this study examines the potential ranking survey metrics for the psychometrics of drivers, their perceptions of risk, and their travel behavior in Lagos State, Nigeria.

The main aim of this study is to examine the rank-order analysis of motorists' psychometrics, risk perceptions, and travel behavior in Lagos State, Nigeria. The objectives are to ascertain the rank-order analysis of motorists' psychometrics in Lagos State, examine the rank-order analysis of motorists' risk perceptions in Lagos State, and assess the rank-order analysis of motorists' travel behavior in Lagos State. This study is structured with an introduction, literature review, methodology, results, discussion, and recommendations.

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Literature Review

Conceptual Review

Motorists' Psychometrics and Behavioral Impact

Driver behavior includes steering, accelerating, and braking. Driver behavior can be affected by mood, mental State, age, gender, visibility, weather, and traffic (Alavi, Mohammadi, Souri, Kathori, Jannatifard & Sepahbodi, 2017; Sayed, Abdelgawad, &Said, 2022). Poor driver behavior causes most road accidents. Driving risks include speeding, unpredictable driving, distractions, weariness, harsh turning, harsh braking, and alcohol use (Su, Woodman, Smyth, & Elliott, 2023; Taiwo, Mahmud, Hassan, & Mohsin, 2024). Aggressive driving can harm road users' health and safety. Aggression can anger other drivers and cause them to drive aggressively (Al-Hussein, Kiah, Yee, & Zaidan, 2021; Arevalo-Tamara, Caicedo, Orozco-Fontalvo & Useche, 2022).

Risk Perception and Motorists' Travel Behaviour

Risk perception is people's assessment of future outcomes if they do a particular activity. Although risks can have positive and negative results, they are usually used to indicate negative ones like health and safety concerns or natural or artificial calamities (Caber, Gonzalez-Rodriguez, Albayrak, & Simonetti, 2020; Wang, Choudhury, Hancock, Wang, & Ortuzar, 2024). Brida, Moqui, Scaglione, and Seijas (2022) define risk perception as an estimate of the risk's magnitude. In contrast, risk evaluation is a judgment of risk acceptability based on the perceived magnitude and other risk characteristics. However, government protective actions also depend on risk perception. Airak, Sukor, and Rahman (2023) found that persons who were more hygienic and avoided others accepted government programs more than those who opposed them. Risk perception is crucial to understanding health and safety behavior and responses to artificial and natural disasters. Risk perception has been examined by psychologists, economists, criminologists, and sociologists (Airak *et al.*, 2023; Caber *et al.*, 2020).

Previous studies have shown that perceived risk affects travel preferences, intentions, and behavior (Ertas & Kirlar-Can, 2022; Neuberger & Egger, 2020; Peric, Dramicanin & Conic, 2021). Peric *et al.* (2021) stipulated that risk perception is affected by many factors, including socio-demographic, behavioral, organizational, or psychographic variables. Therefore, it is widely known that the characteristics of travelers have an impact on risk perception, travel intentions, and travel behavior (Brida *et al.*, 2022; Peric *et al.*; Wang *et al.*, 2024). Travel preferences, intentions, and behavior are affected by perceived risk (Ertas & Kirlar-Can, 2022; Neuberger & Egger, 2020; Peric, Dramicanin & Conic, 2021). Peric et al. (2021) stated that socio-demographic, behavioral, organizational, and psychographic aspects affect risk perception. Therefore, it is well

established that traveler characteristics affect risk perception, travel intentions, and travel behavior (Brida et al., 2022; Peric et al. and Wang, 2024).

Theoretical Review

Psychological Safety Climate (PSC) Theory

The psychological safety climate (PSC) theory illuminates how psychosocial factors affect driving. Road safety and results. Drs. Michael Dollard and Andrew J.B.H. Bakker created this idea (Zadow, Loh, Dollard, Mathisen, & Yantcheva, 2023). This theory highlights how societal influences affect motorists' actions and mental health, which can be applied to driving settings (Fattori, Comotti, Bordini, Dollard, & Bonzini, 2022). Motorists are affected by road safety policies according to PSC theory. Effective road safety policies can indicate a strong PSC. These policies promote mental health awareness and reduce driver stress, making driving safer (Amoadu, Ansah, & Sarfo, 2023). Silla and Gamero (2018) say that the PSC theory shapes cultural norms that affect driving and road safety. The culture encourages mental health discussions, which makes driving safer.

