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THE MEDIATING EFFECT OF SERVICE QUALITY ON THE RELATIONSHIP BETWEEN RIDE-HAILING DRIVER CHARACTERISTICS AND CUSTOMER SATISFACTION

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ABSTRACT

Purpose: This study explored the relationship between the ride-hailing transport system, service quality, customer satisfaction, and driver characteristics among university and college students in major cities in Ghana.

Design/Methodology/Approach: Using a quantitative approach, data were collected from a sample of 436 ride-hailing users through the simple random sampling technique. A cross-sectional research design was employed for data gathering, and Partial Least Square Structural Equation Modeling (SEM) version 4.0 was utilised for data analysis.

Findings: The findings indicated that the ride-hailing transport system significantly influenced service quality and overall customer satisfaction. Additionally, driver characteristics such as skills, punctuality, and age impacted customer satisfaction. The study also established a positive relationship between service quality and customer satisfaction.

Research Limitation: Research within specific geographical areas or demographics restricts the findings' applicability to other cultural or economic contexts.

Practical Implication: The results highlight the necessity for transportation network companies (TNCs) to improve driver training and service quality to boost customer satisfaction, foster loyalty, and enhance business performance.

Social Implication: The study's insights on the mediating effect of service quality will guide policymakers in identifying key factors influencing consumer satisfaction in the ride-hailing industry. By understanding these dynamics, policymakers can develop regulations that enhance service standards, benefiting drivers and passengers through improved operational frameworks.

Originality/ Value: This research contributes to the existing literature on ride-hailing transport systems by emphasising the critical roles of service quality and driver characteristics in enhancing customer satisfaction.

Keywords: *Customer satisfaction. driver characteristics, ride-hailing. service quality. transport*

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INTRODUCTION

The rapid growth of ride-hailing services has transformed urban transportation, creating new dynamics in customer service and satisfaction (Mensah et al., 2024; Sisiopiku et al., 2021; Grahn et al., 2020; Wang et al., 2017). As competition intensifies among ride-hailing platforms, understanding the factors influencing customer satisfaction has become critical for service providers aiming to enhance their market position (Ann et al., 2022). One key area of interest is the relationship between driver characteristics—such as experience, professionalism, and communication skills—and customer satisfaction. However, existing literature indicates a significant research gap concerning how service quality mediates this relationship (Si et al., 2022; Morris et al., 2020).

Service quality is a pivotal determinant of customer satisfaction in the service industry, particularly in ride-hailing services, where interactions between drivers and passengers are direct and frequent. Prior studies have established that service quality dimensions, including reliability, responsiveness, and empathy, are crucial in shaping customer perceptions and experiences (Palese & Usai, 2018; Mohamed et al., 2023). Nevertheless, there is limited empirical evidence exploring how these dimensions interact with driver characteristics to impact overall customer satisfaction in ride-hailing services. Ma et al. (2023) opine that drivers' demographic information, experience, and personality traits can affect the quality and satisfaction of customer service.

Ride-hailing services offer consumers a convenient and accessible transportation option (Teo et al., 2018). Even though ride-hailing services are popular, they are beset with myriad issues, including driver behaviour, service quality, and price discrimination (Zuo et al., 2019). These issues result in lower customer satisfaction (Nguyen-Phuoc et al., 2021).

Existing research has primarily focused on the direct effects of service quality on customer satisfaction in various service industries, including ride-hailing (Alemi et al., 2018; Yifei et al., 2018; Sureshchandar et al., 2002). However, there is a notable gap in the literature regarding how service quality mediates the relationship between driver characteristics and customer satisfaction, specifically within the context of ride-hailing services (Ali et al., 2022; Ma & Liu, 2019; Schuhmacher & Kuester, 2012).

This gap is particularly pertinent given the unique nature of ride-hailing interactions, where drivers serve as service providers and brand representatives. Understanding the mediation is essential for ride-hailing companies aiming to enhance service delivery and improve customer satisfaction. Without a clear understanding of how driver characteristics influence perceived service quality—and how this, in turn, affects customer satisfaction—service providers may struggle to implement effective training programs or develop targeted marketing strategies that resonate with their

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customers' expectations (Ann et al., 2022; Gomez et al., 2021; Kang et al., 2020; Dzisi et al., 2020 Wolff & Madlener, 2019).

This study aims to bridge this gap by investigating the mediating effect of service quality on the relationship between ride-hailing driver characteristics and customer satisfaction. By addressing these questions, this research intends to provide valuable insights for ride-hailing companies seeking to improve their service delivery through targeted training and development programs for drivers. Furthermore, understanding the interplay between driver characteristics, service quality, and customer satisfaction can help organisations tailor their marketing strategies to enhance customer loyalty and retention.

THEORIES UNDERPINNING THE STUDY

The availability and accessibility theory

The availability and accessibility theory (Ariel, 2001) suggests that how easy it is to access and use a resource or service can affect how people use it and how satisfied they are with it. Accessibility means how easy it is to access a resource or service, while availability means that it is present or available at a given time and place.

Carmona et al. (2020) opine that the liquidity and accessibility of ride-hailing transportation systems can greatly affect customer satisfaction. For example, whether or not ride-hailing services are available and easy to use in a certain area can affect how easy it is for customers to use the service and how well it meets their needs. If a ride-hailing service is hard to find or hard to get to in a certain area, people who cannot use it when they need it may be dissatisfied. On the other hand, customer satisfaction may increase if the service is widely available and easy to use.

The availability and accessibility theory can guide the creation and development of ride-hailing transportation systems, making sure that services are available and easy for customers to get to where they are needed. This can mean increasing drivers and vehicles in high-demand areas and making the service easier for all customers (Bakó et al., 2020).

