

Research on the Security Risks of Digital Empowerment and the Participation of "Blockchain+" in RCEP Commerce Strategy

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Abstract: Digital empowerment of cross-border commerce presents various risks, including data security and privacy protection, virtual currency risks, technological vulnerabilities and smart contract security, as well as legal compliance risks. The implementation of "Blockchain+" can foster an improvement in addressing these dangers. Based on the Porter Diamond Model framework and the characteristics of "blockchain+", RCEP trading enterprises can increase their market competitiveness through transparent supply chain management, convenient cross-border payment, quality control of products and traceability, and intellectual property protection. These measures offer competitive advantages and support for RCEP trading enterprises.

Keywords: Blockchain+; RCEP commerce; Digital empowerment

1. Introduction

1.1. Research background

In the 1860s, following improvements made by British engineer James Watt to the steam engine, the use of manual labour shifted towards mechanical production. The key elements driving the development of groundbreaking technology were coal, steel and steam engines. From the latter half of the 19th century until the start of the 20th century, electricity began to replace steam, and through product assembly, the division of labour was attained, thereby promoting industrial growth on a large-scale. Since the 1940s, the focus has shifted towards information technology control, which has become a revolution represented by atomic energy, electronic computers, space technology and bioengineering. During the first stage of the modern industrial revolution, China promotes the use and development of big data and artificial technology to convert industrial production into a quantifiable operation. The resulting quantified data can be used to create an intelligent operating system. Therefore, in the era of the digital economy, blockchain technology is an essential tool for ensuring data security and enabling its effective use. (Berg, M. & Hudson, P., 1992) The utilization of blockchain technology in diverse sectors is steadily increasing. The financial industry particularly applies blockchain in various aspects such as cross-border payments, transaction settlements, digital currencies and more. The research covers the implementation of blockchain to enhance transaction efficiency, decrease expenses, and improve security. Blockchain technology is utilised to improve logistics and supply chain management, leading to advancements in research and practice regarding product traceability, information sharing, and contract fulfilment. The investigation into blockchain technology in intelligent manufacturing concentrates on establishing distributed manufacturing networks, introducing trust mechanisms between devices, and exchanging information in order to encourage the digital transformation of the manufacturing industry (Xu, M., 2019). Furthermore, researchers are investigating how to employ blockchain technology to guarantee the security of intellectual property, avoid piracy and infringement, and support innovation and intellectual property protection.

2. From the perspective of cross-border commerce: security risks of the application of new generation information technology

The implementation of cutting-edge information technology in international commerce has

presented numerous security hazards, encompassing data confidentiality, online security, conformity to intellectual property regulations, and other areas.

2.1. Data privacy and leakage issues

Cross-border commerce involves a significant amount of sensitive data, including commerce secrets and customer information. The adoption of new advanced information technologies may increase the risk of data privacy breaches. For instance, applying cloud computing and big data technology in cross-border commerce may compromise data security and subject it to abuse and attack. This, in turn, poses a potential threat to the privacy rights of both enterprises and individuals. Firstly, data breaches in data privacy can cause harm to an institution's reputation and credibility, which may result in a lack of trust among consumers and partners. This can hamper firms' competitiveness in the global market, thereby impacting their overseas trading activities. Secondly, data breaches could potentially instigate legal action and regulatory inquiries, leading multinational enterprises to incur penalties and sanctions from various nations' governments and regulatory bodies. The measures and regulations safeguarding data privacy may differ across various countries, necessitating significant time and resource investment by firms to address the manifold legal impediments. Data privacy breaches can result in the exposure of intellectual property and the theft of commerce secrets. This can cause significant harm to the competitiveness of enterprises, particularly those involved in multinational technological innovation, research, and development. Additionally, such breaches may present compliance and risk management challenges in cross-border commerce. (Li, H., et al., 2019) Companies should consider reviewing their data management and security measures to guarantee compliance with diverse regulations in various countries and regions, which could raise operational expenses and commercial risks.

