

Telematics in Global Digital Trade: A Case Study of Temu and Shein and Its Implications For E-Commerce Regulations in Indonesia and UNCITRAL

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Abstract: Digital trade has rapidly developed with the support of telematics technology, which enables connectivity among economic actors worldwide. Major e-commerce platforms like Temu and Shein leverage this technology to accelerate product distribution and expand their market reach. Temu, with its business model that directly connects producers and consumers, reduces distribution costs and speeds up delivery. Shein, which adopts a fast fashion model, utilizes telematics-based applications to enhance the speed of production and distribution, as well as to quickly respond to fashion trends. Nevertheless, the global e-commerce sector faces significant regulatory challenges, particularly concerning digital taxation, consumer protection, and personal data protection. In Indonesia, these regulatory challenges become more complex due to cross-border digital transactions involving international platforms that do not fully comply with local regulations. Therefore, this study aims to analyze the role of telematics technology in supporting global digital trade and its impact on e-commerce regulatory policies, as well as to propose policy measures to address the existing challenges. This research uses a qualitative approach with document analysis and literature review from various related sources. The findings indicate that regulatory updates and stronger international cooperation are crucial to addressing cross-border e-commerce regulatory challenges and enhancing consumer protection and fair implementation of digital taxation.

Keywords: Telematics technology; global e-commerce; digital trade regulation.

Introduction

The rapid development of digital trade around the world is driven by telematics technology, which enables seamless connectivity between economic actors across countries. Telematics, which involves information and communication technology (ICT), facilitates more efficient and low-cost digital transactions, while accelerating the flow of goods and services between nations. As explained by Achmad in the Technology Acceptance Model (TAM), consumer acceptance of technology largely depends on factors such as trust, attitude, and intention to engage in transactions¹. In the context of e-commerce, consumer trust in platforms like Temu and Shein significantly influences their decision to participate in cross-border digital transactions.

According to Minan, various factors in technology acceptance play a significant role in influencing the level of Indonesian consumer participation in the e-commerce sector². The study indicates that the application of technology in e-commerce influences user behavior to continue transacting, especially on platforms offering more affordable and efficient products. This highlights

¹ Achmad, H. (2018). Technology Acceptance Model: Analisis terhadap Penggunaan E-Commerce di Indonesia. *Jurnal Teknologi dan Manajemen*, 10(2), 45-58

² Minan, *Penerimaan Teknologi dalam E-Commerce: Studi Empiris di Indonesia* (Jakarta: Penerbit Teknologi dan Ekonomi Digital, 2021).

the relevance of Temu and Shein, which have adopted app-based business models to accelerate global product distribution, thereby enhancing consumer access to goods and facilitating cross-border digital trade.

Furthermore, research by Hiep et al. demonstrates the positive impact of technology implementation in e-commerce on economic growth in Southeast Asia³. Countries in this region have experienced the benefits of e-commerce in expanding markets and increasing distribution efficiency. In Indonesia, however, the e-commerce sector faces challenges related to inadequate tax regulations for international digital transactions. Sukarno et al. and Koynja & Suryani emphasize the importance of tax regulations in governing cross-border e-commerce transactions⁴. The Indonesian government has issued several policies, such as Government Regulation No. 80 of 2019 and Ministry of Finance Regulation No. 210/PMK.010/2018, which aim to address tax supervision issues for digital transactions. However, these regulations still face implementation challenges.

UNCITRAL, as an international body responsible for regulating cross-border digital trade, plays a critical role in establishing regulatory guidelines that can accommodate the dynamic nature of the e-commerce sector. However, as noted by Elsig and Klotz and also Meltzer, current policies still fall short in keeping pace with the rapid changes occurring in this sector⁵. Burri also emphasizes the need for stronger international cooperation so that existing regulations can respond more effectively to the increasingly complex developments in global digital trade⁷. Research conducted by Chusumastuti et al. and Astuti and Pratama highlights challenges in the sustainability of digital commerce, particularly concerning environmental impacts and corporate social responsibility⁸. Platforms such as Shein and Temu face significant regulatory challenges in addressing environmental concerns, including energy consumption and waste generated by fast production models. These studies suggest that sustainability in e-commerce must go hand in hand with policies that not only support innovation but also prioritize environmental and consumer protection⁹. Therefore, more adaptive regulatory frameworks that can incorporate these multidimensional aspects are urgently needed to support sustainable e-commerce growth.

