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THE ROLE OF ELECTRONIC PAYMENT METHODS IN ACTIVATING AND STIMULATING CROSS-BORDER E-COMMERCE - CHINA AS A MODEL

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Abstract

The study aims to demonstrate the role of electronic payment methods in activating and stimulating cross-border e-commerce in China. It relied on quantitative methods and a descriptive and analytical approach. To achieve the study's objective, SPSS version 27.0 was used to analyze a questionnaire directed to a sample of 210 respondents in the import and export market. It also used a set of tests, including Cronbach's alpha, correlation coefficients, and multiple and simple regression coefficient tests. The results showed that the use of electronic payment methods has a significant impact on activating and stimulating cross-border e-commerce. It was found that improving the independent variables by one-unit results in a 2,736-unit improvement in the level of cross-border e-commerce for each improvement unit. Reflecting its role in facilitating foreign exchange, reducing costs, and saving a lot of time, as the impact of the dimension (comfort and ease) was greater, reaching a value of (0.624) units, which highlights its decisive role in adopting and using electronic payment methods to activate and stimulate cross-border e-commerce.

Keywords: *electronic payment methods; digital currencies, bank cards; international trade; cross-border e-commerce.*
JEL Codes: F41, F81, N15

Introduction

The buying and selling of goods and services in this era cannot take place without a payment tool, whether traditional or electronic, especially when it comes to cross-border e-commerce and foreign trade.

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Our current era has witnessed significant developments in the fields of technology, communications, and the financial industry. The digital transformation has also encompassed all aspects of citizens' daily lives, whether personal, professional, or financial, which has increased the importance of modern payment methods of various kinds.

For any trade, whether local or international, to reach the high and favorable levels desired by both buyers and sellers, there must be an appropriate means to ensure that the exchange of sales and purchases of goods and services occurs quickly and securely, keeping pace with developments in the field of trade and finance.

What is meant by this method here is the existence of payment methods that aim to facilitate the methods of settling transactions in trade, and enhance their efficiency in light of technological progress and communication? The renaissance that both foreign trade and cross-border e-commerce have witnessed in the method of settling their transactions, especially since traditional payment methods were unable to keep up with this type of commerce, which relies primarily on electronic and internet-based platforms, it was necessary to consider finding a suitable alternative.

Based on these reasons, specialists have begun to think and research on finding modern alternatives to traditional payment methods, in order to keep pace with the changes taking place and help settle commercial transactions taking place in the field of foreign trade and cross-border e-commerce, which are represented by electronic payment methods of all kinds. This importance has necessarily led to the recognition and acknowledgement that electronic payment methods have become an indispensable and essential pillar in settling commercial and financial transactions, especially during times of crisis. This is precisely what happened during the COVID-19 pandemic, as global foreign trade witnessed a significant slowdown. According to the World Trade Organization, the annual growth rate of global trade has not exceeded 3% Since 2012, China, a leader in technology, digital payments, and cross-border e-commerce, has recorded an average annual growth rate of 3.41% during the period (2011-2020). This is due to the maximum use of the Internet and digital technology, as the share of cross-border e-commerce in China has increased to approximately 5% of total foreign trade (Dokken & ATO Beijing Staff, 2023, p. 2).

Therefore, both payment methods and systems enable individuals and businesses to engage in cross-border commercial transactions and send money to friends, family, and loved ones living in other countries. In order to understand and study the nature and type of relationship between electronic payment methods and their security concerns when used in cross-border e-commerce in China, we will attempt to answer the following question:
To what extent do electronic payment methods contribute to stimulating and activating cross-border e-commerce?

Hypotheses

Through this study, we seek to answer the problem posed within the framework of the following hypotheses:

Main Hypothesis: The increased adoption of electronic payment methods leads to the activation and revitalization of cross-border e-commerce.

From this main hypothesis, the following two sub-hypotheses branch out:

Sub-Hypothesis 1 (Hs1): Electronic payment methods contribute to the convenience and ease of cross-border transactions, which leads to the promotion of cross-border e-commerce.

Sub-Hypothesis 2 (Hs2): Speed and efficiency are the most important attributes leading to the adoption of electronic payment methods in cross-border e-commerce.

Sub-Hypothesis 3 (Hs3): Electronic payment costs are important in increasing the activation and stimulation of cross-border e-commerce.

Literature Review

Electronic or digital payments are payments made via electronic transfers rather than using paper checks or physical cash (Kabir, Saidin, & Ahmi, 2015). They are also viewed as a means of communication between institutions and individuals with the help of banks and financial and transfer networks (Briggs & Brooks, 2011). These transfers are usually made online. From payer to recipient via an electronic payment channel that enables customers to manage their accounts and track their transactions online (Teoh, Chong, Lin, & Chua, 2013). It takes place in the e-commerce environment in the form of financial exchange via electronic media. These means are integrated into a general system known as the electronic payment system, which consists of a set of rules, institutions, and mechanisms used to conduct money transfers from one account to another. With the aim of fulfilling obligations arising from economic, commercial and financial activities (Victory, 2022), this system creates many methods that enable the transacting parties to conduct or pay for goods and services through an electronic means. It contains many elements such as payment instruments, a clearing mechanism for settlement, etc., as well as the institutions participating in its management, such as banks and non-banking financial institutions. Money transfer agencies, remittance companies, the central bank, etc. (Victory, 2022) Electronic payment systems cannot be used or implemented on the ground unless the necessary infrastructure, such as the internet, is available and in place to facilitate the payment process. These are essential for further development in the field of e-commerce and business (Abdul Aziz & Muneeb, 2019). It has many features, including assurance, maintaining the security and confidentiality of information, security, availability, cost-

effectiveness, and integration capabilities. In light of these features, we find that the vast majority of consumers have begun using various electronic payment methods to settle their daily transactions, due to convenience (Jebarajakirthy & Shankar, 2021) and efficiency (Kaur, Dhir, Bodhi, Singh, & Almotairi, 2020). Cost-effectiveness (Mukhopadhyay, 2016), in addition to the following factors: relative advantages, compatibility, complexity, trialability, perceived usefulness, perceived ease of use, perceived risk, trust, etc. (Muliad & Usman, 2023).