In examining the mediating effect of service quality on the relationship between ride-hailing driver characteristics and customer satisfaction, the availability and accessibility theory provides valuable insights (Duy Phuong & Dai Trang, 2018; Ofori et al., 2022). The theory suggests that if ride-hailing services are readily available in a given area, it enhances customer satisfaction. For instance, when drivers are easily accessible during peak times or in high-demand locations, customers are more likely to have positive experiences. This availability can mitigate dissatisfaction that arises from long wait times or unfulfilled ride requests. The theory also emphasises the importance of how accessible the quality of service is to customers. If customers

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perceive that high-quality service is consistently available—such as professional driver behaviour, timely arrivals, and effective communication—they are more likely to report higher satisfaction levels (Lin, 2022).

Conversely, if service quality is inconsistent or difficult to access, it may negatively impact customer satisfaction, regardless of driver characteristics. In this context, service quality mediates between driver characteristics (skills, punctuality, and professionalism) and customer satisfaction. For example, even if a driver possesses excellent driving skills, is not perceived as professional, or fails to communicate effectively with passengers, overall customer satisfaction may still be low. The availability and accessibility theory underscores that both the availability of drivers and the accessibility of quality service are crucial for enhancing customer satisfaction with ride-hailing services (Ali et al., 2022; Afifudin et al., 2024). Given this, the theory, therefore, becomes applicable to this study.

Overview of Ride-hailing Transport Systems

Ride-sharing or ride-sourcing services are transportation services provided by private individuals using their vehicles (Wang et al., 2017; Sisiopiku et al., 2021; Grahn et al., 2020). The main difference between this service and traditional taxi services is that the customer can use a mobile app to request a ride, watch the driver's arrival, and pay without exchanging cash (Kang et al., (2020). Uber is the best-known ride-hailing service. It was started in 2009 and has grown all over the world since then.

Ride-hailing services have changed the transportation industry in a big way because they are more convenient, reliable, and cost-effective than traditional cab services (Etminani-Ghasrodashti & Hamidi, 2019). They have also given people new ways to make money as full-time or part-time workers. However, ride-hailing services have raised some challenges, such as the safety of passengers and drivers, the effect on the conventional taxi industry and jobs, and the difficulty of regulating them (Acheampong, 2021; Zou, 2017).

Overall, ride-hailing systems have changed how people get around and will likely continue to grow and change. Ride-hailing services have become more popular in recent years because they are easy to use and inexpensive (Gomez et al., 2021; Nguyen-Phuoc et al., 2022). Some of Ghana's most well-known ride-hailing services are Uber, Bolt, and YANGO (Agyemang, 2022). These companies have given Ghanaian commuters a new way to get around that is safe, quick, and comfortable, especially in cities where public transportation is limited and not always dependable (Adom-Asamoah et al., 2021; Abane, 2009). They have also created new jobs for drivers, who can now work part-time or full-time and earn a flexible income (Nguyen-Phuoc et al., (2020). However, the growth of ride-hailing services in Ghana has brought some problems, like problems

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with regulations and competition from regular cab services (Agyemang, 2022). The government of Ghana has put in place rules to ensure that ride-hailing services are safe and of good quality. Businesses are also trying to improve customer satisfaction and driver training. Ride-hailing services are just starting in Ghana, but they are already giving commuters a new way to get around and opening up new business possibilities.

Characteristics of drivers in ride-hailing services

The effectiveness of ride-hailing services is significantly influenced by the characteristics of their drivers, who typically operate as self-employed individuals using their vehicles to transport customers (Fielbaum & Tirachini, 2021). Unlike traditional taxi drivers, ride-hailing drivers often possess distinct goals, needs, and interests that can impact customer and driver satisfaction (Qin et al., 2022). Research indicates that various driver characteristics—age, gender, education level, and driving experience—are crucial in shaping customer satisfaction within the ride-hailing context (Sun et al., 2020; Song & Fan, 2017). Younger drivers tend to be more adept at utilising technology and smartphone applications, which can enhance service efficiency.

In contrast, older drivers may leverage their extensive experience in customer service and navigation, contributing positively to passenger experiences (Fielbaum & Tirachini, 2021). Furthermore, higher levels of education among drivers correlate with improved customer service capabilities. Experienced drivers are often better at navigating traffic conditions and ensuring safe rides.

Customer satisfaction is also closely linked to the interpersonal treatment provided by drivers. Passengers are likelier to give favourable ratings and feedback to drivers who exhibit friendliness and respect and maintain clean vehicles. Therefore, driver traits significantly influence the perceived quality of ride-hailing services. Understanding the motivations and preferences of drivers can help ride-hailing companies enhance their service offerings, ultimately leading to greater satisfaction for both drivers and customers. Several studies have explored these dynamics. For instance, Jameson et al. (2015) highlighted the importance of driver skills in enhancing service quality for Uber customers.

Similarly, Fazeen et al. (2012) identified critical skills necessary for ride-hailing drivers through survey research. Yaya et al. (2015) emphasised the significance of social skills in fostering positive driver-customer relationships that enhance service quality. Overall, the literature underscores that driver characteristics are essential in assessing ride-hailing services' quality and satisfaction levels.

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Addressing these factors can lead to improved operational strategies that benefit all stakeholders involved in the ride-hailing ecosystem.

Driver skills

The drivers' capabilities and characteristics significantly influence the ride-hailing experience's quality. As highlighted in the literature, driver skills encompass a range of abilities crucial for ensuring safe and efficient transportation while providing high levels of customer service (Jameson et al., 2015; Mayhew & Simpson, 2002; Fazeen et al., 2012).

Key skills identified include driving proficiency, knowledge of traffic laws, navigational abilities, problem-solving skills, customer service aptitude, communication skills, and conflict-resolution capabilities (Tan et al., 2020). A driver with these skills is better positioned to manage diverse driving situations, ensure passenger comfort and safety, and communicate effectively with riders. Several studies have explored the relationship between driver skills and the quality of ride-hailing services. For instance, Jameson et al. (2015) investigated the impact of various driver skills on Uber's service quality. They found that competencies such as safe driving practices, local area knowledge, and effective communication significantly enhance customer satisfaction. Similarly, Fazeen et al. (2012) utilised surveys to identify essential skills for ride-hailing drivers, concluding that proficiency in driving, familiarity with the city, strong customer service capabilities, and adept problem-solving are critical for success in this field.