PSC theory introduces psychosocial elements that affect driving safety and performance, including stress, anxiety, and exhaustion. However, fatigue and stress awareness programs might help drivers focus and make safer judgments (Amoadu *et al.*, 2023; Disassa & Kebu, 2019). With PSC theory, motorists must communicate well. Public awareness efforts, traffic laws, and mental health education with safety measures. Finally, PSC theory helps drivers understand how psychosocial issues affect driving conduct and road safety.

Empirical Review

Wang et al. (2024) examined the effect of perceived risk on travel mode choice during Covid-19. This study used a risk perception map to explicate the unfamiliar and uncontrollable risk elements to travelers. The study's findings indicate that high-level perceived risk reduces travelers' use of public transport and increases the adoption of shared bikes and private cars. The study suggested that a decrease in passengers' perceived risk is critical to motivating the reuptake of public transport in the post-crisis era.

Airak *et al.* (2023) investigated the nexus between travel behavior changes and risk perception during COVID-19 with a Malaysia case study. The study examined factors affecting travel frequency during the recovery period of the COVID-19 crisis in Malaysia. An outline cross-sectional survey was carried out alongside various traveling restriction policies to gather data. During the crisis, the research instrument contained socio-demographics, risk perception of COVID-19, experience with COVID-19, and traveling probability in numerous activities. Mann Whitney U was selected to determine the statistical procedures to be adopted, which assisted in realizing the differences in the socio-demographic metrics aside from their educational status. Spearman correlation was further

chosen to determine the significant nexus between risk perception and experience with Covid-19. There established a nexus between the probability of traveling and travelers' risk perceptions. The study suggested that with the comprehension of the effect of risk perception on the probability (frequency) of travel, the government can identify suitable policies during health emergencies to avert delays in normal travel behavior. It concluded that people's mental and psychological wellness are not inversely affected.

Ertas and Kirlan-Can (2022) established a nexus between travelers' risk perception, travel behavior, and behavioral intent during COVID-19, with certain socio-demographic variables such as age, gender, and past travel experience as their measuring scales. The study employed convenience sampling, with invitations sent to social media platforms on an online survey among 160 participants. The study employed three statistical procedures: exploratory factor analysis, cross-tabulation analysis, and independent sample test. Travelers' ages and genders were key instruments adopted to create differences in travel behavior, risk perceptions, and travelers' intents during this period. The study found that the higher the travelers' past experiences, the lower their risk perceptions.

Peric *et al.* (2021) evaluated the effect of Serbian travelers' perceived risks regarding their travel intents during the COVID-19 crisis, with socio-demographic metrics as control measures. This study was implemented in 2020, with a sample of 348 participants who were asked to use an online questionnaire. This study adopted principal component analysis with an identified category of five perceived risk metrics alongside travelers' intents, including financial, health, travel, psychological, and destination risks. The measure of analysis employed was a logistics regression. The findings symbolized that the risk perception metrics among Serbian travelers have an inverse effect on their travel intents during the COVID-19 crisis. Regarding travel mode, the study's outcomes proved that travel risk negatively imparted foreign travel. In contrast, health risk was a significant determinant of foreign travel during the Covid-19 crisis.

Rather (2020) assessed a concise review of approaches to investigate risk perception in the tourism industry from travelers' perspectives in India. The study conceptualized risk perception and the numerous dimensions of risks in location-specific and general risks in travel-related situations. The study focuses more on travelers' demographic and psychometrics influence on their perceived risks. The study took cognizance of the cognitive and affective measures of on-site travelers' risk perception. The study adopted an integrated conceptual model for assessing travelers' judgment process concerning risk-specific situations. This study outlined the implications of the future outcome of travel-related risk measures.

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Methodology

A cross-sectional quantitative survey examined metropolitan Lagos motorists' important psychometrics, risk perception, and travel habits decisions. This method mapped and executed the study to attain goals and address real-world difficulties (Creswell & Creswell, 2018; Grey, 2017). The 2022 survey included 897,982 Lagos State Motor Vehicle Administration Agency-registered drivers. The study was conducted in Lagos due to its high motorist population (Fowode et al., 2023).