Innovation is defined as an individual's willingness or desire to experiment with any new information technology (Midgley & Dowling, 1978). It also refers to the extent to which customers adopt innovations earlier than others, according to the diffussion of innovations theory by Rogers (1983). Several applied studies have been conducted in this field by a group of scholars and experts, who found that personal innovation influences adoption behavior for various innovations in information technology systems (Aydin & Burnaz, 2016). This is based on the relative advantage of the innovation, which refers to the benefits it offers compared to previous solutions. The greater the relative advantage the adopter receives, the faster the innovation will be adopted and accepted (Rogers, 1983). This was confirmed by the experimental study conducted by Al-Jabri & Sohail (2012) on the adoption and acceptance of mobile banking in Saudi Arabia, as well as by Nor, Pearson, Michael, & Altaf (2010). Those who conducted a study on the adoption of online banking, using diffusion of innovation theory with undergraduate and graduate students at four universities in Malaysia, as well as studies by Moore & Benbasat (1991), Mccloskey (2006), and Lin (2011). Fit is viewed as the extent to which a new innovation aligns with current values, past experiences, and societal needs. If the innovation is similar and compatible with the values and standards that potential users adhere to, it is adopted more quickly, and vice versa if it is not appropriate, it is difficult to adopt. This is what Royer (1983), Chen, Gillenson, & Sherrell (2004), Nor, Pearson, Michael, & Altaf (2010), Ndubisi & Sinti (2006), and Al-Gahtani (2003) have concluded. While complexity indicates the difficulty of using an innovation—in other words, the rate at which it will be adopted—complexity has a negative relationship with the adoption of new innovations (Cheung, Chang, & Lai, 2000), (Luarn & Lin, 2005) and (Wang, Lin, & Luarn, 2006). The lower the level of complexity, the faster the adoption of a new innovation, and vice versa. The more complex the innovation, the more difficult it is to adopt (Au & Kauffman, 2008), (Tahar, Riyadh, Sofyani, & Purnomo, 2020), (Bauer, Barnes, Reichardt, & Neumann, 2005), (Wulandari, Meuwissen, & Karmana, 2017). Trialability refers to the ability to try out a new innovation before committing to its use (Muliad & Usman, 2023), (Tan & Teo, 2000), (Agarwal & Prasad, 1998). The role of observability in electronic payment adoption decisions lies in its perception of the ease with which the results of using the new innovation

can be seen and evaluated. For others, the easier it is to perceive the benefits of an innovation, the more quickly it will be adopted and embraced (Muliad & Usman, 2023), (Al-Jabri & Sohail, 2012). These perceived benefits indicate the extent to which an individual believes that using electronic payment will enhance the efficiency of their transactions (Wardana, Saputro, Wahyuddin, & Abas, 2022). This feature helps consumers decide whether or not to accept a system, based on their perception of its ease of use. This perception is considered one of the key dimensions that significantly influences the acceptance of new technologies and technological systems (Davis, Bagozzi, & Warshaw, 1992). This is based on the perception that an individual develops when using a new system, whether it is effortless or easy to implement (Davis & Davis, 1989). Perceived risks also limit adoption and acceptance, as they include concerns about privacy, security, and the potential for financial loss during transactions (Chelvarayan, Yeo, Yi, & Hashim, 2022). However, the pivotal role that trust plays in the acceptance and use of electronic payment systems and methods remains important and necessary, as it reduces uncertainty and mitigates concerns about security and privacy breaches. Despite the availability of trust, perceived risks remain a major obstacle to the widespread use of these methods. They indicate the degree of risk associated with the use of innovation and, consequently, the degree of adoption of all types of electronic payment applications. Customer perceptions of risk are typically created by doubts about the degree of discrepancy between customer judgment and actual behavior. The failure of technology to achieve the expected results and the resulting losses (Al-Jabri & Sohail, 2012). Rewards are also considered among the most important external motivators and incentives that drive individuals and consumers to seek adoption and acceptance of these methods. They come in the form of tangible benefits (cash incentives, vouchers, free gift items, raffles, etc.). Thanks to these rewards consumers are willing to go to great lengths to obtain them (Aydin & Burnaz, 2016). This is what Kim and Han (2014) demonstrated regarding marketing communications and advertising. They found that customers' focus on advertisements increases when the message includes benefits. Social influence is also evident in the acceptance and adoption process when consumers encounter a new product, and they may feel uncertain. Regarding these products, their characteristics, and the consequences of their use, this uncertainty can be reduced by obtaining the opinions of others (family, friends, reference groups) that the consumer values.

This adoption and acceptance have actually translated into reality through the emergence of new business and financial trading models. Similar to e-commerce, which has become an inevitable reality in keeping pace with the new technological developments that have imposed their dominance over the daily and practical lives of societies, e-commerce refers to transactions that include all types of commercial information

exchanged between companies and individuals, or companies and companies, and which rely on the electronic exchange of data. Whether written, visual, or audible, it also includes the effects resulting from the electronic exchange of commercial data and information (Shuqing, 2009), (Kim, 2022). Cross-border e-commerce is defined as the commercial transactions that take place between different regions and countries around the world via e-commerce platforms. This trade includes all international activities related to e-commerce. Consumers purchase goods and services online from merchants located in countries other than their own (Ding, Huo, & Campos, 2017), with transactions conducted virtually using digital platforms (Wang, 2017). It also extends to include integrated services, such as customs, taxes, logistics, and electronic payments, facilitating business transactions, saving time and costs, and opening new channels for international trade. This enhances the efficiency, effectiveness, and speed of exchange between different parties (Lan, Ouyang, Gu, & Wang, 2023), (Chen, Li, Song, & Ma, 2022).