Yaya et al. (2015) examined how the interpersonal relationship between drivers and customers influences the connection between driving skills and service quality. Their findings indicated that drivers' communication styles and social skills are vital in shaping the quality of interactions with passengers, affecting overall service quality. Flannery et al. (2005) further explored this relationship by analysing demographic factors such as age and gender but found that these traits had minimal impact on service performance. Instead, they emphasised that drivers' knowledge of the city and communication abilities were significant determinants of service quality. Schuhmacher and Kuester (2012) investigated how driver motivations and skills correlate with service quality outcomes. They concluded that a combination of driving skills, social competencies, and intrinsic motivation substantially influences customer service. Based on this, the below hypothesis is formulated:

H1. *Driver skills will positively affect service quality.*

Driver Punctuality

Driver punctuality, defined as the ability of drivers to arrive at designated pick-up locations on time, is a critical factor influencing the quality of ride-hailing services and overall customer

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satisfaction (Ma et al., 2020). Punctuality is assessed by comparing the actual pick-up time to the planned or requested time, with smaller discrepancies indicating higher reliability (Davidoff et al., 2011). Research has consistently shown that punctuality significantly impacts various aspects of service quality and customer satisfaction, linking it to customer retention, user loyalty, and repeat usage (Van Lierop et al., 2018; Murambi & Bwisa, 2014; Sun et al., 2019; Sun & Pan, 2023; Li et al., 2020). Studies indicate that customers perceive a driver's ability to be on time as a fundamental aspect of quality service. For instance, Etminani-Ghasrodashti and Hamidi (2019) identified punctuality as one of the most crucial factors affecting customer satisfaction in ride-hailing services, with passengers favouring drivers who minimise delays.

Similarly, Carmona et al. (2020) found a positive correlation between driver punctuality and passenger ratings, suggesting that timely drivers are more likely to receive favourable feedback and retain customers. Several factors influence driver punctuality in ride-hailing services. Traffic conditions have been identified as a significant determinant (Damani & Vedagiri, 2021), along with the distance to the passenger's pick-up location (Luo et al., 2018) and the driver's experience (Cheung et al., 2018). Additionally, incentives provided by ride-hailing platforms to encourage punctuality have been explored (Jia et al., 2021).

To enhance driver punctuality, the literature suggests implementing performance incentives for timely arrivals (Pyddoke, 2020), providing real-time traffic information to drivers (Cohn, 2009), and optimising trip allocations to reduce deadheading (Scott-Parker et al., 2015). These strategies can improve operational efficiency and elevate customer satisfaction in the ride-hailing industry. Overall, the empirical evidence underscores the importance of driver punctuality as a key performance indicator for assessing the reliability and effectiveness of ride-hailing services. In light of this, the below hypothesis is formulated:

H2*: The availability of drivers to pick up clients on time will positively contribute to service quality.*

Driver Professionalism

Driver professionalism is a critical component of the ride-hailing service industry, directly influencing the quality of service passengers receive. It encompasses various behaviours, including politeness, effective communication, ensuring passenger safety, and adherence to company policies (Yu et al., 2020). Research has identified several dimensions of driver professionalism, such as interpersonal skills, vehicle cleanliness, safe driving practices, familiarity with local routes, and compliance with platform regulations (Ismail et al., 2023; DeBruyne, 2017).

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Numerous studies have established a significant correlation between driver professionalism and passenger satisfaction. Al-Madhoun et al. (2021) found that professional drivers who exhibit courteous behaviour and adhere to safety protocols receive higher ratings and positive reviews from passengers. Conversely, unprofessional conduct—such as using offensive language, unsafe driving practices, or poor communication—can lead to decreased customer satisfaction, reduced loyalty, and negative feedback, ultimately harming the reputation of the ride-hailing service (Painter & Akinlabi, 2020). Factors influencing driver professionalism include financial incentives (Al-Madhoun et al., 2021), safety concerns (Chen et al., 2021), job security (Scott-Parker et al., 2015), and social recognition (Painter, 2020; Akinlabi, 2020). Addressing these factors is essential for ride-hailing companies seeking to enhance driver professionalism. Support and incentives can foster a more professional environment among drivers, improving service quality and increasing passenger satisfaction. So, the study suggests the following hypothesis:

H3*. A high level of professionalism by ride-hailing drivers will positively affect service quality.*

Driver communication skills

Driver communication skills are essential for effective interaction between drivers and passengers during ride-hailing. These skills encompass verbal and non-verbal communication and active listening (Ma et al., 2023; Ding et al., 2023). These skills significantly influence the quality of engagement in ride-hailing services, impacting overall customer satisfaction and experience (Nguyen-Phuoc et al., 2020).

Research has demonstrated that effective communication is critical to successful driver-passenger exchanges. Yu et al. (2020) found that drivers who exhibit friendly, polite, and professional communication skills facilitate smoother interactions with passengers. Similarly, Möhlmann & Zalmanson (2017) established a positive correlation between drivers' communication abilities, such as using polite language, providing route information, and engaging in small talk and higher passenger ratings. Luo et al. (2018) explored the role of communication from drivers' and riders' perspectives, highlighting that clear communication regarding pick-up locations and trip details is vital for enhancing the ride-hailing experience.

Additionally, Qin et al. (2022) investigated how interactions between drivers and passengers affect satisfaction and loyalty. They concluded that key communication factors such as attentiveness, responsiveness, and interpersonal skills significantly influence passenger satisfaction and their likelihood of returning to the service.