Primary source data was collected using a standardized questionnaire. Surveys were chosen for their relevance to the research design, cost and time efficiency, ability to represent a large sample, ease of administration, and generalisability to similar themes (Kothari & Garg, 2016). This study was sampled in phases using quotas and convenience. The 52 MVAA licensing stations' 2022 motorist registrations were used to sample proportionally for quota sampling. Respondents owned personal and business vehicles. The researcher used convenience sampling at all licensing stations to gather extra data based on respondents' availability and readiness to complete the research instrument. Lagos' registered motor users were the study's target population; therefore, Taro Yamane's (1967) formula estimated the sample size:

$$n = \frac{N}{1+Ne^2}$$

$$n = \frac{897{,}982}{1 + 897{,}982\ \ (0.05)^2} = 399$$

The study's sample size was 289, and copies of 399 questionnaires were distributed, giving a response rate of 72 percent.

The study evaluated theoretical, content, internal, and external validity. To test the consistency of results, subjects or participants were given the study's tests or measurements twice (Fallon, 2016). The impact of road safety measures on Lagos motorists was estimated using a Cronbach alpha value over 0.7 in the reliability test. Results supported statistical scale validity and internal consistency assumptions. Alpha findings validated the scale's statistical validity (Leavy, 2017).

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Results and Discussion of Findings

Analytical Descriptions of Participants Opinions

Table 1: Participants' Bio-Data Information

Variable	Response Label	Frequency	Percentages (%)
Gender	Male	193	66.8
	Female	96	33.2
Age	18 but less than 30	35	12.1
	30 but less than 40	95	32.9
	40 but less than 50	51	17.6
	50 but less than 60	85	29.4
	60 & above	23	8.0
Marital Status	Single	61	21.1
	Married	213	73.7
	Separated	07	2.4
	Widow	08	2.8
Educational Qualifications	SSCE/GCE/OND	90	31.2
	HND/BSC	151	52.2
	Postgraduate Certificate	13	4.5
	Professional Certificate	16	5.5
	Others	19	6.6

Source: *field survey (2024)*

The data presented in Table 1 provides insights into various demographic variables. These statistics offer insight into the configuration of the surveyed population, allowing for valuable observations and implications. The gender distribution reveals it is highly skewed towards males, constituting 66.8% of the sample compared to 33.2% of females. This gender disparity might influence perspectives on various aspects, potentially affecting responses and attitudes toward the survey's subject matter. Regarding age demographics, the data illustrates high percentages of those aged 30 but less than 40 years and 50 years but less than 60 years, with 32.9% and 29.4%, respectively. It was followed by those aged 40 but less than 50, which amounted to 17.6 percent, while 12.1% and 8% accounted for those aged 18 but less than 30 and 60 years and above. The responses from the participants are indications of the maturity encompassing their opinions regarding the subject matter. Marital status revealed a high level of maturity concerning the participants' opinions, which recorded that 73.7% had been married. While 21.2% was recorded for those single, 2.8% and 2.4% were recorded for those widows and separated. Educational qualifications showcase a notable distribution, with the majority (52.2 percent) holding a

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BSc/HND. This high percentage suggests a well-educated sample population, indicating a higher level of expertise among respondents.

Table 2: Participants' Bio-Data Information

Variable	Response Label	Frequency	Percentages (%)
Type of vehicle you use	Urban bus	55	19
	Intercity bus	09	3.1
	Company vehicle	70	24.3
	Long haul vehicle	23	8.0
	Private vehicle	128	44.3
	Others	04	1.4
Transportation Modalities	Passengers	71	24.6
	Cargoes	25	8.7
	Private	189	65.3
	Others	04	1.4
Risks associated with Vehicles on Lagos Road	Not at all	26	9.0
	Rarely	25	8.7
	Often	206	71.3
	Frequently	32	11.1
Perceived risks on Lagos road	Very low	00	0
	Low	00	0
	Average	142	49.1
	High	58	20.1
	Very high	89	30.8

Source: *field survey (2024)*

In Table 2, the types of vehicles used by motorists were classified into urban buses (19%), intercity buses (3.1%), company vehicles (24.3%), long haul vehicles (8%), private vehicles (44.3%), and other vehicles (1.4%). For transportation modalities adopted by motorists, passengers carrying vehicles accounted for 24.6%. While cargo-carrying vehicles were recorded at 8.7%, private-carrying vehicles, and others were recorded at 65.3% and 1.4%, respectively. The risks associated with vehicles on Lagos roads were often recorded at 71.3%. The risks perceived on Lagos roads were recorded to be on average.

