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Legal Certainty and Consumer Protection Promote Sustainable Electronic Commerce in Indonesian Personal Shopper Services

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Abstract

Digital consignment services are growing rapidly along with the rise of social media-based commerce and cross-regional and cross-border transactions. However, their hybrid legal nature creates uncertainty regarding the status of parties, service provider liability, data protection, consumer rights, and loss recovery mechanisms. This study analyzes the influence of legal certainty and consumer protection on the sustainability of e-commerce in digital consignment services in Indonesia. This study uses a quantitative explanatory approach, employing primary data collected from consumers using digital consignment services collected through an online questionnaire. The analysis was conducted using partial least squares (PLS) based structural equation modeling. The results indicate that legal certainty has a positive and significant influence on e-commerce sustainability and consumer protection. Consumer protection also has a positive and significant influence on e-commerce sustainability. These findings suggest that the sustainability of digital commerce is determined not only by transaction and technology growth but also by clarity of legal status, information transparency, payment and personal data security, business actor accountability, and the effectiveness of complaint and recovery mechanisms. This study emphasizes the importance of integrating legal certainty and consumer protection as an institutional foundation for sustainable digital e-commerce.

Introduction

The digitalization of trade has transformed market structures, contract formation processes, and the distribution of rights and responsibilities among businesses, consumers, and digital platform providers. Transactions that previously relied on physical meetings can now initiate, negotiate, pay for, and settle transactions electronically, eliminating the need for physical meetings. This transformation expands market access, lowers transaction costs, and creates new economic opportunities for consumers and micro, small, and medium enterprises. Wirdiyanti et al. (2023) stated that in Indonesia, e-commerce adoption In Indonesia, research has demonstrated that e-commerce adoption enhances brand recognition, consumer awareness, business performance, and financial inclusion for MSMEs. This research aims to increase brand recognition, consumer awareness, business performance, and financial inclusion for MSMEs. However, digital commerce also increases information asymmetry, platform dependence, contract ambiguity, the risk of personal data misuse, and difficulties in consumer recovery. Therefore, e-commerce growth does not necessarily translate into the establishment of a fair and sustainable digital commerce ecosystem.

For e-commerce sustainability to be based on increasing user numbers, transaction value, or market access, it also requires trust, digital security, business accountability, contractual certainty, and accessible redress mechanisms. Aaronson (2023) states that trust in digital commerce cannot be built simply by streamlining data flows or removing trade barriers; it must also be based on the ability of public policies to address the risks faced by users. In the Indonesian context, information technology infrastructure, digital security, and digital literacy influence the sustainability of community participation in e-commerce (Sham et al., 2024). Thus, consumer protection therefore does not merely function as a

corrective instrument after a loss has occurred but is an institutional infrastructure that determines the sustainability of digital trade.

One emerging business model within this ecosystem is digital personal shopper services, known in Indonesia as "jastip" (a personal shopping service). In practice, service providers purchase goods based on consumer demand and receive compensation in the form of service fees, commissions, price differences, or reimbursements. Service providers typically conduct offers, negotiations, payments, and the delivery of product information through social media, instant messaging apps, or e-commerce platforms. Service providers typically conduct offers, negotiations, payments, and product information delivery through social media, instant messaging apps, or e-commerce platforms. Service providers can purchase goods from other cities or countries, receive payment in advance, temporarily retain the goods, and arrange for delivery to consumers. This model provides access to products not readily available in consumers' local areas while creating relatively easy-to-enter business opportunities for individuals and MSMEs.

Despite this flexibility, consignment services have a hybrid legal character. Service providers can act as agents who purchase goods on behalf of consumers, intermediaries who connect consumers with sellers, traders who resell goods for a profit, service providers who only handle purchasing and shipping, or even importers if the goods are obtained from abroad. These differences in character determine who bears the risk of loss and damage to goods, who is responsible for product defects, whether there is a refund obligation, when ownership and risk transfer, and which law applies. A business actor's use of the term "consignment service" does not automatically determine the nature of the legal relationship; instead, legal classification must rely on the substance of the transaction, not just the names the parties use.

Gadjong (2023), the legal relationship of personal shopping services is categorized as a sale-purchase relationship because its elements closely resemble those of a sale-purchase transaction, and the service provider can be held liable if the consumer suffers a loss due to the provider's failure to fulfill their obligations. This finding provides an important basis for consumer protection for personal shopping services. However, a single classification as a sale-purchase fails to fully explain the variety of digital personal shopping practices. In some transactions, the service provider does not determine the product price, does not possess the goods before receiving the order, and acts solely on the consumer's instructions. In other transactions, the service provider determines the final price, controls information about the source of the goods, takes a profit margin, and controls payment and delivery. These differing levels of control create legal consequences that cannot be resolved through a single, uniform contractual classification.

The issue of digital consignment services can be understood not only as a matter of incomplete regulation but also as a form of market failure arising from information asymmetry, imbalanced bargaining power, transaction costs, data externalities, and opportunistic behavior. Consignment service providers generally control more information regarding the identity of the original seller, the original price

of the goods, the commission amount, the quality and authenticity of the product, the shipping process, customs risks, and the possibility of refunds. Conversely, consumers often make decisions based solely on social media posts, testimonials, account reputation, or private conversations, which do not always provide complete and verifiable information. This inequality increases the likelihood of making the wrong choice before the transaction, changing the provider's behavior after receiving payment, charging hidden fees, shipping non-conforming goods, and shifting responsibility when losses occur. Thus, legal uncertainty in digital consignment services has economic consequences because it increases the risks and costs consumers must bear in conducting transactions.

From an economic perspective, legal certainty has economic value when it reduces transaction costs that arise before, during, and after a transaction. These costs include information retrieval, service provider identity verification, price and liability negotiations, monitoring the purchasing and delivery process, documenting agreements, and enforcing rights in the event of a dispute. Eger & Scheufen (2024) explains that the private and social benefits and costs in the digital economy are heavily influenced by the structure, boundaries, and legal design that govern these economic activities. Therefore, the effectiveness of a law is not solely determined by the existence of regulations but also by its ability to influence actors' incentives, efficiently distribute risk, reduce uncertainty, and improve the welfare of all parties. In consignment services, clarity regarding the status of the service provider, information obligations, payment protection, responsibility for goods, personal data processing, and refund mechanisms can reduce the costs consumers incur in anticipating and recovering losses.

Legal certainty also serves to reduce information asymmetry between service providers and consumers. In digital transactions, consumers do not always have the ability to verify the quality of goods, identify the original seller, assess the reasonableness of service fees, or verify the accuracy of information provided by service providers. Obligations for transparency regarding identity, prices, commissions, source of goods, shipping risks, import duties, cancellations, and refunds can help consumers make more informed decisions. However, information obligations will be ineffective if the information is presented in a format that is too long, complex, hidden, or difficult to understand. Luzak et al. (2023) shows that the online trading environment can increase information asymmetry and consumer cognitive load. Therefore, a transparency policy not only needs to determine what information must be provided but also how that information is presented. Wulf & Seizov (2023) found that optimizing legal information through a more easily understood format can improve consumers' ability to read, remember, and understand their rights and obligations, especially when a dispute has occurred. These findings suggest that transparency should be assessed based on consumers' actual understanding, not just on the fulfillment of formal obligations by businesses.

Unclear distribution of responsibility can also create incentives for each actor to shift risk to others. Service providers may claim responsibility rests with the original seller, while platforms may claim transactions take place outside their systems. Logistics companies may limit liability through standard terms, while consumers lack direct contact with all parties involved. This situation leaves consumers with risks even though they lack control over seller selection, payment, the goods, and the arrangement

of delivery, which should bear greater liability than individuals who only provide incidental assistance, goods, data processing, or delivery. From an efficiency perspective, responsibility should be allocated proportionally to the party with the greatest control, economic benefits, information, and the lowest cost of preventing losses. Service providers who determine the final price, receive payment, select the original seller, possess the goods, and arrange delivery should bear greater liability than individuals who only provide incidental assistance with the purchase.

