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Satisfaction in App-Based Transportation: Evidence from Grab Users in Malaysia

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Abstract. This study investigates the key determinants of customer satisfaction with Grab ride-hailing services in Malaysia. Drawing on a sample of 450 users, the study employs partial least squares structural equation modeling (PLS-SEM) to examine the effects of five factors; price, reliability, ride comfort, perceived ease of use, and perceived usefulness on overall customer satisfaction. The results indicate that perceived ease of use, usefulness, and price significantly affect satisfaction, while reliability and ride comfort do not show significant relationships. These findings offer strategic insights for enhancing service quality and user experience in the ride-hailing industry.

Keywords: ride-hailing; satisfaction; reliability; price; Malaysia

1. Introduction

The rapid advancement of technology has brought significant changes to the transportation industry, leading to the emergence of services such as ride-hailing. These services, which allow users to book rides through smartphone applications, have seen growing acceptance and usage globally. One of the key players in this space is Grab, a well-established Southeast Asian company that offers not only ride-hailing but also food delivery and digital payment solutions. The increasing use of smartphones and the expansion of digital infrastructure have played a central role in reshaping how people travel and access transportation services.

Ride-hailing platforms function by connecting three key parties: the service provider, the driver, and the passenger. Through internet-based applications, these platforms simplify the process of booking a ride, offering users the flexibility to make reservations via both mobile devices and desktop computers. Among the notable features of such services is the ability to share real-time journey details with friends or family, contributing to enhanced safety and peace of mind. In addition, the door-to-door service model they offer provides a convenient alternative to traditional taxi services, aligning with the growing demand for more efficient and user-friendly transport options.

Malaysia's ride-hailing market is experiencing steady growth. According to Statista Research Department (2024), it is projected to generate approximately USD 0.48 billion in revenue by 2024, with an annual growth rate of 3.50% expected through 2029—reaching an estimated market value of USD 0.57 billion. User penetration is also expected to increase from 28.1% in 2024 to 31.5% by 2029, with an average revenue per user (ARPU) of USD 49.33. Globally, countries like China continue to dominate the ride-hailing sector, with an estimated revenue of USD 59.56 billion in 2018. In Malaysia, platforms like Grab and MyCar have gained popularity as practical solutions to increasing traffic congestion and limitations in public transportation, reinforcing the growing reliance on on-demand ride services.

Despite the widespread use and growing dependence on Grab in Malaysia, there remain clear signs of customer dissatisfaction. Complaints often revolve around inconsistent service quality, unpredictable pricing especially during peak hours safety concerns (particularly among female passengers), and slow or ineffective customer support. Customers frequently encounter differences in driver professionalism, vehicle condition, and overall ride experience, leading to fragmented perceptions of the service. This indicates that while ride-hailing platforms have successfully met demand for convenience, significant gaps still exist in delivering consistent and satisfying user experiences.

While several studies have explored service quality and technology acceptance in digital transportation, there is limited understanding of how traditional service factors like price, reliability, and ride comfort interact with app-based elements such as perceived ease of use and usefulness in shaping satisfaction especially within a Malaysian context. Furthermore, demographic factors such as age and user expectations may further influence how these variables are perceived, yet they are often overlooked in existing research.

To address these gaps, this study investigates key factors influencing customer satisfaction with Grab's ride-hailing service in Malaysia. By integrating perspectives from the Technology Acceptance Model (TAM) and service quality literature, the study aims to provide a more comprehensive view of what drives user satisfaction and how service providers can better meet the evolving needs of digital-age consumers.

2. Literature Review and Hypotheses Development

2.1. Theoretical Framework

This study draws upon the Technology Acceptance Model (TAM) as its primary theoretical underpinning, complemented by selected service quality dimensions to provide a more comprehensive understanding of customer satisfaction in ride-hailing services. Originally developed by Davis (1989), TAM posits that two main beliefs, perceived ease of use and perceived usefulness influence an individual's behavioural intention to use a technology, which ultimately affects their actual usage. These

constructs have been widely applied in digital service contexts, including e-commerce, mobile applications, and transportation platforms.

However, in the context of ride-hailing services like Grab, customer satisfaction is also shaped by service-specific factors that go beyond system usability. Building on this, the study incorporates elements from the SERVQUAL model (Parasuraman et al., 1988), particularly price, reliability, and ride comfort, which have consistently been identified as significant predictors of satisfaction in transportation and service management literature.

Integrating TAM and service quality variables enables a holistic view that captures both the technological interface experience and the physical service delivery components of the ride-hailing experience. This integrated approach is particularly relevant in emerging markets such as Malaysia, where users increasingly rely on mobile apps for transportation while still expecting dependable, cost-effective, and comfortable services.

The combination of these models allows the study to examine a broader range of satisfaction determinants, addressing gaps in prior research that tend to treat technological and service factors in isolation. By doing so, this study contributes to the literature by proposing a more nuanced framework that reflects the multifaceted nature of customer satisfaction in digital transportation services.