A comparative study by Etminani-Ghasrodashti and Hamidi (2019) analysed communication practices among drivers in two prominent ride-hailing services in China: Uber and Didi Chuxing.

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The findings revealed that drivers across both platforms employed similar communication strategies characterised by politeness, helpfulness, and informativeness. So, the study leads to the following hypothesis:

H4. *Good communication skills by the ride-hailing drivers will significantly affect service quality.*

Customer satisfaction and service quality

Customer service quality and satisfaction are critical determinants of success in the ride-hailing industry, reflecting customers' satisfaction with the services companies provide. Key factors influencing customer service quality in ride-hailing transportation systems include vehicle availability, speed of service, driver professionalism, friendliness, and the overall customer experience (Ann et al., 2022). High customer service quality and satisfaction levels are essential for fostering customer loyalty and generating positive word-of-mouth recommendations (Yu et al., 2020; Wolff & Madlener, 2019; Baidoo & Odum-Awuakye, 2015).

However, achieving consistent, high-quality customer service poses challenges for ride-hailing companies, particularly in managing driver shortages, meeting high customer demand, and adapting to changing consumer preferences (Sun et al., 2020). To maintain elevated levels of customer service quality and satisfaction, companies must actively solicit customer feedback, implement programs to enhance service delivery and provide comprehensive training for drivers.

In Ghana's ride-hailing industry, the quality of customer service and satisfaction levels vary among companies and customers (Agyemang, 2022; Almunawar et al., 2021). Despite some studies indicating that customers generally enjoy ride-hailing services due to their convenience, affordability, and safety (Ali et al., 2022; Ruamchart, 2021; Lee et al., 2021), several issues persist that affect service quality. These include driver behaviour, vehicle maintenance standards, and reliability concerns (Nguyen-Phuoc et al., 2020). Reports from customers highlight instances of drivers arriving late or cancelling rides, as well as issues with vehicle conditions such as malfunctioning air conditioning or cleanliness.

Ghanaian ride-hailing companies are implementing various strategies to improve customer service and satisfaction. Initiatives include driver training programs focused on enhancing professionalism, ensuring better vehicle maintenance, and utilising customer feedback for continuous improvement (Agyemang, 2022; Adom-Asamoah et al., 2021). Additionally, some companies collaborate with local organisations to provide added services and amenities such as in-car entertainment and Wi-Fi. The study proposes the following hypothesis;

H5. *The level of service quality by ride-hailing drivers will positively affect customer satisfaction.*

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Conceptual model

The conceptual model (Figure 1) illustrates the relationships between the variables and provides a clear understanding of how the driver and ride-hailing service characteristics influence customer satisfaction with ride-hailing services.

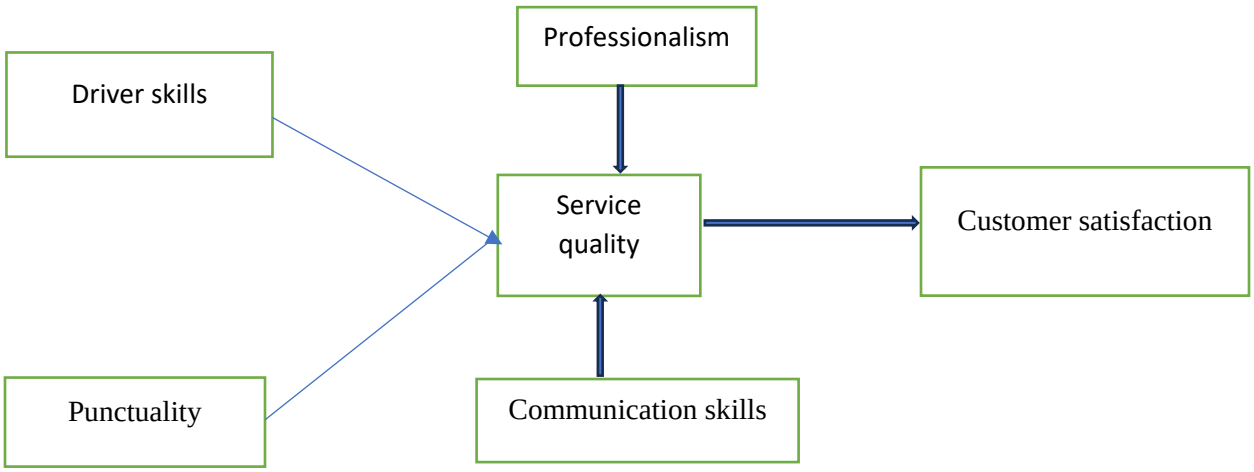

Figure 1: Proposed conceptual framework

MATERIALS AND METHODS

Materials and Methods

In this part of the study, the scientific approach is explained. Amoah et al. (2022) opine that a research method is a systematic, methodical, and correct way to carry out a research plan. Even though the ride-hailing industry, also known as ride-sharing or transportation network companies (TNCs), has become more popular in recent years, we still do not know much more about the drivers, the quality of their service, and how satisfied their customers are, especially when it comes to college or university students. To test the theories, the researchers obtained information from university students. University students were chosen for this study as the main respondents for the data collection since they form a greater part of the usage of this transport system. The researchers chose this group of respondents or participants using a simple random sampling method (Adichwal et al., 2022).

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The simple random sample method was chosen because it is free of labelling errors, bias, and prejudice and can easily determine the sampling error. There are two parts to the organised questionnaire. The first part has questions about the respondents' profiles, and the second part has questions about the main variables used in the study. Using the survey study design as a guide, the researchers developed a questionnaire as a survey tool to get the information needed. The questionnaire aimed to measure the main constructs used in the study, such as service quality, customer satisfaction, and driver characteristics.