This approach supports the need for tiered regulation based on the level of risk and control over transactions. Legal obligations should not be determined solely by the use of the term "jastip," but rather by the economic character of the activity. Some indicators that can be used include continuity of activity, transaction frequency, transaction value, form of remuneration, control over pricing, control of payment and goods, selection of the originating seller, processing of consumer data, and involvement in cross-border shipping. Service providers that engage in repetitive, profit-oriented activities and control most transaction stages should be treated as business actors with higher obligations for transparency, security, documentation, and recovery. Conversely, applying completely uniform obligations to incidental activities could incur disproportionate compliance costs. An economic analysis of the law thus helps find a balance between consumer protection and regulatory costs borne by business actors.

Personal data protection also has an important economic dimension. Collecting consumer data can provide economic benefits to service providers and platforms through personalized offerings, marketing, expanding consumer networks, and improving pricing power. However, consumers largely bear the risks associated with data leakage, unauthorized use, data trafficking, and identity misuse. However, consumers largely bear the risks of data leakage, unauthorized use, data trafficking, or identity misuse. consumers. This situation indicates a negative externality, as businesses benefit from data processing without always bearing the full social costs.

Padilla et al. (2022) Research shows that platform business models influence incentives to collect and disclose consumer information. While data can improve business decision-making accuracy and profitability, privacy concerns can reduce consumer demand and participation. Therefore, data minimization obligations, processing security, usage restrictions, and accountability for leaks are necessary to ensure that the costs of privacy are not entirely shifted to consumers. In a regional context, Cai (2026) shows that differences in consent standards, cross-border data transfers, profiling, automated decision-making, and third-party liability still create consumer protection gaps in ASEAN e-commerce.

An economic analysis of law also needs to consider the limitations of consumer rationality. Consumers don't always read all transaction terms and accurately calculate every risk. Decisions can be influenced by account reputation, follower count, testimonials, limited-time promotions, claims of product scarcity, and information design that emphasizes benefits while concealing costs.

Fletcher and Vasas (2025) explains that the choice architecture in the digital environment can influence consumer decisions and the effectiveness of digital market regulation. Brenncke (2024) also shows that

digital design can exploit consumer behavioral biases and undermine decision-making autonomy. In consignment services, such exploitation can occur through incomplete initial pricing, additional fees only disclosed after booking, unilateral cancellation policies, or the use of time pressure to induce immediate payment. Therefore, consumer protection cannot simply be based on the assumption that consumers have agreed to the terms of the transaction; it must ensure that consent is based on clear, relevant, and understandable information.

Consumer protection should therefore not be viewed solely as a constraint on business freedom or an additional regulatory cost. Properly designed protection can correct market failures, limit opportunistic behavior, lower transaction costs, and increase institutional trust. Chawla and Kumar (2022) shows that security, privacy, product assurance, information quality, customer service, and legal protection frameworks contribute to consumer trust and loyalty in e-commerce. In the long term, consumers who receive transparent information, protected payments, data security, and access to complaints and compensation are more likely to maintain their participation in digital markets. Consumer protection can therefore improve market efficiency by reducing consumer churn due to negative experiences and preventing opportunistic players from profiting at the expense of compliant businesses.

This study examines the sustainability of e-commerce, defining it as more than just growth in transaction value or the number of users. This study defines the sustainability of e-commerce beyond just the growth in transaction value or the number of users. This study defines the sustainability of e-commerce as extending beyond just growth in transaction value or the number of users. Sustainability is understood as the ability of a digital market to maintain consumer participation through secure, transparent, accountable, and trustworthy transactions. A market experiencing short-term transaction growth cannot be considered sustainable if the costs of seeking and enforcing rights remain high, risks are disproportionately borne by consumers, personal data is unprotected, and redress mechanisms are ineffective. In cross-border transactions, a balance is also needed between the smooth operation of digital commerce and the regulatory framework within countries to protect consumer privacy, security, and interests. Burri & Kugler (2024) shows that digital trade governance must balance cross-border transaction facilitation with regulatory autonomy to achieve public policy goals.

Although research on digital consumer protection continues to grow, most studies still address information obligations, data protection, platform liability, and dispute resolution as separate areas. Previous research has also predominantly used formal marketplaces or e-commerce in general as the unit of analysis. The informal, social media-based nature of digital consignment services, which utilize direct payments and involve a hybrid role of buyer, intermediary, reseller, and delivery provider, has not been widely analyzed from an economic legal perspective. Limited research links legal certainty with reduced transaction costs, consumer protection with correcting information asymmetries, and digital market sustainability with long-term participation incentives.

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Literature Review and Hypothesis Development

Legal Certainty and Sustainable Electronic Commerce

An economic perspective analysis of law explains that law not only functions to establish rights and obligations but also to generate incentives, create risks, reduce income, and influence transaction efficiency. Eger and Scheufen (2024) states that in the digital economy, the private and social benefits and costs arising from a transaction depend heavily on the structure and design of the laws that govern it. Clear and predictable rules can reduce the costs of information search, negotiation, monitoring, and contract enforcement. Conversely, ambiguity regarding the status of parties, the division of responsibilities, and redress mechanisms increases transaction costs and creates opportunities for opportunistic behavior. Based on this perspective, perceived legal certainty reflects consumers' belief that the rules, rights, obligations, responsibilities, and legal consequences in digital transactions are understandable, predictable, and consistently enforced.

The effectiveness of legal certainty is also influenced by the consumer's ability to understand the legal information provided.. Luzak et al. (2023) suggests that the online trading environment can increase information asymmetry and cognitive load, so transparency must regulate not just what information is conveyed but also how it is communicated. Wulf and Seizov (2023) explains that online legal information presented in a more accessible manner can improve consumers' ability to read, remember, and understand their rights and obligations. Thus, the perception of legal certainty is formed when regulations are not only formally available but also accessible, understandable, and usable by consumers in making decisions and resolving disputes.

Legal certainty further shapes institutional trust, which supports continued digital market participation. Institutional trust differs from personal trust, which is based solely on testimonials, follower counts, or the reputation of a service provider's account. Institutional trust arises when consumers believe there are rules that can be used to hold them accountable and obtain redress if a transaction fails. This clarity lowers expectations of loss and increases a sense of security, making consumers more willing to repeat transactions, maintain relationships with service providers, recommend services, and continue participating in the digital commerce ecosystem. Therefore, sustainable digital market participation in this study reflects the continuity of use, repeat purchases, trust in transactions, and willingness to maintain engagement in the digital market.

Chawla and Kumar (2022) found that legal frameworks covering consumer protection, security, privacy, product assurance, information quality, and customer service contribute to building trust and loyalty in e-commerce. This suggests that legal regulations that provide security and predictability can support the sustainability of relationships between consumers and digital businesses.Wulf & Seizov (2023) proves that improving the presentation of legal information increases consumer understanding, especially when consumers face post-transaction problems. A similar point was also made by Arizal et al. (2024), research indicates that security has a positive effect on consumer trust and loyalty in online purchases. Overall, the research findings indicate that clear regulations, understandable legal information, transaction security, and the availability of accessible protection are factors that support sustainable consumer participation in the digital marketplace.

Thus, the first hypothesis in this study is

H1

Legal certainty has a positive effect on sustainable electronic commerce.

Legal Certainty and Consumer Protection

Legal certainty is a fundamental element in creating effective consumer protection, particularly in digital commerce transactions, which are characterized by rapid, cross-regional, platform-based transactions and often involve contractual relationships that consumers may not fully understand. Legal certainty provides clarity regarding the rights and obligations of parties, the responsibilities of business actors, dispute resolution mechanisms, information disclosure obligations, and legal consequences in the event of violations. In the context of digital commerce, the existence of clear and predictable rules can reduce information asymmetry and improve consumers' legal standing in transactions.

Luzak et al. (2023) stated that the transparency of information requirements in online transactions is a crucial component in creating legal certainty for consumers. Clarity regarding the information businesses must provide allows consumers to understand the characteristics of transactions, their rights, and the potential risks. Therefore, legal certainty serves not only as a normative instrument but also as a mechanism that increases the effectiveness of consumer protection in the digital commerce environment.

In addition, legal certainty also plays a role in minimizing consumer vulnerability in facing the complexity of digital contracts. Durovic et al. (2023), evidence suggests that the rise of digital markets can increase consumer vulnerability when contract terms, platform practices, and protection standards are unclear or poorly implemented. In such circumstances, the existence of clear and consistent rules is critical to guarantee that consumers receive fair treatment and are not subject to detrimental contractual provisions.