Based on the introduction above, this study raises two key research questions: What is the role of telematics in facilitating global digital trade, particularly through e-commerce platforms such as Temu and Shein, and what are its implications for the international trade system and existing regulatory frameworks? This question aims to analyze how telematics contributes to the efficiency and cost-effectiveness of international transactions and its broader impact on global e-commerce.

The second question is: What are the implications of e-commerce regulations in Indonesia and those developed by UNCITRAL on the business models of global e-commerce platforms such as Temu and Shein, and how can these regulations be optimized to promote fair and sustainable

³ Hiep et al., *E-Commerce and Digital Trade Growth in Southeast Asia*, *Journal of International Digital Economy* 15, no. 2 (2023): 112-129.

⁴ Sukarno et al., "Regulasi Pajak untuk E-Commerce Lintas Negara di Indonesia", *Jurnal Hukum dan Ekonomi Digital* 8, no.1(2022):25-40; Koynja & Suryani, *Tantangan Perpajakan dalam Perdagangan Digital*, (Bandung:Pustaka Ekonomi,2020)

⁵ Elsig, M., & Klotz, A. (2021). *The Normative Power of the Digital Trade Regime: UNCITRAL and Beyond*.

⁶ Meltzer, J. P. (2019). *Governing Digital Trade*.

⁷ Burri, M. (2021). *International Regulatory Cooperation in Digital Trade*.

⁸ Chusumastuti, D. R., Azizah, S., & Purnomo, H. (2023). *Sustainability Challenges in E-Commerce Business Models..*

⁹ Astuti Astuti, R., & Pratama, A. (2023). *Corporate Social Responsibility and Environmental Policy in Digital Commerce.*

trade? This part of the research focuses on how domestic and international policy frameworks influence these platforms and how they can be improved to strike a balance between innovation, sustainability, and consumer protection.

Method

This research adopts a juridical analysis and literature review approach to explore the interaction between telematics, e-commerce, and the prevailing regulations, particularly within the Indonesian context, while also considering the influence of international frameworks such as those established by UNCITRAL. This approach is designed to collect comprehensive data and to develop an analysis grounded in evidence and relevant literature.

From the juridical perspective, the study focuses on legal aspects related to e-commerce and international regulations, especially those applied by global e-commerce platforms such as Temu and Shein. A central component of this approach is a comparative study that examines the regulatory frameworks established by UNCITRAL and compares them with the policies in force in Indonesia and other jurisdictions. This comparative legal analysis aims to determine how far international regulations can harmonize global digital trade law, as discussed by Budiarti and Akbar, who underscore the critical role of regulation in building a robust e-commerce infrastructure in Indonesia¹⁰.

Moreover, the literature review constitutes an essential part of the research. This review gathers data from a variety of relevant written sources, including books, journal articles, and official documents, to offer a deeper understanding of the relationship between telematics, e-commerce, and international trade regulation. One significant source in this context is the work of Solihat and Sandika, who analyze communication management within e-commerce, providing insight into the marketing strategies employed by e-commerce actors¹¹.

The research also involves an analysis of official documents published by the Indonesian government, particularly those related to digital taxation and consumer protection in e-commerce transactions. In this regard, the study by Komala and Sugilar, which outlines e-commerce service categories and their impact on purchasing power, especially among SMEs, serves as an important reference for understanding consumer behavior in Indonesia¹².

To gather data, this research applies multiple methods, including a comprehensive literature review of books, academic articles, and publications that address current developments in telematics, e-commerce, and international trade regulation. Additionally, document analysis is conducted to evaluate Indonesian government policies and UNCITRAL guidelines related to e-commerce regulation and international digital tax frameworks. A qualitative approach is employed to interpret the regulatory context and its effects on e-commerce business practices. The study aims to explore several key areas: first, causality assessment to identify the relationship between regulatory frameworks and e-commerce practices in Indonesia and global markets; second, barriers and challenges evaluating the difficulties faced by platforms such as Temu and Shein in adapting to diverse national regulations, including regulatory challenges in Indonesia as highlighted by Ayu

¹⁰ Budiarti, I., & Akbar, A. (2021). *Pentingnya Regulasi dalam Membangun Infrastruktur E-commerce di Indonesia*.