2.2. Price and customer satisfaction

Price is closely related to customer satisfaction. It can be evaluated through various indicators such as price appropriateness, retailer's pricing, minimised pricing, competitive pricing, and reasonable pricing. Since value is often more individualised and subjective compared to quality and price, it is typically assessed at a higher level. When customers are satisfied, they are more likely to perceive the product or service as worth the price, which in turn influences their intention to repurchase (Zhao et al., 2021).

Hayder (2020) found that price had the strongest positive association with customer satisfaction among online taxi service users in Dhaka City, outperforming other factors like reliability, comfort, and service quality. This suggests that pricing remains a central factor in customer decision-making, particularly in ride-hailing contexts where consumers are highly price-conscious and sensitive to the value received. Additionally, product pricing plays a direct role in revenue generation and can be a key indicator of a service's market success or failure. Sadiq et al. (2020) emphasised that price is among the most critical factors influencing consumer purchase intention, a view supported by Zhao et al. (2021), who also noted that while both pricing and packaging affect consumer behaviour, pricing tends to have a greater impact. Ilyas and Mustafa (2022) similarly found a significant and positive relationship between price and customer satisfaction, reinforcing the importance of effective pricing strategies for consumer engagement.

Amarajaya et al. (2023) further support this view by highlighting how COVID-19 prevention measures strongly influenced customer satisfaction and their perception of price in the ride-hailing sector. Even in the post-pandemic environment, customers continue to place importance on how fair and reasonable pricing feels, indicating that price perception remains a critical component of customer satisfaction. Recent work by Sun and Liu (2023) also shows that in competitive ride-hailing markets, platforms offering more distinct service features often charge higher prices and are better positioned to manage pricing pressure. Their study suggests that aligning pricing strategies with service quality is not only key to profitability but also plays an important role in shaping customer satisfaction in digital transport services. Hence, the first hypothesis was developed to examine whether price significantly influences customer satisfaction.

H1: There is a significant relationship between price and customer satisfaction

2.3. Reliability and customer satisfaction

Reliability can be described as an employee's capacity to execute the appropriate service the first time, on schedule, and accurately fulfil their commitment (Tien et al., 2021). Further, et al. (2020) found that reliability is one of the most essential service factors in the public transportation system. Moreover, Ha et al. (2019) found that reliability is one of the main elements that affects consumer satisfaction and loyalty in public transport. Similarly, Tyrinopoulos and Antoniou's (2008) study (as cited in Ha et al. 2019) stated that reliability is the steadiness of public transport's regularity and punctual performance based on scheduled time. Supporting this view, Husin (2022) reported a significant positive relationship between reliability and the passenger experience in ride-hailing services among the younger generation. This indicates that dependable and consistent service delivery is especially valued by younger users and contributes meaningfully to their overall satisfaction.

In contrast, Lookman and Dewi (2022) identified that reliability does not impact customer satisfaction. They highlighted possible causes for this, such as the effects of the pandemic, lack of facilities, and shortcomings in the logistics sector's service consistency. Furthermore, Chege (2021) found that service reliability significantly influences customer satisfaction. This was attributed to companies keeping promises made to customers, employing dependable staff, ensuring error-free services, maintaining accurate records, and delivering timely responses and support.Therefore, a second hypothesis was developed to identify whether reliability influences customer satisfaction.

H2: There is a significant relationship between reliability and customer satisfaction

2.4. Ride comfort and customer satisfaction

Ride comfort is another essential factor that influences customer satisfaction. İmre & Çelebi's (2017) study stated that comfort is the most significant factor that impacts consumer satisfaction towards ride-hailing services, connected with quality models related to the transport industry worldwide (Zulkiffli et al., 2021). Furthermore, Wawryszczuk et al. (2023) stated ride comfort is a complex perception and depends on various factors that are connected to the passenger's context. Such as vibrations, noise, air temperature and relative humidity, lighting, and pressure. The authors of this study also claim that ride comfort is subjective and depends on an individual's age, weight, height, and other personal traits. These aspects contribute towards customer satisfaction. Moreover, existing studies (George et al. 2013; Bhat & Dubey, 2014; Hashim et al. 2020) have explored the factors that influence comfort in ride-hailing services, such as ride comfort, openness, security, advisement, passenger care, accommodation, time or duration, and ecological impacts, which are all distinguished as assessed riding comfort and normal riding comfort (Zulkiffli et al., 2021). Thus, a third hypothesis was developed to identify whether ride comfort influences customer satisfaction.

