Research Article

Research on Optimization of Steel Foreign Trade Financial Transaction Based on Blockchain Technology

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For many years, China's steel exports have been winning with low prices. As the upstream iron ore price rises, the profit margin is compressed while many problems are exposed. The author has constructed a SWOT-AHP model for the cross-border financial transaction link of steel foreign trade and analyze the main factors affecting the financial transactions of steel foreign trade by calculating the weights within the SWOT group and among the factors and ranking them. The results show that transaction credit risk, long and inefficient settlement cycle, changes in steel tax rebate policy, high cross-border transaction costs, and rising upstream raw material prices are the main factors for the development of China's foreign trade in steel. Relying on blockchain technology, it will be improved and its application path in cross-border financial transactions will be explored to achieve the purpose of avoiding credit risks on both sides of transactions and reducing time and costs of foreign trade transactions. At the same time, it breaks the monopoly of cross-border transactions of the SWIFT system and optimizes the financial transaction mode of foreign trade of steel, and with the background of the E-CNY R&D pilot, we construct the application path of E-CNY cross-border payment under blockchain technology and provide some theoretical support for the promotion of E-CNY internationalization.

1. Introduction

In 2008, due to the financial crisis, the number of exports of Chinese steel products dropped sharply. From 2017 to 2021, the world's total steel exports declined due to the rise of trade protectionism and the impact of the new crown pneumonia epidemic, but China still occupies first place in terms of national and regional steel imports and exports. The continuous recovery of the overseas economy, construction machinery, trade import and export, freight, and other indicators is also deepening the demand for steel. China's steel industry, in the face of the pervasive global epidemic, taking on the task of ensuring supply, stabilizing employment, and promoting development, is the backbone of supporting the domestic economic rebound. Taking steel exports as an example, the trend in the number of exports between 2008 is presented in Figure 1.

Chinese steel exports have always won with a low-price advantage, but upstream iron ore prices have risen, soaring since 2016, from an average price decline of 6.3% in 2015 to a 25.2% rise in 2016 and even 55.3% in 2021. Export profit margins have been forced to compress, and the low-price advantage of Chinese steel is gradually weakening. For years, Chinese steel exports have mostly been low-tech, energy-intensive products that do not have long-term sustainability. Therefore, the state tightened its policy to control the export of high-energy, low-margin steel products only three times between 2020 and 2021 to amend the tax rebate policy. Until August 1, 2021, the export tax rebates for steel products are cancelled, and all steel exports will not enjoy tax rebate policy. The continuous modification of the tax rebate policy affects the export profits of steel enterprises and is shown in Figure 2.

Chinese steel companies have an absolute advantage in production and lower shipment prices and profit through price advantage to promote steel exports, but this model has low technological content and high energy consumption, which is not sustainable in the long term. Therefore, the

Figure 1: Changes in steel export volume and average export price, 2008–2021 .
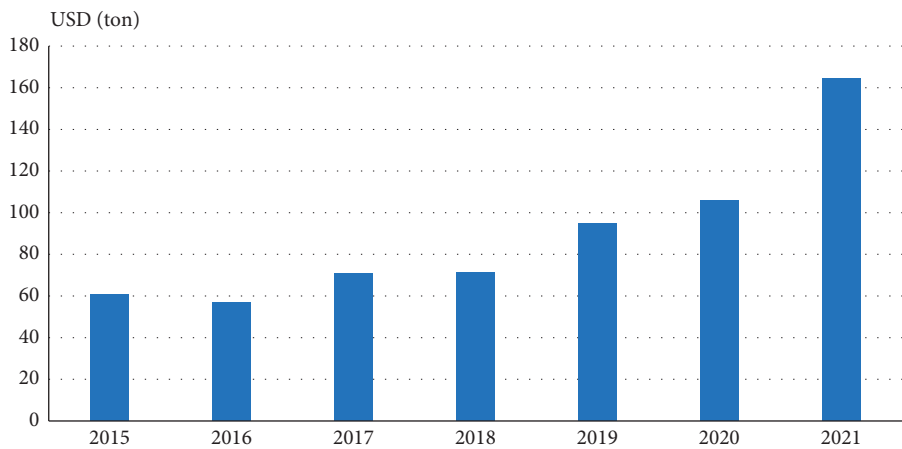

Figure 2: China's iron ore and concentrates import price chart, 2016–2021.

Chinese government tightened the export of high energy consumption and low-profit steel products and modified the tax rebate policy three times from 2020 to 2021. Until August 1, 2021, the export tax rebates for steel products will be cancelled and all steel exports will not enjoy tax rebates. The continuous modification of the tax rebate policy affects the export profits of steel enterprises.

In terms of foreign trade transactions, the recipient and remitter of funds need to pay relevant handling fees, respectively, including remittance handling fees, service fees, overhead costs, cross-border system occupancy fees, and exchange change loss fees between various banks. It is shown in Table 1 and Figure 3. Every increase to agency bank fees will increase, and the transaction delay is serious. The slow turnover of funds also increases the pressure on enterprise funds.

In addition, the U.S. dollar settlement still dominates the payment of international transactions, and the transaction messages need to be transmitted through the SWIFT system. In 2012 and 2018, Iran was kicked out of the SWIFT system twice, and its foreign trade was hit hard. In February 2022,

the former situation reappeared, the situation between Russia and Ukraine intensified, and several major Russian banks were banned from using the SWIFT settlements, which severely impacted the Russian economy. Over the years, countries have been actively developing their own cross-border financial payment systems, and all have achieved results. However, due to the limitations of the scope of participation and the dominance of the U.S. dollar in international trade payments, any system developed subsequently has never been able to replace the SWIFT.