The need for legal certainty is becoming increasingly important because legal information in online transactions is often complex and difficult for consumers to understand. In their experimental research on online legal information, Wulf and Seizov (2023), research shows that the way legal information indicates that the presentation of legal information significantly impacts significantly affects consumers' understanding of their rights and obligations. This structure influences consumers' ability to understand their rights and obligations effectively. The results suggest that the success of consumer protection depends not only on the existence of regulations but also on whether the legal information provided to consumers is clear and accessible.

The development of laws regarding digital data and transactions is also increasingly related to the legal protection of the digital economy in Indonesia. Wibowo et al. (2024) demonstrates that law enforcement and personal data protection mechanisms are critical to preserving security and trust in the digital economy. A clearer legal framework can make the collection, processing, and use of consumer data more transparent, empowering consumers in digital transactions.

Furthermore, the growth of digital commerce necessitates regulations that can address new transaction models. Research on policy gaps in digital innovation in Indonesia shows that provisions regarding electronic information and transactions provide certainty for businesses and consumers, but the dynamics of digital business models require policy refinement and regulatory coordination. This conclusion applies to digital transactions because the characteristics of consignment services typically include informal transactions, commerce through social media, agency or intermediary relationships, consumer protection, and cross-border transactions.

In jastip, legal certainty is crucial because consumers face various risks, such as unclear status of the consignment provider, price changes, non-transparent additional fees, late delivery, non-conforming goods, lost goods, and unclear refund mechanisms. Clarity regarding the responsibilities of consignment providers, consumer rights, transaction information standards, and complaint and dispute resolution mechanisms can strengthen consumer protection. Conversely, unclear regulations can increase information asymmetry and make it difficult for consumers to obtain redress when losses occur.

Based on theoretical arguments and previous research evidence, legal certainty can be viewed as an institutional factor that strengthens consumer protection through clarity of rights and obligations, transparency of transactions, certainty of service providers' responsibilities, and the availability of mechanisms for redress and dispute resolution. The higher the level of legal certainty perceived in digital consignment services, the higher the level of protection consumers can expect.

Thus, the second hypothesis in this study is

H2: Legal certainty has a positive effect on perceived consumer protection.

Consumer Protection and Sustainable Electronic Commerce

The theory of information asymmetry explains that markets can fail to function efficiently when one party has more information than the other (Akerlof, 1970). In digital transactions, businesses, personal shopping services (Jastip), and platforms generally have greater information and control over the quality and authenticity of goods, seller identity, pricing structures, additional fees, shipping processes, personal data processing, and dispute resolution procedures. In contrast, consumers make decisions based on information provided through digital catalogs, social media posts, private conversations, reviews, or terms of service, which may not be complete or verifiable. This information gap increases consumers' vulnerability to non-conforming goods, hidden fees, data misuse, failed deliveries, and denied refunds.

Consumer protection serves as a corrective mechanism for information asymmetry and imbalanced bargaining power. This protection is realized through the right to accurate information, product and transaction security, payment and personal data protection, freedom of choice, fair treatment, access to complaints, and the right to a refund or compensation. In the context of digital justice, consumer protection also includes transparency of the service provider's identity, detailed pricing and service fees, information on the seller's origin, shipping and import risks, proof of payment, cancellation policies, and clarity regarding who is responsible in the event of a loss. Consumer protection thus not only demonstrates the existence of regulations but also illustrates the extent to which consumer rights are actually fulfilled and the effectiveness of redress mechanisms.

Mechanically, consumer protection promotes e-commerce sustainability by reducing perceived risk and increasing security, satisfaction, and trust in digital transactions. Consumers who receive transparent information, payment protection, data security, and recovery guarantees will have greater confidence in reusing digital services. An effective protection experience can also increase repeat purchases, loyalty, positive recommendations, and the sustainability of relationships between consumers, service providers, and platforms. Conversely, experiences such as misleading information, non-conforming goods, data breaches, denied refunds, and difficulties in filing complaints can undermine trust and drive consumers to abandon digital services.

Consumer protection also supports the sustainability of e-commerce at the ecosystem level. Information, security, and accountability standards can limit opportunistic business practices and create fairer competition for compliant service providers. Effective complaint and compensation mechanisms prevent individual losses from escalating into distrust in digital commerce as a whole. Therefore, sustainable e-commerce is reflected not only in increased transaction value but also in the digital ecosystem's ability to maintain consumer participation through security, transparency, accountability, inclusivity, and long-term transaction relationships.

Empirical support for this relationship is found in previous research. Chawla and Kumar (2022) shows that security, privacy, product assurance, information quality, customer service, and consumer protection regulations contribute to e-commerce consumer trust and loyalty. Gadjong (2023) found that the transparency of communication and the willingness of Jastip providers to provide compensation or replacement for goods are important elements in protecting consumers and creating trustworthy

transactions. Prastyanti and Sharma (2024) shows that data protection and transparency in data processing can reduce privacy concerns and strengthen consumer trust in digital companies. Morić et al. (2024) also emphasized that the integration of legal protection, security technology, and data management procedures can increase security and trust in e-commerce. Sham et al. (2024) shows that security perceptions influence the sustainability of the digital economy in Indonesia. Overall, the research results indicate that perceived consumer protection is an important prerequisite for sustainable participation in digital commerce.

Thus, the more effective the fulfillment of the rights to information, transaction security, payment and personal data protection, and access to complaints and compensation, the higher the consumer trust and willingness to continue using e-commerce services. Therefore, the third hypothesis of this study is as follows:

H3

Consumer protection has a positive effect on sustainable electronic commerce.

Legal Certainty, Consumen Protection and Sustainable Electronic Commerce

Perceptions of consumer protection mediate the relationship between perceived legal certainty and continued digital market participation, as clear rules result in actual protection, which then influences consumers' decisions to continue transacting. Legal certainty establishes standards regarding service provider identity, pricing and commission information, product liability, payment security, personal data processing, refunds, and dispute resolution. These provisions create incentives for service providers to fulfill their obligations and increase the costs of violations. When businesses respond to regulations by providing transparency, security, and effective redress mechanisms, consumers perceive a higher level of protection.

Consumer protection further reduces information asymmetry, perceived risk, and transaction costs. In digital consignment services, consumers have less information about the source of goods, initial price, product quality, delivery process, and refund possibilities. Protection in the form of transparent information, transaction documentation, payment security, and guaranteed compensation reduces the costs of searching for and verifying information. This protection also lowers the expected losses and enforcement costs if a transaction fails. The lower the expected costs and risks, the higher the net benefit consumers derive from participating in the digital marketplace.

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costs of searching for and verifying information. This protection also lowers the expected losses and enforcement costs if a transaction fails. The lower the expected costs and risks, the higher the net benefit consumers derive from participating in the digital marketplace.

Conversely, if consumer protection is weak, legal certainty may have a limited impact on sustainable market participation. Conversely, weak consumer protection can limit the impact of legal certainty on sustainable market participation. Consumers may know their rights. Consumers may be aware of their rights, but they still encounter issues such as opaque information, unprotected payments, data misuse, or challenges in obtaining refunds. but still face opaque information, unprotected payments, data misuse, or difficulty obtaining refunds. In such circumstances, the law only provides formal certainty without reducing the economic risks faced by consumers. Therefore, the impact of legal certainty on market sustainability is that effective consumer protection is believed to play a significant role in the impact of legal certainty on market sustainability, at least in part, through effective consumer protection.

Understanding legal information is also part of this mechanism. Luzak et al. (2023) shows that online information obligations do not automatically reduce information asymmetry if the delivery is too complex or burdens consumers' cognitive abilities. Wulf and Seizov (2023) found that clearer and more easily understood legal information improves consumers' ability to recognize and exercise their rights, particularly in post-transaction situations. Thus, perceptions of legal certainty enhance perceptions of consumer protection when rules are accessible, understandable, and applicable to prevent or remedy losses.