H3: There is a significant relationship between ride comfort and customer satisfaction

2.5. Perceived ease of use and customer satisfaction

According to Alalwan (2020), perceived ease of use is the factor that has the most impact on people's intention to continue using new technologies (Ngubelanga & Duffett, 2021). Moreover, a study by Hendra et al. (2020) pointed out that perceived ease of use is a factor in customer satisfaction in online shopping (Ngubelanga & Duffett, 2021). Furthermore, Wilson et al. (2021) found that perceived ease of use and perceived usefulness significantly influence customer loyalty through customer satisfaction. Moreover, Ngubelanga and Duffett's (2021) study highlighted that perceived enjoyment, mobility, and involvement were positively related to perceived ease of use, and perceived ease of use and perceived usefulness were positively connected with customer satisfaction. Zaigham et al. (2022) supported this

perspective by showing that perceived ease of use significantly influences drivers' intention to use ride-hailing platforms in Malaysia, further emphasising the importance of intuitive and user-friendly platform design. In contrast, Chong et al. (2023) revealed that perceived ease of use, perceived trust, and perceived usefulness show insignificant relationships towards customer satisfaction among Shopee users in Malaysia. This study recommends exploring vital information and guidance for improving Shopee's customer satisfaction. Thus, a fourth hypothesis was developed to identify whether perceived ease of use influences customer satisfaction.

H4: There is a significant relationship between perceived ease of use and customer satisfaction.

2.6. Perceived usefulness and customer satisfaction

Perceived usefulness refers to a user's belief that a technology will enhance their performance or make tasks easier and more efficient (Ajzan, 1991; Wilson et al., 2021). Several studies have shown that this perception plays an important role in shaping customer satisfaction. For example, Filieri et al. (2021) found that travellers who found TripAdvisor useful were more likely to continue using it. Similarly, Lee and Kwon (2011) reported a significant link between perceived usefulness and user satisfaction. Chi (2018) suggested that perceived usefulness stems from improvements in productivity, convenience, and effectiveness. Olivia and Marchyta (2022) further confirmed that the more useful users find a service, the more satisfied they tend to be. Wilson et al. (2021) also emphasised the importance of perceived usefulness in building long-term customer relationships and business success.

In the ride-hailing context, Zaigham et al. (2022) described perceived usefulness as the platform's ability to meet users' social, economic, and technological needs. Likewise, Zhong et al. (2022) found that users preferred ride-hailing services over traditional taxis because of practical benefits such as reduced waiting time, convenient payments, and overall service efficiency highlighting how these useful features drive user preference and satisfaction. Hence, a fifth hypothesis was developed to identify whether perceived usefulness influences customer satisfaction.

H5: There is a significant relationship between perceived usefulness and customer satisfaction.

2.7. Research Hypotheses

Figure 1 depicts the conceptual model showcasing the connections between price, reliability, ride comfort, perceived ease of use, perceived usefulness and customer satisfaction.

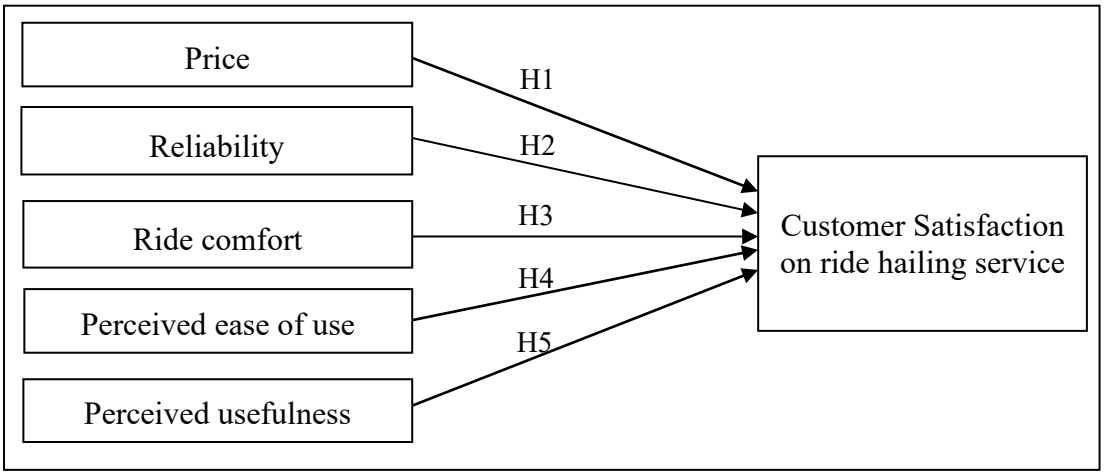

Fig. 1: Research framework

3. Methodology

This study employed a quantitative research design and applied a non-probability purposive sampling technique. The use of purposive sampling was considered appropriate as the research aimed to gather insights from individuals aged 20 and above who are regular users of ride-hailing services, with a particular focus on Grab. These individuals were selected based on their relevance and familiarity with the subject matter, which allowed the researchers to obtain more meaningful and context-specific responses.

The survey consisted of 24 items measured on a five-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The items measuring perceived ease of use, perceived usefulness, and ride comfort were adapted from Pappas et al. (2014). Measures for reliability were drawn from McKnight (1986), price perception from Dodds et al. (1991), and customer satisfaction was assessed using items also adapted from Pappas et al. (2014).