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Descriptive Analysis of Research Variables

Table 3: Psychometrics

Variables	Scale Level					Mean	Std Dev.
	SD	D	U	A	SA		
	1	2	3	4	5		
I display a satisfactory attitude, as a motorist, to ensure road safety compliance (attitude)	17.0	4.2	3.5	42.2	33.1	3.71	1.407
My personality as a patient driver makes me remain calm in traffic (personality)	0.0	0.0	0.0	49.1	50.9	4.51	.501
My knowledge of the Lagos Road environment is important for me to maintain safety compliance (knowledge)	0.0	0.0	0.0	41.5	58.5	4.58	.494
I drive within my driving ability for me to maintain road safety (driving ability)	0.0	0.0	0.0	33.6	66.4	4.66	.473

Source: Researcher's Computations, 2024

In Table 3, survey items projecting the psychometrics include *attitude, personality, knowledge, and driving ability*. The responses from the participants that participated in their study showcased that the majority, in references to attitude (75.3%), personality (100%), knowledge (100%), and driving ability (100%), all agreed. For contrasting views, the following were noticed for the survey items: attitude (21.2%), personality (0%), knowledge (0%), and driving ability (0%). For participant's views depicting their indecision, the following were recorded – attitude (3.5%), personality (0%), knowledge (0%), and driving ability (0%). The mean scores and standard deviation agreed with the results. The outcomes imply that psychometric metrics indicate identical decisions regarding all subject areas in the distribution.

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Figure 1: The graphical model explains the psychometrics among selected motorists in Lagos State

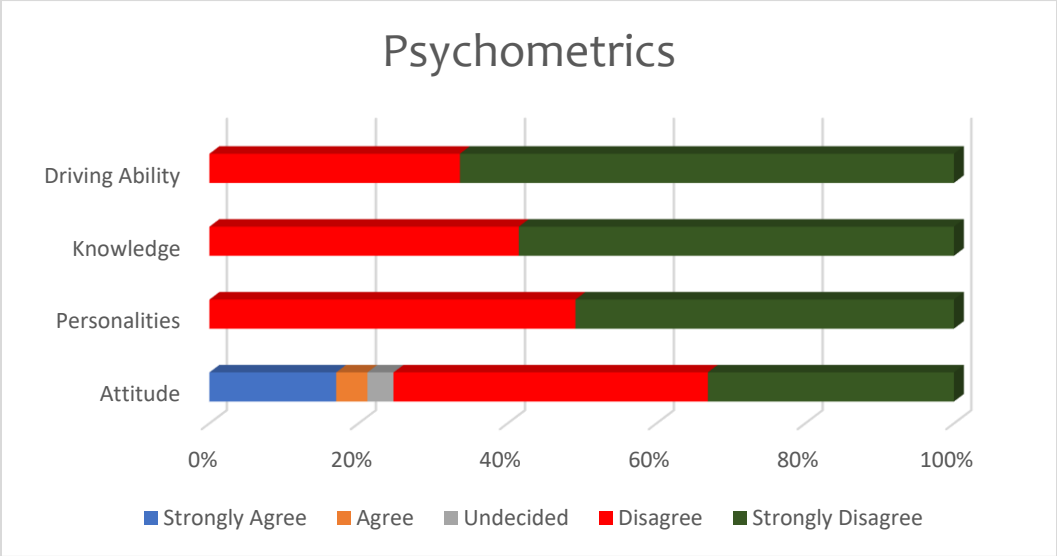

Table 4: Risk Perception Metrics

Variables	Scale Level					Mean	Std Dev.
	SD	D	U	A	SA		
	1	2	3	4	5		
I usually developed fear when driving on Lagos Road due to the unpredictable, risky conditions (fear)	14.5	14.9	0.0	38.4	32.2	3.59	1.436
I do not entirely trust the safety of vehicle movement on Lagos Road because of the road risk (trust)	9.6	6.6	2.1	38.1	43.6	3.99	1.264
Most drivers on the Lagos Roads are exposed to high-level vulnerabilities (vulnerabilities)	0.0	1.4	1.0	39.8	57.8	4.54	.595
The structural design of Lagos Roads has not given drivers choices over their usage (choice)	0.0	6.9	2.8	29.1	61.2	4.45	.849