This development in these types of trade is due to the emergence of a wide and diverse group of factors that have contributed to driving and significantly enhancing them, such as the rapid development of technology, the increasing degree and value of innovation, and the embodiment of digital transformation locally. Internationally, in addition to the improvements and updates to e-commerce platforms, electronic payment technologies, and artificial intelligence applications (Vivian, Abla, & Tahani, 2022). The renewal and development of logistics services and international transport and shipping infrastructure were among the most important factors that contributed to facilitating the movement of goods between borders, as they provided express shipping services and accurate parcel tracking, in addition to the cooperation achieved. Between logistics companies and e-commerce companies, this has enhanced the possibility of delivering products faster and at a lower cost (Chen, Qiu, Wang, & Yang, 2022). Meanwhile, the increased spread of communication and high-speed internet across the globe has made access to e-commerce extremely easy and simple for everyone (Yin & Choi, 2021). As for agreements, Trade and regional blocs such as (free trade zones spread around the world) have encouraged many companies to expand their activities beyond their local borders (Zhang, 2016). Despite its widespread spread, it still suffers from a set of shortcomings and obstacles that prevent its development and further generalization around the world, such as the consumer culture, which includes cultural differences (Chen et al., 2022) and language and its barriers (Yin & Choi, 2021), (Wu & Li, 2023). The merchant's reputation and reliability (Wang & Street, 2019). The difficulty of achieving a position in the market, obtaining market share, and building a distinctive brand (Fefer, 2022) due to the unbalanced and unfair competition with major companies with distinctive and well-known brands, which are always working to expand their international operations, This threatens the growth and stability of these

emerging companies with unknown brands. Furthermore, counterfeiting and imitation of products and brands poses a major challenge, preventing consumers from engaging in trustful transactions with sellers across borders (Fefer, 2022). Differences in regulatory procedures, rules, and laws between most countries of the world, and differences in data protection and privacy laws Variation in policies regarding product returns, fees, taxes, and customs laws (Wu & Li, 2023).

Methodology

The current study was designed to achieve its objective by relying on a quantitative approach. This approach is an effective research method for accessing the largest possible number of samples and collecting primary data to explain the phenomenon under study. An electronic questionnaire was used as a study tool, with the goal of providing accurate, reliable, and valid data. The questionnaire was created based on analysis, designed within an analytical framework, the research instrument comprised 19 items measured using a five-point likert scale. The survey captured key dimensions namely the usability of electronic payment systems, transaction efficiency, and cost structures in order to examine their influence on strategic decision-making in cross-border e-commerce (CBEC). The real reason for using this tool is the lack of necessary secondary data that could be used in the study. The online survey was administered to a targeted sample comprising 60% importers and 40% exporters. To enhance of the study, participation was restricted exclusively to representatives of small and medium-sized enterprises (SMEs) and e-commerce firms. Individual consumers were intentionally excluded in order to preserve a focus on professional business activities, encompassing both B2B and B2C operations, rather than consumer-driven retail purchasing behavior, during the period from June 2025 to July 2025 in the Chinese market. From a geographical perspective, the majority of respondents represented firms operating within the Chinese market, predominantly located in the Pearl River Delta (Shenzhen and Guangdong) and the Yangtze River Delta (Shanghai and Hangzhou), regions widely recognized as key hubs for cross-border e-commerce (CBEC). Additionally, approximatelly 10% of the surveyed firms were foreign-invested enterprises (FIEs) operating in China, while the remaining 90% consisted of domiestically owend Chinese firms. The questionnaire was distributed regularly online. It was also sent to the above-mentioned individuals for distribution and collection, and data and responses were collected during the aforementioned time period. The number of distributed questionnaires reached 250, and the distribution process was carried out digitally. At the end of the collection period, 210 survey results were deemed valid for statistical analysis. In order to ensure to increase the accuracy and external validity of survey results, 40 of the 250

questionnaires withdrawn were excluded due to missing data, incorrect responses, or incomplete answers, so 210 questionnaires were ultimately approved and used for analysis.

Results

Testing the reliability of the study tool (Questionnaire):

Table no. 1. Results of Cronbach's alpha coefficient to measure the reliability of the questionnaire.

Study topics	Dimensions	Number of paragraphs		Cronbach's alpha coefficient		
Axis 1: Electronic payment methods	First dimension: comfort and ease	05	14	0,763	0,684	Good ratio
	The second dimension: speed and efficiency	04		0,728		Good ratio
	The third dimension: cost	05		0.702		Good ratio
Axis 2: Cross-border e-commerce	-	05		0,944		Excellent ratio
The total sum of the study		19		0,718		Good ratio

Source: Prepared by the researcher based on the outputs of the SPSS.V.27 program for the study sample individuals.