Chawla and Kumar (2022) found that legal frameworks for consumer protection, security, privacy, product assurance, information quality, and customer service contribute to a safer and more trustworthy e-commerce environment. These findings suggest that the clarity and enforceability of regulations can translate into perceived consumer protection. Wulf & Seizov (2023) also shows that increasing the clarity of legal information strengthens consumers' ability to understand and exercise their rights. Arizal et al. (2024) found that transaction security increases consumer trust and loyalty in online purchases.. Prastyanti & Sharma (2024) research shows that data protection and transparency in data processing play a crucial role in building consumer trust in digital companies. These findings indicate that perceived protection through transaction security, transparency, and data protection can strengthen consumers' willingness to maintain relationships with digital service providers. Thus, prior literature supports a two-stage mechanism: legal certainty enhances consumer protection, and consumer protection further encourages sustainable market participation.

Thus, the fourth hypothesis in this study is

H4

Cconsumer protection mediates the positive relationship between legal certainty and sustainable electronic commerce.

Research Method

To examine the relationship between legal certainty, consumer protection, and sustainable e-commerce, this study uses an explanatory approach. This explanatory approach was chosen to test the predictive relationship between legal certainty, consumer protection, and sustainable e-commerce in digital consignment services in Indonesia. Primary data will be collected once from consumers through a structured online questionnaire.

The study population consisted of consumers in Indonesia who use digital consignment services. The unit of analysis was the individual consumer. The sample was selected using purposive sampling with the following criteria: at least 17 years old, having used a digital consignment service in the past six months, and being directly involved in ordering and payment. Respondents answered based on their most recent consignment transaction experience to minimize memory errors.

Data were collected through Google Forms. A total of 606 responses were received. After excluding incomplete, duplicate, non-compliant, or unusual response patterns, a final sample of 391 respondents was obtained. Sampling adequacy was determined through an a priori statistical power analysis based on a 5% significance level, at least 80% statistical power, the maximum number of predictors, and the minimum effect desired.

The instrument was developed through adaptation of previous research indicators and adjustments to the legal context of Indonesian digital consignment services. Perceptions of legal certainty reflect clarity, consistency, predictability, and enforceability of legal rights and responsibilities. Perceptions of consumer protection reflect information availability, transaction security, data protection, accountability, and loss recovery. Sustained digital market participation reflects willingness to repeat transactions, maintain usage, and continue involvement in digital commerce. Statements were distributed via Google Forms, with each statement rated on a Likert scale from 1 (strongly disagree) to 6 (strongly agree).

Data were analyzed using PLS-SEM through [software name and version]. The choice of PLS-SEM was based on the need to estimate relationships between latent constructs and test mediating mechanisms simultaneously, not solely due to sample size or data non-normality (Becker et al., 2022.; Guenther et al., 2023).

Measurement model evaluation included outer loading, Cronbach's alpha, rho_A, composite reliability, average variance extracted (AVE), and heterotrait-monotrait ratio (HTMT). Reliability values between 0.70 and 0.95 and an AVE of at least 0.50 were used as benchmarks. Discriminant validity was primarily evaluated using HTMT and bootstrap confidence intervals, while Fornell–Larcker and cross-loadings were used as additional checks.

Structural model evaluation includes VIF, path coefficients, (R2), (f2), and (Q2). Significance was tested through bootstrapping (5,000/10,000) subsamples with a two-tailed test at the 5% significance level. Results are reported using coefficients, standard errors, (t) values, (p) values, and 95% confidence

intervals. A probability value of 0.000 is written as ($p < 0.001$). The mediation effect of consumer protection was tested through the indirect path. Mediation is declared significant if the bootstrap confidence interval for the indirect effect does not cross zero. The analysis reports the direct effect, indirect effect, total effect, and type of mediation. Interpretation is based not only on the (p) value but also on the magnitude and uncertainty of the mediation effect (Sarstedt & Moisescu, 2024).

Results and Discussion

Results

Respondent Overview

Table 1 shows that 61% of respondents were male, while 39% were female. This composition indicates greater male involvement in the research sample. This finding is in line with Ariansyah et al. (2021), found that gender is one of the individual characteristics associated with the probability of using e-commerce in Indonesia. However, the predominance of male respondents does not necessarily mean that digital consignment service consumers in Indonesia are predominantly male. This composition may be influenced by the questionnaire distribution channel, respondent networks, the type of product purchased, and the purposive sampling technique. This composition may be influenced by factors such as the questionnaire distribution channel, respondent networks, the type of product purchased, and the purposive sampling technique. This composition may be influenced by factors such as the questionnaire distribution channel, respondent networks, the type of product purchased, and the purposive sampling technique. Therefore, gender needs to be considered as a control variable or additional basis for analysis because men and women may have different evaluations of risk, security, data confidentiality, and protection of digital transactions.

Table 1
Respondent Overview

Category	Percentage
Gender	
Male	61%
Female	39%
Age	
17–25 years	34%
26–35 years	39%
36–45 years	23%
Over 45 years old	4%
Employment Status	
Working	56%
Not/Not Working Yet	25%
Having Your Own Business	18%
Pension	1%
Region	
Sumatra	17%
Java	59%
Kalimantan	14%
Sulawesi	8%
Maluku	1%
Papua	1%
Source: Data processing results (2026)	

Based on age, the 26–35 age group was the largest at 39%, followed by the 17–25 age group at 34%, the 36–45 age group at 23%, and the age group above 45 at 4%. Thus, 73% of respondents were under 35 years of age. This composition indicates that the research results primarily represent young and young adult consumers who are relatively familiar with the use of social media, digital payments, and e-commerce. Helmi et al. (2023) explains that young consumers are an important group in online shopping activities in Indonesia and shows decision-making characteristics influenced by digital information, internet usage habits, and an orientation towards transaction convenience.

The dominance of the younger age group is relevant to the nature of digital consignment services, which often operate through social media and instant messaging apps. Young consumers likely face lower technological learning costs and are better able to search and compare information. However, the ability to use technology does not always equate to the ability to understand legal rights, transaction clauses, the use of personal data, or dispute resolution procedures. In this context, consumer protection remains necessary because risk, security, and trust are important determinants of online purchasing decisions (Handoyo, 2024). The low proportion of respondents aged over 45 also limits the study's ability to describe the perceptions of consumer groups who may face digital literacy barriers and higher costs of understanding legal information.

In terms of employment, 56% of respondents were employed, and 18% had their own business. This means that at least 74% of the sample is an economically active group. Meanwhile, 25% of respondents were unemployed or had never worked, while retirees were only 1%. The size of the economically active group can indicate that entrustment services are used by consumers who have transaction needs, limited time, and the ability to make digital payments. From the perspective of economic analysis of law, consumers who are actively working can use entrustment services to reduce the cost of searching for goods, travel expenses, and opportunity costs. However, employment status cannot be used as a substitute for income level or purchasing power. Therefore, conclusions regarding the economic capabilities of respondents must be limited if the research does not collect data on income, transaction value, or frequency of use of entrustment services.

By region, 59% of respondents came from Java, followed by Sumatra at 17%, Kalimantan at 14%, Sulawesi at 8%, Maluku at 1%, and Papua at 1%. This composition indicates that the research covered several key regions in Indonesia but remained concentrated in Java. This dominance may be related to population concentration, economic activity, logistical infrastructure, internet access, and the survey distribution network. Caraka et al. (2026) Data shows that internet access and quality in Indonesia still vary across regions due to variations in geography, urbanization levels, digital infrastructure, education, and socioeconomic conditions. This digital divide can impact consumers' opportunities to use online shopping services and shape their experiences with payment security, information quality, delivery, and access to complaint mechanisms.

The low representation of Maluku and Papua suggests that the research results do not adequately reflect the experiences of consumers in eastern Indonesia. Consumers in these regions may face higher shipping costs, delivery times, risk of loss, and dispute resolution costs than consumers in Java. From a legal and economic perspective, these differences are important because the benefits of legal protection are determined not only by the existence of regulations but also by the costs of accessing and enforcing rights. Furthermore, Bali and Nusa Tenggara are not included in the regional classification, so it is important to clarify whether respondents were absent from these regions or their responses were included in another category.

Demographic characteristics are also relevant to testing the research model. Singh et al. (2024) this study shows that age, gender, and frequency of e-commerce use can shape variations in perceived security, trust, and intention to use the platform. Therefore, gender, age, occupation, region, and transaction frequency should be included as control variables or used in robustness analysis. Multigroup analysis can only be conducted if each group has an adequate sample size and first meets the requirement of measurement invariance. With only 1% of respondents from Maluku and Papua each, a comparison of structural coefficients by region is not yet reliable.