Participants were recruited over a three-month period using online distribution methods. The survey, created via Microsoft Forms, was circulated through personal emails and WhatsApp to reach potential respondents efficiently. While the sampling method does not allow for generalisation to the broader population, care was taken to ensure a diverse range of users were invited, representing different age groups, occupations, and backgrounds to enhance the credibility of the findings. Using G*Power 3.1 software (Faul et al., 2009) with an effect size of 0.15, alpha of 0.05, and power of 0.95, the minimum required sample size for analysis was determined to be 138. A total of 463 responses were received from 500 invitations. After removing 13 incomplete responses, the final dataset comprised 450 valid responses. Demographic details of the respondents are presented in Table 1.

4. Findings

4.1. Demographic Profile

The success response rate for the following screening question: “Do you use the Grab ride app platform to meet your transportation needs?” is 93.75 percent. This figure comes from analysing 450 datasets of six constructs and twenty-four latent variables in PLS-SEM. Males made up 47.5% of the usable responses, while females accounted for 52.5%. People aged 20 to 30 form the biggest group, at 48.7%. Next up, those 31 to 40 years old account for 22.9%, while the 41 to 50 crowd represents 23.1% (104 people), and those over 50 make up 5.3%. The sample includes people from various ethnic groups. Malays make up 143 respondents, Chinese account for 165 respondents, Indians represent 175 respondents, and 67 respondents are from the other ethnic groups, namely Kadazan, Iban, Bidayuh,

Indonesia, Bangladeshi, Iranian, and Saudi Arabian comprise 14.9%. The respondents' monthly salary distribution shows that 11.8% earn below RM2000, 29.3% earn between RM2001 and RM3000, 30.0% earn between RM3001 and RM4000, 16.9% earn between RM4001 and RM5000, and 12.0% earn above RM5000. Also, over 51% have used the Grab app to request a ride one to six times.

Table 1. Respondent's demographic profile (N = 450)

Demographic variable	Category	Frequency	(%)
Gender	Male	96	47.5
	Female	106	52.5
Age	20 - 30 years old	219	48.7
	31 - 40 years old	103	22.9
	41 - 50 years old	104	23.1
	Above 50 years old	24	5.3
Ethnic	Malay	143	31.7
	Chinese	165	36.7
	Indian	75	16.7
	Others	67	14.9
Monthly Income	RM2000 and below	53	11.8
	RM2001 – RM3000	132	29.3
	RM3001 – RM4000	135	30.0
	RM4001 – RM5000	76	16.9
	Above RM5000	54	12.0
How often do you call for ride service via Grab **apps** in a month?	1 to 3 times	81	18.0
	4 to 6 times	150	33.3
	7 to 9 times	126	28.0
	More than 9 times	93	20.7

4.2. Measurement Model

Table 2 presents the composite reliability values, all of which exceeded the threshold of 0.70, indicating acceptable internal consistency and construct reliability (Hair et al., 2017). In addition, all 24 measurement items demonstrated factor loadings above 0.70, suggesting that each item had a strong association with its corresponding construct and contributed meaningfully to the model. The results hint that the constructs in the measurement model were somewhat convergent in their validity. Dijkstra and Henseler (2015) said to use the rho_A coefficient to check how dependable PLS construct scores are, with 0.7 or more being okay. All constructs showed they were convergent because their average variance extracted (AVE) was above 0.50. In this study, the R^2 value for the structural model was 0.795, indicating that the five variables namely price, reliability, ride comfort, perceived ease of use, and perceived usefulness collectively explain about 79.5% of the variance in customer satisfaction with Grab's ride-hailing service. This high R^2 value suggests that the model effectively captures the main elements shaping how users evaluate their experience. As noted by Hair et al. (2019), an R^2 value of this magnitude is considered substantial in social science research, reflecting strong predictive relevance. Overall, these findings suggest that combining both service-related and technology-related factors offers valuable insight into the key drivers of customer satisfaction within the ride-hailing sector.

Table 2. Assessment of Convergent Validity and Reliability.

Variables	Items	Loadings	Cronbach's Alpha	AVE
Price	Price 1	0.755	0.823	0.653
	Price 2	0.855		
	Price 3	0.768		
	Price 4	0.850		
Reliability	Reliability 1	0.913	0.905	0.778
	Reliability 2	0.877		
	Reliability 3	0.899		
	Reliability 4	0.839		
Ride Comfort	RC1	0.765	0.812	0.638
	RC2	0.819		
	RC3	0.798		
	RC4	0.813		
Perceived Ease of Use	PEU1	0.811	0.822	0.652
	PEU2	0.790		
	PEU3	0.810		
	PEU4	0.819		
Perceived Usefulness	PU1	0.786	0.802	0.628
	PU2	0.847		
	PU3	0.749		
	PU4	0.785		
Customer Satisfaction	CS1	0.817	0.793	0.617
	CS2	0.796		
	CS3	0.785		
	CS4	0.743		