From the table above, it is clear that the stability of the value of the first axis (the independent variable) indicating the use of electronic payment methods is stable and good, as the Cronbach's alpha measurement coefficient for the first axis reached a value of approximately (0.684), while with regard to the Cronbach's alpha value for the first dimension of the first axis, it reached (0.763), which is a good value. Which is a good value, and if this indicates anything, it indicates that the phrases of the first dimension are characterized by strong internal consistency between them and the dimension to which they belong. The same thing applies to the second and third dimensions of the first axis, as they reached (0.728) and (0.702) respectively, which is a good percentage, and that the phrases of the second and third dimensions are characterized by very strong internal consistency with the dimension to which they belong. For the second axis (the dependent variable), it reached approximately 0.944, an excellent percentage, indicating the strength of internal consistency among the statements in the second axis. A more accurate interpretation can be given from the results of the table above, which indicates that the overall stability value for the impact of the use of electronic payment methods on e-commerce is good. The stability rate in all the questionnaire phrases, which numbered (19) phrases or paragraphs, ranged (0.718), which are considered high and good stability coefficients, which explains

the degree of consistency between the phrases, considering that the value of Cronbach's alpha, whenever it is greater than (0.60), i.e., it is close to the correct one, this indicates the stability and internal consistency of the scale used in the study (approach of Feldt et al (1987)), It is the standard percentage for accepting or rejecting Cronbach's alpha coefficient, which reflects its accuracy, reliability, acceptance, and validity for use in analyzing field study data. This, if it indicates anything, indicates that if the study were repeated on the same sample and under the same conditions, we would find a match in the results at a rate of (71.8%), which confirms the validity and reliability of the approved study measurement tool. It gives us confidence in its validity and suitability for analyzing results, answering study questions, and testing hypotheses.

Normal Distribution Test for the Study

The Kolmogorov-Smirnov test allows us to determine whether the data is normally distributed. It is frequently used to measure the validity of hypotheses, in line with the nature of the distribution, as most studies rely on the normal distribution of data for their analysis.

Table no. 2. Normal distribution test for all study axes

Sig level of significance	K-S value	
0,257	0,185	All topics of the study

Source: Prepared by the researcher based on the outputs of SPSS.V.27 for the study sample.

From the results of the table above, it is clear that the significance level of the Kolmogorov-Smirnov test is greater than 0.05, indicating that the overall study data follow a normal distribution, allowing us to rely on parametric tests to analyze the study data.

Hypothesis Testing

Table no. 3. Results of the Multiple Regression Coefficient Test.

T signification	β	F Signification	F value	R^2	R	Independent variables	Dependent variable
	2,736	**The constant**					
0,000	0,624	**0,000**	545,607	0,888	0,942[a]	First dimension: comfort and ease	Cross-border e-commerce
0,000	0,04					The second dimension:	

						speed and efficiency	
0.000	0.02					The third dimension: cost	
Multiple linear regression equation for the overall model							
$\boldsymbol{Y_i = 2,736 + 0,624X_1 + 0,04X_2 + 0.02X_3}$							

Source: Prepared by the researcher based on the outputs of the SPSS V. 27 program for the study sample members.

From the table above, we note that the results obtained from the multiple linear regression analysis indicate that the multiple linear regression model is significant, as shown by the Fisher value (F = 545.607), where the value of (β) that explains the relationship between The dependent variable (cross-border e-commerce) and the independent variable (use of electronic payment methods) are represented by the three dimensions with a value of (2.736) with a significant statistical significance (0.000) which is smaller than the significance level (α=0.05). These results explain that the independent variables explain about (88.8%) of the variance in (activating and activating cross-border e-commerce), given the value of (R^2) the coefficient of determination. This means that every time the dimensions of the independent variable (use of electronic payment methods) improve by one unit, the level of cross-border e-commerce improves by 2,736 units. The value of (β_1), which illustrates the relationship between (activation and activation of cross-border e-commerce) and the dimension (convenience and ease), reached a value of (0.624), which is a statistically significant value. This can be concluded through the value of (T) and the associated significance, which is estimated at (0,000), which is less than the significance level (α=0,05). This means that whenever the dimension (comfort and ease) improves by one unit, the level of (activation and activation of cross-border e-commerce) improves by (0,624) units.

The value of (β_2) for the dimension (speed and efficiency) was (0.04), which is a statistically significant value, as this can be deduced from the value of (T) and the moral significance associated with it, which is estimated at: (0.000) less than the level of significance (α=0.05), and this means that whenever the dimension (speed and efficiency) improves by one unit, the level of (cross-border e-commerce) improves by (0.04) units.

As for the value of (β_3) of the dimension (cost), it is (0.02), which is a statistically significant value, as this can be deduced from the value of (T) and the moral significance associated with it, which is estimated at: (0,000) less than the level of significance (α=0,05),

and this means that whenever the dimension (cost) improves by one unit, the level of (cross-border e-commerce) improves by (0.02) units.

Based on the above, we can conclude the following: The null hypothesis is rejected and the alternative hypothesis is accepted, which claims that there is a statistically significant effect at a significance level (α=0.05) for the independent variable, the use of electronic payment methods, represented by the three dimensions, in activating and enabling cross-border e-commerce. However, the clearest and greatest effect was for the independent variable (X_1), represented by (convenience and ease).

The multiple linear regression equation for the study as a whole can be written as follows:

$$Y_i = 2{,}736 + 0{,}624X_1 + 0{,}04X_2 + 0.02X_3$$

Y_i: Dependent variable (activation and activation of cross-border e-commerce)

β: Constant, equal to 2.736

X_1: Convenience and ease

X_2: Speed and efficiency

X_3: Cost

Many previous studies have confirmed the positive effects of using electronic payment methods in developing cross-border trade, including the study (Ivan, 2024), which concluded that electronic commerce plays a major role in reducing the costs of international trade, improving the efficiency of transactions, and encouraging innovation in global business practices. Challenges such as online security, intellectual property protection, and cross-border payments must also be addressed to maximize their benefits. The study, "The Role of Electronic Payment Methods in Developing Foreign Trade - Iraq as a Case Study," indicated that the use of electronic payment methods contributes to modernizing and revitalizing foreign trade and driving its growth. However, their effectiveness remains dependent on structural reforms and infrastructure investments. A study by Li et al. (2024) finds that digital payments significantly improve international trade by reducing barriers to cross-border capital flows and strengthening trade ties. However, their impact varies depending on the level or degree of trade openness of countries. In countries with high levels of trade openness, the impact is significant and increases international trade growth, while its impact remains limited in countries with low levels of trade openness. It also highlights the need to improve digital payment infrastructure and enhance data that supports the integration of digital payments into international trade. As for the study by Sadaoui (2024), while arguing and emphasizing that electronic banking services facilitate commercial transactions by reducing costs and accelerating trade, on the one hand, it did not fail to highlight the significant delay in Arab countries' adoption of these technologies and tools, even though the United Arab Emirates is making rapid progress toward an