Measures

Figure 1 shows the Smart-PLS 4 structural output model. Legal Certainty on Consumer Protection is 0.850, indicating that it has a strong positive influence on Consumer Protection. In other words, a higher level of legal certainty leads to a greater level of consumer protection in the digital commerce ecosystem. Meanwhile, consumer protection for sustainable e-commerce is 0.362. This indicates that consumer protection also has a positive influence on sustainable e-commerce. The stronger consumer protection, the greater the opportunity for the creation of sustainable digital commerce. The direct relationship between legal certainty and sustainable e-commerce is 0.466, indicating that the path of legal certainty toward sustainable e-commerce has a positive direct influence. This means that legal certainty directly contributes to the sustainability of e-commerce.

Note

LC is legal certainty, CP is consumer protection, and SE is sustainable electronic commerce

Overall, the model shows that legal certainty plays a central role. Its influence on consumer protection is significant and also has a direct impact on sustainable e-commerce. These findings indicate that the sustainability of digital commerce is shaped not only by technological and transactional factors but also by the quality of the legal environment, which provides certainty regarding rights, obligations, responsibilities, and dispute resolution mechanisms.

Consumer protection also plays a crucial role as a mechanism that translates legal certainty into sustainable digital trade. When legal certainty results in improved consumer protection, such as information transparency, transaction security, complaint rights, and loss redress mechanisms, trust in the digital ecosystem has the potential to increase and support long-term transaction relationships.

Evaluation of the Measurement Model with Reliability and Validity Test

Table 1 shows the results of the model measurements for the reliability and validity tests, along with the number of respondents who have used a personal shopping service using digital media at least once.

Table 1
Evaluation of the Measurenment Model with Reliability and Validity Test

Construct	Item	CR	rho_a	AVE	Factor Loading	Mean	SD	VIF
Legal Certainty (LC)	LC.1.1	0,963	0,961	0,618	0,750	5,182	0,591	2.427
	LC.1.2				0,777			2.719
	LC.1.3				0,809			3.206
	LC.2.1				0,776			3.108
	LC.2.2				0,742			3.132
	LC.2.3				0,837			3.378
	LC.3.1				0,812			3.102
	LC.3.2				0,791			2.797
	LC.3.3				0,857			3.863
	LC.3.4				0,779			2.436
	LC.3.5				0,804			2.763
	LC.4.2				0,807			3.593
	LC.4.3				0,770			3.296
	LC.4.4				0,814			3.922
	LC.4.5				0,841			3.779
Consumer Protetction (CP)	CP.1.1	0,956	0,949	0,626	0,813	5,229	0,581	3.419
	CP.1.2				0,845			3.206
	CP.1.3				0,824			3.404
	CP.2.1				0,875			4.032
	CP.2.3				0,842			3.192
	CP.2.4				0,857			3.374
	CP.3.1				0,844			3.631
	CP.3.2				0,851			4.111
	CP.3.3				0,816			3.253

Source: SEM-PLS data processing results (2026)

Construct	Item	CR	rho_a	AVE	Factor Loading	Mean	SD	VIF
Sustainable Electronic Commerce (SE)	SE.1.1	0,930	0,917	0,626	0,733	5,248	0,553	1.949
	SE.1.2				0,815			2.601
	SE.2.1				0,769			2.787
	SE.2.2				0,74			2.491
	SE.2.3				0,789			2.091
	SE.3.1				0,824			3.222
	SE.3.2				0,84			3.300
	SE.3.3				0,812			3.410
Source: SEM-PLS data processing results (2026)								

Dicriminant Validity

Table 2. Discriminant validity shows that the relationship between constructs ranges from 0.810 to 0.886. The correlation between legal certainty and consumer protection is 0.886, between legal certainty and e-commerce sustainability is 0.820, and between consumer protection and e-commerce sustainability is 0.810. All of these values are below the maximum limit of 0.90, so it can be stated that the research model has met the criteria for discriminant validity. This finding indicates that legal certainty, consumer protection, and e-commerce sustainability are empirically distinct constructs, and each is capable of representing a different conceptual dimension. However, the relationship between legal certainty and consumer protection of 0.886 indicates a relatively high conceptual closeness, so an evaluation of the suitability of the indicators of both constructs is still necessary to ensure that there is no excessive measurement overlap.

Table 2
Summary Discriminant Validity

Fornell and Larcker Criterion	Legal Certainty (LC)	Consumer Protection (CP)	Sustainable Electronic Commerce (SE)
Legal Certainty (LC)	0,786		
Consumer Protetction (CP)	0,850	0,841	
Sustainable Electronic Commerce (SE)	0,773	0,757	0,791
Heterotrait-Monotrait Ratio (HTMT) Criterion			
Legal Certainty (LC)			
Consumer Protetction (CP)	0,886		
Sustainable Electronic Commerce (SE)	0,820	0,810	
Source: Research Findings SMART-PLS 4 (2026)			

Hypothesis Results

Table 3. shows the results of the hypothesis test.

Table 3
Hypothesis Results

Hypothesis	Relationships	t-value	p-value	Result
H1	LC ◊ SE	5.049	0.000	Supported
H2	LC ◊ CP	41.208	0.000	Supported
H3	CP ◊ SE	3.676	0.000	Supported
H4	LC ◊ CP ◊ SE	3.688	0.000	Supported
Source: Research Findings SMART-PLS 4 (2026)				
Note: LC is legal certainty, CP is consumer protection, and SE is sustainable electronic commerce				

Discussion

Legal Certainty and Sustainable Digital-Market Participation

The results of the study indicate that legal certainty has a positive and significant effect on sustainable e-commerce. Based on the results of the structural model test, the path coefficient of the relationship between legal certainty and sustainable e-commerce is 0.466, with a test statistic value of 5.049 and a probability value of 0.000. Thus, the first hypothesis, stating that legal certainty has a positive effect on sustainable e-commerce, is accepted. This positive coefficient indicates that the higher the legal certainty perceived by consumers in digital consignment transactions, the higher the tendency to create sustainable electronic commerce. This finding is also consistent with the structural model of the study, which shows a direct effect of legal certainty on the sustainable e-commerce of 0.466.

These results align with Lawrence M. Friedman's legal systems theory perspective used in this research. Based on this framework, legal effectiveness depends on the relationship between legal substance, legal structure, and legal culture. In the context of digital consignment services, legal substance provides clarity regarding the status of service providers, consumer rights and obligations, the responsibilities of the parties, and dispute resolution mechanisms. The legal structure provides institutions capable of oversight, enforcement, and redress, while legal culture relates to the awareness and compliance of transaction actors. The research document explicitly positions legal certainty as a prerequisite, consumer protection as an institutional outcome, and the sustainable e-commerce as a long-term consequence of increased trust, security, accountability, and continued consumer participation. Thus, the empirical results of this research provide support for the theoretical argument that the quality of the legal system has direct implications for the sustainability of the digital commerce ecosystem.

These findings are consistent with Aaronson (2023b), This demonstrates that building trust in digital commerce cannot rely solely on trade liberalization or smooth data flows. Digital trust also requires public policies that address the actual risks faced by users. Therefore, the sustainability of digital commerce depends on how the regulatory framework provides protection and fosters trust among transactors. The findings of this study extend this argument to the context of digital consignment services in Indonesia by empirically demonstrating that perceptions of legal certainty are directly related to the level of e-commerce sustainability.

The research results are also in line withLuzak et al. (2023), which places transparency and clarity of information obligations as crucial components in establishing legal certainty in online transactions. Clarity regarding the identity of the business actor, product characteristics, transaction conditions, and consumer rights enables consumers to better understand the legal consequences of their transaction decisions. In the context of consignment services, this principle becomes even more relevant because transactions are often conducted through social media or instant messaging applications, so contractual relationships are not always documented through formal contracts. Clear information regarding prices, service fees, delivery risks, cancellations, refunds, and liability for non-receipt of goods can reduce information asymmetry and strengthen the continuity of transactional relationships.