¹¹ Solihat, A., & Sandika, B. (2022). *Komunikasi dalam Manajemen E-commerce*.

¹² Komala, R., & Sugilar, H. (2020). *Kategori dan Layanan E-commerce serta Dampaknya terhadap Daya Beli*.

and Nasution¹³; and finally, policy recommendations proposing enhancements to existing e-commerce regulations to make them more relevant and supportive of sustainable trade growth in the rapidly evolving digital era, as noted by Kusuma and Diyana¹⁴. By employing this integrated approach, the research aims to provide an in-depth understanding of the relationship between telematics and e-commerce, while assessing the role of regulation in facilitating or hindering the growth of the digital trade industry both nationally and internationally.

Result and Discussion

The Role of Telematics in Facilitating Global Digital Trade, Particularly Through E-Commerce Platforms Such as Temu and Shein, and Its Impact on the International Trade System and Regulatory Policies

Global digital trade has undergone significant transformation, driven by advances in technology particularly in the field of telematics which enable connectivity among economic actors worldwide. Telematics technology serves as a critical foundation in supporting efficient, low-cost digital transactions. Alongside this technological progress, e-commerce platforms such as Temu and Shein have harnessed telematics to accelerate distribution processes and expand their market reach, not only domestically but also internationally.

For instance, Temu employs a business model that facilitates direct connections between producers and consumers, thereby reducing distribution costs that often hinder international trade. By leveraging telematics, Temu can offer competitively priced products and ensure faster delivery times by bypassing intermediaries that typically increase transaction costs¹⁵. This model benefits consumers by providing access to lower prices and more efficient product delivery.

Shein, long recognized as a global leader in the fashion industry, has also capitalized on telematics-based applications to streamline the production and distribution of fashion products, in alignment with the fast fashion model. This technology allows Shein to respond rapidly and effectively to fashion trends, offering highly competitive prices in international markets. The company's efficient app driven strategy enables faster global market penetration, broader consumer access, and the availability of affordable fashion products¹⁶. By utilizing telematics, Shein has optimized global distribution, adapted to shifting market demands, and reduced costs associated with production and logistics.

The telematics revolution has had a substantial impact on the international trade system. E-commerce platforms such as Temu and Shein have transformed the trade paradigm by introducing more efficient methods for connecting producers and consumers worldwide. These technologies have facilitated easier access to international markets, thus increasing global trade volumes. However, the rapid growth of digital commerce also presents significant regulatory challenges that must be addressed to ensure fair and sustainable practices. Key among these challenges are consumer protection and equitable tax enforcement, both of which require serious attention at national and international levels.

¹³ Ayu, S., & Nasution, A. (2023). *Tantangan Regulasi dalam Platform Global*.

¹⁴ Kusuma, H., & Diyana, A. (2021). *Kebijakan E-commerce untuk Perdagangan Digital Berkelanjutan*.

¹⁵ Wang, Y. (2016). *Digital Distribution Efficiency in Cross-Border E-Commerce: A Case Study on Temu*.

¹⁶ Lv, Z. (2024). *Fast Fashion Logistics and Telematics: The Shein Model*.

In Indonesia, although the e-commerce sector is experiencing rapid growth, existing regulations remain inadequate in addressing the complexities of cross-border digital transactions. Issues such as consumer protection and taxation in international digital trade continue to pose major challenges. Global platforms like Temu and Shein often operate beyond the scope of local regulations and are not always in full compliance with Indonesian law. This situation creates legal uncertainty for both domestic consumers and local businesses, highlighting the need for more integrated and adaptive regulatory frameworks that can protect all stakeholders in cross-border commerce¹⁷.

At the global level, the United Nations Commission on International Trade Law (UNCITRAL) has played a crucial role in developing guidelines and frameworks for governing international digital trade. Despite these efforts, current policies still fall short of keeping pace with the rapid evolution of this sector¹⁸. This reveals a continuing need for improvement in policies and regulations to better accommodate the dynamic nature of digital trade. Consequently, stronger international cooperation and more responsive regulatory updates are urgently needed to ensure that global digital trade is fair, sustainable, and adequately protective of both consumers and businesses¹⁹.