advanced digital banking system (Kere & Zongo, 2023)**.** Also argued that rapid digital transformation is crucial to boosting intra-trade between the sample countries, and that the use of information and communication technology (ICT), in particular (Internet, mobile phone, introduction of mobile payment services), has a significant positive impact on exports. However, this effect is moderate for manufactured goods, even though access to electricity is a key factor in the effectiveness of ICT. The results of a study (Shlapak & al, 2023) showed that digital transformation reduces the costs of international trade, accelerates trade, and enhances innovation. However, the digital divide remains a major obstacle, especially for developing countries. Regarding the study by Alqarni (2023), it concluded that there was a significant improvement in transaction speed (85% of respondents), a decrease in transaction costs (75%), and an increase in trade volume (65%). However, there are still barriers that must be overcome, such as the lack of a coordinated regulatory framework (55% of respondents), and security concerns (45% of respondents).

As Bhatt et al. (2023) showed, age, gender, perception, and transaction amounts significantly influence the use of digital payments in international trade. Digital payments via PayPal offer multiple advantages, such as speed, security, and the ability to track transactions, reduce hidden costs, and facilitate cross-border e-commerce. In addition to the use the widespread adoption of digital payments plays a key role in the development of global trade. The research paper also highlighted the obstacles and difficulties associated with electronic payments, such as fraud risks, high fees for international transactions, and the threat of cyberattacks. A study by Hasan (2021) concluded that blockchain provides greater transparency and traceability of products in the supply chain. It reduces the complexity of traditional commercial transactions and allows for faster payments. It also does not hide the significant challenges facing widespread implementation, including regulatory issues and a lack of awareness of the technology's benefits in some countries. A study by Chen (2020) showed that electronic payments expedite transactions, minimize transfer costs, and minimize the risk of currency fluctuations. However, there are still shortcomings and obstacles in the areas of transaction security and the reliability of credit systems, which require improved regulatory frameworks and risk management systems.

A study by European Parliamentary Research Service (2020) also demonstrated that blockchain technology can improve supply chain efficiency, thanks to its contribution to reducing costs and delays while enhancing transparency and combating fraud and counterfeiting.

As for the studies that recommended the need to correct imbalances and overcome obstacles and security and regulatory concerns, which we believe have an impact on the use of electronic payment methods in cross-border trade, such that this impact is according to the degree of these concerns. The more there is control and ability to address security

and regulatory concerns, the more there is an improvement in trade, and vice versa. The greater the security and regulatory concerns, the more negative their impact on trade. In addition to the above, numerous studies have addressed the relationship between the independent and dependent variables, including: Li et al. (2024), Sahlan & Nasution (2024), Shlapak et al. (2023) ,(Alqarni, 2023), (Bhatt et al., 2023), (Nabila et al., 2022) , (Victory, 2022), (Wua et al., 2021), (Hasan, 2021), (Chen, 2020),(Ahmedov, 2020), (Derindag et al., 2019).

Discussion

Thanks to the tremendous revolution brought about by technological innovation in the economy, finance, and business, digital payments using electronic payment methods have created a better environment for cross-border capital flows and reduced barriers to these flows. Reducing these barriers to cross-border capital flows and payments contributes to increasing the import and export of goods and services between countries. This supports the formation of a promotional impact on foreign trade.

Under the traditional conditions of cross-border transactions, exporters and importers in the past, and even today in some regions of the world, were forced to undergo complex payment and settlement processes. They relied on cross-border banks to achieve final payment and comprehensive settlement of trade transactions, which required a certain level of knowledge in the field. Both parties and more time.

However, with the emergence of digital payments and electronic payment methods as a new method for settling payments, electronic payment methods have significantly revitalized the settlement process and reduced the difficulty of settlement across the world.

Today, digital payment platforms (cross-border e-commerce platforms) are directly responsible for negotiating with banks. Both parties can easily exchange foreign currencies, pay and receive, and exchange local currencies on these platforms. Furthermore, this process does not require large sums of money for transactions, providing significant convenience in foreign trade. In terms of payment and settlement operations and scope.

On the other hand, eliminating or reducing barriers to cross-border capital flows will create a favorable environment and conditions that encourage increased international investment, which often results in increased exports and imports of technology, factors of production, goods, and services, thus providing an incentive and impetus for the development, growth, and revitalization of cross-border trade. This explains the enhanced impact of reducing barriers to cross-border payments on international trade relations. This status China has attained did not come out of nowhere, but rather as a result of the importance Chinese political authorities place on this sector. They have taken the initiative

to establish comprehensive pilot zones for cross-border e-commerce, supporting the stability of foreign trade. For example, in 2015, the government approved the establishment of 165 pilot zones, increased internet bandwidth from 2Gbps to 5Gbps, emphasized the adoption and expansion of digitalization, and imposed and encouraged the use of electronic payment methods (Wu & Li, 2023, p. p186). In general, this section will address the most important points, initiatives, and actions undertaken by China to achieve its current status in the field of digitization and electronic payments.

Participation in numerous cross-border initiatives, including mBridge, a platform based on distributed ledger technology (DLT), which aims to improve, encourage, and secure cross-border payments through the issuance and exchange of Central Bank Digital Currencies (CBDCs) by several central banks (Bank for International Settlements, 2022, p.8).