Wulf & Seizov (2023), the study indicates that the mere presence of legal information does not automatically result in effective protection; the way that information is designed and delivered influences

consumers' ability to understand their rights and obligations in online transactions. These findings support the research, emphasizing that legal certainty in digital commerce must ultimately translate into rules and information that consumers can understand. If rules are available but difficult to understand, scattered across various instruments, or unclear in their implementation, legal certainty's role in promoting transaction sustainability is limited. Conversely, easily understood and predictable rules enhance consumers' ability to make decisions, anticipate risks, and determine actions in the event of a dispute.

Shah et al. (2024), this study demonstrates that trust plays a crucial role in generating social and economic benefits in the digital economy. Trust enables individuals to participate in digital activities when inherent uncertainty cannot be completely eliminated from online interactions. In the context of this research, legal certainty can serve as a source of institutional trust. Consumers no longer rely solely on the personal reputation of the consignment service provider, the number of social media followers, or customer testimonials, but also have confidence that there are rules, responsibilities, and recovery mechanisms in place if a transaction fails. This shifts the foundation of trust from mere interpersonal trust to institutionally supported trust.

The research findings also received support from Wibowo et al. (2024), this demonstrates the importance of a legal framework for personal data protection in providing legal certainty and supporting the security of digital economic activities in Indonesia. Clear regulations regarding data processing and protection can reduce uncertainty and strengthen trust in digital activities.

In the context of cross-border trade, Burri & Kugler (2024), this study demonstrates that the development of digital trade regulations in various international agreements increasingly emphasizes the necessity of a balance between digital trade facilitation and state regulatory space. Regulatory clarity is crucial because the development of a data-driven economy creates new regulatory needs that conventional trade rules cannot fully address. The research results also have relevance to the specific characteristics of social commerce. Aade (2025) The study demonstrates that commerce via social media creates unique consumer protection challenges and requires regulations regarding merchant traceability, platform liability, consumer rights to information, and enforcement mechanisms. These conditions closely mirror the characteristics of personal shopping services in Indonesia, which often operate through Instagram, WhatsApp, TikTok, or private communication channels. In such transactions, the ambiguity surrounding whether the service provider is an intermediary, seller, agent, or business actor can impact the allocation of responsibility. The research document also points out that this mixed nature is a key factor in figuring out who is responsible for goods, payment, delivery, and consumer recovery. Therefore, the positive impact of legal certainty on the sustainability of e-commerce can be understood as the need to reduce this functional ambiguity.

Zhang (2023), this study demonstrates that research on e-commerce sustainability is not only concerned with environmental dimensions but also encompasses consumer trust, satisfaction, commitment, and regulation as part of building a sustainable trading ecosystem. This means that e-commerce

sustainability needs to be understood multidimensionally. A digital ecosystem may experience short-term increases in transaction volume, but it cannot be considered sustainable if consumers face uncertainty, weak recovery from losses, and low trust in business actors and the trading system.

This finding can also be linked to the results Wirdiyanti et al. (2022) in the Indonesian context. Research on micro, small, and medium enterprises in Indonesia shows that the adoption of e-commerce benefits business performance, including increased brand recognition and consumer awareness, and supports financial inclusion. Although the study did not directly examine legal certainty, the results demonstrate the substantial economic benefits that can result from continued participation in e-commerce. The findings of this study add an institutional perspective that these benefits will be more difficult to sustain if transaction growth is not accompanied by certainty regarding rights, obligations, responsibilities, and dispute resolution mechanisms.

In the specific context of Indonesia, the research results are important because the research document identifies regulatory fragmentation and an unclear classification of entrusted services. Even though Indonesia has a framework for consumer protection, electronic transactions, trading through electronic systems, and personal data protection, the informal character of entrustment services means that some transactions take place through personal accounts, closed chat groups, and direct payments that are not always connected to formal trading platforms. Therefore, the mere existence of formal regulations is not enough. What determines the sustainability of a transaction is the extent to which consumers feel there is certainty about how the rules are applied and how losses can be recovered.

Legal Certainty and Consumer Protection

The results of the hypothesis testing indicate that legal certainty has a positive and significant effect on consumer protection. Based on the results of the structural model testing, the relationship between legal certainty and consumer protection has a path coefficient of 0.850, with a test statistic value of 41.208 and a probability value of 0.000. Thus, the second hypothesis, stating that legal certainty has a positive effect on consumer protection, is accepted. The coefficient value of 0.850 indicates a forceful positive relationship, so that an increase in consumer perception of the clarity and certainty of regulations is substantively followed by an increase in perception of the protection obtained in digital consignment service transactions. The structural model of the study also indicates that the path from legal certainty to consumer protection is the strongest relationship compared to other structural paths.

This relationship is consistent with Lawrence M. Friedman's Legal Systems Theory perspective, which serves as the primary foundation of this research. Within this framework, the effectiveness of legal protection depends not only on legal substance but also on legal structure and culture. Legal substance provides clear norms regarding the status of consignment service providers, the rights and obligations of parties, standards of information disclosure, liability, data protection, compensation, and dispute resolution. Legal structure provides institutions that monitor and enforce regulations, while legal culture relates to the awareness and behavior of parties in using and complying with the law. The empirical

findings of this research strengthen this argument by showing that when the dimension of legal certainty is more clearly perceived, consumer protection also increases significantly.

Mechanically, legal certainty positively impacts consumer protection. Legal certainty enhances consumer protection by reducing information asymmetry. by reducing information asymmetry. In digital consignment services, consumers are often in a weaker information position because the service provider has greater control over information regarding the seller's origin, the condition and authenticity of the goods, the base price, service fees, the purchasing process, shipping risks, and refund mechanisms. Research documents indicate that consignment service consumers may face the risk of incorrect or damaged goods, delays, undisclosed additional costs, loss of deposits, and refusal of refunds. These risks are increasingly complex in international transactions because they involve import duties, import restrictions, product standards, exchange rates, customs delays, and questions regarding applicable laws. Legal certainty can reduce this asymmetry by determining minimum information standards, allocation of responsibilities, consequences for non-compliance, and redress mechanisms for consumers.

The research results are in line with Luzak et al. (2023) which emphasizes that the transparency of information requirements and certainty regarding compliance standards are fundamental elements of online consumer protection. The study shows that overly general or ambiguous transparency requirements can create uncertainty for businesses, consumers, and law enforcement agencies. Conversely, clarity regarding the information that must be provided and how those obligations are implemented helps consumers make more informed decisions and strengthens the effectiveness of the consumer protection framework. Thus, the findings of this study provide empirical evidence in the context of Indonesian online concierge services that certainty regarding transaction rules is not simply a formal attribute of the law but has direct consequences for the level of consumer protection. Durovic et al., (2023) which shows that consumers in the digital environment can experience vulnerabilities due to the complexity of contracts, the imbalance of power between consumers and digital companies, and the limited effectiveness of protection provisions designed before the emergence of modern digital business models. Wiśniewska & Pałka (2023) regarding online platform terms of service. Their research on one hundred platform terms of service showed that unclear or incomplete service descriptions can reduce the effectiveness of consumer protection and even reduce legal certainty regarding the service's compliance with the contract.

In the trading environment through social media, Aade (2025), research shows that consumer protection requires clarity regarding merchant traceability, platform compliance design, the right to information, and enforcement mechanisms. The research also identified regulatory complexity, interpretive ambiguity, and enforcement gaps in social commerce. These conditions are relevant to the characteristics of digital consignment services in Indonesia, as these services are often offered through social media accounts or instant messaging apps and not always within formal marketplace structures. In such circumstances, the greater the certainty regarding the identity of the responsible party and the obligations they must

fulfill, the less likely consumers are to be trapped in transactional relationships that lack clear accountability mechanisms.

The findings of this study also demonstrate that legal certainty has a preventive, not just corrective, function. Certainty regarding information delivery obligations, service standards, risk sharing, payment protection, data management, and the right to compensation can encourage service providers to adjust their behavior before losses occur. At the same time, consumers have a clearer basis for assessing whether a personal shopping service meets appropriate standards. Thus, consumer protection not only occurs when a dispute arises but is built from the pre-contractual stage through transparency and clarity of legal relationships.