By constructing a SWOT-AHP model, the author analyze the main factors affecting the foreign trade financial transactions of China's steel industry and rely on blockchain technology to simulate the path of its application in the foreign trade financial transactions of steel, aiming to reduce the cost of foreign trade transaction fees and time costs, simplify the financial transaction process, and improve the efficiency of foreign trade financial transactions of domestic and foreign enterprises through the use of emerging technologies. At the same time, the characteristics of blockchain determine its natural coupling with digital currency. With

TABLE 1: Chinese banks cross-border transaction fee.

Bank	Service charge rate	Minimum fee (¥)	Maximum fee (¥)	Telegram fee (¥)	Time (working day)
BOC	1‰	50	1000	150	2–3
CCB	1‰	50	260	150	2–3
ICBC	1‰	20	300	80	3–5
ABC	1‰	20	200	80	3–5
CMB	1‰	100	1000	150	3–5
PABC	1‰	50	500	150	3–4

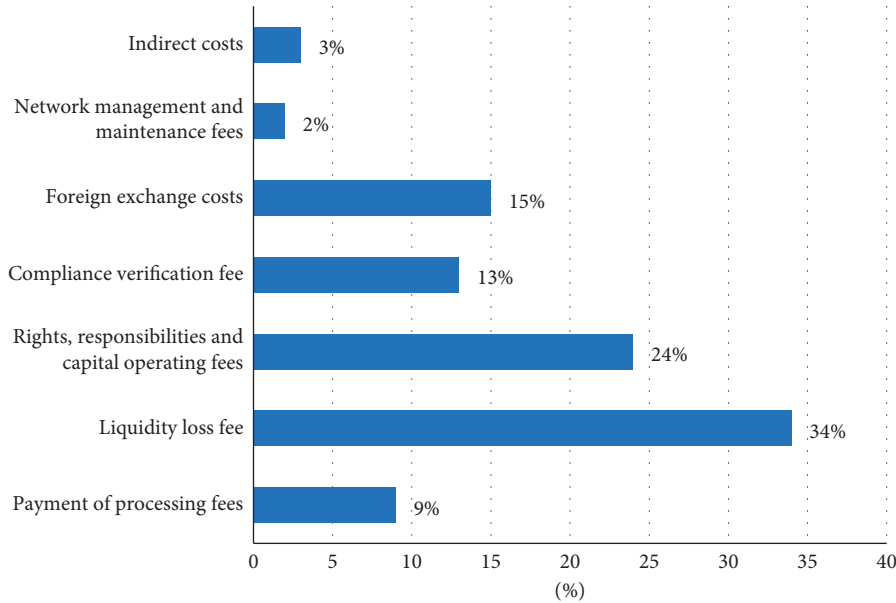Data source: Data collation of official websites of Chinese banks.

FIGURE 3: Cross-border transaction cost composition.

the opportunity of expanding the overseas market of steel foreign trade, it is proposed to build a blockchain digital people's cross-border payment model to provide some theoretical reference for promoting E-CNY foreign trade payment. See Table 2 for payment system coverage by country.

The available literature mainly focuses on the exploration of blockchain application areas and feasibility, the research and development of underlying technology modules, the demonstration of the effectiveness of enhancing the efficiency of financial cross-border transactions, etc. There is less research on the practical application path. The application areas are mainly power, energy, and e-commerce, and there is almost no research on the application in the steel industry. The research is to explore the application path of blockchain technology in foreign trade finance transactions in the steel industry on the basis of the existing literature that blockchain technology can significantly improve the original cross-border financial transactions.

2. Review of Related Theoretical Research

Blockchain is another application model of PC innovation, for example, appropriated information capacity, highlight point transmission, agreement instrument, and encryption calculation. It is basically a decentralized data set, and as the hidden innovation of bitcoin, it is a series of information blocks created by utilizing cryptography. Every information block contains a clump of bitcoin network exchange data, which is utilized to check the legitimacy of the data and produce the following block. Its principal highlights are decentralization, transparency, autonomy, security, and obscurity. The center advances are dispersed record, deviated encryption, agreement component, and savvy contract.

The research literature on blockchain in foreign trade finance mainly focuses on feasibility exploration and the enhancement of transaction effects. Gao [1] summarized the current status of blockchain technology applications in various fields of cross-border e-commerce. OuYang et al. [2] pointed out that the consensus mechanism, collaboration mechanism, incentive mechanism, and governance mechanism of blockchain technology can be used to empower the development of foreign trade. Huang et al. [3] argued that the varying environment of cross-border payment and settlement and the serious asymmetry of market information restrict the scale and efficiency of cross-border trade cooperation between China and the countries along the route. On the other hand, some scholars [4–7] have argued through

TABLE 2: Coverage of cross-border payment systems in different countries.

Settlement currency	Payment system	Number of participating countries	Number of participating banks
Dollar	SWIFT	More than 200	More than 11000
RMB	CIPS	103	1280
Rouble	SPFS	12	452
Euro	TIPS	19	35
Pound	CHAPS	2	24

experiments and models that the application of blockchain technology can improve the timeliness of business processing and the efficiency of cross-border institutional collaboration, significantly reduce the time and expense costs of cross-border transactions, and ensure the security of financial operations. And Franchina et al. [8] conducted a comparative study between the SWIFT cross-border payment system and blockchain cross-border transaction model and concluded that the blockchain distributed payment system better meets modern payment requirements. Cao [9] constructed a new model of cross-border trade under smart contracts based on blockchain technology and explored its operational mechanism in addressing trade data sharing, reducing third-party institutions, establishing trust mechanisms, and enterprise authentication.