Source: Researcher's Computations, 2024

In Table 4, survey items projecting the risk perception metrics include *fear, trust, vulnerabilities, and choices*. The responses from the participants that participated in their

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study showcased that the majority, in references to fear (70.6%), trust (81.7%), vulnerabilities (97.6%), and choices (90.3%), all agreed. For contrasting views, the following were noticed for the survey items: fear (29.4%), trust (16.3%), vulnerabilities (1.4%), and choices (6.9%). For participants' views depicting their indecision, the following were recorded: fear (0%), trust (2.1%), vulnerabilities (1.0%), and choices (2.8%). The mean scores and standard deviation agreed with the results. The outcomes imply that risk perception metrics indicate identical decisions regarding all subject areas in the distribution.

Figure 2: The graphical model explains the risk perception metrics among selected motorists in Lagos State

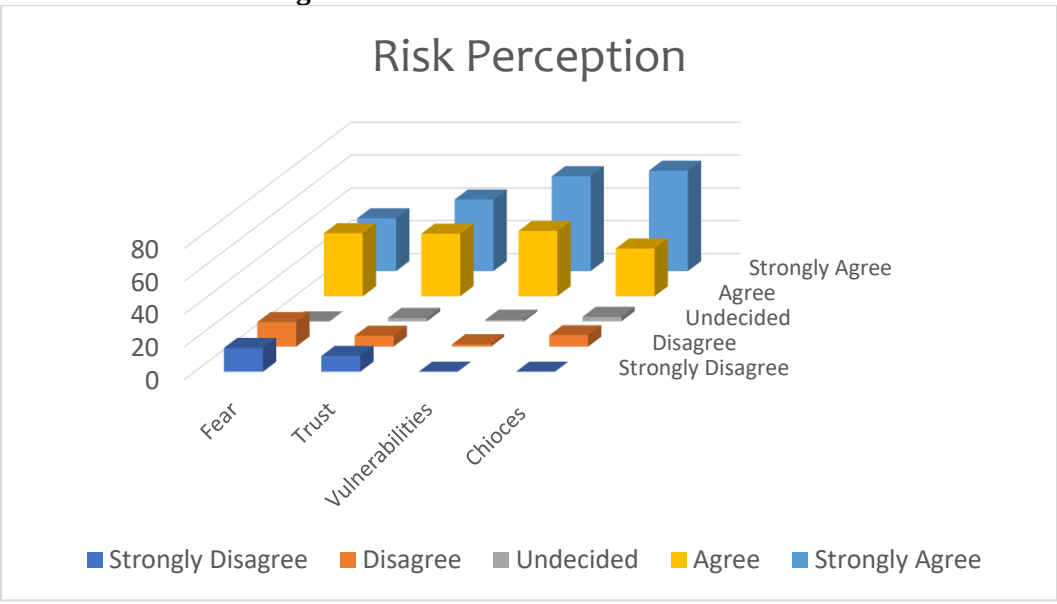

Table 5: Travel Behaviour Metrics

Variables	Scale Level					Mean	Std Dev.
	SD	D	U	A	SA		
	1	2	3	4	5		
More travel time is spent on Lagos roads due to the level of traffic congestion (travel time)	0.0	0.0	0.0	52.6	47.4	4.47	.500
The cost of traveling from one location to the other on Lagos roads is high due to bad road design (travel costs)	1.0	5.5	0.0	43.7	49.8	4.36	.830