Respondents were from traditional universities, technical universities, and private university colleges across four regions, Greater Accra, Western, Central, and Ashanti. The data was collected once for its analysis. Three institutions from each of the three groups (traditional universities, technical universities, and private universities colleges) were used as samples for the study. Using Google Forms, questionnaires were made and sent to students through emails and other social media sites like WhatsApp, LinkedIn, Twitter, and others. For more information, out of the 500 sets of questionnaires sent out through different platforms, 436 valid answers were received, representing 87.2%. This means that 64 of the questionnaires given to the students were not received. The data collection took place between January to June 2024. Hair et al. (2017) found that quantitative research with more than 300 respondents is significant for data processing and analysis.

Descriptive statistics were used to present the demographic data of the participants. Partial Least Square Structural Equation Modeling (SEM) version 4.0 was used to process and analyse the data. This was done to test relationships between variables of interest and determine the causes of ride-hailing transportation systems, service quality, customer satisfaction, and driver characteristics. Also, it is important to opine that the cross-sectional research design was used to gather the data because, unlike the longitudinal research design, the data was only handled and analysed once. The cross-sectional data approach was also used because of its importance. For example, it can prove or disprove hypotheses without wasting much money or time. It can also be used to analyse findings and results to develop new theories, studies, or in-depth research (Xie et al., 2022).

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Table 1: Participants' Details

Details	Groups	Frequency	Percentage
Age	Under 19years	98	22.48
	20-22years	102	23.39
	23-25years	106	24.31
	Above 26years	130	29.82
Gender	Male	152	34.86
	Female	284	65.14
Level of Education	Diploma	26	5.97
	Level 100	91	20.87
	Level 200	65	14.91
	Level 300	99	22.71
	Level 400	87	19.95
	Postgraduate	68	15.60
Work Experience	1year	124	28.44
	2years	224	51.38
	Above 3years	88	20.18
Institutions	Traditional University	215	49.31
	Technical University	152	34.86
	Private University Colleges	69	15.83
Sample	**Total**	**436**	**100**

Source: filed work, January-June, 2024

Measurement of the Constructs

The researchers used a five-point Likert scale analysis, with 1 denoting severely disagree, 2 denoting disagree, 3 denoting neutral, 4 denoting agree, and 5 denoting highly agree. It is also vital to note that the majority of academics and researchers have recently used the five-point Likert scale for their studies because it allows them to assess respondents' opinions and subject expertise (Janes & Curran, 2023; Oleśków-Szłapka et al., 2020).

The constructs used in the study were altered and tweaked from those used in prior investigations/studies to suit the context of the researchers' inquiry, which is another important point to make. The ordinal scale was used to assess the constructs, and it was selected since it accurately reflects how strongly respondents feel about the variables under investigation.

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Test of Common Method Variance

Since the data were acquired independently, the researchers were conscious that there could be common method variance. Common Method Variance (CMV), which is characterised as "common and heightened variability variation amongst observed data that reflects the same method," constitutes the variation that is "attributed to the assessment method rather than the intended construct" (Bagozzi & Yi 1991: Keelson et al., 2024).

The survey's participants were also told that their responses would not be disclosed, considering there was no right or wrong response to any of the survey questions. Upon learning of Common Method Bias (CMB), the researchers, according to Bagozzi and Yi (1988), structured the survey to comply with the preconditions in the prelude and approached respondents or participants with maximum confidence. It was crucial to stress the existence of CMB. The variance inflation factor (VIF) test was used for this. The study revealed that the variance inflation factor is less than ten, as indicated in Table 3 below (Amoah et al., 2022; Kock & Hadaya, 2018). CMV only has an average incidence based on VIFs. The CMB is less of a worry, considering this survey finds that it only has a few tiny issues.

FINDINGS AND DISCUSSION

Reliability test and Cronbach's alpha

It has always been advised to evaluate an instrument's validity and reliability before deciding how well it can be used to collect data. Using Dijkstra-rho Henseler's and Cronbach's alpha coefficients proved the most efficient way to assess construct reliabilities as the PLS-SEM studies inspired the researchers. Average Variance Extracted and Cronbach Alpha were utilised to determine reliability and validity, respectively (Hair et al., 2019; Hair et al., 2017; Bagozzi & Yi, 1988). The minimum and maximum values in Table 2 resulted in reliable coefficients of construct stability greater than 0.5 (Hair et al., 2016; Bagozzi & Yi, 1988).

Using PLS-SEM version 4.0, the constructs and supporting items' predictive values were assessed (Henseler et al., 2015). When the Average Extracted Variance (AVE) has a minimum value of 0.5 and a Cronbach alpha value of 0.70, it is considered a reliable statistic to indicate construct trustworthiness (Bagozzi & Yi, 1988).

According to the PLS-SEM estimations, the outcomes also met the predetermined trimmed-offs, supporting the validity of the study constructs on which they were centred. Jöreskog's rho (pc) and Composite dependability values fell between 0.7 and 0.8. The composite reliability, characterised by a reliability coefficient range of 0.894 to 0.966, was used to decide the obtained result. The AVE showed convergence validity at a minimum threshold of 0.5 (see Table 2).

African Journal of Applied Research
Vol. 11, No. 1 (2025), pp.334-362
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In essence, factor loading is the relationship between the factor and the variable. Nevertheless, the indicator loadings for the latent constructs were closely scrutinised and placed into the appropriate categories. Factor loadings can be utilised to find underlying restrictions or dimensionality that may or may not be seen by simple analysis. Baggozzi and Yi (1988) found that the best outer loadings have an acceptable threshold above 0.5. Additionally, every estimate from the dominant research met the prescribed limit criterion. This emphasises that all the values of the factor loadings met the minimum threshold. Table 3 demonstrates the details of the summarised variables, items, and the results of the coefficients.

Discriminant validity is significant because it reveals whether your test accurately examines the relevant concept or whether it evaluates additional, unintendedly related constructs. The Fornell-Larcker criterion is a widely recognised and commonly used technique for assessing the psychological characteristics of scale items.

