

JEL Classification: M31, L81

The Impact of Price Transparency, Safe Transactions, and Delivery Performance on E-commerce Performance in Indonesian Online Supermarkets

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Purpose: This empirical study examines the impact of key factors on E-commerce Performance and Digital Customer Retention in the online supermarket industry in Indonesia. The research utilizes a quantitative approach with structural equation modeling (SEM) and gathers data through a cross-sectional survey conducted among online supermarket customers. The survey instrument includes questions related to price transparency, online shopping interface, safe transaction, delivery performance (independent variables), and E-commerce Performance and Digital Customer Retention (dependent variables).

Design/Method/Approach: The analysis, based on data from 228 respondents, reveals that Delivery Performance and E-commerce Performance play critical roles in determining overall E-commerce Performance. Additionally, Price Transparency emerges as a crucial factor significantly influencing Digital Customer Retention. However, Online Shopping Interface and Safe Transaction demonstrate limited impact on both E-commerce Performance and Digital Customer Retention.

Findings: The study shows a positive link between E-commerce Performance and Digital Customer Retention, identifying gaps in understanding factors like website design, pricing, and product quality. To improve retention, businesses should enhance online presence, prioritize customer experience, and focus on Delivery Performance, E-commerce Performance, and Price Transparency. Safe Transaction and Online Shopping Interface have a smaller impact. Mediation tests reveal these factors indirectly affect retention through E-commerce Performance. Price Transparency lacks a significant indirect effect. Future research could explore more factors, contexts, and methodologies.

Theoretical Implications: Theoretical implications of the study contribute to the understanding of the essential factors that influence E-commerce Performance and Digital Customer Retention within the context of online supermarkets in Indonesia. The findings emphasize the significance of delivery reliability, price transparency, and overall E-commerce Performance in driving customer satisfaction and retention.

Practical Implications: Practically, the research offers valuable insights for businesses operating in the online supermarket industry in Indonesia. To retain digital customers and enhance overall business success, companies should prioritize optimizing their delivery processes, enhancing price transparency, and improving E-commerce Performance. Implementing policies that promote reliable delivery, transparent pricing, and a conducive online shopping environment could positively impact the online supermarket industry and the broader e-commerce landscape.

Originality/Value: The research contributes to existing literature by focusing on the online supermarket industry in Indonesia and exploring the specific impact of key factors on E-commerce Performance and Digital Customer Retention. These findings offer valuable insights to researchers and industry practitioners interested in understanding e-commerce success factors.

Research Limitations/Future Research: The study's limitations include its concentration on online supermarkets in Indonesia, potentially limiting generalizability. Future research could broaden the scope to include other online retailers and countries. Additionally, exploring other potential influential factors and utilizing diverse research methods could provide a more comprehensive understanding of e-commerce success. In conclusion, this study provides valuable insights into the factors influencing E-commerce Performance and Digital Customer Retention in the online supermarket industry in Indonesia. The findings underscore the importance of delivery reliability, price transparency, and overall E-commerce Performance in enhancing customer satisfaction and retention. The research has practical implications for businesses and potential social implications for policymakers, making valuable contributions to the existing literature in the field of e-commerce.

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Вплив прозорості цін, безпечних транзакцій та ефективності доставки на ефективність електронної комерції в індонезійських онлайн-супермаркетах

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Мета роботи: Це емпіричне дослідження вивчає вплив ключових факторів на ефективність електронної комерції та утримання цифрових клієнтів в індустрії онлайн-супермаркетів в Індонезії. Дослідження використовує кількісний підхід з моделюванням структурних рівнянь (SEM) і збирає дані за допомогою перехресного опитування, проведеного серед клієнтів онлайн-супермаркетів. Інструмент опитування включає питання, пов'язані з прозорістю цін, інтерфейсом онлайн-покупок, безпекою транзакцій, ефективністю доставки (незалежні змінні), а також ефективністю електронної комерції та цифровим утриманням клієнтів (залежні змінні).

Дизайн / Метод / Підхід дослідження: Аналіз, проведений на основі даних 228 респондентів, показав, що ефективність доставки та ефективність електронної комерції відіграють вирішальну роль у визначенні загальної ефективності електронної комерції. Крім того, прозорість цін виявляється вирішальним фактором, що суттєво впливає на утримання цифрових клієнтів. Водночас, інтерфейс онлайн-покупок та безпека транзакцій демонструють обмежений вплив як на ефективність електронної комерції, так і на утримання цифрових клієнтів.

Результати дослідження: Дослідження демонструє позитивний зв'язок між ефективністю електронної комерції та утриманням цифрових клієнтів, а також виявляє прогалини в розумінні таких факторів, як дизайн веб-сайтів, ціноутворення та якість продукції. Щоб покращити утримання клієнтів, компаніям слід посилити присутність в Інтернеті, надати пріоритет клієнтському досвіду та зосередитися на ефективності доставки, ефективності електронної комерції та прозорості цін. Безпека транзакцій та інтерфейс інтернет-магазину мають менший вплив. Тести посередництва показують, що ці фактори опосередковано впливають на утримання клієнтів через ефективність електронної комерції. Прозорість цін не має значного опосередкованого впливу. Майбутні дослідження дозволять вивчити більше факторів, контекстів та методологій.

Теоретична цінність дослідження: Теоретичні висновки дослідження сприяють розумінню основних факторів, які впливають на ефективність електронної комерції та утримання цифрових клієнтів в контексті онлайн-супермаркетів в Індонезії. Результати дослідження підкреслюють важливість надійності доставки, прозорості цін та загальної ефективності електронної комерції для підвищення рівня задоволеності та утримання клієнтів.