Some other studies focus on the construction of a blockchain cross-border payment system framework. Li [10] constructed a blockchain-based letter of credit payment application framework under cross-border B2B e-commerce conditions. Shen et al. [11] constructed a theoretical framework of a cross-border e-commerce ecosystem covering supply chain intelligence systems, logistics, payment, product quality recourse, and customs supervision relying on blockchain technology. Lee [12] used quantitative analysis to solve the problem of blockchain cross-border electronic payment, optimized the online website, simulated online website resource allocation variables, and tested them.

In terms of combining blockchain and digital currency, the electric energy industry has taken the lead in testing the waters. Drawing on centralized exchanges and blockchain cryptocurrencies, Wu [13] designed a cryptocurrency energy trading platform, using energy blockchain cryptocurrencies as a medium for transactions. And Tian [14] proposed a distributed cryptocurrency trading scheme that enables direct and secure transactions between different types of cryptocurrencies. Li [15] used the core technology of blockchain to establish a blockchain-based legal digital currency system for application in cross-border payments. Feng [16] proposed the hypothesis and architecture of digital currency usage with the Beijing Olympic Games as an example and demonstrated its feasibility and practicality. Some tech companies have also tried to launch their own digital currencies. Guo et al. [17] used Libra, a cryptocurrency issued by Facebook, as a case study to explore the impact of international issuance of digital currencies on large multinational enterprises and how to better design and develop digital currencies.

The available literature mainly focuses on the discussion and feasibility study of blockchain application areas, the research and development of underlying technology modules, the demonstration of the effect of improving the efficiency of cross-border transactions, etc. There is less research on the actual application path. The application areas are mainly in the electric energy and e-commerce industries, and there is almost no literature on the application of traditional heavy industry bulk commodity exporters such as the steel industry. The research is to explore the application of blockchain technology in the steel industry on the basis of the existing literature that blockchain technology can significantly improve the efficiency and security of the original cross-border financial transactions and to construct the application path of foreign trade financial transactions to help improve the efficiency of financial transactions in the steel industry.

3. Analysis of Influencing Factors of Foreign Trade Financial Transactions of Iron and Steel

3.1. Brief Introduction of the SWOT-AHP Analysis Method. SWOT analysis is proposed by Werrick, which lists the main internal strengths, weaknesses, opportunities, and threats closely related to the research object and uses the idea of system analysis to analyze the factors matching each other to obtain a series of corresponding conclusions. The importance of each factor on a level is then quantitatively described, and then the weights reflecting the relative importance of each factor on each level are mathematically calculated, and finally, the relative weight size of all the factors is calculated and the weights of the factors on each level are ranked [18].

Usually, the SWOT analysis is mostly used for the selection and optimization of corporate development strategies, but the SWOT analysis method alone cannot be quantitatively analyzed and cannot quantitatively assess the factors or judge the priorities among the elements [19]. Therefore, accuracy can be influenced by the subjective judgment of the evaluator. Combining SWOT with AHP analysis can not only effectively solve the problem that SWOT analysis cannot be effectively quantified, but also help to improve the accuracy of policy analysis and strategic decision-making [20].

3.2. SWOT Analysis of Foreign Trade Financial Transactions. Because of the synopsis of the current references, this paper separates 15 principal factors that influence the monetary exchanges of steel unfamiliar exchange:

(i) Over the years, China's iron and steel industry has developed extensively, the production capacity has been continuously expanded, and the reserve of iron and steel products is sufficient (S_1).

(ii) Since 2006, China has been the largest steel exporter in the world [21]. And it has a significant advantage in price and stability in a reasonable range (S2).

(iii) After 30 years of accumulation and development of the steel industry, the infrastructure of steel production technology is perfect and the product types are diversified, which can meet the diversified needs of various countries (S_3).

(iv) Due to its geographical advantages, China has been trading very closely with the countries along "The Belt and Road Initiative." Southeast Asia is China's most important steel export market, with a market share of up to 45%, followed by West Asia and South Asia, with a solid trade Foundation (S_4) [22].

3.3. Internal Weakness (W)

① In the process of cross-border transaction remittance, it needs to be reconciled and cleared by multiple intermediary institutions such as clearing banks, agent banks, and receiving and paying banks. The same clearing system of many banks adopts a different clearing mode, and the operation time and time zone of each system are different [23, 24]. The anti-money laundering supervision in various countries has forced banks to take more time to carry out compliance reconciliation, greatly increasing the time for cross-border payment to arrive (W_1) [25].

② In the payment of cross-border foreign trade transactions, multi-party institutions are involved, and the expenses are varying, including notification fee, operation fee, express fee, correction fee, telegram fee, and payment service charge [26]. With the increase in capital flow, as well as the exchange loss caused by time cost and exchange rate changes, the cost of the cross-border payment increases. The opacity of the cross-border payment process is also an important factor in the high cost (W_2) [27].

③ The price of upstream raw materials in the iron and steel industry increased significantly year on year, which increased the production cost of iron and steel enterprises, squeezed the profit space of the industry, and affected the low-price advantage (W_3) [28].