The construct's discriminant validity was subsequently assessed using Fornell Larcker's (1981) criterion to see if any latent variables exhibit discriminant validity (Henseler et al., 2015). It is crucial to note that the evaluated constructs represented by the rows of AVE values (in bold) in Fornell Larcker's Table 1 should have values greater than 0.5. (Henseler et al., 2015: Hair et al., 2019). The data suggest that the concepts sustain primary and rigorous assumptions, guaranteeing discriminant validity. Therefore, each construct's AVE must have a larger coefficient across the portion and matrix locations than other concepts.

Table 2: Test of Validity and Reliability Research Constructs

Constructs	**Cronbach's Alpha**	**Jöreskog's rho (ρc)**	**Composite Reliability**	**Average Variance Extracted (AVE)**
Communication skills	0.925	0.927	0.944	0.770
Customer Satisfaction	0.953	0.955	0.966	0.877
Driver Skills	0.945	0.947	0.958	0.820
Professional	0.891	0.897	0.925	0.755
Punctuality	0.875	0.879	0.924	0.802
Service Quality	0.822	0.839	0.894	0.738

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Vol. 11, No. 1 (2025), pp.334-362
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Received: July 15, 2024
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Revised: November 28, 2024
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Table 3: Construct Items, Loading factor, and Variance Inflation Factor (VIF)

Construct	Indicator	Loading	VIF
Communication Skills (COS)	1: How would you rate the drivers' communication skills?	0.810	2.001
	2: The driver displays pleasantness toward the passenger	0.903	3.911
	3: In my view, the driver tries to establish rapport	0.906	4.327
	4: Tried to keep the conversation very business-like	0.921	4.949
	5. In my opinion, the driver tries to build a good relationship by completing the task at hand	0.843	2.580
Customer Satisfaction (CS)	1: How ready are you to choose the ride-hailing service over other transport services?	0.930	4.721
	2: How likely are you to recommend this ride-hailing service to others?	0.959	4.072
	3. How satisfied are you with the customer service provided by the ride-hailing company?	0.930	4.313
	4. Quick responses to customer inquiries	0.927	4.113
Drivers Skills (DS)	1: How would you rate the drivers' driving skills?	0.898	3.259
	2: Have you had any negative experiences with the drivers while using the ride-hailing service?	0.916	4.762
	3: Avoid unnecessary risks	0.924	4.806
	4: The driver always exhibits a high level of skills	0.869	2.824
	5: Showing consideration for other road users	0.921	4.299
Professional (PROF)	1: How would you rate the cleanliness of the vehicle provided by the ride-hailing service?	0.797	1.806
	2: How comfortable do you feel during the ride?	0.858	2.585
	3: Getting off the road/lane to bypass a traffic jam	0.922	3.681
	4: Use of mobile phone while driving	0.892	3.062
Punctuality (PU)	1: Drivers are always on time to pick up customers	0.828	1.717
	2: Time is regarded as an important element	0.928	3.908
	3: Reduced waiting time and precision in start and end locations	0.927	3.910
Service Quality (SQ)	1: How would you rate the overall quality of the ride-hailing transport system?	0.799	1.838

African Journal of Applied Research
Vol. 11, No. 1 (2025), pp.334-362
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Received: July 15, 2024
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Revised: November 28, 2024
Published: January 2025

2: How do you rate the cost-effectiveness of this ride-hailing service compared to other transportation options?	0.916	2.640
3: How comfortable do you feel during the ride?	0.857	1.841

Source: Authors' processing from PLS-SEM 4.0 version

Table 4: Test of Discriminant Validity – Fornell-Larcker Criterion

Constructs	COS	CS	DS	PROF	PU	SQ
COS	**0.878**					
CS	0.910	**0.937**				
DS	0.835	0.861	**0.906**			
PROF	0.904	0.888	0.866	**0.869**		
PU	0.816	0.758	0.793	0.824	**0.895**	
SQ	0.750	0.720	0.803	0.751	0.820	**0.859**

Note: Communication skills (**COS**), Customer Satisfaction (**CS**), Drivers Skills (DR), Professional (PROF), Punctuality (PU), Service Quality (SQ). ***Source****: processing from Smart PLS 3.3 software version 4.0. The diagonal (in bold) is the average variance extracted (AVE)*
Sources: Author's processing from ADANCO 2.0 version.

Structural modeling-path analysis

The research also demonstrated the significance of path analysis following model fit determination. This investigation is critical because it underlines the connections among the study constructs revealed in the analysis. Table 5 shows that two direct hypotheses, Drivers' Skills and Punctuality (Independent variables), have a positive relationship with the dependent variable (customer satisfaction). In contrast, the other two direct hypotheses are insignificant to customer satisfaction (dependent variable).

Table 5 shows the determination of coefficient and significant values or T-values greater than 1.96. The regression model's coefficient of determination (R^2) was used to evaluate the research items' predictive ability. The coefficients demonstrate the extent to which the independent (predictor) variable can be held responsible for the variance of the dependent variable. The multidimensional model's coefficient of determination (R^2) was examined to ascertain the study model's predicting

African Journal of Applied Research
Vol. 11, No. 1 (2025), pp.334-362
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Received: July 15, 2024
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Revised: November 28, 2024
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tendency. The degree to which the external constructs explain the variance in the endogenous latent construct is shown below. This is illustrated by the R^2 values of the predictive variables, valid and equal to 51% and 73% in Figure 2 and Table 5.