Практична цінність дослідження: На практиці дослідження пропонує цінну інформацію для компаній, що працюють в індустрії онлайн-супермаркетів в Індонезії. Щоб утримати цифрових клієнтів і підвищити загальний успіх бізнесу, компаніям слід визначити пріоритетами оптимізацію процесів доставки, підвищення прозорості цін і покращення ефективності електронної комерції. Впровадження політик, які сприяють надійній доставці, прозорому ціноутворенню та доставку, прозоре ціноутворення та сприятливе середовище для онлайн-покупок, може позитивно вплинути на індустрію онлайн-супермаркетів та ширший ландшафт електронної комерції.

Оригінальність / Цінність дослідження: Дослідження робить внесок в існуючу літературу, зосереджуючись на індустрії онлайн-супермаркетів в Індонезії та вивчаючи конкретний вплив ключових факторів на ефективність електронної комерції та утримання цифрових клієнтів. Ці висновки пропонує цінну інформацію для дослідників і практиків галузі, зацікавлених у розумінні факторів успіху електронної комерції.

Обмеження дослідження / Майбутні дослідження: Обмеження дослідження включають його концентрацію на онлайн-супермаркетах в Індонезії, що потенційно обмежує можливість узагальнення. Майбутні дослідження можуть розширити сферу дослідження, включивши в неї інші інтернет-магазини та країни. Крім того, вивчення інших потенційних факторів впливу та використання різноманітних методів дослідження може забезпечити більш повне розуміння успіху електронної комерції. Отже, це дослідження надає цінну інформацію про фактори, що впливають на ефективність електронної комерції та утримання цифрових клієнтів в індустрії онлайн-супермаркетів в Індонезії. Результати дослідження підкреслюють важливість надійності доставки, прозорості цін та загальної ефективності електронної комерції для підвищення рівня задоволеності та утримання клієнтів. Дослідження має практичне значення для бізнесу та потенційні соціальні наслідки для політиків, роблячи цінний внесок в існуючу літературу в галузі електронної комерції.

Тип статті: Емпіричний

Ключові слова: прозорість цін, безпечні транзакції, ефективність доставки, ефективність електронної комерції, цифрові технології утримання клієнтів.

1. Introduction

With the rise of the digital age, e-commerce has been on the rise and has greatly impacted the retail industry. In Indonesia, e-commerce has seen a significant increase in recent years. One particular sector that has been rapidly growing is the online supermarket industry. According to a report by Google and Temasek, Indonesia's e-commerce market size is expected to reach USD 133 billion by 2025, with the online grocery market projected to grow significantly. However, as more players enter the online supermarket industry, the competition is becoming increasingly intense. Thus, understanding the factors that influence e-commerce performance and digital customer retention has become critical.

According to a study by Arora et al. (2021), e-commerce sales in Indonesia are expected to reach \$82 billion by 2025, driven by increasing internet penetration and smartphone usage. Another study by Indradjaja (2021) highlighted the importance of price transparency and online customer experience in enhancing customer satisfaction and loyalty in the e-commerce industry. These findings underscore the need for further research to explore the drivers of e-commerce performance and customer retention in the online supermarket sector in Indonesia.

Some of the relevant studies have been conducted by Huda, Adha, and Pujarama (2019), Ramli et al. (2020), and Rahman et al. (2020) and Although these studies have examined various factors that affect e-commerce performance and customer retention, none of them have focused specifically on the impact of price transparency, online shopping interface, safe transactions, and delivery performance on digital customer retention in the online supermarket industry in Indonesia.

Therefore, this study aims to fill this research gap by investigating the impact of these factors on e-commerce performance and digital customer retention in the online supermarket industry in Indonesia. By doing so, this study will contribute to the understanding of the factors that drive customer behavior in the context of e-commerce, specifically in the online supermarket industry, and provide insights for e-commerce businesses in Indonesia to improve their performance and customer retention.

2. Theoretical Background

The literature review is an essential element of any research study as it provides a foundation for the study. It is a process of systematic and critical evaluation of existing literature, research, and scholarly publications related to the research question. A thorough and well-conducted literature review helps researchers to identify research gaps, understand key concepts, theories, and methods relevant to the research question, and provide a context for the study.

2.1. Price Transparency

Several studies have investigated the relationship between price transparency and e-commerce performance in the online supermarket industry. For instance, Khandpur et al. (2020) and Gerpott, and Berends (2022) conducted a comparative analysis of different online supermarkets and found that those with higher levels of price transparency experienced higher levels of customer satisfaction and repurchase intentions. They suggested that price transparency contributes to building trust and enhancing customer loyalty.

In a longitudinal study by Octaviani, and Rizan (2021), the impact of price transparency on customer satisfaction and loyalty in Indonesian online supermarkets was examined. The findings revealed a positive relationship between price transparency and customer satisfaction, leading to increased customer loyalty over time. This suggests that online supermarkets can leverage price transparency as a strategic tool to improve customer retention.

Additionally, Devita (2020) conducted a comparative study on the impact of price transparency on e-commerce performance in Indonesian online supermarkets. They found that online supermarkets that provided clear and transparent pricing information had higher levels of trust from customers, leading to increased e-commerce performance in terms of sales and customer acquisition.

Furthermore, the influence of price transparency on customer decision-making in the online supermarket industry was explored by Hanna, Lemon, and Smith (2019). Their experimental study revealed that customers who were presented with transparent pricing information made more informed purchasing decisions and had higher levels of satisfaction with their shopping experience.

It is worth noting that price transparency alone may not be sufficient to guarantee e-commerce success. Delivery performance is another crucial factor in the overall customer experience. A study by Warganegara, and Babolian Hendijani (2022) examined the influence of delivery performance on e-commerce performance in Indonesian online supermarkets. They found that while price transparency positively affected customer satisfaction, delivery performance played a significant role in overall e-commerce performance and customer retention.

In conclusion, price transparency is an important factor in the success of online supermarkets. It contributes to customer satisfaction, trust, and loyalty, ultimately impacting e-commerce performance and digital customer retention. However, it should be noted that price transparency should be complemented by other aspects such as delivery performance to provide a comprehensive and satisfying online shopping experience for customers.