④ China's iron and steel products have low technology content, and the medium and low-end products account for a large proportion, and the products with high added value account for less than half of them. There is a big gap in the field of using core technology to produce iron and steel products (W_4) [29].

3.4. External opportunities (O)

① With the outbreak of the global epidemic in 2019, the economic downturn of various countries, industrial and manufacturing were severely damaged, the international market supply of steel products was insufficient, and the prices were gradually increasing. As the country with the fastest economic recovery, China's iron and steel industry took the lead to resume production (O1) [30].

② Nowadays, the global currency payment is diversified. The emergence of new scientific and technological means such as E-CNY and the launch of the RMB cross-border payment and settlement system CIPS paves the way for promoting the internationalization of RMB payment, building a new cross-border payment system around international payment and settlement, and reducing the sunk cost and opportunity cost of cross-border investment and trade (O_2) [31].

③ Under "The Belt and Road" initiative, the trade potential of the countries along the line is huge in the process of infrastructure construction, and China's steel export has a broad development prospect (O_3) [32].

3.5. External Threats (T)

① In all cross-border foreign trade transactions, there is the risk of counterparties [33]. Once one party has fraud, the other party will lose a lot of money and goods. The trust risk problem runs through the whole transaction process (T_1).

② In order to achieve the goal of carbon peak and carbon neutralization, and to promote the transformation and upgrading of the steel industry, China has repeatedly adjusted the export tax rebate policy of iron and steel products in recent years, restricting the export of high-grade iron, high-purity pig iron, rail, and other steel products, and giving priority to domestic demand (T_2).

③ The SWIFT system and the CHIPS system are the most common cross-border payment methods for steel products, which are nominally neutral, non-profit international interbank organizations, but in reality have become tools of the U.S. "Long arm jurisdiction" [34]. The important means of imposing financial embargoes and sanctions is to remove the sanctioned country from the system and prohibit the use of this international payment clearing channel [35]. The United States is a "long-arm" interbank organization, which in practice has become an instrument of "long-arm" jurisdiction (T_3).

④ Due to the increase of China's steel market share, the aggravation of Sino-US trade friction, and the influence of the western social conservatism probe, China's steel products have been subject to anti-dumping investigation in many countries (T_4) [36].
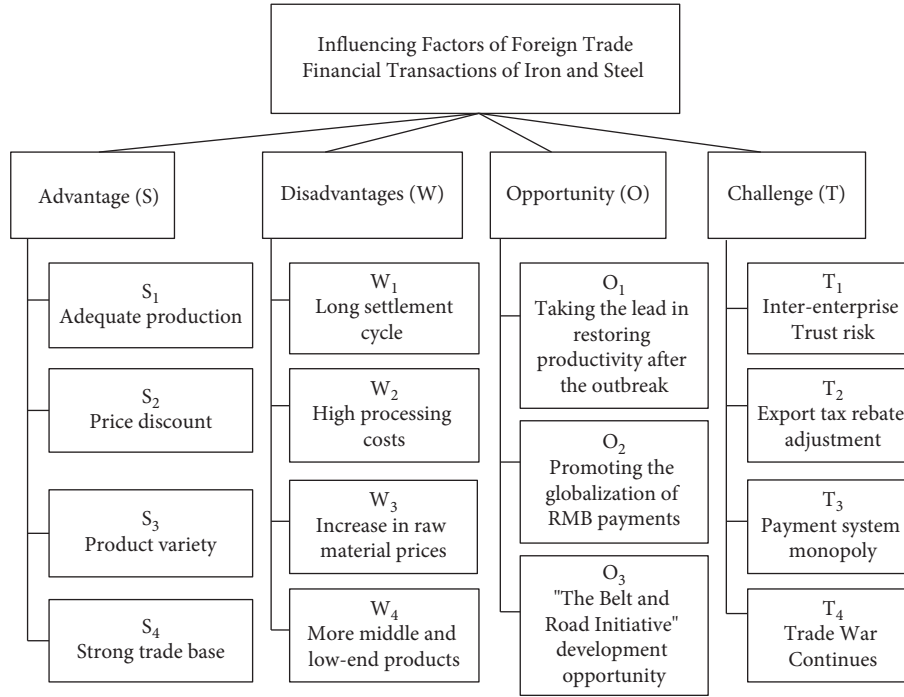
FIGURE 4: Hierarchical analysis structure chart of influencing factors of steel foreign trade financial transactions.

3.6. Construction of the SWOT-AHP Model

3.6.1. Build Model. According to the above the SWOT analysis, the paper constructs the AHP structure chart, as shown in Figure 4:

3.7. Construction of Model Discriminant Matrix and Consistency Test.

When constructing the discriminant matrix of influencing factors, there are usually two methods: the questionnaire method and the expert scoring method. Considering the specificity of the field of the research problem, the author considers that if the questionnaire method is used, the professional background of the person filling out the questionnaire is required to be high. It is necessary to be a professional who is engaged in work related to the steel industry and also understands the status of foreign exports of steel; otherwise the accuracy of the survey results will be affected. However, the number of professionals who meet this requirement will be limited, resulting in an insufficient number of questionnaires, so the author will use the expert scoring method to construct the discriminant matrix.