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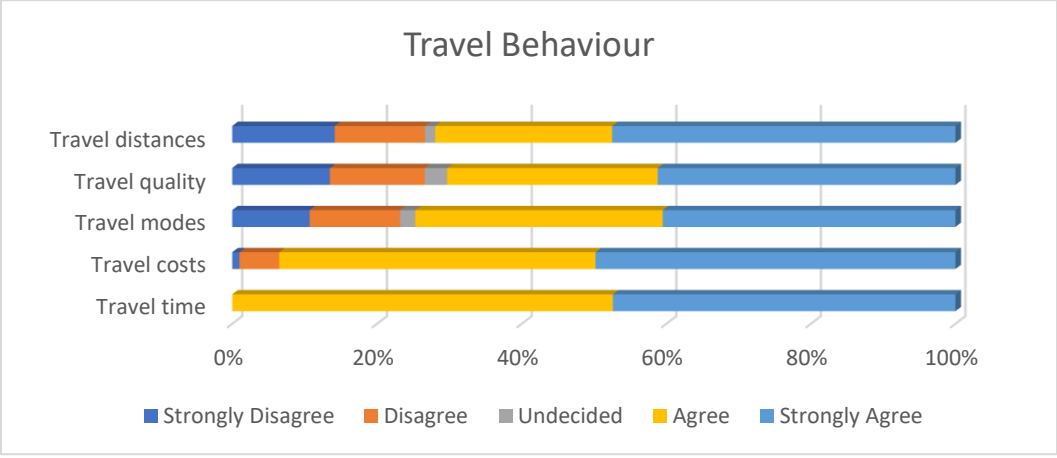
Travel modes on the Lagos Roads have allowed road users to access many locations within the shortest possible time (travel modes)	10.7	12.5	2.1	34.2	40.5	3.81	1.364
The quality of transport services design on the Lagos Roads has given road users ease of traveling (travel quality)	13.5	13.1	3.1	29.1	41.2	3.71	1.452
Travel distance on Lagos Road has allowed road users to regularly meet up with their desired expectations (travel distance)	14.2	12.5	1.4	24.3	47.6	3.78	1.494

Source: Researcher's Computations, 2024

In Table 5, survey items projecting the risk perception metrics include *travel time, travel costs, travel modes, travel quality, and travel distances.* The responses from the participants who participated in their study showcased that the majority were about travel time (100%), travel costs (93.5%), travel modes (97.6%), and travel quality (70.3%). Moreover, travel distances (71.9%) all agreed. For contrasting views, the following were noticed for the survey items: travel time (0%), travel costs (6.5%), travel modes (23.2%), and travel quality (26.6%). And travel distances (26.7%). For participant's views depicting their indecision, the following were recorded – travel time (0%), travel costs (0%), travel modes (2.1%), and travel quality (3.1%). And travel distances (1.4%). The mean scores and standard deviation agreed with the results. The outcomes imply that travel behavior metrics indicate identical decisions regarding all subject areas in the distribution.

Figure 2: The graphical model explains the travel behavior metrics among selected motorists in Lagos State



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Test of Hypotheses

Friedman's Rank Test

This symbiotic analysis test, expressed by K, evaluates a regularly sampled universe with an identical median. In a hypothetical State with no impact, it presumes that the response variable follows a persistent distribution, necessitating at least ranked measurement (Eisinga et al., 2017). Data under this test is coordinated in a tabular representation with 'n' rows and 'k' columns. This test determines whether the combined rank consequences for each condition notably differ from the forecasted approximations (St. Laurent & Turk, 2013).

Ho_1: There is no rank order analysis for motorists' psychometrics in Lagos State

Table 6: Results of Friedman's Rank Test on psychometrics among selected motorists in Lagos State

S/N	Survey Items	Mean Rank	Rank
1.	Attitude	1.96	4
2.	Personality	2.54	3
3.	Knowledge	2.67	2
4.	Driving ability	2.82	1

Source: Researchers' Computations, 2024

Table 7 Chi-Square Results from the Friedman's Test

N	289
Chi-Square	176.443
Df	3
Asymp.sig.	.000

a. Friedman Test

The outcome of the analysis from the above mark the existence of a statistically significant variance in psychometrics [attitude, personality, knowledge, and driving ability; X^2 (3, n=289) = 176.443, $p < 0.05$]. Importantly, careful examination of the mean estimations indicated a slopy layer in psychometrics adopted among selected motorists from driving ability (2.82) to knowledge (2.67) to personality (2.54) to attitude (1.96). The significance of these criteria making up the psychometrics among selected motorists was ranked to give grounds for the above clarifications.