This project is the result of cooperation between the Bank for International Settlements (BIS) and four (04) central banks from Asia and the Middle East: Hong Kong Monetary Authority, Bank of Thailand, Central Bank of the United Arab Emirates, and the World Currency Institute. The People's Bank of China's digital platform has also invited several central banks from around the world as observer members to provide transparency and flexibility. These include Bank Indonesia, Bank Negara, Malaysia, Korea, Sweden, Rikki, and staff from the Eurosysteme Innovation Center at the Bank for International Settlements and the New York Innovation Center at the Federal Reserve Bank of New York (Bank for International Settlements, 2022, p.9).

The project includes twenty (20) participating commercial banks, which can make cross-border payments directly with each other, using central bank digital currencies. The project has many advantages that can be summarized as improving the speed of cross-border payments, reducing costs, increasing transparency, and reducing financial risks.

Thanks to this project, China was able to make the Chinese digital currency more integrated with global payment systems, and it also strengthened its cross-border trade, as it acquired a large share of the project’s transactions, due to the large volume of its regional trade, and it also enabled it to manage liquidity with complete flexibility. For example, within six (06) weeks, currencies were issued to central banks with a total value of 12.1 million US dollars. 164 cross-border payment transactions were conducted, with a total value of US$22.1 million, of which China accounted for 23.6 million yuan (Bank for International Settlements, 2022, p. P 4). The mBridge project is an innovative pilot initiative aimed at restructuring cross-border payments systems through central bank digital currencies. It contributes to massive transactions, with China receiving significant benefits, in terms of promoting the global use of e-CNY.

Transaction costs were high in cross-border trade, due to different institutional frameworks and the need for cross-border financial transactions and foreign exchange transactions. However, with the emergence of cross-border e-commerce companies in China, which have begun to use artificial intelligence and robotics extensively to improve their storage and distribution networks and plan routes more efficient delivery and optimal utilization of their warehouses, and many startups are developing autonomous robots that work alongside humans and track inventory on shelves in warehouses, factories, and distribution centers, have contributed to reducing costs and facilitating trade.

E-commerce and mobile banking platforms facilitate cross-border payments: E-commerce platforms have developed their own payment systems for cross-border transactions. These systems facilitate the exchange of goods and services across platforms. This has helped bypass banking infrastructure, reducing delays and eliminating processing fees. It increases the efficiency of international transactions, to the point where they reach the level of efficiency of domestic transactions. For example, the Chinese platform (Alipay), and the American platforms (Amazonpay and PayPal) are some examples of popular payment systems in the world. In light of the global slowdown in foreign trade, cross-border e-commerce platforms in China have emerged as a solution to the dilemma, thanks to making the most of the internet and digital technology, cross-border e-commerce has flourished in China, expanding into global markets. In 2021, cross-border e-commerce volume reached 1.96 trillion yuan, a 15% year-on-year increase. In 2022, it exceeded 2 trillion yuan, reaching 2.1 trillion yuan, registering an annual growth rate of 1.5%. By 7.1%. In the first half of 2023, China's trade value reached $152.7 billion, an increase of 16% over the same period in 2022. In addition, since 2020, the share of cross-border e-commerce has increased to about 5% of China's total foreign trade (Dokken & ATO Beijing Staff, 2023, p.2), making China a leader. It is a leader in the global cross-border e-commerce market, while the United States and Europe hold shares estimated at 27% and 18%, respectively. Therefore, cross-border e-commerce platforms have become a fundamental component of China's foreign trade and a key driver of its growth (OMC, 2018, p. P 79).

The role of youth in driving innovation in cross-border payment systems: They have contributed to finding practical solutions for electronic payment that have enabled small and medium-sized enterprises to bypass traditional systems and reduce costs. For example, Taobao Maker is a good example, demonstrating that youth have become the driving force for innovation (AliResearch, 2017, p. 32).

Initiatives and proposals by the private sector and governments to propose solutions: The most ambitious initiative is the Alibaba initiative, which plans to create a network of digital free trade zones, which would allow micro, small and medium-sized enterprises to

sell their products in other countries without import duties, and with fast and low-value customs clearance.

The first such zone was established in Malaysia in 2017 to facilitate trade between that country and China (OMC, 2018, p. 86). In 2020, Alibaba's platform included 200,000 sellers and more than 20 million buyers from more than 200 countries and regions around the world. In 2022, the total registered goods reached $35 billion (Feng & al, 2024, p. 1). Since 2016, Alibaba has transformed from a display site to a cross-border commerce platform, incorporating payment, transaction, and settlement functions, allowing buyers and sellers to conduct secure transactions. Thirty (30) warehouses have been allocated in major cities in China, with coverage from more than twenty (20) global shipping lines. During the pandemic, when many companies faced significant logistical challenges, Alibaba offers flexible logistics solutions tailored to the needs of diverse businesses. It has also developed a comprehensive foreign trade services system, offering a wide range of services, including factory security checks, certification to help buyers select reliable suppliers, and secure payment platforms. To address the issue of trust between merchants and buyers, it has provided numerous tools. Such as cargo global, which ensures accurate and efficient delivery, in addition to a credit guarantee system in cooperation with Ant Financial and international banks. It also introduced the Worry-Free-Set Soil strategy to help companies quickly digitize their products, promising to do so within 30 days of signing the contract (Yang, 2022). Some Chinese logistics companies are also trying to improve the efficiency of cross-border shipments. This is in line with another approach taken by major companies: establishing what are known as "fulfillment centers." Using big data analytics, they can predict the level and quantity of demand for certain products, export them in the traditional way, import them, and store them in warehouses in the importing country. This way, they can ship products directly to consumers very quickly. Today, there is an alternative to this model: a modern model that involves storing products in free zones and importing small shipments after each order (AliResearch, 2017, p. 4).