Expert survey method is a more scientific and reasonable method, based on the basic principle of "Delphi method," select experts in various aspects of the enterprise, take the form of independent filling in the form of scoring, using the 1–9 scale method, such as Table 3, and invite relevant experts to score the SWOT group and S, W, O, *T* group of impact factors two by two comparison. Their respective scores were collated and statistically analyzed, and then the aggregated results were fed back to the experts, who then modified them according to the feedback results, and the discriminant matrix was finally determined after Dorian solicitation and

feedback. The square root method is used to calculate the weights and consistency ratios, and when the consistency ratio C.R. < 0.1, it passes the consistency test, and, vice versa, it fails, and the discriminant matrix needs to be checked and its values adjusted.

The geometric mean of each row of a matrix

$$\overline{w_i} = \sqrt[n]{\prod_{j=1}^{n} a_{ij}} i, j = 1, 2, 3, 4. \tag{1}$$

The geometric mean values were normalized to obtain the relative weights of elements:

$$w_i = \frac{\overline{w_i}}{\sum_{i=1}^{n} \overline{w_i}} i = 1, 2, 3, 4. \tag{2}$$

Maximum eigenvalue:

$$\lambda_{\max} \approx \overline{\lambda} = \frac{1}{n} \sum_{i=1}^{n} \frac{\left(\sum_{j=1}^{n} a_{ij} w_{ij} \right)}{w_{ij}} i, \tag{3}$$

$$j = 1, 2, 3, 4.$$

Consistency index:

$$C.I. = \frac{\lambda_{\max} - n}{n - 1}. \tag{4}$$

Consistency ratio:

$$C.R. = \frac{C.I.}{R.I.}. \tag{5}$$

The results of the discrimination matrix groups and their consistency are as follows.

TABLE 3: 1–9 Scale table.

Scale	Comparison of two indicators	Meaning
1	Equally important	Both indicators are equally important
3	A little more important	The former is slightly more important or advantageous than the latter
5	More important	The former is more important or advantageous than the latter
7	Very important	Compared with the two indicators, the former is more important or has advantages than the latter
9	Absolutely important	Compared with the two indicators, the former is absolutely important or has advantages over the latter
2, 4, 6, 8		Intermediate value of the above scale
The reciprocal of the above numbers		Describe the comparison between the former and the latter

The results of the SWOT group consistency test and the calculation of the weighting coefficients are shown in Table 4.

Within group SWOT, $\lambda_{max} = 4.24$, $C.R. = 0.088$, and satisfy $C.R. < 0.1$ through the consistency test.

The results of the consistency test and weight coefficient calculation for each factor within group S are shown in Table 5.

In group S, $\lambda_{max} = 4.17$, $C.R. = 0.064$, and satisfy $C.R. < 0.1$ through the consistency test.

The results of the consistency test and weight coefficient calculation for each factor within the W group are shown in Table 6.

In group W, $\lambda_{max} = 4.10$, $C.R. = 0.037$, and satisfy $C.R. < 0.1$ through the consistency test.

The results of the consistency test and weight coefficient calculation for each factor within the O group are shown in Table 7.

In group O, $\lambda_{max} = 3.07$, $C.R. = 0.062$, and satisfy $C.R. < 0.1$ through the consistency test.

The results of the consistency test and weight coefficient calculation for each factor within the T group are shown in Table 8.

In group T, $\lambda_{max} = 4.08$, $C.R. = 0.030$, and satisfy $C.R. < 0.1$ through the consistency test.

The results of the total hierarchical ranking calculation are shown in Table 9.

As per the estimation consequences of the model, the elements that affect the unfamiliar and monetary exchanges of the iron and steel industry are credit vulnerability of exchanging undertakings, low long-haul pace of repayment cycle, changes in steel charge refund strategy, high cross-line exchange expenses, and rising costs of upstream unrefined components. Adapting to these variables can really work on the effectiveness of unfamiliar and finance exchanges in the iron and steel industry.

4. Relying on Blockchain Technology to Promote Foreign Trade Financial Transactions of Iron and Steel Enterprises

In the computation aftereffects of the above model, the steel charge refund strategy has a place in the classification of public strategy, and the ascent of unrefined substance costs is impacted by the connection among organic market, so it is not examined here. As indicated by the attributes of blockchain innovation, it can tackle the issues of high business credit risk, low long-haul settlement cycle rate, and high exchange cost.

4.1. Traditional Foreign Trade Financial Transaction Mode. As of now, the standard cross-line monetary installment mode is the specialist bank mode, or at least, for cross-line installment exercises, on the off chance that the payer and the payee do not open a record in the similar bank, the two players need to open a record in a bank (the specialist keep money with) the capability meeting the prerequisites of the two players to complete the capital repayment in the concurred exchange cash. The specialist bank can be the bank in the payer's area; it can likewise be embraced by an overseas bank [37]. Additionally, the two banks undertaking office business should have between bank current records to go through with exchanges. If they do not have to keep on acting through saving money between bank current records, cross-line installment must be acknowledged by adding more specialist banks. Each time you elapse through a bank, you want to expand the ideal opportunity for clearing and reviewing. In addition to organization charges, the time and cost of the entire cycle are high. The traditional foreign trade cross-border financial transaction model is shown in Figure 5.

4.2. Blockchain Technology Promotes Foreign Trade Financial Transaction Path. Undertaking A of the foreign merchant and endeavor B of the homegrown exporter sign an electronic product exchange contract on the blockchain stage, which is kept in the chain; subsequently, an overseas venture A sends a settlement application to its overseas bank C. After getting the unfamiliar exchange settlement use of big business A, unfamiliar bank C presents the important request data on the blockchain stage to demand the homegrown record bank D of homegrown undertaking B for affirmation. Domestic bank D confirms the capital consistency of big business B as per the solicitation. After the confirmation is passed, bank D affirms the request data demand sent by bank C on the blockchain and reports the relating dealing with expense, and the shrewd agreement will

TABLE 4: SWOT Group discrimination matrix and weight table.