The structural model depicts the relationships among the constructs postulated in the study model. Bootstrapping analysis was performed on 5000 subsamples to determine the significance of the regression coefficients, which may be used to determine the relevance of the recommended hypotheses. Based on the findings (Table 3), two paths were statistically significant at the 0.01 level, while one path were significant at the 0.05 level. The other paths were judged statistically insignificant, as shown in Table 4. The study found that perceived price had a statistically significant impact on customer satisfaction, with a beta coefficient of 0.159 and a t-value of 2.187 ($p = 0.029$). This result indicates that, at the conventional significance level of 0.05, price contributes meaningfully to customer satisfaction in the context of Grab's ride-hailing service. However, it is important to note that the p-value does not meet the stricter 0.01 level, which calls for a more cautious interpretation of its influence. The perceived ease of use (H4: $\beta = 0.457$ and $t= 5.404$) had a beneficial impact on customer satisfaction. The perceived usefulness (H5: $\beta = 0.300$ and $t= 4.044$) exhibited a significant and robust connection with customer satisfaction on Grab rides. As a result, H2 was not supported. The data demonstrate no link between reliability ($\beta = 0.032$, $p > 0.1$). Nonetheless, ride comfort ($\beta = 0.022$, $p > 0.1$) had no effect on customer satisfaction. These suggest that H3 were not supported.

Henseler et al. (2015) said that they used the standardised root mean square residual (SRMR) to evaluate the overall fitness of the model. The SRMR was calculated by comparing the observed

correlations with the correlations predicted by the model. The model in this study estimate yielded a value of 0.073, suggesting that the model exhibited a satisfactory fit.

Table 3. Assessment of Structural Model."

Hypotheses	Path	Std Beta	Std Error	t-value	P values	Remarks
H1	Price > Customer Satisfaction	0.159	0.077	2.187*	0.029	Supported
H2	Reliability > Customer Satisfaction	0.032	0.021	1.489	0.136	Not Supported
H3	Ride Comfort > Customer Satisfaction	0.022	0.077	0.122	0.903	Not Supported
H4	Perceived Ease of Use > Customer Satisfaction	0.457	0.083	5.404**	0.000	Supported
H5	Perceived Usefulness > Customer Satisfaction	0.300	0.079	4.044**	0.000	Supported