Table 1.1. Comparison of Temu and Shein

Aspect	Temu	Shein
Business Model	Directly connects producers and consumers.	Fast fashion model based on a mobile application.
Main Advantages	Competitive pricing and efficient distribution.	Rapid distribution and international market access.
Regulatory Challenges	Digital taxation and consumer protection.	Copyright issues and environmental impact.
Telematics Strategy	Utilizes a platform for direct product distribution without intermediaries.	Uses a telematics-based mobile application for rapid production.

Source: *Processed from Various Business and Regulatory Literature (2023–2024)*

The table presented above provides a comparative overview of two major e-commerce platforms, Temu and Shein, focusing on key aspects that shape their strategies and operational models. The explanation of each element listed in the table is elaborated below.

Temu's business model centers on creating a direct connection between producers and consumers. This allows Temu to eliminate intermediaries in the distribution process, which in turn reduces costs and speeds up the flow of goods. The model strengthens efficiency and transparency, enabling consumers to access products at more competitive prices since no third party is involved in the transaction. Thus, Temu offers a more streamlined and cost-effective model for linking supply and demand.

As a leading player in the global fashion industry, Shein adopts an app-based fast fashion model. This model emphasizes speed in the production and distribution of goods to keep pace with rapidly changing fashion trends. Shein enables consumers to access the latest fashion items at

¹⁷ Sihombing, D., & Resen, I. (2024). *Challenges of International Digital Trade Regulation in Indonesia*.

¹⁸ Elsig, M., & Klotz, A. (2021). *E-Commerce and Global Trade Law: Assessing UNCITRAL's Role*

¹⁹ Dulherova, N., & Shvahireva, E. (2020). *Global Regulatory Frameworks for Sustainable Digital Commerce*

affordable prices by leveraging telematics technology to streamline procurement and distribution processes. Temu's main advantage lies in its competitive pricing and efficient distribution. By connecting producers directly with consumers, Temu reduces costs typically incurred from intermediaries. This allows them to offer lower product prices while enhancing the efficiency of goods delivery.

Shein's key strength lies in its rapid distribution and ability to quickly penetrate international markets. It uses mobile applications to expedite production and logistics, making it one of the few platforms capable of responding swiftly to global fashion trends. Shein's ability to efficiently distribute products allows it to maintain competitive pricing while achieving broad global reach. Like many other e-commerce platforms, Temu faces regulatory challenges related to digital taxation and consumer protection. In many countries, including Indonesia, regulations concerning digital transaction taxation and consumer data protection are still evolving. As such, Temu must adapt to the legal frameworks in the various markets where it operates to ensure legal compliance and maintain consumer trust.

As a global fashion e-commerce platform, Shein encounters challenges related to copyright and environmental impact. Its fast fashion model raises concerns about intellectual property violations and environmental damage resulting from mass production and textile waste. Additionally, Shein must comply with regulations on sustainability and corporate social responsibility, which are gaining attention in global markets. Temu utilizes a telematics-based platform to distribute goods without involving intermediaries. This technology simplifies the distribution chain, minimizes delivery obstacles, and accelerates transactions. By using telematics, Temu not only cuts costs but also increases the speed and transparency of its distribution process, offering added value to consumers.

Conversely, Shein leverages telematics-based applications to enable rapid production. This technology allows Shein to monitor market demand in real-time and adjust production accordingly to meet fast-changing fashion trends. Telematics applications also help Shein manage logistics efficiently, accelerate distribution, and optimize its global supply chain. Overall, both platforms Temu and Shein utilize telematics technology to optimize their operations in the digital commerce landscape. Temu focuses more on cost reduction by eliminating intermediaries, while Shein emphasizes speed and responsiveness to market trends. Although they face different regulatory challenges digital taxation and consumer protection for Temu, and copyright and environmental concerns for Shein both have demonstrated adaptability in aligning with existing regulations to thrive in the global digital trade environment.