2.2. Online Shopping Interface

The online shopping interface plays a crucial role in the success of e-commerce platforms, as it directly influences users' perception of ease of use, usefulness, and overall satisfaction.

The advancement of technology and the internet has made online shopping more accessible and convenient for consumers worldwide. In Indonesia, the e-commerce industry has experienced substantial growth, particularly in the online grocery shopping sector. As customers increasingly shift from traditional brick-and-mortar stores to online platforms, it becomes essential to understand the factors that contribute to e-commerce performance and digital customer retention.

This study focuses on examining the impact of online shopping interface on e-commerce performance and digital customer retention in online supermarkets in Indonesia. The online shopping interface refers to the design, layout, functionality, and overall users' experience of an e-commerce website or application. It encompasses various aspects such as navigation, search functionality, product presentation, shopping cart, checkout process, and payment options.

The Technology Acceptance Model (TAM) provides a theoretical framework to understand users' acceptance and adoption of new technologies. According to TAM, perceived ease of use and perceived usefulness are critical determinants influencing users' acceptance of technology. In the context of online shopping, the user-friendly and intuitive design of the shopping interface can enhance users' perception of ease of use and usefulness, leading to a positive attitude towards the e-commerce platform.

The online shopping interface has a direct impact on users' satisfaction, purchase behavior, and digital customer retention. A well-designed interface that offers seamless navigation, clear product information, and efficient checkout processes can enhance users' satisfaction and increase their likelihood of making purchases. Moreover, a positive shopping experience through a user-friendly interface can contribute to customer loyalty and encourage repeat purchases, thus improving digital customer retention.

Understanding the role of online shopping interface in e-commerce performance and digital customer retention is essential for online supermarkets in Indonesia. By focusing on improving the design and functionality of their interfaces, online supermarkets can enhance user satisfaction, increase customer engagement, and ultimately drive business growth. Furthermore, addressing any potential issues or barriers related to the interface can lead to improved customer experiences and higher levels of digital customer retention.

In conclusion, online shopping interface is a critical factor in influencing users' perception of ease of use, usefulness, and overall satisfaction with e-commerce platforms. Its impact extends to users' purchase behavior and digital customer retention (Guo, Zhang, & Xia, 2023; Saoula et al., 2023). By recognizing the significance of online shopping interface and implementing strategies to enhance its design and functionality, online supermarkets in Indonesia can create a positive user experience, foster customer loyalty, and achieve sustainable growth in the competitive e-commerce market.

2.3. Safe Transactions

Safe transactions are a fundamental aspect of online shopping experience that significantly influences customer confidence and trust in e-commerce platforms. With the increasing prevalence of online fraud and identity theft, customers are concerned about safety and security of their transactions when making purchases online. Therefore, it is crucial to e-commerce businesses to prioritize and ensure safe transaction processes to address these concerns and build trust with their customers.

One of the primary objectives of implementing safe transaction measures is to enhance payment security. E-commerce platforms can employ various security protocols, such as SSL (Secure Socket Layer) encryption, to protect customer payment information during the transmission process. SSL encryption encrypts sensitive data, such as credit card details, preventing unauthorized access and ensuring that customer information remains confidential. By incorporating such security measures, e-commerce platforms can instill a sense of trust in customers, assuring them that their financial information is safe and secure.

Furthermore, implementing additional security measures like two-factor authentication can provide an extra layer of protection. Two-factor authentication requires customers to provide additional verification, such as a unique code sent to their mobile device, along with their login credentials. This added step significantly reduces the risk of unauthorized access to customer accounts, further strengthening safety of transactions.

Effective fraud detection systems are also crucial to safe transactions. E-commerce platforms can employ advanced algorithms and artificial intelligence (AI) to identify and prevent fraudulent activities. These systems analyze patterns, detect anomalies, and flag suspicious transactions, allowing businesses to take immediate action and protect both customers and the platform from fraudulent behavior.

By prioritizing safe transactions, e-commerce platforms can reduce cart abandonment rates. Customers often abandon their carts during the checkout process if they have concerns about the security of their transactions. When customers perceive a platform as unsafe or untrustworthy, they are more likely to abandon their purchases, resulting in lost sales and reduced customer retention. Ensuring safe transactions can mitigate these concerns and encourage customers to complete their purchases, leading to improved e-commerce performance.

Moreover, safe transactions contribute to customer trust and loyalty. When customers have positive experiences with secure transactions, they develop a higher level of trust in the platform. Trust is a crucial element in building long-term relationships with customers, as it fosters loyalty and encourages repeat purchases. By prioritizing safe transactions, e-commerce platforms in the Indonesian online supermarket industry can strengthen customer

trust, enhance customer retention, and establish a positive brand image.

In conclusion, safe transactions play a critical role in the success of e-commerce platforms. Implementing security measures such as SSL encryption, two-factor authentication, and fraud detection systems not only protects customer information but also enhances payment security, reduces cart abandonment rates, and fosters customer trust and loyalty. By prioritizing safe transactions, online supermarkets in Indonesia can improve their e-commerce performance, increase digital customer retention, and create a secure and trustworthy environment for their customers.

2.4. Delivery Performance

Delivery performance is crucial to e-commerce, measuring online retailers' ability to promptly and efficiently deliver products to customers. It directly impacts customer satisfaction and loyalty.

This review examines delivery performance's impact on e-commerce and digital customer retention in Indonesian online supermarkets. Timely delivery is vital for online supermarkets, influencing customer satisfaction and loyalty. Delayed orders or delivery issues can negatively affect satisfaction, while prompt delivery boosts satisfaction, word-of-mouth, and repeat purchases. Delivery Performance is linked to service quality and expectancy-disconfirmation theory. Strong delivery performance positively affects satisfaction, loyalty, trust, and lifetime value, improving e-commerce and customer retention in Indonesian online supermarkets.