Brenncke (2024) which suggests that digital environment design can exploit consumers' behavioral biases and reduce their autonomy. These findings indicate that clear legal mechanisms are necessary to restrict and limit digital practices that systematically exploit consumer weaknesses. In entrusted service transactions, forms of exploitation do not have to be identical to dark patterns but can appear in the non-transparency of prices, additional costs that are only announced after ordering, incomplete product information, or one-sided refund provisions. Legal certainty can limit such practices by establishing more predictable standards of behavior and responsibility.

Gamito (2023), this study demonstrates that the existence of numerous protection instruments does not necessarily result in effective protection if their enforcement is fragmented or uncoordinated. This finding is relevant for consignment services in Indonesia, as transaction issues can intersect consumer protection, electronic transactions, digital commerce, data protection, customs, and dispute resolution laws. This means that legal certainty that results in consumer protection is not simply a multitude of regulations; it requires clarity regarding which institutions have authority, which procedures can be used, and who is responsible for specific losses.

This finding provides a theoretical contribution by positioning legal certainty as an institutional antecedent of consumer protection. Much digital commerce literature discusses transparency, privacy, unfair terms, merchant traceability, or complaint mechanisms as separate elements of consumer protection. This study integrates these elements through the construct of legal certainty and empirically demonstrates that the clearer and more predictable the legal environment, the stronger the perceived consumer protection in digital consignment activities. This extends the use of legal system theory by demonstrating that legal substance, structure, and culture not only determine legal effectiveness in the abstract but can also translate into consumer perceptions of protection in digital transactions.

Consumer Protection and Sustainable E-Commerce

The results of the study indicate that consumer protection has a positive and significant effect on the sustainability of e-commerce. Based on the results of the structural model test, the path coefficient of the relationship between consumer protection and e-commerce sustainability is 0.362, while the results of the hypothesis test produce a test statistic value of 3.676 with a probability value of 0.000. Thus, the

hypothesis stating that consumer protection has a positive effect on the sustainability of e-commerce is accepted. These results indicate that increased protection perceived by consumers contributes to the strengthening of the sustainability of digital commerce activities. In the research model, this relationship indicates that consumer protection is not only a normative consequence of e-commerce regulations but is also a determinant that directly supports the sustainability of the digital commerce ecosystem. In digital transactions, especially consignment services, consumers generally have more limited information than service providers regarding the quality and authenticity of goods, the identity of the original seller, price details, service fees, delivery processes, personal data management, and dispute resolution mechanisms.

The research findings indicate that the sustainability of e-commerce cannot be assessed solely on the basis of growth in the number of transactions, users, or economic value generated. Sustainability is also determined by the digital commerce system's ability to retain consumers through secure, transparent, accountable, and trustworthy transactions. This perspective is consistent with the research's conceptualization that consumer protection serves as an institutional infrastructure that supports the sustainability of digital commerce, not simply as a corrective instrument after losses occur.

Research results from the security aspect also become an important mechanism that explains the influence of consumer protection on the sustainability of e-commerce. Arizal et al., (2024), in a study of e-commerce consumers in Indonesia, security was found to have a positive impact on consumer trust and loyalty, while trust plays a significant role in shaping loyalty. These results support the study's finding that consumer protection that provides transaction security has the potential to foster long-term relationships between consumers and service providers. In digital consignment services, security is not only related to the technology system but also encompasses payment certainty, personal data security, product conformity, delivery security, and guarantees of resolution in the event of non-receipt of goods.

In the context of digital consignment services, post-transaction aspects are crucial because service providers can act as a liaison between consumers and the original seller. In the event of damaged goods, loss, delays, product errors, or refusal of a refund, consumers need clarity regarding who is responsible. This study found that consignment services have a hybrid legal character because service providers can act as agents, intermediaries, resellers, purchasing and delivery providers, or even engage in cross-border transactions. This situation makes consumer protection even more crucial, as unclear responsibilities can directly increase transaction risks.

In cross-border e-commerce, protection issues become more complex because transactions involve greater uncertainty regarding the seller, product, jurisdiction, payment, and delivery. Research on consumer trust in cross-border e-commerce indicates that the cross-border nature of transactions and perceived risk have a major impact on determining consumer trust. Other research on cross-border e-commerce platforms also indicates that consumer trust is a crucial element in explaining purchase intentions in situations with higher levels of risk. In the context of cross-border consignment services, consumer protection becomes even more important because consumers face additional risks such as

import duties, restrictions on goods, customs delays, exchange rate fluctuations, and difficulties in recovering funds when the parties involved are located in different jurisdictions.

These results also demonstrate that consumer protection has preventive, corrective, and developmental functions in digital commerce. The preventive function emerges when information transparency, payment protection, and data security prevent losses. The corrective function emerges through complaint mechanisms, refunds, compensation, and dispute resolution once losses have occurred. Meanwhile, the developmental function is reflected in the contribution of protection to trust, loyalty, repeat participation, and the healthy development of digital markets. Therefore, consumer protection should not be viewed as a regulatory burden that hinders the growth of e-commerce but as an institutional infrastructure that enables the sustainable development of digital commerce.

Legal Certainty, Consumer Protection and Sustainable E-Commerce

The results of the fourth hypothesis test indicate that perceived consumer protection mediates the positive relationship between perceived legal certainty and sustained consumer participation in digital markets. From the perspective of an economic analysis of law, these findings suggest that legal certainty not only directly influences consumer behavior but also operates through the legal system's ability to generate perceived protection. Legal certainty provides a normative structure regarding rights, obligations, responsibilities, and transaction consequences. However, this structure only generates economic benefits when translated into information transparency, payment security, personal data protection, clear accountability, and accessible complaint and redress mechanisms. Thus, consumer protection functions as a mechanism that transforms formal legal certainty into transactional security.

This mediation mechanism can be explained by reducing transaction costs and expected losses. In digital consignment transactions, consumers face uncertainty regarding the identity of the service provider, the source and authenticity of goods, price components, delivery times, payment security, the use of personal data, and who is responsible for damaged, lost, or non-conforming goods. Clear regulations can reduce this uncertainty, but the sustainability of transactions still depends on confidence that consumer rights can be effectively enforced. When refund, compensation, complaint, and dispute resolution procedures are available, the costs of information retrieval, monitoring, the risk of lost payments, and the costs of enforcing rights are reduced. These reduced costs increase the net benefits of transactions and encourage consumers to maintain their participation in digital markets.

This finding is in line with Eger and Scheufen (2024), which positions the rule of law as an institution that influences incentives, access to data, the distribution of benefits, risks, and efficiency in the digital economy. In this context, legal certainty is not solely assessed based on the existence of regulations but also on their ability to provide effective protection. Consumer protection serves as a link between formal regulations and consumers' economic decisions because it determines whether legally granted rights can significantly reduce transaction risks.

Chawla and Kumar (2022), the results indicate that a consumer protection framework encompassing security, privacy, product assurance, information quality, and customer service is associated with the formation of trust and loyalty in e-commerce. These findings support the conclusion that regulatory certainty is critical to encouraging repeat participation in e-commerce. These findings indicate that concrete protection instruments must embody regulatory certainty to generate repeat participation. Concrete protection instruments must embody regulatory certainty before generating repeat participation. Consumer protection, therefore, functions not only as a corrective instrument after a loss has occurred but also as a preventative institution that shapes consumer expectations before a transaction takes place.

The role of transparency also explains the mediation path. Luzak et al. (2023) found that the effectiveness of online disclosure obligations is determined by the clarity of standards, the understandability of information, and the consistency of enforcement. Formally available but difficult to understand information does not fully reduce information asymmetry. In consignment services, certainty about rules regarding prices, commissions, product conditions, shipping risks, and refund procedures only increases the sustainability of participation if the information is clearly communicated and can be used in decision-making. Therefore, consumer protection is an operational form of legal certainty at the transaction level.

The research results are also consistent with Singh et al. (2024), who found that information integrity, data confidentiality, and prevention of unauthorized data use build consumer trust, which further increases the intention to use e-commerce. Handoyo (2024), through meta-analysis, it also shows that trust, risk, security, and electronic information are important factors in online purchasing decisions. This evidence strengthens the argument that sustainable digital market participation is shaped not only by the existence of regulations but also by the perception that these regulations can reduce risks and protect consumers' interests.