In Indonesia, e-commerce regulations continue to face several challenges, particularly regarding the implementation of digital taxes and consumer data protection in cross-border transactions. While regulations such as Government Regulation No. 80 of 2019 and Minister of Finance Regulation No. 210/PMK.010/2018 have been issued, their implementation is hindered by various technical barriers. One of the primary challenges is monitoring transactions involving domestic actors and international e-commerce platforms, highlighting the need for more effective regulatory updates to govern cross-border digital transactions.

At the international level, UNCITRAL (United Nations Commission on International Trade Law) plays a key role in drafting guidelines to regulate cross-border digital transactions. However, current policies have not yet fully kept pace with the rapid evolution of the e-commerce sector. As

noted by Kugler and Castillo (2024), effective regulation of international e-commerce requires closer cooperation among countries to harmonize policies, ensure fair trade practices, provide adequate consumer protection, and respond to the fast-changing dynamics of the industry^{20,1}

Telematics functions as a technology that enables the global distribution of goods in a cost-efficient manner. However, it is crucial to ensure that digital trade not only yields economic benefits but is also sustainable and equitable. Platforms such as Temu and Shein must adapt to regulations that ensure digital commerce can continue to grow without harming consumers or the environment. Therefore, transparent and well-crafted regulations are essential to support the sustainable development of the e-commerce sector while prioritizing protection for all stakeholders involved. In facing these challenges, it is important to update regulations to be more adaptive to the rapid advancements in telematics technology. Stronger international collaboration is needed to reinforce existing legal systems, enabling faster and more effective responses to emerging challenges in the digital trade landscape²¹.

Implications of E-Commerce Regulation in Indonesia and UNCITRAL on the Business Models of Global E-Commerce Platforms

E-commerce regulations in Indonesia, along with the role of UNCITRAL, are critically important in shaping the digital trade ecosystem, particularly for major platforms such as Temu and Shein. In Indonesia, the rapidly growing e-commerce sector presents significant regulatory challenges, especially regarding digital taxation and consumer data protection. Although several regulations have been enacted—such as Government Regulation No. 80 of 2019 and Minister of Finance Regulation No. 210/PMK.010/2018 implementation issues remain. One of the key difficulties is monitoring cross-border transactions conducted by international e-commerce platforms, which often leads to legal uncertainty that can harm both businesses and consumers^{22 23}.

These regulations aim to govern digital and e-commerce transactions in Indonesia. However, enforcement still encounters multiple challenges. Chief among them is the effective oversight of international transactions, particularly those involving platforms like Temu and Shein that operate beyond Indonesia's legal jurisdiction. Effective oversight is essential to ensure compliance with tax obligations and local regulations, but Indonesia currently lacks the mechanisms to enforce these rules on foreign platforms operating without a physical presence.

Another major challenge lies in ensuring compliance with Indonesian law by international platforms. Many do not fully adhere to national regulations, creating legal uncertainty that negatively affects both local businesses and consumers. Additionally, data protection remains a critical issue in digital trade. Consumer personal data protection mechanisms are still limited, increasing the risk of data breaches and misuse of private information, which can significantly harm consumers.

²⁰ Kugler, L., & Castillo, J. (2024). *Governing Global E-Commerce: Towards Harmonized Legal Frameworks*. *Journal of International Commercial Law*, 29(2), 145–167.

²¹ UNCITRAL. (2023). *Legal Issues in International E-Commerce*. United Nations Commission on International Trade Law Report.

²² Marwan, A., Lubis, A., & Putra, H. (2022). *Urgensi Regulasi Perlindungan Konsumen dalam Transaksi E-Commerce Internasional*. *Jurnal Hukum dan Teknologi*, 6(2), 118–132.

²³ Darmayasa, I. M., & Kumontoy, C. (2022). *Implementasi Regulasi E-Commerce dan Tantangannya di Indonesia*. *Jurnal Kebijakan Publik*, 11(1), 47–59.

Given these challenges, it is essential to continuously improve existing regulations and enhance international cooperation, particularly with institutions such as UNCITRAL, which can provide cross-border regulatory frameworks. UNCITRAL plays a key role in helping countries draft adaptable regulations to address international digital trade issues, offering guidance that aligns with evolving market conditions and rapid technological advancements.