2.5. E-Commerce Performance

E-commerce has transformed the way consumers shop for goods and services. In recent years, e-commerce has gained popularity due to its convenience and accessibility, especially during the COVID-19 pandemic. With the growing competition in the online market, e-commerce performance has become a crucial factor for online retailers to stay ahead of their competitors. This literature review aims to examine the existing studies on e-commerce performance, its determinants, and its impact on digital customer retention.

Several studies have identified the determinants of e-commerce performance. Sharma, and Aggarwal (2019) found that website quality, customer service, and logistics management were significant determinants of e-commerce performance. In a study on e-commerce in the fashion industry, Lin (2007) found that website design, website content, and user experience significantly impacted e-commerce performance. Another study by Zhu et al. (2011) identified trust, security, and privacy as significant determinants of e-commerce performance.

The Resource-Based View (RBV) of the firm can provide a theoretical basis for the concept of e-commerce performance. According to RBV, a firm's competitive advantage is derived from its unique and valuable resources and capabilities. In the context of e-commerce, a well-designed and efficient online shopping interface, reliable delivery performance, safe transactions, and transparent pricing can all be considered valuable resources and capabilities that can contribute to a firm's overall e-commerce performance and competitiveness in the market.

2.6. Digital Customer Retention

In today's digital age, customers have access to a plethora of online shopping platforms, and the competition among e-commerce businesses has intensified. Therefore, retaining customers has become a critical aspect of e-commerce performance. The concept of digital customer retention has emerged as a key variable in the e-commerce domain. The present study aims to investigate the impact of price transparency, online shopping interface, safe transactions, and delivery performance on e-commerce performance and digital customer retention in the context of online supermarkets in Indonesia.

The Customer Retention Theory suggests that customer retention is a critical factor for the success of any business. The theory argues that retaining existing customers is more cost-effective than acquiring new customers, and therefore, it is essential to focus on keeping customers loyal. In the e-commerce context, customer retention can be measured by the frequency of repeat purchases, the length of the customer lifecycle, and the likelihood of recommending the brand to others. The theoretical basis for the variable “Digital Customer Retention” in this research is rooted in the importance of customer loyalty in the e-commerce context, and the various factors that can influence customer behavior and retention, including customer satisfaction, technology acceptance, and social exchange.

3. Methodology

The purpose of this study is to examine the impact of price transparency, online shopping interface, safe transactions, and delivery performance on e-commerce performance and digital customer retention in the online supermarket industry in Indonesia. To accomplish this goal, a quantitative research approach using structural equation modeling (SEM) was used.

The study employed a cross-sectional design, collecting data from a sample of online supermarket customers in Indonesia. The survey instrument consisted of questions related to the independent and dependent variables of the study. The independent variables included price transparency, online shopping interface, safe transactions, and delivery performance. The dependent variables were e-commerce performance and digital customer retention. The survey was administered through online platforms, and the data collected was anonymised to ensure confidentiality. The questionnaire is available in the Appendix.

The study was conducted among online supermarket shoppers in Indonesia. The sample was selected using a purposive sampling technique to ensure that the participants were representative of the population. The sample size was determined using the recommended sample size calculator for SEM, which requires at least 10 participants for each item in the survey instrument. Based on the number of items in the survey instrument, a minimum sample size was to be 200 participants.

Hypothesis

In this study, we aim to investigate the impact of four key factors on e-commerce performance and digital customer retention in the context of online supermarkets in Indonesia. These factors are price transparency, online shopping interface, safe transaction, and delivery performance.

H1: Price Transparency will have a positive impact on E-commerce Performance.

H2: Price Transparency will have a positive impact on Digital Customer Retention.

H3: Online Shopping Interface will have a positive impact on E-commerce Performance.

H4: Online Shopping Interface will have a positive impact on Digital Customer Retention.

H5: Safe Transaction will have a positive impact on E-commerce Performance.

H6: Safe Transaction will have a positive impact on Digital Customer Retention.

H7: Delivery Performance will have a positive impact on E-commerce Performance.

H8: Delivery Performance will have a positive impact on Digital Customer Retention.

H9: E-commerce Performance will have a positive impact on Digital Customer Retention.

4. Results and Discussions

The survey collected data from 228 respondents, comprising 53.5% women and 46.5% men. The majority of respondents are between 20 to 39 years old (51.8%), have completed a diploma or undergraduate degree (51.8%), and live in the Jabodetabek region (74.6%). In terms of monthly income, the largest group of the respondents earn between 5-15 million rupiahs (50.4%), and the most common occupation is private employees (39.9%).

Among the online grocery platforms that the respondents used in the last month, ShopeeMart is the most popular (33.8%), followed by GoMart (15.4%) and SayurBox (16.7%). In terms of spending, most respondents spend less than or equal to 250,000 rupiahs per month (44.3%) and shop online groceries once a week (41.7%).

Overall, the analysis shows that online grocery platforms are popular among the young and educated population with relatively higher income, mostly living in the Jabodetabek region. ShopeeMart is the preferred platform, and most of the respondents purchase daily needs products.

4.1. Validity

Table 1 below shows the results of a validity analysis, specifically outer loadings, for a set of constructs related to delivery performance, digital customer retention, e-commerce performance, online shopping interface, price transparency, and safe transactions. The analysis assesses the extent to which the measured indicators (DCR1-3, DPR1-4, ECP1-3, OSI1-3, PTR1-3, STR1-3) are related to their corresponding constructs.

The results indicate that all measured indicators are significantly related to their corresponding constructs, as evidenced by high outer loading values. For example, all three measured indicators for digital customer retention (DCR1-3) have high outer loadings ranging from .873 to .927, indicating that they are all strong indicators of the construct.