This mechanism is increasingly relevant in consignment services operating through social media and instant messaging apps. In these transactions, the platform does not always process payments, verify the identity of the service provider, or provide buyer protection. The legal relationship also involves multiple parties: the consumer, the consignment service provider, the original seller, the digital platform, the payment provider, and the logistics company. This fragmentation increases the likelihood of shifting responsibility .Durovic et al. (2023) shows that the complexity of digital contracts and the unequal positions of the parties can increase consumer vulnerability. Meanwhile, Aade (2025) explains that trading via social media faces regulatory complexity, ambiguous interpretation, and gaps in enforcement. These conditions demonstrate that legal certainty will only foster market sustainability if it can provide effective protection across the entire transaction chain.

Theoretically, the research findings extend the analysis of the relationship between law and digital market sustainability by demonstrating that consumer protection is an institutional transmission mechanism. Legal certainty shapes expectations about how transactions should proceed, while

consumer protection determines whether these expectations are realized through security, accountability, and effective remedies. Thus, consumer protection is not simply a consequence of legal certainty or a compliance burden for businesses. It constitutes market infrastructure that can mitigate market failures, increase trust, and sustain digital economic exchange.

The policy implication is that additional regulations will not necessarily improve the sustainability of consignment services if they are not accompanied by implementation that consumers can feel. Policy priorities need to be directed at clarifying the status of consignment service providers, verifying identities, disclosing prices and commissions, providing information on the origin of goods, documenting transactions, protecting payments and personal data, sharing shipping risks, and ensuring certainty regarding responsible parties. Furthermore, we need straightforward online mechanisms for complaints, refunds, compensation, and dispute resolution that are proportionate to the transaction value. Moreover, we require straightforward online mechanisms for complaints, refunds, compensation, and dispute resolution that align with the transaction value. These mechanisms should be proportionate to the value of the transaction. This approach can reduce the gap between the law on the books and the law in action.

Conclusion

This study aims to analyze the influence of legal certainty and consumer protection on the sustainability of e-commerce in digital consignment services in Indonesia. The results show that legal certainty has a positive effect on the sustainability of e-commerce and consumer protection, while consumer protection also has a positive effect on the sustainability of e-commerce. These findings confirm that the sustainability of digital commerce is determined not only by technology and transaction growth but also by clarity of rights and obligations, information transparency, transaction security, data protection, and the effectiveness of complaint and redress mechanisms.

This study extends the application of Lawrence M. Friedman's Legal System Theory by demonstrating that legal substance, legal structure, and legal culture play a role in shaping legal certainty and consumer protection in digital commerce. The study also positions legal certainty as an institutional factor supporting consumer protection and the sustainability of e-commerce.

Personal shopping service providers need to improve price and fee transparency, product information clarity, payment security, personal data protection, transaction documentation, and mechanisms for complaints, refunds, and compensation. Regulators and digital platforms need clearer regulations regarding the status of service providers, the distribution of responsibilities, and simple and accessible dispute resolution mechanisms.

This study has limitations in that it only involved consumers as the unit of analysis. Future research could employ a longitudinal design, involving consignment service providers, platforms, regulators, and other supporting actors, and include variables such as trust, risk perception, digital security, service quality, and dispute resolution effectiveness. Comparative research between domestic and cross-border

consignment services To strengthen the generalizability of the results, researchers should conduct comparative studies between domestic and cross-border consignment services. Researchers should conduct comparative studies between domestic and cross-border consignment services to strengthen the generalizability of the results.

Declarations

Ethics statement

This study was reviewed and approved by the Research Ethics Committee of Sahid University of the Faculty of Economics and Business (Approval Ref./No. 011/USJ-12/I-50/2026). All procedures involving human participants were conducted in accordance with ethical standards of the institutional research committee and the Declaration of Helsinki (2013 revision).

Ethics approval and consent to participate

Informed consent was obtained from all participants prior to their participation in the study. Participants were informed about the purpose of the research, the voluntary nature of their participation, the confidentiality and anonymity of their responses, and their right to withdraw from the study at any time without any consequences. Only participants who provided informed consent were included in the study. No participants under the age of 16 were involved in this research; therefore, informed consent from parents or legally authorized representatives was not applicable.

Conflict of interest

The authors have no relevant financial or non-financial interests to disclose.

Consent to publish

Not applicable

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Author Contribution

Yuherman Yuherman is a lecturer at the Department of Law, Faculty of Law, Sahid University, Jakarta, Indonesia. This article is part of the first author's. The first author contributed to this article by conducting a literature review before designing the research model, writing the article as a whole, collecting and processing data, analyzing and interpreting the data.Ani Siska MY is a lecturer in the Master of Management Study Program, Postgraduate School, Sahid University, Jakarta, Indonesia. Ani Siska MY is the corresponding author. The second author of this article is the corresponding author, who contributed to the development of the research idea, critically revised the manuscript, provided advice during data processing, writing the article as a whole, collecting and processing data, analyzing and interpreting the data and gave final approval of the published version.Setyo Utomo is a lecturer at the Department of Law, Faculty of Laws, Panca Bhakti University, Pontianak, Indonesia. The third author of this article who contributed to the critical revision of the manuscript, provided advice on the storyline and theories used in this research, and gave final approval of the published version.

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Data Availability

The datasets generated and analyzed in this study are available from the corresponding author upon reasonable request.

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Figures

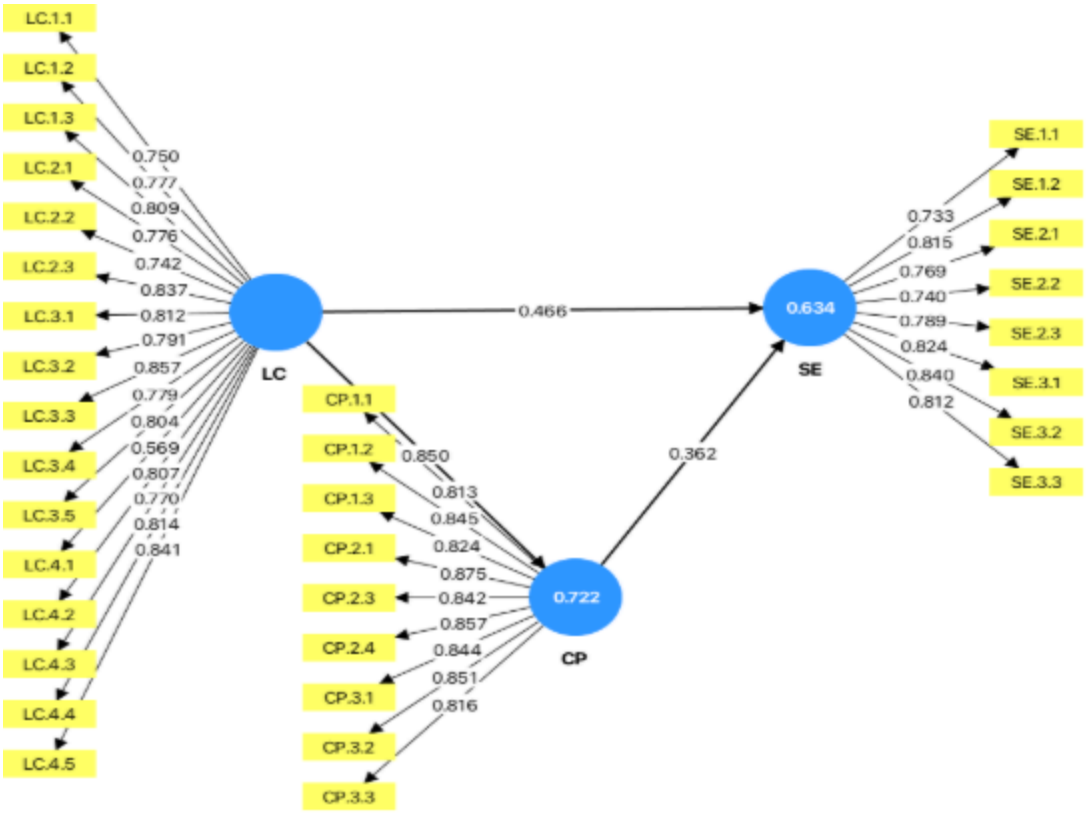


Figure 1

Model Output Structural Smart-PLS 4

Note: LC is legal certainty, CP is consumer protection, and SE is sustainable electronic commerce