Table 1.2. Challenges of E-Commerce Regulation in Indonesia

Challenge	Description
Transaction Oversight	Difficulty in monitoring cross-border transactions, particularly those conducted by international platforms such as Temu and Shein.
Legal Compliance	The inability of international platforms to fully comply with local regulations creates legal uncertainty for consumers and domestic businesses.
Consumer Data Protection	Lack of adequate protection and oversight of users' personal data increases the risk of data breaches.

Source: Adapted from Meinarni & Willdahlia (2020); Rongiyati (2019); Indriyani (2017); Setiantoro et al. (2018)

The regulatory framework governing e-commerce in Indonesia includes several laws and government regulations, such as Government Regulation No. 80 of 2019 and Minister of Finance Regulation No. 210/PMK.010/2018. These regulations aim to establish a clear legal framework for the e-commerce sector, including the governance of digital taxation and consumer data protection. However, despite the formal enactment of these regulations, their implementation continues to face significant challenges.

One of the major challenges is the difficulty in monitoring cross-border transactions, particularly those conducted by international platforms like Temu and Shein. These platforms often operate without fully complying with local regulations in Indonesia, making it difficult for the government to enforce monitoring and control mechanisms. This creates potential risks for Indonesian consumers who engage in transactions with foreign platforms not bound by national regulations. According to Meinarni and Willdahlia (2020), the supervision of international transactions has become increasingly complex due to the growing volume of digital transactions involving foreign platforms²⁴.

In addition, many international platforms fail to comply fully with Indonesian regulations. Their inability to adhere to legal requirements creates legal uncertainty for both consumers and local businesses. These platforms frequently avoid taxation obligations and other legal duties imposed by the Indonesian government, resulting in an unlevel playing field between compliant local businesses and non-compliant foreign entities. As Rongiyati (2019) notes, this legal uncertainty can harm both consumers and domestic enterprises, fostering an unfair business environment²⁵.

Another critical issue is consumer data protection. Inadequate safeguards and oversight of personal data collected by e-commerce platforms pose significant risks for users. Without robust regulations, personal data obtained through digital transactions can be misused or leaked. For example, sensitive consumer data collected by international platforms may fall into the hands of

²⁴ Meinarni, R. & Willdahlia, S. (2020). *Legal Challenges in Monitoring International E-Commerce Transactions*. *Jurnal Hukum dan Teknologi*, 5(2), 101-112.

²⁵ Rongiyati, R. (2019). *Legal Uncertainty in Cross-Border E-Commerce Platforms*. *Jurnal Regulasi Digital Indonesia*, 4(1), 45-59.

unauthorized parties, causing serious harm to consumers. Indriyani (2017) and Setiantoro et al. (2018) argue that supervision over the use of personal data by international e-commerce platforms remains weak, thereby increasing the risk of data breaches with negative consequences for consumers^{26,27}.

Overall, while Indonesia has issued e-commerce regulations, the main challenges remain centered on monitoring cross-border transactions, ensuring legal compliance from international platforms, and providing adequate consumer data protection. As such, further regulatory reform is essential to address these issues and create a more transparent, fair, and secure e-commerce ecosystem for all stakeholders.

Meanwhile, the United Nations Commission on International Trade Law (UNCITRAL) plays a crucial role in harmonizing international trade law, particularly concerning e-commerce, by offering adaptable guidelines for member states engaged in digital cross-border transactions. UNCITRAL focuses on developing regulations that support efficient and fair international trade. Its presence is vital for addressing emerging global e-commerce issues such as digital taxation and consumer protection, which require clear and uniform legal frameworks across jurisdictions.

UNCITRAL has issued the Model Law on E-Commerce, serving as an international guideline that countries can adopt. This model law provides a legal structure that legitimizes digital transactions across jurisdictions and promotes global e-commerce system integration. Countries that adopt the Model Law can tailor their regulations to national contexts while maintaining legal consistency for cross-border transactions. According to Primadhany and Azizah (2023), this Model Law is instrumental in establishing legal certainty for both businesses and consumers engaged in international digital trade²⁸.

Table 1.3. The Role of UNCITRAL in E-Commerce

Aspect	Description
Model Law on E-Commerce	Establishes a legal framework for digital transactions that can be adapted by member states.
Digital Tax Regulation	Highlights the need for updated digital tax policies to ensure fair revenue distribution for countries.
Dispute Resolution	Guides resolving cross-border e-commerce disputes.