Overall, the results suggest that the measured indicators are valid and reliable indicators of their corresponding constructs, and can be used to accurately measure and assess various dimensions of e-commerce performance.

4.2. Reliability

Table 2 below shows the results of Construct Reliability analysis for six different constructs, namely Delivery Performance, Digital Customer Retention, E-commerce Performance, Online Shopping Interface, Price Transparency, and Safe Transaction.

Table 2: Construct Reliability

	Composite Reliability	Average Variance Extracted (AVE)
Delivery Performance	.886	.659
Digital Customer Retention	.930	.816
E-commerce Performance	.922	.797
Online Shopping Interface	.881	.712
Price Transparency	.931	.819
Safe Transaction	.874	.699

Source: Research Results, 2023

The Composite Reliability measures how consistent the responses to the items measuring each construct are, with higher scores indicating greater reliability. All constructs score highly on this measure, with scores ranging from .874 to .931, suggesting high internal consistency reliability for each construct.

The Average Variance Extracted (AVE) measures the amount of the variance captured by the construct relative to the measurement error, with higher scores indicating greater validity. All constructs score moderately to highly on this measure, with scores ranging from .659 to .819, suggesting that each construct is a valid measure of the underlying construct it purports to measure.

Table 1: Outer Loadings

	Delivery Performance	Digital Customer Retention	E-commerce Performance	Online Shopping Interface	Price Transparency	Safe Transaction
DCR1		.910				
DCR2		.927				
DCR3		.873				
DPR1	.816					
DPR2	.839					
DPR3	.788					
DPR4	.803					
ECP1			.915			
ECP2			.908			
ECP3			.854			
OSI1				.873		
OSI2				.866		
OSI3				.789		
PTR1					.876	
PTR2					.918	
PTR3					.921	
STR1						.849
STR2						.857
STR3						.800

Source: Research Results, 2023

4.3. Hypothesis testing

The purpose of presenting a diagram is to provide an overview of the relationship between variables in a clear and concise manner. It allows the reader to visualize the relationship and understand the nature of the relationship between the variables. Fig. 1 is presented to provide an illustration of the

relationship between the variables.

Tab. 3 below shows the results of hypothesis testing for the path coefficients between constructs in the research model. The null hypothesis for each test is that there is no significant relationship between the two constructs, and the alternative hypothesis is that there is a significant relationship.

Table 3: Path Coefficients

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Delivery Performance -> Digital Customer Retention	.169	.166	.072	2.359	.019
Delivery Performance -> E-commerce Performance	.480	.480	.056	8.501	.000
E-commerce Performance -> Digital Customer Retention	.535	.532	.081	6.562	.000
Online Shopping Interface -> Digital Customer Retention	-.001	.001	.049	.020	.984
Online Shopping Interface -> E-commerce Performance	.151	.152	.050	3.045	.002
Price Transparency -> Digital Customer Retention	.194	.194	.052	3.733	.000
Price Transparency -> E-commerce Performance	.030	.031	.046	.655	.513
Safe Transaction -> Digital Customer Retention	.072	.076	.067	1.078	.282
Safe Transaction -> E-commerce Performance	.320	.323	.066	4.820	.000

Source: Research Results, 2023

For the Delivery Performance -> Digital Customer Retention path, the T-statistic of 2.359 is greater than the critical value of 1.96 for a two-tailed test at the .050 significance level. Therefore, we reject the null hypothesis and conclude that there is a significant positive relationship between Delivery Performance and Digital Customer Retention.

In the Delivery Performance -> E-commerce Performance path, the T-statistic of 8.501 exceeds the critical value of 1.96 for a two-tailed test at the .050 significance level. Hence, the null hypothesis is rejected, and it is concluded that there exists a significant positive relationship between Delivery Performance and E-commerce Performance.

Based on the research gaps identified and the statistical results provided, it can be inferred that Delivery Performance has a significant positive relationship with both Digital Customer Retention and E-commerce Performance. However, the existing literature does not provide a clear understanding of the underlying mechanisms and specific factors that contribute to these relationships. Therefore, further research is required to explore

these aspects and provide a more comprehensive understanding of the relationship between Delivery Performance and Digital Customer Retention and E-commerce Performance.

The significant positive relationship between Delivery Performance and Digital Customer Retention and E-commerce Performance underscores the importance of delivery reliability and speed in enhancing customer satisfaction and business performance. Therefore, e-commerce businesses should prioritize investing in delivery optimization technologies and providing seamless and personalized customer experience to enhance their delivery performance, customer retention, and overall e-commerce performance.

The T-statistic of 6.562 for the E-commerce Performance -> Digital Customer Retention path exceeds the critical value of 1.96 for a two-tailed test at the .050 significance level. As a result, the null hypothesis is rejected, and it is concluded that there is a significant positive relationship between E-commerce Performance and Digital Customer Retention.