Table 5: Hypothetical path coefficient -PLS-SEM

Constructs	Original sample (O)	Sample mean (M)	Standard deviation	T statistics	P values	Decision
Driver Skills -> Service Quality	0.436	0.436	0.076	5.750	0.000	Supported
Punctuality -> Service Quality	0.504	0.492	0.071	7.092	0.000	Supported
Profession. -> Service Quality	-0.103	-0.095	0.096	1.076	0.282	Not Supported
Com Skills -> Service Quality	0.068	0.071	0.093	0.725	0.468	Not Supported
Service Quality -> Customer Satisfaction	0.720	0.717	0.047	15.168	0.000	Supported

	R Square	**R Square Adjusted**
Customer Satisfaction	0.518	0.516
Service Quality	0.737	0.734

Source: Author's processing from PLS-SEM version 4.0. ***Note:*** Communication skills (**COS**), Customer Satisfaction (**CS**), Drivers Skills (DR), Professional (PROF), Punctuality (PU), Service Quality (SQ

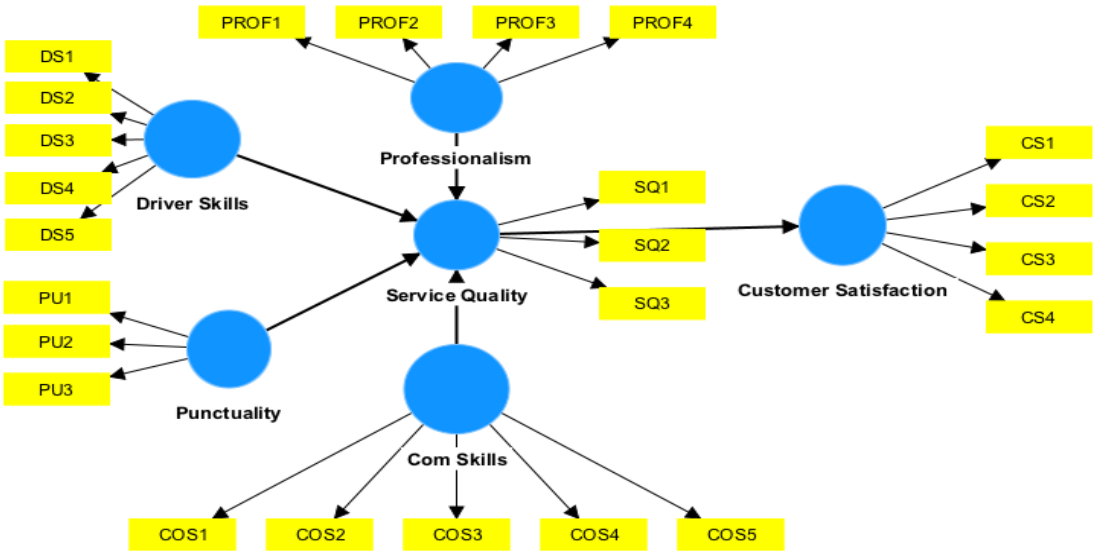

Figure 2: Estimated research model

African Journal of Applied Research
Vol. 11, No. 1 (2025), pp.334-362
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Revised: November 28, 2024
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Discussion

Undoubtedly, many investors, individuals, and businesses are constantly developing interest in ride-hailing services. This is a result of customers' interest in always accessing the services. The key benefit of this mode of transportation is its simplicity of usage via smartphone apps. Ride-hailing apps give customers accessibility to a practical form of mobility. The origins of ride-hailing services, for example, have been exaggerated, especially in the current environment where the medium is being exploited aggressively to close the gap between businesses and their customers. Consequently, this study aims to investigate the mediating effect of service quality on the relationship between ride-hailing driver characteristics and customer satisfaction by applying the theory of availability and accessibility. The study formulated five hypotheses based on the conceptual framework and reviewed the literature.

Firstly, the study hypothesised that ***(H1)****: Driver skills will positively affect service quality*. This hypothesis was supported. This suggests a strong and significant relationship between the two variables. Confirming the hypothesis affirms that of (Pasharibu et al., 2018; Fazeen et al. 2012; Pugh et al., 2002). Research indicates that drivers' effective communication skills and professionalism significantly enhance service quality. For instance, Tambayong and Tan (2022) found that drivers who exhibit friendly and professional behaviour foster better interactions with passengers, leading to higher service quality. This means driver skills and service quality are greatly taken into account by the ride-hailing drivers. It can be inferred that driver skills significantly impact service quality. The study discovered that driver skills are a fundamental motivating variable influencing service quality.

Secondly, the study hypothesised that (***H2)****: The availability of drivers to pick up clients on time will positively contribute to service quality.* The results of this hypothesis strongly affirmed the previous works (Sun et al., 2019). This indicates a strong and significant relationship between punctuality and service quality in ride-hailing services. Punctuality is often regarded as a key performance indicator (KPI) for evaluating the effectiveness and reliability of ride-hailing services. It means there are no delays or substantial departures from the scheduled pickup time and drivers are on time and comply with the agreed-up pick-up time.

Driver punctuality is crucial to service excellence and client happiness (Man et al., 2019; Duy Phuong & Dai Trang, 2018). It is confirmed that a favourable correlation exists between driver punctuality and service quality. The availability of drivers' punctuality to pick up customers on time has tremendously contributed to customer retention and hence affected drivers' sales in the long run. Man et al. (2019) demonstrated that drivers who consistently arrive on time receive higher ratings from passengers, indicating that punctuality is closely linked to perceived service

African Journal of Applied Research
Vol. 11, No. 1 (2025), pp.334-362
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Received: July 15, 2024
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Revised: November 28, 2024
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quality. This relationship suggests that companies emphasising punctuality can enhance their overall service reputation.

Thirdly, the study again hypothesised that (***H3)****: a high level of professionalism by ride-hailing drivers will positively affect service quality*. This hypothesis was not supported. This means that professionalism negatively influences service quality. This suggests that the relationship between driver profession and service quality is not statistically significant.

The literature suggests that professionalism, defined by politeness, responsiveness, and effective communication, plays a more significant role in determining service quality than the specific profession of the driver. This aligns with findings from Lee & Wong (2021), which indicate that the drivers' attitudes and behaviours during service delivery significantly impact passenger satisfaction rather than their professional background.