SWOT group	S	W	O	T	Weight
S	1	1/9	1/5	1/9	0.0347
W	9	1	7	1	0.4387
O	5	1/7	1	1/7	0.0880
T	9	1	7	1	0.4387

TABLE 5: Discrimination matrix and weight table of S Group.

Group S	S_1	S_2	S_3	S_4	Weight
S_1	1	9	3	5	0.5651
S_2	1/9	1	1/7	1/5	0.0394
S_3	1/3	7	1	3	0.2696
S_4	1/5	5	1/3	1	0.1260

TABLE 6: W Group discriminant matrix and weight table.

Group W	W_1	W_2	W_3	W_4	Weight
W_1	1	3	3	9	0.5298
W_2	1/3	1	2	7	0.2596
W_3	1/3	1/2	1	5	0.1687
W_4	1/9	1/7	1/5	1	0.0419

TABLE 7: O group discrimination matrix and weight table.

Group O	O_1	O_2	O_3	Weight
O_1	1	1/3	5	0.2790
O_2	3	1	7	0.6491
O_3	1/5	1/7	1	0.0719

TABLE 8: T Group discriminant matrix and weight table.

Group T	T_1	T_2	T_3	T_4	Weight
T_1	1	3	6	8	0.5829
T_2	1/3	1	4	5	0.2704
T_3	1/6	1/4	1	2	0.0904
T_4	1/8	1/5	1/2	1	0.0563

TABLE 9: Total weight summary and ranking table.

| SWOT	C.R.	Priority	SWOT factor	C.R.	Within priority group	Total priority	Sort
Group S		0.0347	S_1	0.064	0.5651	0.0196	10
			S_2		0.0394	0.0014	15
			S_3		0.2696	0.0094	12
			S_4		0.1260	0.0044	14
Group W	0.088	0.4387	W_1	0.037	0.5298	0.2324	2
			W_2		0.2596	0.1139	4
			W_3		0.1687	0.0740	5
			W_4		0.0419	0.0184	11
Group O		0.0880	O_1	0.062	0.2790	0.0245	9
			O_2		0.6491	0.0571	6
			O_3		0.0719	0.0063	13
Group T		0.4387	T_1	0.030	0.5829	0.2557	1
			T_2		0.2704	0.1186	3
			T_3		0.0904	0.0397	7
			T_4		0.0563	0.0247	8
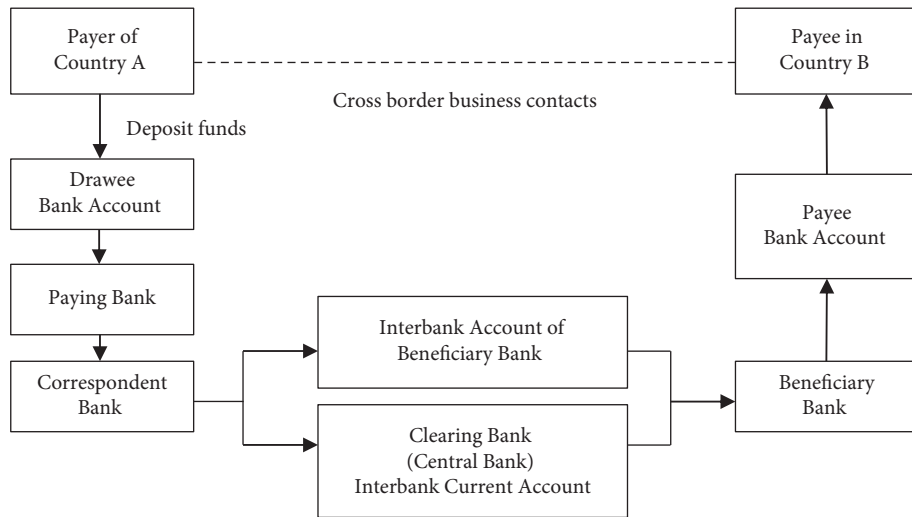
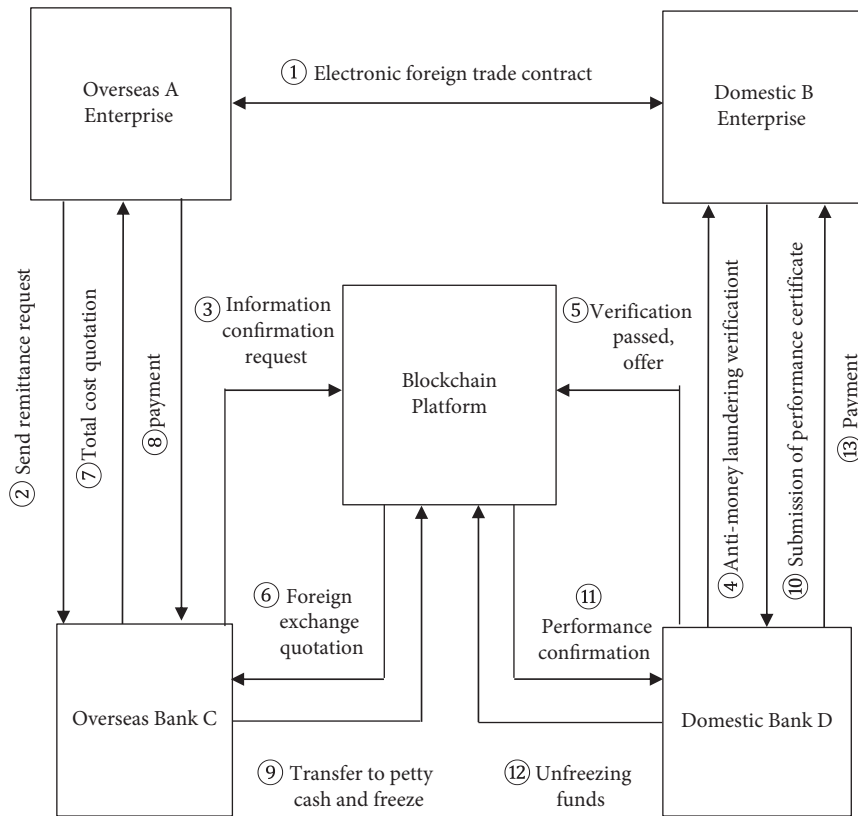FIGURE 5: Traditional foreign trade cross-border financial transaction mode.