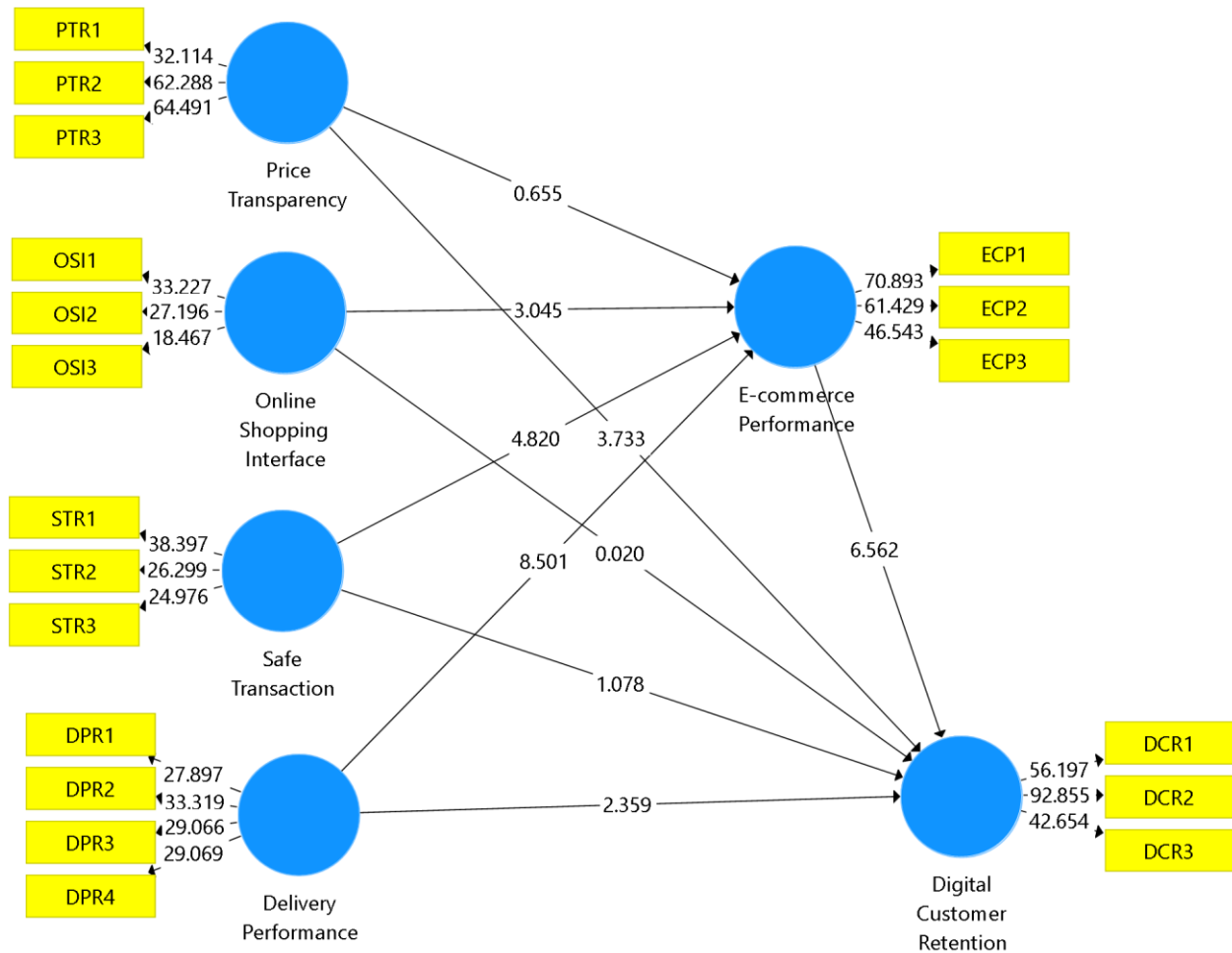


Figure 1: The relationship between variables

Source: Research Results, 2023

While the above statement indicates a significant positive relationship between E-commerce Performance and Digital Customer Retention, there are several research gaps in this area. For example, there is a need to investigate the impact of various factors, such as website design, pricing, and product quality, on digital customer retention. Additionally, research is needed to explore the effect of customer satisfaction and loyalty on digital customer retention.

Based on the current understanding of the relationship between E-commerce Performance and Digital Customer Retention, businesses should focus on improving their online presence and customer experience to increase customer retention. This includes investing in website design, providing competitive pricing, and offering high-quality products. Additionally, companies should prioritize customer satisfaction and loyalty programs to build long-term relationships with their customers. Finally, future research in this area should focus on identifying the most effective strategies for improving digital customer retention and developing a comprehensive understanding of the factors that influence customer behavior in the online marketplace.

The T-statistic of .020 for the Online Shopping Interface → Digital Customer Retention path is not statistically significant ($p > .050$), indicating no relationship between the variables. For the Online Shopping Interface → E-commerce Performance path, the T-statistic of 3.045 is statistically significant ($p < .050$), indicating a positive relationship between the variables. Price transparency shows a significant positive relationship with digital customer retention (T-statistic = 3.733, $p < .050$). There is no statistically significant relationship between Price Transparency and E-commerce Performance (T-statistic = .655, $p > .050$). Safe Transaction does not

show a significant relationship with Digital Customer Retention (T-statistic = 1.078, $p > .050$). Safe Transaction has a significant positive relationship with E-commerce Performance (T-statistic = 4.820, $p < .050$).

These findings suggest that businesses should prioritize Delivery Performance and E-commerce Performance to improve Digital Customer Retention. Price Transparency can also enhance both Digital Customer Retention and E-commerce Performance. However, investments in Safe Transaction or Online Shopping Interface may not significantly impact Digital Customer Retention. Nevertheless, improving these aspects can still enhance overall customer experience and satisfaction.

By referring to the path coefficients presented in Tab. 3, the subsequent structural equations for the endogenous variables for E-commerce Performance (ECP) and Digital Customer Retention (DCR) can be written as follows:

$$DCR = 0.169 * Delivery\ Performance + 0.535 * E-commerce\ Performance + 0.001 * Online\ Shopping\ Interface + 0.194 * Price\ Transparency + 0.072 * Safe\ Transaction + error\ term$$

$$ECP = 0.480 * Delivery\ Performance + 0.151 * Online\ Shopping\ Interface + 0.030 * Price\ Transparency + 0.320 * Safe\ Transaction + error\ term$$

From the given regression equations, it can be determined the variables that have the most influence on Digital Customer Retention (DCR) and E-commerce Performance (ECP).