Ride-hailing drivers might have to tackle factors (financial incentives, safety concerns) that reduce their professionalism during service delivery since the exhibition of professionalism can give them greater encouragement and incentives to improve their delivery mode. Contrary to prior studies, (Adam et al., 2020; Nguyen et al., 2021; Lee & Wong, 2021) indicated that ride-hailing drivers must always exhibit high professionalism. Pleasant, professional drivers who give outstanding service to customers and adhere to safety regulations are more inclined to obtain favourable customer feedback and ratings.

Following this, the study also tested (***H4)***. *Good communication skills by the ride-hailing drivers will significantly affect service quality.* This suggests that the relationship between communication skills and service quality is not statistically significant. The propositions were not supported and affirm the studies (Ofori et al., 2022; Lee & Wong, 2021). This shows that drivers who operate ride-hailing services strongly lack better communication skills.

Communication abilities cover a range of areas pertinent to how drivers and customers connect in ride-hailing services (Jusoh & Ridzuan, 2022; Ruamchart, 2021). Drivers and passengers must have good communication skills, such as welcoming others, courteousness, and competence. Jusoh and Ridzuan (2022) highlighted the significance of good communication for generating favourable relationships between drivers and customers, raising customer satisfaction, and encouraging customer loyalty. Research has highlighted the importance of interpersonal skills such as empathy and active listening over basic communication skills in enhancing customer satisfaction (Jones et al., 2019). This perspective aligns with findings from Lu and Shi, (2024), which indicate that

African Journal of Applied Research
Vol. 11, No. 1 (2025), pp.334-362
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Received: July 15, 2024
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Revised: November 28, 2024
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drivers' ability to connect with passengers on a personal level can significantly influence their overall satisfaction with the ride-hailing experience.

Lastly, hypothesis (***H5)***, *the level of service quality by ride-hailing drivers will positively affect customer satisfaction,* was investigated. The result of this hypothesis was supported (Duy & Dai, 2018; Man et al., 2019). This indicates a strong and significant relationship between service quality and customer satisfaction in ride-hailing services. Relative to service quality, Ali et al. (2022) affirmed that the ability of ride-hailing drivers to provide prompt service and vehicle availability significantly affects customer satisfaction.

Client devotion and referrals from friends and family are directly affected by excellent levels of consumer satisfaction and quality of service, which are essential for ride-hailing firms' success. Ride-hailing companies are establishing driver instruction courses, upgrading vehicle upkeep, and integrating customer feedback into their operations to increase customer service quality and satisfaction (Agyemang, 2022). It is known that customers' perceptions of service quality significantly influence their overall satisfaction and corporate image of the service provider. This relationship underscores the importance of maintaining high service standards to enhance customer experiences and foster positive brand associations.

CONCLUSION

The mediating effect of service quality on the relationship between ride-hailing driver characteristics and customer satisfaction is a critical area of study that underscores the complex interplay between various factors influencing consumer experiences in the ride-hailing industry. High service quality characterised enables customers to feel valued and satisfied with their ride-hailing experience.

This study highlights that while driver characteristics such as professionalism, communication skills, and punctuality are essential, the quality of service delivered ultimately shapes customer satisfaction. Data was collected from university students in four regions between January and June 2024. The data gathered was processed and analysed using PLS-SEM. Three of the five hypotheses formulated were significant, while two were insignificant. The findings of this study contribute to both theoretical and practical implications.

Study Implications

Theoretically, this study offers insights into the literature. The application of availability and accessibility theory has provided a discourse investigating the mediating effect of service quality

African Journal of Applied Research
Vol. 11, No. 1 (2025), pp.334-362
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on the relationship between ride-hailing driver characteristics and customer satisfaction. This theory emphasises how the availability of resources and the ease of access to services influence consumer satisfaction and behaviour. The role of service quality as a mediator in this relationship aligns with the accessibility aspect of the theory. High service quality characterised by reliability, responsiveness, and assurance facilitates easier customer access to satisfactory experiences.

Research indicates that when drivers possess strong communication skills and professionalism, it enhances their ability to deliver high-quality service. Again, understanding the interplay between driver characteristics, service quality, and customer satisfaction can inform ride-hailing companies' strategies for service design and training programs. By prioritising training initiatives that enhance driver professionalism and communication skills, companies can improve both service availability and accessibility for customers. This proactive approach addresses current consumer demands and positions companies favourably in a competitive market.

Practically, the study has important implications for the ride-hailing business, and its results can be used to shape policies and practices that improve service quality and customer satisfaction. From a social point of view, the study shows that ride-hailing companies can make customers' transportation experiences better in a modern way. By providing good services, ride-hailing companies and drivers can improve their health and well-being by making transportation less stressful and giving customers a better total travel experience. From a policy point of view, the study shows how important it is for the ride-hailing business to have rules and policies that promote high-quality services.

Governments and regulatory bodies can play a major role in ensuring ride-hailing companies maintain high service standards, which in turn help customers in the long run. Lastly, from a practical point of view, the study opines that ride-hailing companies can benefit from investing in driver training and development programs that improve the drivers' knowledge of the service area and driving experience. Ride-hailing companies can improve the quality of their service by investing in their drivers. This can lead to satisfied customers and a larger market share.

Limitations

The study may be limited to specific geographical areas or demographics, which affect the generalizability of the findings. For instance, since the study was conducted within specific regions, the results may not apply to ride-hailing services in different cultural or economic contexts. This limitation restricts the ability to draw broader conclusions about the relationship between driver characteristics, service quality, and customer satisfaction. Also, applying the cross-sectional design in the study posits a limitation. This approach limits the ability to assess causal

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relationships and changes over time. Longitudinal studies would provide more robust insights into how driver characteristics and service quality impact customer satisfaction dynamically. The study only concentrates on certain driver characteristics while neglecting other potentially influential traits (e.g., appearance, vehicle condition). This narrow focus could overlook critical aspects contributing to perceived service quality and overall customer satisfaction.

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