Notes: $**p < 0.01$; $*p < 0.05$

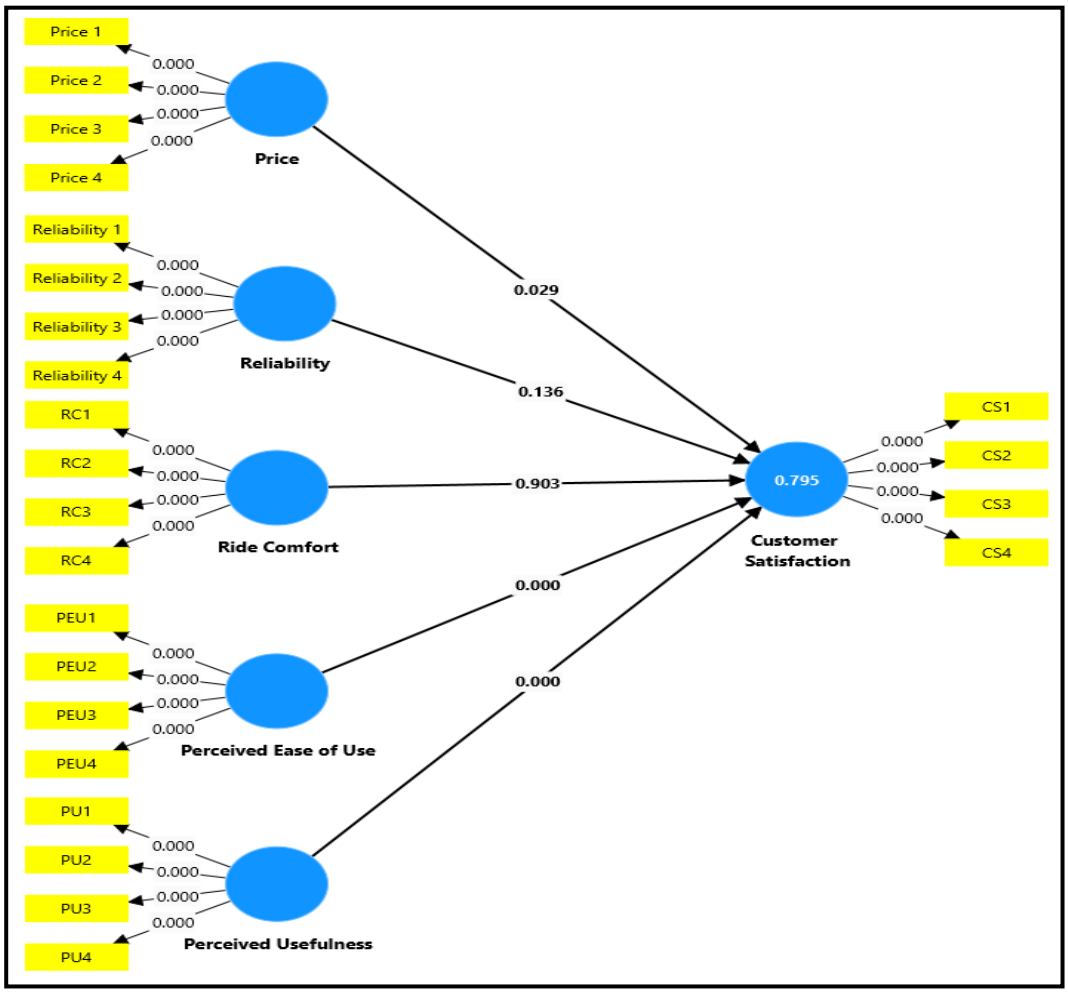

Fig. 2: Results of structural modelling analysis

4.3. Importance-Performance Matrix Analysis (IPMA)

The Importance-Performance Matrix Analysis (IPMA) was carried out to build on the structural model findings and provide a more practical view of customer satisfaction with Grab's ride-hailing service. Unlike the main analysis, which focuses on the strength of relationships between variables, IPMA also looks at how well each factor is currently performing from the user's perspective. As Hair et al. (2017) pointed out, it's often the factors that are highly important but underperforming that deserve the most attention from decision-makers.

In this study, IPMA was used to assess both the importance and performance of the key influencing factors, price, reliability, ride comfort, perceived ease of use, and perceived usefulness on customer satisfaction. The results, shown in Table 4 and Figure 3, provide a clearer picture of where improvements could make the most impact. The IPMA results offer added value by complementing the hypothesis testing. While hypothesis testing helps determine whether the relationships between variables are statistically significant, IPMA adds a practical layer by showing how well each factor is performing. This allows for more informed decision-making by highlighting which factors should be prioritised not just because they are important, but because they are currently falling short in performance. By combining both statistical and performance-based insights, the analysis offers a well-rounded understanding of where service enhancements are most needed.

Table 4. IPMA results for customer satisfaction

Latent variable	Customer Satisfaction	
	Direct effect (importance)	Index value (performance)
Perceived Ease of Use	0.448	80.390
Perceived Usefulness	0.320	81.472
Price	0.168	80.670
Reliability	0.031	71.355
Ride Comfort	0.011	80.331