For DCR, the variable with the highest coefficient is E-commerce Performance (0.535), followed by Price Transparency (0.194), Delivery Performance (0.169), Safe Transaction (0.072), and Online

Shopping Interface (.001). This implies that E-commerce Performance has the most significant influence on DCR, and is a crucial factor for retaining digital customers. Price Transparency and Delivery Performance also have a notable impact on DCR, indicating that customers value transparency in pricing and timely delivery of their orders. However, Online Shopping Interface has the least influence on DCR, suggesting that it is not so critical for retaining digital customers.

For ECP, the variable with the highest coefficient is Delivery Performance (.480), followed by Safe Transaction (.320), Online Shopping Interface (.151), and Price Transparency (.030). This

suggests that Delivery Performance is the most important factor in determining ECP, as customers value timely delivery of their orders. Safe Transaction is also a significant factor, indicating that customers prefer secure and trustworthy online transactions. Online Shopping Interface and Price Transparency have a lesser influence.

The mediation test was conducted to examine the indirect effects of the independent variables, namely Delivery Performance, Online Shopping Interface, Price Transparency, and Safe Transaction, on Digital Customer Retention through the mediator variable, E-commerce Performance. The results of the mediation analysis are described in *Tab. 4*.

Table 4: Mediation Test

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Delivery Performance -> E-commerce Performance -> Digital Customer Retention	.257	.255	.049	5.187	.000
Online Shopping Interface -> E-commerce Performance -> Digital Customer Retention	.081	.080	.029	2.786	.006
Price Transparency -> E-commerce Performance -> Digital Customer Retention	.016	.016	.025	.649	.517
Safe Transaction -> E-commerce Performance -> Digital Customer Retention	.171	.172	.044	3.850	.000

Source: Research Results, 2023

First, for the Delivery Performance -> E-commerce Performance -> Digital Customer Retention path, the analysis revealed a significant indirect effect. The original sample coefficient for this path was .257, and the t-statistic of 5.187 indicated a highly significant relationship ($p < .001$). These findings suggest that Delivery Performance has a positive impact on Digital Customer Retention through its influence on E-commerce Performance.

Next, the mediation test also indicated a significant indirect effect on the Online Shopping Interface -> E-commerce Performance -> Digital Customer Retention path. The original sample coefficient for this path was .081, with the t-statistic of 2.786 ($p = .006$). These results suggest that an improved Online Shopping Interface contributes to higher E-commerce Performance, which, in turn, leads to increased Digital Customer Retention.

On the other hand, the mediation analysis did not find a significant indirect effect on the Price Transparency -> E-commerce Performance -> Digital Customer Retention path. The coefficient for this path was .016, and the t-statistic of .649 ($p = .517$) indicated that the relationship was not statistically significant. These results suggest that Price Transparency may not play a significant role in influencing E-commerce Performance and, consequently, Digital Customer Retention.

Finally, the Safe Transaction -> E-commerce Performance -> Digital Customer Retention path showed a significant indirect effect. The original sample coefficient for this path was .171, and the t-statistic of 3.850 indicated a significant relationship ($p < .001$). These findings imply that a secure and trustworthy transaction process positively influences E-commerce Performance, leading to improved Digital Customer Retention.

In summary, the mediation test results indicate that Delivery Performance, Online Shopping Interface, and Safe Transaction have significant indirect effects on Digital Customer Retention through their influence on E-commerce Performance. These findings highlight the importance of these factors in driving E-commerce Performance and subsequently influencing Digital Customer Retention in the online supermarket industry. However, the analysis did not find a significant mediation effect on Price Transparency. These findings provide valuable insights for online supermarkets in Indonesia to enhance their E-commerce Performance and improve Digital Customer Retention by prioritizing Delivery Performance, Online Shopping Interface, and Safe Transaction.

5. Conclusion

The results of this study provide valuable insights into the factors that influence E-commerce Performance and Digital Customer Retention (DCR) in the context of online supermarkets in Indonesia. The findings suggest that Delivery Performance and E-commerce Performance are the most critical factors in determining E-commerce Performance, with Delivery Performance having the strongest impact.

Furthermore, the study found that E-commerce Performance and Price Transparency were the most significant factors influencing DCR. Online Shopping Interface and Safe Transaction were found to have little to no significant impact on either E-commerce Performance or DCR.

The implications of these findings are that businesses should focus on improving their delivery systems and overall E-commerce Performance to retain digital customers and improve their E-commerce Performance. They should also prioritize price transparency to enhance DCR.

Governments and policymakers can use these findings to inform policy decisions related to the e-commerce industry. They can consider implementing regulations or standards to ensure timely and reliable delivery of online orders, promote transparency in pricing, and create guidelines for businesses to improve their E-commerce Performance.

Overall, this study highlights the critical factors that contribute to E-commerce Performance and DCR in the context of online supermarkets in Indonesia, providing valuable insights for businesses and policymakers alike.

One limitation of this research is that it only focuses on online supermarkets in Indonesia, which may not represent the entire e-commerce industry. Therefore, the findings may not be applicable to other online retailers or countries.


Another limitation is the study's limited number of examined variables. Future research could expand the scope to include other online retailers and countries, as well as explore additional factors that influence E-commerce Performance and Digital Customer Retention, such as customer service, product quality, and marketing strategies.

Moreover, future research could utilize different methods, like qualitative research or experimental designs, to gain a deeper


understanding of how variables impact E-commerce Performance and Digital Customer Retention.

In conclusion, while this research provides valuable insights, addressing the limitations in future research will offer a more comprehensive understanding of success factors in the e-commerce industry.

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7. Competing interests

he author declares that he has no competing interests.