FIGURE 6: Flow chart of foreign trade financial transactions under blockchain Technology.

produce results naturally. In the wake of getting the affirmation data and getting the swapping scale citation, the overseas bank C works out the all-out settlement expense, including the settlement sum, taking care of charge of bank C, and the help charge of bank *D*, submit citation to big business A. After getting the all-out expense citation, endeavor A affirms that it is right and pays the sum to bank C; bank C stores the sum paid by big business into the blockchain hold represent freezing; Company B performs and submits proof of performance to the bank D confirms; bank *D* affirms the presence of big business B and naturally arrives at the execution states of savvy contract, the blockchain save account is consequently thawed, and the assets are paid to the sub-record of bank *D* and naturally cleared. Smart bank *d* in the wake of getting installment sums. The agreement comes consequently, keeps on paying to big business B and sells. The transaction process is shown in Figure 6.
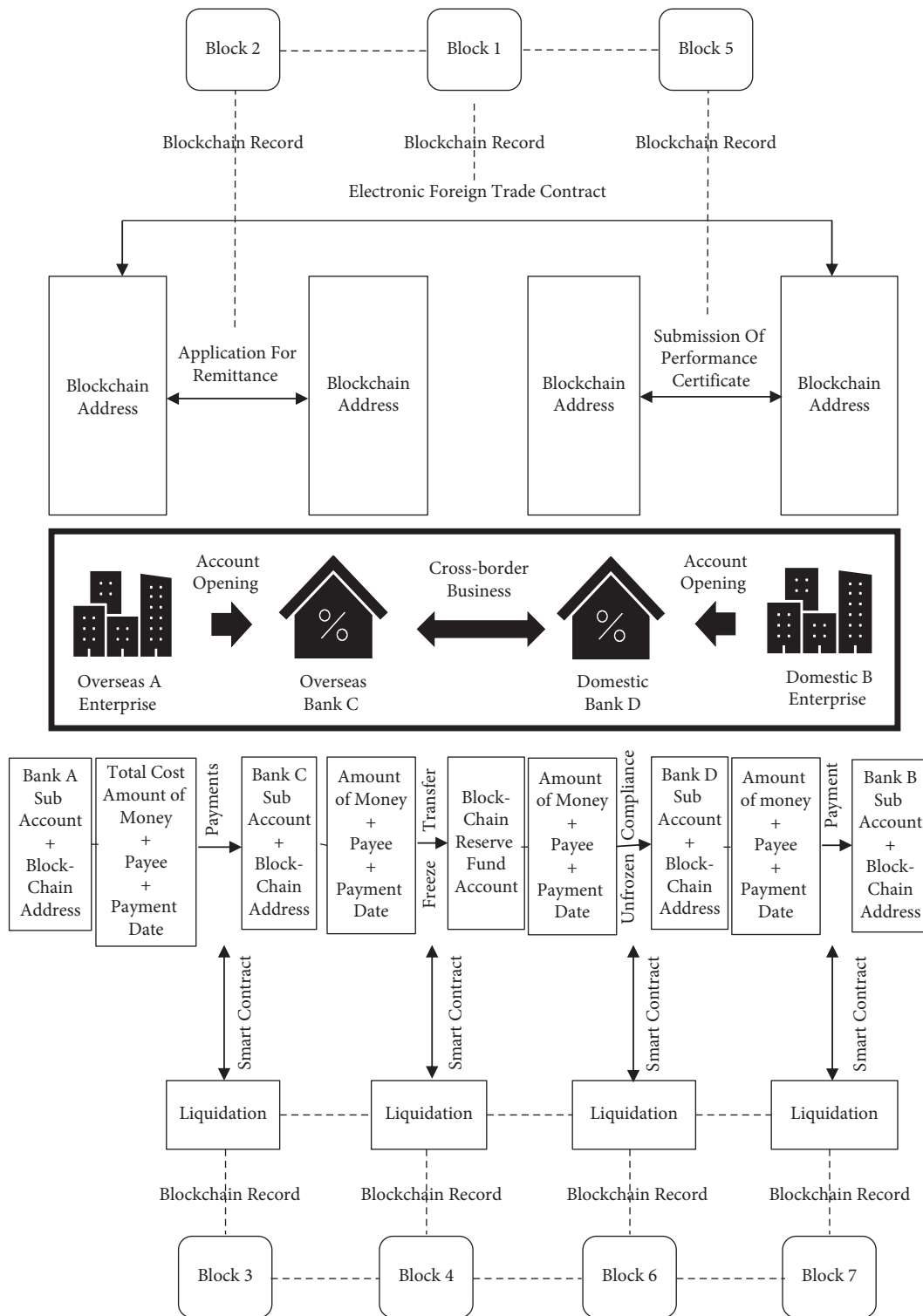
Figure 7: Path map of foreign trade financial transactions of blockchain.