The Chinese government's utmost importance to digitization, the digital economy, and the digitization of foreign trade:

General Secretary Xi Jinping has placed great importance on developing the digital economy. This is achieved by issuing many policies and directives. Starting from 2015, China has developed more than (34) policies and 609 domestic policies to develop the digital economy and foreign trade. This is in addition to the initiative for developing the digital economy and cooperation of the Group of Twenty (G20) at the Hangzhou Summit in 2016, as well as the Digital Silk Road Project in 2018. In 2019, the National Digital Economy Pilot Zone's implementation plan for innovation and development in the digital economy was drawn up and implemented, with a focus on establishing a benchmark for

innovation and development in the digital economy in China. In 2020, the Regional Comprehensive Economic Partnership agreement was signed, with agreements covering trade issues. Digitalization, telecommunications, and cross-border trade are important areas for high-level open cooperation among signatory countries. In 2021, the Government Work Report was released, focusing on digital maturity, industrial digital transformation, and accelerating the construction of a digital society (Zhang & Li, 2022, p. 5).

Fierce competition with leading countries in the digital and electronic payment fields. China and other leading countries in this field are engaged in a geopolitical race in artificial intelligence, digitalization, technology, the Internet of Things, and digital payments. They have developed various policies and strategies to promote innovation in these areas, including high levels of government spending. Amid this escalating conflict, the United States, for example, has repeatedly complained. The Chinese government repeatedly demonstrates its disrespect for intellectual property rights. In 2020, China pledged to refrain from requiring American companies to transfer their technology as a condition for entering the Chinese market (Jones, 2023, p. 75).

Pursuing the internationalization of the Chinese yuan: Given China's advantage in financial technology, it is seeking to transform its official currency into a digital currency. The digital transformation of the Yuan (e-CNY) is a project spearheaded by the People's Bank of China. Launched in 2014, the project relies on central bank digital currencies (CBDCs), capitalizing on another advantage: the yuan's inclusion in the Special Drawing Rights basket in 2016, joining the US dollar, euro, Japanese yen, and British pound. In January 2021, China has launched a joint project with SWIFT to develop payment and data integration systems (Deng, 2024, p. 3). Recent studies indicate that expanding the international use of the yuan depends on trade and political exchanges between China and the target countries. China has also developed strategies to promote the use of the yuan in global markets. Recent studies indicate that expanding the use of the yuan internationally depends on trade and political exchanges between China and the target countries. China has also developed strategies to promote the use of the yuan in global markets, such as establishing a settlement center in London, providing exchange lines, and opening investment markets linked to the yuan (Deng, 2024, p. 5). With the introduction of the e-CNY digital yuan, China has a new tool to further its plans to increase the international use of the yuan. This digital currency can facilitate the spread of technology and expand economic efficiency. Chinese payment systems, such as Alipay and WeChat, are also contributing to this project, indicating integration with global payment systems operated by Unionpay (Deng, 2024, p. 7).

Establishing the Cross-Border Interbank Payment System: The CIP system is a key tool for the internationalization of the Chinese currency (RMB). In 2022, this system

processed approximately 96.7 trillion yuan, with 1,427 financial institutions connected to it in 109 countries and regions. In 2023, the China Investment and Transaction Service processed approximately 6.6 million transactions, with a total value of 123.06 trillion yuan.

That's a 50.29% increase in size and a 27.27% increase in value. As of 2024, the system has approximately 150 direct participants and 1,401 indirect participants spread across four continents. What's most striking about the system, however, are its contributing members. In addition to the People's Bank of China as the largest shareholder, there are state-owned Chinese banks, foreign shareholders, such as HSBC and Standard Chartered, also participated.

Other electronic payment methods saw significant growth during the fourth quarter of 2023, with the number of bank accounts reaching 14.465 billion, an increase of 0.64% compared to the previous quarter. Non-cash transactions reached 152.253 billion, worth 1.338.75 trillion yuan. Bank card usage rose to 9.787 billion. Electronic payments recorded 77.891 billion transactions, worth 862.92 trillion yuan. The total number of online payment transactions reached 24.512 billion, worth 711.39 trillion yuan. Mobile payment transactions Mobile transactions recorded 49,392 billion transactions, worth 134.06 trillion yuan, an increase of 10.46%. Electronic payment systems processed 353,799 billion transactions, worth 3,085.95 trillion yuan, an increase of 20.99 and 14.24%, respectively, compared to the previous year.

Competing with the US dollar: China began 2020 with its digital currency experiments while the rest of the world was busy. The COVID-19 pandemic has been ostensibly aimed at curbing the dominance of private payment instruments such as Alipay and Wechtpay, which offer digital payment services (Aysan & Nawaz, 2022, p. 3), and curbing and combating virtual and cryptocurrencies. However, the real goal is to support and internationalize the renminbi and its use in cross-border payments, especially after Trump's 2017 threats to block it from accessing the SWIFT system. Therefore, after creating and experimenting with this currency, China sought to replace the US dollar as the global reserve currency several times (most recently with the BRICS group, which announced the creation of a unified currency for settlement and payments), through the cross-border use of the digital renminbi (RMB) (Avgouleas & Blair, 2024, p. 5).

Today, China is considered the most important country to have expressed this so far. It aspires to have other countries use its digital currency as a means of exchange for international payments, with the ultimate goal of strengthening China's position in international trade relations, through the potential replacement of the US dollar as the global reserve currency by the digital renminbi (RMB) in the near or distant future (Avgouleas & Blair, 2024, p. 7).

In general, the development of electronic payment methods in a country can effectively reduce barriers to cross-border money flows and strengthen trade ties with other countries, enhancing the position of these tools in foreign trade. Furthermore, countries with a high level of digital payments development have lower barriers to capital flows between them. Which increases the intensity of trade links between them and makes global trade more integrated and interconnected.