Source: Adapted from Primadhany & Azizah (2023); Cahyadi & Margana (2018); Sari (2018)

The Model Law on E-Commerce is one of the most important initiatives undertaken by UNCITRAL to regulate e-commerce at the international level. This model provides a clear legal foundation for countries to develop laws and policies related to digital transactions. Through this legal framework, countries can design regulations that not only meet their domestic needs but also accommodate the increasingly complex nature of cross-border e-commerce. This facilitates greater integration within the global trade system and ensures legal protection for businesses and

²⁶ Indriyani, T. (2017). *Data Protection Issues in Indonesia's Digital Marketplace*. *Jurnal Hukum Siber*, 2(1), 33-40.

²⁷ Setiantoro, A., Pranata, H., & Mardiani, N. (2018). *Cybersecurity and Consumer Protection in Southeast Asian E-Commerce*. *Southeast Asian Law Review*, 6(3), 75-89.

²⁸ Primadhany, F., & Azizah, L. (2023). *UNCITRAL's Model Law on E-Commerce and Its Role in International Digital Trade Regulation*. *International Journal of Trade Law and Technology*, 9(1), 15-28.

consumers worldwide. Primadhany and Azizah emphasize that the Model Law allows countries to address e-commerce challenges without compromising their existing national regulations²⁹.

One of the key issues in international e-commerce is digital taxation. Many countries, including Indonesia, face difficulties in collecting taxes from transactions carried out by international platforms operating within their territories. These platforms frequently fail to comply with local tax obligations, which can negatively impact national economies. UNCITRAL plays a critical role by offering guidelines for developing digital tax regulations to address this problem. Updating regulations to include digital tax provisions helps countries secure fair revenue from international transactions while also preventing tax avoidance by foreign entities. According to Cahyadi and Margana, and Sari, reforms must target cross-border digital taxation in order to create a more transparent and equitable tax system for all parties involved^{30,31}.

In a global e-commerce environment involving cross-border transactions, dispute resolution is another critical concern. Parties engaged in international transactions often operate under different jurisdictions, making dispute resolution more complex. UNCITRAL guides for countries to develop effective and efficient dispute resolution mechanisms. These guidelines enable business actors to resolve e-commerce disputes fairly without being constrained by differences in national legal systems. As noted by Primadhany and Azizah (2023), UNCITRAL's role in facilitating international dispute resolution is vital in building trust among consumers and businesses and reinforcing confidence in the global e-commerce framework³².

The role of UNCITRAL in the e-commerce landscape is indispensable in addressing global challenges resulting from the rapid expansion of the digital sector. By providing the Model Law on E-Commerce, advocating for the modernization of digital taxation frameworks, and offering guidance on dispute resolution, UNCITRAL helps countries build a more harmonious and effective legal infrastructure. This is essential to support the sustainability and growth of a more transparent, efficient, and fair e-commerce ecosystem—both domestically and internationally.

Based on the regulatory challenges faced in e-commerce, policy optimization measures are crucial to ensure that digital trade can progress fairly and sustainably. The following section elaborates on a policy recommendation table proposed to address the key regulatory issues in e-commerce.

Table 4: Policy Recommendations to Optimize E-Commerce

Action	Description
Regulatory Reform	Updating tax regulations to strike a balance between protecting users and attracting investment.
Data Protection	Enhancing personal data protection regulations to ensure the security of consumer information in digital transactions.
International Cooperation	Strengthening intergovernmental collaboration to harmonize e-commerce laws and policies, thus increasing compliance and legal certainty.

Source: Adapted from Sari (2018); Indriyani (2017); Primadhany & Azizah (2023)

²⁹ Primadhany, L. A., & Azizah, S. (2023). *UNCITRAL and Its Role in Harmonizing International E-Commerce Law*. *Journal of Law and Digital Economy*, 11(2), 145–162.

³⁰ Cahyadi, I. A., & Margana, A. (2018). *Urgency of Cross-Border Digital Taxation in the Era of Global E-Commerce*. *Indonesian Journal of Fiscal Policy*, 3(1), 66–80

³¹ Sari, M. (2018). *Digital Tax Reform: Ensuring Tax Fairness in Cross-Border E-Commerce*. *Journal of International Trade and Policy*, 6(4), 210–225.