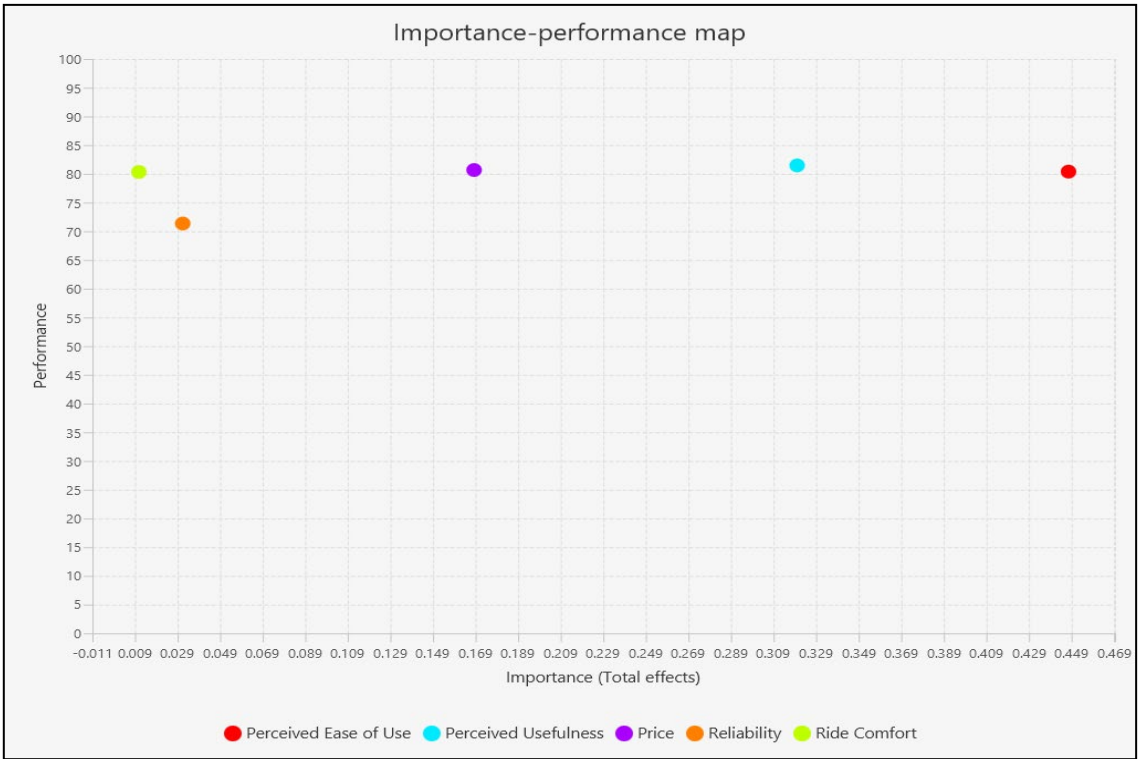

Fig. 3: Importance-Performance Map by constructs

The IPMA findings also revealed that perceived ease of use was the most important factor in customer satisfaction with the Grab ride-hailing service. A one-point increase in perceived ease of use performance leads to an increase in the performance of customer satisfaction towards ride-hailing with Grab service by a value of 0.448, while perceived usefulness will increase the performance of customer satisfaction towards ride-hailing with Grab service with the value of 0.320, the price will increase the performance of customer satisfaction towards ride-hailing with Grab service with the value of 0.168, and reliability will increase the performance of customer satisfaction towards ride-hailing with Grab service with the value of 0.031. Ride comfort's value increased the least for every increase in the performance of customer satisfaction towards ride-hailing with Grab service by 0.011. The IPMA analysis results outline the areas that need improvement in terms of factors influencing customer satisfaction towards ride-hailing with Grab service in the Malaysian context.

5. Discussion

This study offers meaningful insights into what shapes customer satisfaction with Grab's ride-hailing services. Five key factors were examined price, reliability, ride comfort, perceived ease of use, and

perceived usefulness. The results show that each of these elements plays a role, but not all carry the same weight. This gives us a clearer, more nuanced understanding of what really matters to customers when using Grab. The first hypothesis (H1) was supported, showing that price does have a positive influence on satisfaction. With a beta value of 0.159 and a p-value of 0.029, the effect is statistically significant, though modest. In other words, customers do care about pricing and tend to feel more satisfied when they believe they're getting good value for money. This supports previous findings by Hayder (2020) and Amarajaya et al. (2023), who also found that competitive pricing helps strengthen customer satisfaction. That said, price wasn't the strongest driver in this study. Compared to factors like how easy the app is to use or how useful it feels, price had a smaller impact. This suggests that while keeping fares fair is important, customers may value a smooth, hassle-free experience even more. The IPMA results back this up, showing that price is already performing quite well. So rather than focusing only on pricing, Grab could gain more by improving other areas like making the app more intuitive or ensuring consistent reliability. These are the touches that could make the biggest difference in how satisfied users feel overall.

The hypothesis that reliability (H2) influences customer satisfaction is not supported. Studies conducted by Yee and Salleh (2022) and Shang et. al. (2019) had identified reliability as the central feature of service quality and the primary predictor of customer satisfaction. However, our findings suggest that the reliability for Grab users may be less important. A possible explanation is that reliability can be perceived as a fundamental expectation rather than a distinguishing factor. Previous studies had respondents who were mostly aged 15 to 35, which could have set lower expectations of reliability. On the contrary, the survey includes 51.3% of respondents aged 31 and over who may have higher expectations and more precise satisfaction criteria and may evaluate aspects such as ease of use and technical features more highly. This deviation from previous studies highlights the expectations of different age groups within modern consumers in the context of app-based services.

In addition, the ride comfort hypothesis (H3) does not significantly influence customer satisfaction. The results contrast with Wan Zulkiffli et al. (2020), they found that the comfort of passengers is the main factor in achieving customer satisfaction with Malaysian passengers, especially in the Klang Valley region. Their study focuses on the population aged 15 to 39 and does not consider the diversity of ethnic groups. Besides, the study by Yaacob et al. (2022), which focused on only 195 respondents from the four states in Malaysia, also found that ride comfort significantly contributes to passengers' satisfaction. On the other hand, the study included a broader age range and a more diverse ethnic mix, with respondents from different regions and backgrounds. This diversity may impact the relative importance of ride comfort because different demographic groups may prioritise different aspects of the ride experience. Elderly respondents and people of different ethnic origins may focus on factors such as ease of use and perceived usefulness of services rather than comfort during driving. Furthermore, cultural and regional differences may be instrumental in forming customer expectations and satisfaction standards, leading to discrepancies between our findings and those of Wan Zulkiffli et al. (2020) and Yaacob et al. (2022).

Perceived ease of use affects customer satisfaction (H4) and is strongly supported. The finding emphasises intuitive and user-friendly application interfaces' vital role in improving customer satisfaction. Consequently, it has also validated by the IPMA results that the importance and performance of perceived ease of use greatly influenced customer satisfaction with the Grab ride-hailing service in Malaysia. Ease of use facilitates seamless booking and payment processes, reduces friction, and improves customer experience. Well, the finding is consistent with Bassey et al. (2024), who emphasise usability as the main factor of user satisfaction and adoption.