Conclusion

This study aims to examine the impact of electronic payment methods on the activation and stimulation of cross-border e-commerce in China. The study relied on a five-point Likert-type questionnaire as a measurement tool. The sample includes 210 participants in the Chinese import and export market. The results showed that there is a positive relationship between the independent variables and the activation and stimulation of cross-border e-commerce. Improved use of electronic payment methods leads to enhanced cross-border e-commerce. The results of the multiple linear regression analysis demonstrated high explanatory power for the proposed model. Specifically, for every one-unit improvement in the independent variables, the activation and revitalization of cross-border e-commerce (CBEC) increases by 2,736 units. This underscores the profound impact of these strategies in bolstering and stimulating CBEC operations (Tiour , Koridjidj , & Khelifa , 2024, p. 27). The coefficient of determination (R^2) reached 0.888, indicating that the three independent variables collectively account for 88.8% of the variance in CBEC efficiency.Regarding the following observations were made:

Comfort and Ease: This variable exerted the most significant influence, recording a regression coefficient of (β=0.624) with high statistical significance ($p<0.01$). This finding implies that both importers and exporters prioritize the seamlessness of technical procedures as a paramount concern.

Speed and Efficiency: This factor ranked second, with a regression coefficient of (β=0.04) and high statistical significance. This reflects the necessity for Chinese firms to maintain robust financial standing to mitigate the risks associated with currency fluctuations.

Cost: Although influential, this variable ranked third with a coefficient of (β=0.02).Its relatively low weight is attributed to the intense price competition within the Chinese payment market, which has rendede pricing a secondary factor compared to operational efficiency.

What must be emphasized here is that these results did not come out of nowhere, but rather as a result of the factors and conditions provided by the Chinese government, which

facilitated the widespread adoption and use of all types of electronic payment methods at all levels. The most prominent of these can be mentioned below:

– Technological development: The proliferation of smartphones and cross-border digital platforms, which provide secure, fast, and easy-to-use payment services, in addition to the financial industry...etc.

– Growing confidence in cybersecurity: Encryption and security authentication systems have improved over time, reducing security concerns associated with hacking and fraud;

– Expansion of local and cross-border e-commerce: The growth of major e-commerce platforms and the increasing number of companies specializing in this industry have increased the need for reliable and fast electronic payment methods.

– Scientific research and training in the digital and technological field, and allocating the necessary expenditures for this field.

Based on the above, this study emphasizes the importance of developing electronic payment methods and addressing security and regulatory concerns to promote, grow, and stimulate foreign trade, especially in light of the accelerating digital economy. The study recommends the following:

For the world to benefit from the advantages of electronic payment methods, the following are recommended:

– The need to provide a flexible legislative environment and improve global digital infrastructure to ensure the use of these tools in supporting foreign trade;

– Countries must improve their digital payment infrastructure and create a favorable development environment for cross-border international digital payments. This primarily includes two aspects:

– Developing digital technology, making it accessible to all, and monitoring all relevant equipment and tools. Countries should also promote the development of cross-border digital payment technologies, particularly electronic payment security technologies, to support the sustainable and secure development of digital payment methods. – Secondly, China and other leading countries in the field should accelerate the construction of servers Core networks, to ensure seamless digital payments within and across borders.

– Developing international guidelines to regulate electronic payment methods (especially digital currencies). Governments and international bodies (the International Monetary Fund, the World Bank, and the World Trade Organization) should cooperate to develop a set of binding international guidelines to regulate these methods, these guidelines will inevitably help ensure security and uniformity in regulatory approaches, reducing barriers to adopting these methods and facilitating smoother international transactions.

– Implementing unified security protocols. To address security concerns, it is recommended to form an international coalition comprising cybersecurity experts and blockchain technology developers. Regulatory bodies are working to develop unified security protocols for electronic and digital transactions, enhancing trust and security for all parties.

– Establishing an authority to facilitate foreign trade using these means: A specialized authority could be established to oversee the further integration of these means into the framework of foreign trade. This authority would serve as a platform for exchanging best practices and suggestions, conducting research, and offering advice guidance on how to leverage the advantages of electronic payment methods to promote trade and economic development.

– Governments must ensure that the level of openness to foreign trade and the facilitation of cross-border payments in countries can meet the requirements for the development of electronic payment methods.

– Digital payments reduce barriers to cross-border money flows, which pose risks to the development of foreign and international trade. Therefore, countries must coordinate and unify relevant laws and regulations to guide the development of electronic payment methods in the right direction, and work to make them consistent and comprehensive.

– Countries and governments must fulfill their regulatory and legal responsibilities toward non-government-issued electronic payment methods to avoid risks that threaten economic development.

– The study also recommends that national banks reduce fees resulting from the use of electronic payment methods in the settlement of cross-border transactions.

– Governments should work to provide partial and aggregate data on the use of electronic payment methods so that researchers can study this phenomenon.

– Exchange professional, academic, and research visits between leading and lagging countries in the field of electronic banking, digital payments, and digitization, in order to exchange expertise and benefit from each other's experiences.

– Strengthening public-private partnerships. Public-private partnerships should be encouraged to drive innovation and the adoption of all types of electronic payment methods in foreign trade. These partnerships could focus on developing more efficient and secure transaction platforms, as well as educational programs to increase awareness and understanding of these companies and the public.

– Supporting research and development. Governments and international organizations should invest in research and development efforts focused on improving the scalability, security, and interoperability of digital payment systems. These investments

help address specific technical challenges and support the long-term growth of electronic payment methods in foreign trade.

– The integration of electronic payment methods into the global trade system presents a unique set of opportunities and challenges. By adopting proposals and recommendations, stakeholders can create a more conducive environment for the use of (bank cards, digital currencies, electronic checks, etc.), enhancing the efficiency, security, and inclusiveness of foreign trade. As the landscape of these methods continues to evolve, Continued cooperation, innovation, and political adaptation will be essential to realize its full potential in global trade.

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