2.2. Network security issues

Cross-border commerce plays a crucial role in the development of the digital economy. Network security issues have received considerable attention during this period. Cybersecurity concerns can result in the disclosure of confidential information in cross-border commerce, including commerce secrets and customer data. This situation can significantly harm the trust between companies and trading partners, thereby affecting the sustainable development of commerce cooperation relationships. Secondly, cybersecurity threats could cause data security issues in cross-border commerce. In such commerce, a significant amount of transaction data, payment information, and supply chain data must be transmitted and stored through the network. If hackers attack or infect this data with malicious software, it could have a severe impact on trading activities, leading to commerce disruption. (Islam, M. R., et al., 2021) Cybersecurity concerns can impact the supply chain and logistics of cross-border commerce. The efficiency and reliability of cross-border commerce depend on the stability and security of the highly interconnected supply chain networks and logistics systems. Network attacks or data breaches can result in the immobilisation of logistics systems, which in turn can impact the transportation and delivery of goods, leading to direct financial losses in cross-border commerce.

2.3. Intellectual Property Compliance

Intellectual property compliance is frequently disregarded by multinational trading firms. Multinational corporations must follow the intellectual property laws and regulations of various countries while conducting business in those countries. Infringement of intellectual property rights, including patents, trademarks, copyrights, and more, can result in litigation, fines, and even economic sanctions, harming a company's global reputation and commerce endeavors. Secondly, compliance with intellectual property regulations can impact the innovation capacities and competitive edge of multinationals. When such enterprises engage in cross-border commerce involving technology transfer, joint research and development, or market promotion, they must guarantee adequate protection of their intellectual property to prevent infringement or theft by third parties. Furthermore, guaranteeing adherence not only safeguards the firm's research and development accomplishments and trade secrets but also augments their competitive stance in the global market (Svensson, M., & Larsson, S., 2012). Lastly, the matter of intellectual property conformity necessitates negotiations and enforcement of agreements in intercontinental trade. When entering into agreements with international partners, it is essential to thoroughly assess intellectual property compliance to protect the lawful rights and interests of all parties involved. This also serves to establish stable, long-term cooperative relationships and facilitate smooth commercial activities by clarifying the responsibilities and obligations of both parties with regards to intellectual property.

3. Porter Diamond Model: Strategies for Enhancing RCEP commerce Competitiveness through "Blockchain+" Participation

The utilization of blockchain technology can furnish enterprises with a more efficient, secure, and reliable transaction infrastructure to engage in RCEP commerce. This enhances their competitiveness in commerce. From a theoretical perspective, using the Porter diamond model, enterprises can contemplate employing the "blockchain+" model to tackle the opportunities and challenges presented by RCEP commerce.

3.1. Production factors

From a production factor perspective, blockchain technology can integrate with various production factors to enhance enterprises' competitiveness in RCEP commerce. Initially, blockchain technology can establish cross-border financing platforms that facilitate global financing connections and transparency through the use of functions such as smart contracts and digital asset issuance. This enables enterprises in RCEP commerce to enhance fundraising efficiency, reduce financing costs, and increase fund flexibility. In addition, blockchain technology can establish talent authentication and traceability systems, ensuring the reliability and authenticity of labour identity and skills in international commerce. This promotes labour mobility, better adapts to cross-border labour demand in RCEP commerce, and improves labour market competitiveness. Thirdly, blockchain technology enables the traceability and verification of raw material sources and production processes, ensuring compliance and safety. This improves the traceability and credibility of raw materials, enhances product quality assurance and sharpen the competitiveness of RCEP commerce. Fourthly, blockchain technology can provide a means to establish registration and protection systems for intellectual property, ensuring the effective safeguarding of enterprises' patents, trademarks, copyrights, and other intellectual property rights. This can augment both innovation capacity and competitive advantage of enterprises involved in RCEP trade.