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Ho_2: There is no rank order analysis for risk perception metrics among selected motorists in Lagos State

Table 8: Results of Friedman's Rank Test on risk perception among selected motorists in Lagos State

S/N	Survey Items	Mean Rank	Rank
1.	Fear	2.05	4
2.	Trust	2.40	3
3.	Vulnerabilities	2.83	1
4.	Choices	2.72	2

Source: Researchers' Computations, 2024

Table 9 Chi-Square Results from the Friedman's Test

N	289
Chi-Square	151.359
Df	3
Asymp.sig.	.000

a. Friedman Test

The outcome of the analysis from the above mark the existence of a statistically significant variance in risk perceptions [fear, trust, vulnerabilities, and choices; X^2 (3, n=289) = 151.359, $p < 0.05$]. Importantly, careful examination of the mean estimations indicated a slopy layer in risk perception metrics adopted among selected motorists from vulnerabilities (2.83) to choices (2.72), to trust (2.40), to fear (2.05). The significance of these criteria making up the risk perception among selected motorists was ranked to give grounds for the above clarifications.

Ho_3: There is no rank order analysis for travel behavior metrics among selected motorists in Lagos State

Table 10: Results of Friedman's Rank Test on travel behavior among selected motorists in Lagos State

S/N	Survey Items	Mean Rank	Rank
1.	Travel time	3.19	2
2.	Travel costs	3.21	1
3.	Travel modes	2.75	5
4.	Travel quality	2.89	4

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5.	Travel distance	2.98	3

Source: Researchers' Computations, 2024

Table114 Chi-Square Results from the Friedman's Test

N	289
Chi-Square	32.439
Df	4
Asymp.sig.	.000

a. Friedman Test

The outcome of the analysis from the above marks the existence of a statistically significant variance in risk perceptions [travel time, travel costs, travel modes, travel quality, and travel distances; X^2 (3, n=289) = 32.439, $p < 0.05$]. Importantly, careful examination of the mean estimations indicated a slopy layer in travel behaviors adopted among selected motorists from travel costs (3.21) to travel time (3.19), to travel distances (2.98), to travel quality (2.89), to travel modes (2.75). The significance of these criteria making up the travel behaviors among selected motorists was ranked to give grounds for the above clarifications.

Discussion of Findings

The results of hypothesis one indicated that the psychometrics variables adopted by selected motorists in Lagos were evident from their driving ability, knowledge, personality, and attitude. This result validated recent studies (such as Alavi *et al.*, 2017; Arevalo-Tamara *et al.*, 2022; Su *et al.*, 2023) who noted that psychometrics such as drivers' knowledge, mental ability, and personalities are key instruments to enhancing road management and safety.

The hypothetical results two signified that risk perception metrics adopted by selected motorists in Lagos were evident, ranging from their drivers' vulnerabilities, choices, trusts, and fears. This result validated that recent studies (such as (Airak *et al.*, 2023; *Caber et al.*, 2020; Sayed *et al.*, 2022) stipulated that strong perceived risk indicators can enhance drivers' road safety and behavioral changes toward positive transport systems.

The hypothetical three results implied that travel behavior metrics adopted by selected motorists in Lagos were evident, ranging from their drivers' travel costs to travel time, distance, travel quality, and travel modes. This result validated recent studies (such as (Aderinlewo, 2020; Mahdi et al., 2022; Moody & Zhao, 2020) that strong travel behavior by motorists is a significant impetus for road safety.

Conclusion and Recommendations

Findings from the study have affirmed the rank-test nexus between motorists' psychometrics and their travel behaviors in Lagos, Nigeria. Results proved that rank-order analysis of motorists' psychometrics, risk perceptions, and travel behaviors existed in Lagos State. The study shows the need for motorists to be cognisant of their attitudes, personalities, knowledge, and driving abilities while on the road. It is also established that risk perception metrics such as roads' vulnerabilities, choices, trusts, and fears are quantity while the motorists are on the Lagos roads. Conclusively, the study ensures that motorists are conscious of their travel behavior regarding travel quality, costs, distance, modes, and times for effective transport systems.

According to recommendations, traffic authorities should use psychometrics to detect high-risk drivers and train them for their psychological characteristics. As psychometric evaluations indicate, the government should reward safe drivers with public acknowledgment, lower insurance premiums, or other incentives. To reduce road traffic accidents, motorists should work with traffic authorities. Psychologists, legislators, transport planners, and law enforcement should collaborate to develop cutting-edge road safety initiatives.

Contribution to Knowledge and Future Directions

This study contributed to the literature, knowledge, and theoretical gaps by adding conceptual clarity, theoretical background, and expert expertise. Future studies should examine the causal links between psychometrics, risk perceptions, and motorists' risk attitudes to gain insights.

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