Lastly, perceived usefulness (H5) emerged as a significant predictor of customer satisfaction, with a beta value of 0.30 and a highly significant p-value ($p = 0.000$). This suggests that customers value Grab's practical features such as real-time tracking, fare estimates, and flexible transportation options which directly enhance convenience, efficiency, and the overall ride experience. These results are

consistent with core principles of the Technology Acceptance Model (TAM), which positions perceived usefulness as central to user acceptance and satisfaction with digital systems. This finding is also in line with the work of Olivia and Marchyta (2022), who observed that customers tend to be more satisfied when a service is perceived as functionally beneficial. Likewise, Zhong et al. (2022) found that users are more likely to choose ride-hailing services over traditional taxis when they benefit from app-based features like easier payments, shorter wait times, and greater convenience. These aligned findings reinforce that customers are not just looking for a ride they are looking for a smart, efficient, and valuable service experience.

Overall, the findings from this study reflect a shift in customer expectations, where technology-driven features like how useful and easy the service is to use are becoming more important than traditional aspects such as reliability and ride comfort. This change highlights how today's consumers, especially those familiar with digital platforms, are placing greater value on convenience and seamless user experiences. For service providers like Grab, this means that focusing on improving the app's functionality and user-friendliness could be more impactful than refining basic service features. Adapting to these evolving preferences is key to staying relevant and keeping customers satisfied in an increasingly digital world.

6. Conclusion

This study offers valuable insights not just from a theoretical perspective, but also in terms of practical application, particularly for ride-hailing providers like Grab aiming to enhance customer satisfaction.

From a theoretical standpoint, the results confirm that factors such as price, perceived ease of use, and perceived usefulness play meaningful roles in shaping how customers evaluate their experience. This reinforces the relevance of integrating technology acceptance theories when studying consumer behaviour in digital service environments. It also highlights the growing importance of tech-driven features, alongside more traditional service elements. Additionally, the noticeable variation in responses across age and ethnic groups suggests that customer satisfaction is not one-size-fits-all. These findings point to the need for more inclusive frameworks that reflect the diverse expectations of modern ride-hailing users.

From a practical standpoint, the broad demographic mix of Grab's customer base means there's no universal solution that fits all users. One clear takeaway is the importance of tailoring services to different user segments. For example, adjusting marketing and communication strategies based on age or region could help services feel more personal and relevant. While ride comfort wasn't a major factor in this study, it still contributes to overall perceptions of service quality. Ensuring clean vehicles, professional drivers, and a safe ride environment helps build a strong and trustworthy brand image.

The study also highlights several areas where Grab can take direct, actionable steps. Although price had only a moderate influence on satisfaction, it remains a key concern particularly during peak hours when surge pricing can lead to frustration. Enhancing pricing transparency, offering loyalty rewards, and clearly communicating fare changes in-app could help manage expectations and improve the perceived value of the service. This underlines the importance of continually enhancing the app's usability. Making the booking process more intuitive, improving response times, and integrating real-time support—such as chatbots or in-app assistance—can create a smoother experience, particularly for older users or those who may be less comfortable with technology. Even though reliability and comfort didn't have a major effect in this study, they shouldn't be overlooked. These may simply be baseline expectations things customers expect without necessarily appreciating unless something goes wrong. That means providers should continue focusing on consistency: making sure rides are on time, cars are clean, and service is dependable.

This study confirms that perceived ease of use, perceived usefulness, and price are significant drivers of customer satisfaction in Malaysia's Grab ride-hailing context. The findings suggest that while

traditional service elements like ride comfort and reliability are expected, they may no longer be distinguishing factors in satisfaction. These results have implications for service design, emphasizing the role of digital interface simplicity and functional benefits.

7. Limitations and Future Research

While this study offers valuable insights into customer satisfaction within Malaysia's ride-hailing sector, several limitations should be acknowledged. The research was conducted using a cross-sectional design and convenience sampling, which may limit the ability to draw causal conclusions. As the data reflects a single point in time, it may not fully capture the dynamic nature of consumer behaviour, especially in a fast-evolving digital service landscape. Additionally, since the study was confined to the Malaysian context, caution should be taken when generalising the findings to other countries or cultural settings.

Future studies could consider a longitudinal design to better understand how satisfaction drivers change over time as user need and technology advance. Expanding the research to include diverse geographical areas or cross-cultural comparisons would also help clarify whether the factors identified here hold true in other settings. Employing more representative sampling techniques would further improve the reliability and applicability of the findings.

In addition, integrating qualitative methods such as interviews or focus groups could offer deeper insights into users' expectations and experiences, providing a more holistic view of what drives satisfaction. While this study did not include a mediator, future research may explore constructs such as trust, perceived control, or digital confidence as possible mediating or moderating factors. It would also be beneficial to explore customer satisfaction across varied demographic groups and regional markets, which may reveal cultural or local nuances that influence perceptions of ride-hailing services.

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