3.2. Related and supporting industries

By combining blockchain technology with supporting industries, enterprises can improve the efficiency of their supply chain management, enhance cross-border payment convenience, ensure better product quality control, and strengthen their intellectual property protection capabilities in RCEP commerce. This, in turn, will enhance their overall competitiveness in the commercial sector. Blockchain technology can be utilised to create a traceable management system for supply chains, promoting transparency and visibility regarding the entire process of raw materials and product flow. Through blockchain technology, businesses can improve monitoring of the upstream and downstream flow of information in the supply chain, lowering the risk of information asymmetry while enhancing the response speed and flexibility of the supply chain. This enables more effective responses to the complex supply chain environment in RCEP trade, boosting delivery efficiency and reducing costs. Additionally, blockchain technology is applicable to the optimization of logistics management and cross-border payment systems. For instance, an international trade settlement platform that operates with smart contracts can promptly settle cross-border transactions and fund settlements, decrease remittance expenses, mitigate exchange rate volatility risks, and enhance fund utilization efficiency. As a result, this improves transaction convenience and cost competitiveness for corporations engaged in RCEP commerce. Abbreviations will be explained upon their first use. (Farshidi, S., et al., 2020) Thirdly, the utilization of blockchain technology may allow for the establishment of a system to trace product quality and guarantee safety. By means of blockchain's immutability and transparency, product production, processing, and transportation may be tracked. This could enhance product traceability, credibility, and ultimately meet the quality and safety requirements of RCEP trading partners, further improving product competitiveness.

3.3. Enterprise strategy, structure, and competitive conditions

Integrating blockchain technology into a company's strategy, structure, and competitive conditions can benefit the business in adapting to the requirements of RCEP commerce, enhancing international commerce competitiveness, and accessing more business opportunities. Initially, enterprises can devise strategies related to blockchain technology and clarify its positioning and function in cross-border commerce. This involves identifying how to apply blockchain to supply chain management, quality control, and intellectual property protection, as well as integrating it with existing strategic goals of

businesses to enhance overall commerce efficiency and reduce costs. Secondly, firms must restructure their organizational framework and processes in line with blockchain technology features, together with RCEP commerce requirements. This entails enhancing internal information sharing and collaboration, instituting cross-departmental data sharing mechanisms, and utilising blockchain technology to its full potential to enhance work efficiency and reduce redundancy. Furthermore, enterprises can establish tight partnerships through blockchain technology to achieve global information sharing and cooperation. By creating an "alliance chain" using blockchain technology, our objective is to increase transparency and efficiency in the commerce process and improve the overall competitiveness of the supply chain. Additionally, it is imperative for enterprises to enhance their research and implementation of blockchain technology, and adjust their commercial strategies and structures in a timely manner to adapt to the rapidly changing international commerce environment.

4. Conclusion

By analyzing security risks in the new generation of information technology applications in cross-border commerce, it becomes evident that blockchain technology offers versatile competitive advantages for businesses engaging in RCEP commerce. Firstly, establishing cross-border financing platforms, talent certification and traceability systems, and intellectual property registration and protection systems can improve the efficiency of capital raising, labour mobility, and product quality assurance for enterprises in RCEP commerce. This, in turn, enhances their market competitiveness. Consistent citation will be used throughout. Secondly, in conjunction with accompanying industries, blockchain technology can function as a tool to develop transparent supply chain management systems, refine logistics management and cross-border payment networks, as well as improve product quality traceability systems, ultimately enhancing supply chain responsiveness and flexibility, whilst diminishing transaction costs, augmenting product integrity, and satisfying the quality and safety requirements of RCEP trading associates. Finally, incorporating blockchain technology into an enterprise's strategy, structure, and competitive conditions can benefit the enterprise by enabling it to adapt to the demands of RCEP commerce and bolster its international commerce competitiveness. Businesses can formulate plans pertaining to blockchain technology, restructure their organisations and processes, as well as enhance their research and utilisation of blockchain technology to ameliorate the effectiveness of overall commerce, lower expenditures and procure additional business prospects.

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