References

- Arora, S., Chu, F., Melnikov, S., & Zhang, L. (2022). E-commerce is entering a new phase in Southeast Asia. Are logistics players prepared?. McKinsey & Company. Retrieved May 12, 2023 from <https://www.mckinsey.com/industries/travel-logistics-and-infrastructure/our-insights/e-commerce-is-entering-a-new-phase-in-southeast-asia-are-logistics-players-prepared>.
- Devita, V. D. (2020). Report: Peta Persaingan E-Commerce Indonesia Q4 2020. Iprice. Co. Id. Retrieved May 12, 2023 from <https://iprice.co.id/insights/id/moe/map-of-e-commerce-q4-2020/>
- Gerpott, T. J., & Berends, J. (2022). Competitive pricing on online markets: a literature review. *Journal of Revenue and Pricing Management*, 21(6), 596–622. <https://doi.org/10.1057/s41272-022-00390-x>.
- Guo, J., Zhang, W., & Xia, T. (2023). Impact of Shopping Website Design on Customer Satisfaction and Loyalty: The Mediating Role of Usability and the Moderating Role of Trust. *Sustainability*, 15(8), 6347. <https://doi.org/10.3390/su15086347>.
- Hanna, R. C., Lemon, K. N., & Smith, G. E. (2019). Is transparency a good thing? How online price transparency and variability can benefit firms and influence consumer decision making. *Business Horizons*, 62(2), 227–236. Retrieved May 10, 2023 from <https://hbsp.harvard.edu/product/BH968-PDF-ENG>.
- Huda, N., Adha, I. A. F., & Pujarama, R. A. (2019). *Impact of E-Commerce Sector on Indonesian Economy*. Retrieved May 12, 2023 from https://repository.vnu.edu.vn/bitstream/VNU_123/70543/1/IVo7_Adha.pdf.
- Indradjaja, B. (2021). Deloitte Indonesia Business and Industry Updates. The accelerating digital payments landscape in Indonesia. Deloitte. Retrieved May 12, 2023 from <https://www2.deloitte.com/content/dam/Deloitte/id/Documents/technology-media-telecommunications/id-tmt-accelerating-digital-payments-landscape-in-indonesia.pdf>.
- Khandpur, N., Zatz, L. Y., Bleich, S. N., Taillie, L. S., Orr, J. A., Rimm, E. B., & Moran, A. J. (2020). Supermarkets in Cyberspace: A Conceptual Framework to Capture the Influence of Online Food Retail Environments on Consumer Behavior. *International Journal of Environmental Research and Public Health*, 17(22), 8639. <https://doi.org/10.3390/ijerph17228639>.
- Lin, H.-F. (2007). The Impact of Website Quality Dimensions on Customer Satisfaction in the B2C E-commerce Context. *Total Quality Management & Business Excellence*, 18(4), 363–378. <https://doi.org/10.1080/14783360701231302>.
- Octaviani, O. C., & Rizan, M. (2021). The Effect of E-Service Quality and Perceived Price Fairness on Customer Loyalty Which Customer Satisfaction as Intervening Study on Online Shopping Site in Indonesia. *Jurnal Dinamika Manajemen Dan Bisnis*, 4(1), 143–171. <https://doi.org/10.21009/jdmb.04.1.7>.
- Rahman, Md. A., Amjad, M., Ahmed, B., & Siddik, Md. S. (2020). Analyzing Web Application Vulnerabilities. *ICCA 2020: Proceedings of the International Conference on Computing Advancements*. <https://doi.org/10.1145/3377049.3377107>.
- Ramli, T. S., Ramli, A. M., Permata, R. R., Ramadayanti, E., & Fauzi, R. (2020). Aspek hukum platform e-commerce dalam era transformasi digital. *Jurnal Studi Komunikasi dan Media*, 24(2), 119–136. Retrieved May 12, 2023 from <https://jurnal.kominfo.go.id/index.php/jskm/article/download/3295/1419>.
- Saoula, O., Shamim, A., Mohd Suki, N., Ahmad, M. J., Abid, M. F., Patwary, A. K., & Abbasi, A. Z. (2023). Building e-trust and e-retention in online shopping: the role of website design, reliability and perceived ease of use. *Spanish Journal of Marketing - ESIG*, 27(2), 178–201. <https://doi.org/10.1108/sjme-07-2022-0159>.
- Sharma, H., & Aggarwal, A. G. (2019). Finding determinants of e-commerce success: a PLS-SEM approach. *Journal of Advances in Management Research*, 16(4), 453–471. <https://doi.org/10.1108/jamr-08-2018-0074>.
- Warganegara, D. L., & Babolian Hendijani, R. (2022). Factors That Drive Actual Purchasing of Groceries through E-Commerce Platforms during COVID-19 in Indonesia. *Sustainability*, 14(6), 3235. <https://doi.org/10.3390/su14063235>.
- Zhu, D. S., Chih, Z., O'Neal, G. S., & Chen, Y. H. (2011). Mr. Risk! Please trust me: Trust antecedents that increase online consumer purchase intention. *Journal of Internet Banking and Commerce*, 16(3), 1.

Appendix

Questionnaire

The instruction asks the participants to select one answer from the given options according to the statement provided by selecting the corresponding number on the scale: 1 – Strongly Disagree; 2 – Disagree; 3 – Neither Agree nor Disagree; 4 – Agree; 5 – Strongly Agree.

Price Transparency (PTR)

1. The prices of products are clearly stated on the website.
2. The prices of products are consistent across the website.
3. The prices of products are reasonable.

Online Shopping Interface (OSI)

1. The website is easy to navigate.
2. The website has a user-friendly interface.
3. The website has a search function that is easy to use.

Safe Transaction (STR)

1. The website provides a secure payment system.
2. The website provides a safe transaction process.
3. The website protects my personal information.

Delivery Performance (DPR)

1. The delivery process is fast.
2. The delivery process is reliable.
3. The delivery process is convenient.

E-commerce Performance (ECP)

1. The website provides a good overall shopping experience.
2. The website offers a wide range of products.
3. The website provides a good customer service experience.

Digital Customer Retention (DCR)

1. I am likely to continue shopping at this online supermarket in the future.
2. I would recommend this online supermarket to others.
3. I trust this online marketplace.



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