³² Primadhany, L. A., & Azizah, S *op. cit.*, 11(2), 145–162

One of the most crucial steps in supporting fair and sustainable e-commerce is the reform of taxation regulations. Given the rapid growth of the e-commerce sector, which involves cross-border digital transactions, existing tax regulations need to be adjusted to strike a balance between consumer protection and the creation of an investment-friendly environment. This reform is essential to ensure that countries receive fair revenue from digital transactions without hindering the growth of e-commerce and foreign investment. Sari emphasizes the importance of updating digital tax policies to establish a system that is more transparent and equitable, thereby benefiting both governments and business actors domestic and international³³.

Consumer personal data protection in the e-commerce environment has become a highly important issue, especially as the volume of digital transactions involving private information continues to grow. Without adequate regulation, consumers are at risk of data breaches or misuse of their personal information by e-commerce platforms. Therefore, a necessary step is to strengthen personal data protection regulations to ensure that consumer data is always safeguarded in every transaction. Indriyani (2017) argues that stricter and more comprehensive regulation is essential to prevent the misuse of personal data and to maintain consumer trust in e-commerce platforms³⁴.

As e-commerce increasingly involves cross-border transactions, international cooperation among countries is crucial to harmonize e-commerce laws and policies. Many nations, including Indonesia, face challenges in monitoring and regulating international e-commerce platforms operating within their domestic markets. Thus, international collaboration in aligning e-commerce laws and regulations can enhance compliance and create a safer and more structured digital trade ecosystem. Primadhany & Azizah (2023) highlight that international cooperation is necessary to formulate policies that address global e-commerce challenges, such as tax evasion and non-compliance with consumer protection standards³⁵.

These policy optimization steps are vital to foster a fair and sustainable digital trade environment. Fair tax reforms, stronger consumer data protection, and closer international cooperation can help countries more effectively regulate the rapidly growing e-commerce sector. With such measures, the digital trade ecosystem is expected to continue expanding, generating benefits for businesses while ensuring optimal protection for consumers around the world.

Conlusion

The rapid development of global digital trade, driven by technological advancements particularly in telematics has significantly transformed how cross-border transactions are conducted. Major e-commerce platforms such as Temu and Shein utilize telematics to accelerate product distribution and expand their market reach both domestically and internationally. This technology enables efficient distribution, reduces costs associated with international transactions, and allows products to be offered at more competitive prices. However, behind these advancements, the e-commerce sector faces significant challenges related to regulating cross-border digital transactions. In Indonesia, although e-commerce regulations have been enacted, challenges remain,

³³ Sari, M. (2018). *Digital Tax Reform: Ensuring Tax Fairness in Cross-Border E-Commerce*. *Journal of International Trade and Policy*, 6(4), 210-225

³⁴ Indriyani, R. (2017). *Regulasi Perlindungan Data Pribadi dalam Era Digital*. *Jurnal Hukum dan Teknologi*, 5(2), 87-98.

³⁵ Primadhany, L. A., & Azizah, S. (2023). *UNCITRAL and Its Role in Harmonizing International E-Commerce Law*. *Journal of Law and Digital Economy*, 11(2), 145-162.

particularly in monitoring cross-border transactions, enforcing legal compliance by international platforms, and protecting consumer data. Therefore, regulatory reforms that are more adaptive are necessary to create a fair, transparent, and secure digital trade ecosystem. The role of UNCITRAL (United Nations Commission on International Trade Law) is crucial in providing guidelines that can be adapted by countries for international digital transactions. UNCITRAL's Model Law on E-Commerce offers a legal foundation that enables countries to draft consistent regulations, maintain the integration of global trade systems, and ensure protection for both consumers and business actors. Reforming digital tax regulations, enhancing consumer data protection, and strengthening international cooperation are key policy measures needed to support sustainable digital trade. Collaboration among countries is essential to harmonize e-commerce policies and regulations at the global level. This will ensure that international digital trade continues to grow in a fair and efficient manner, benefiting all stakeholders involved while ensuring optimal consumer protection. Moving forward, it is essential to strengthen existing legal systems, update regulations to be more responsive to technological developments, and foster closer international cooperation to support a healthy and sustainable digital trade ecosystem.

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