The way guide of unfamiliar exchange monetary exchanges of blockchain is shown in Figure 7.

In this mode, the two players lead exchange given the blockchain stage, and all agreements, assets, and exchanges are kept in the chain, which cannot be messed with, and the exchange cycle can be questioned whenever which can

successfully keep away from the credit risk between the two gatherings. Both sides of the exchange can understand the installment and assortment of assets through a cross-line bank move on the blockchain. It enormously decreases the time cost and exchange cost of unfamiliar exchange. The entire exchange data is likewise communicated through the

TABLE 10: Development status of digital currency in major countries in the world.

| Country	Progress
China	In January 2017, the people's bank of China established the digital currency research institute to officially carry out the research and development of E-CNY in April 2020, a pilot test of E-CNY in November 2020, six pilot areas including Shanghai, Hainan, Changsha, Xi'an, Qingdao, and Dalian will be added in June 2021, the people's bank of China issued the white paper on the *R&D* progress of E-CNY in China, which listed the 2022 Beijing Winter Olympics as a pilot project for cross-border payment of E-CNY. In September 2021, the people's bank of China said that it would carry out an innovative pilot project of E-CNY cross-border payment in Qianhai
U.S.A	In August 2020, the Federal Reserve Bank of Boston announced cooperation with MIT on the potential use and direction of the central bank's digital currency. In June 2020, the U.S. Senate held a hearing on whether the digital dollar can promote the development of inclusive finance in May 2021, the digital dollar project (DDP) announced that five pilot projects would be launched in 2022
Britain	In 2016, the UK government published some research reports on DLT. In 2019, the financial conduct authority of the UK issued a consultation document to regulate the regulation of the cryptocurrency market. On April 20, 2021, the bank of England and the Ministry of Finance announced the establishment of the central bank's digital currency task force to accelerate the research and pilot of a digital pound
Japan	The Central Bank of Japan and the European Central Bank jointly announced the first phase of the research on cross-border monetary payments in February 2020, and the central bank of Japan will complete the research report on cross-border payment in February 2020
Korea	In June 2020, the Bank of Korea released its medium and long-term strategic plan (BOK230), putting research into central bank digital currencies on the agenda. In July 2021, SK, Naver, and Kakao, South Korea's head technology companies, announced that they were bidding for the partner qualification of the bank of Korea's digital currency, and the successful bidder would be given the right to pilot projects for 10 months
Russia	In October 2020, the Central Bank of Russia issued a report on social opinions on digital rubles, which is expected to carry out relevant tests on digital rubles in 2022
European union	In April 2018, the European Commission announced that it would launch European blockchain cooperation. In July 2021, the European Central Bank announced the launch of the digital euro project and carried out relevant research
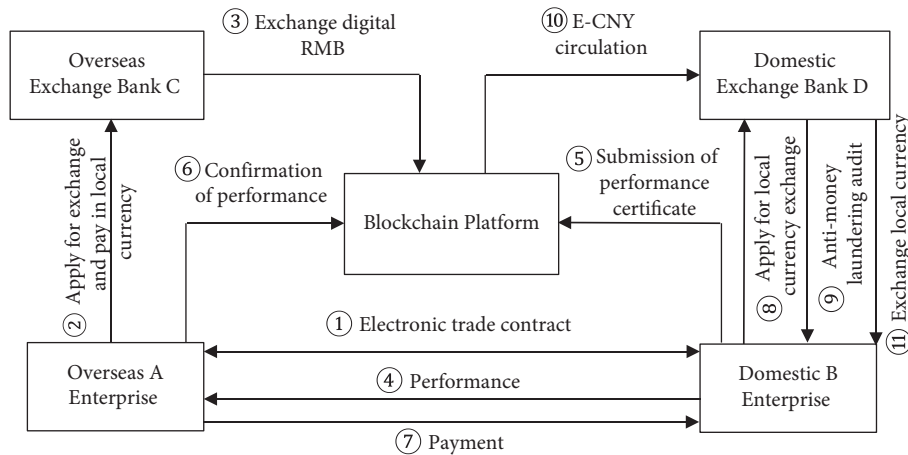
FIGURE 8: E-CNY foreign trade financial transaction process under blockchain technology.

blockchain stage, bypassing the quick framework to acknowledge cross-line monetary installment, and really staying away from the syndication of cross-line exchanging framework European and American nations.

4.3. Foreign Trade Financial Transaction Mode under the Background of E-CNY.
With the change in different exchange modes and the rise of advanced money innovation, national banks in different nations are effectively investigating the application plan of national bank computerized cash (CBDC). The shared objective of cross-line exchange advancement is to develop installment proficiency further, diminish exchange cost, decrease installment rubbing, and so on. The desire to sidestep the cross-line installment and settlement framework overwhelmed by quick partially and the status of digital currency R&D by country is shown in Table 10.

With the trend of trade globalization, especially the development opportunity of the "Belt and Road" initiative, the level of economic cooperation between Chinese enterprises, especially steel enterprises, and countries along the route, has increased significantly, resulting in strong growth in cross-border payments. In order to expand the scale of
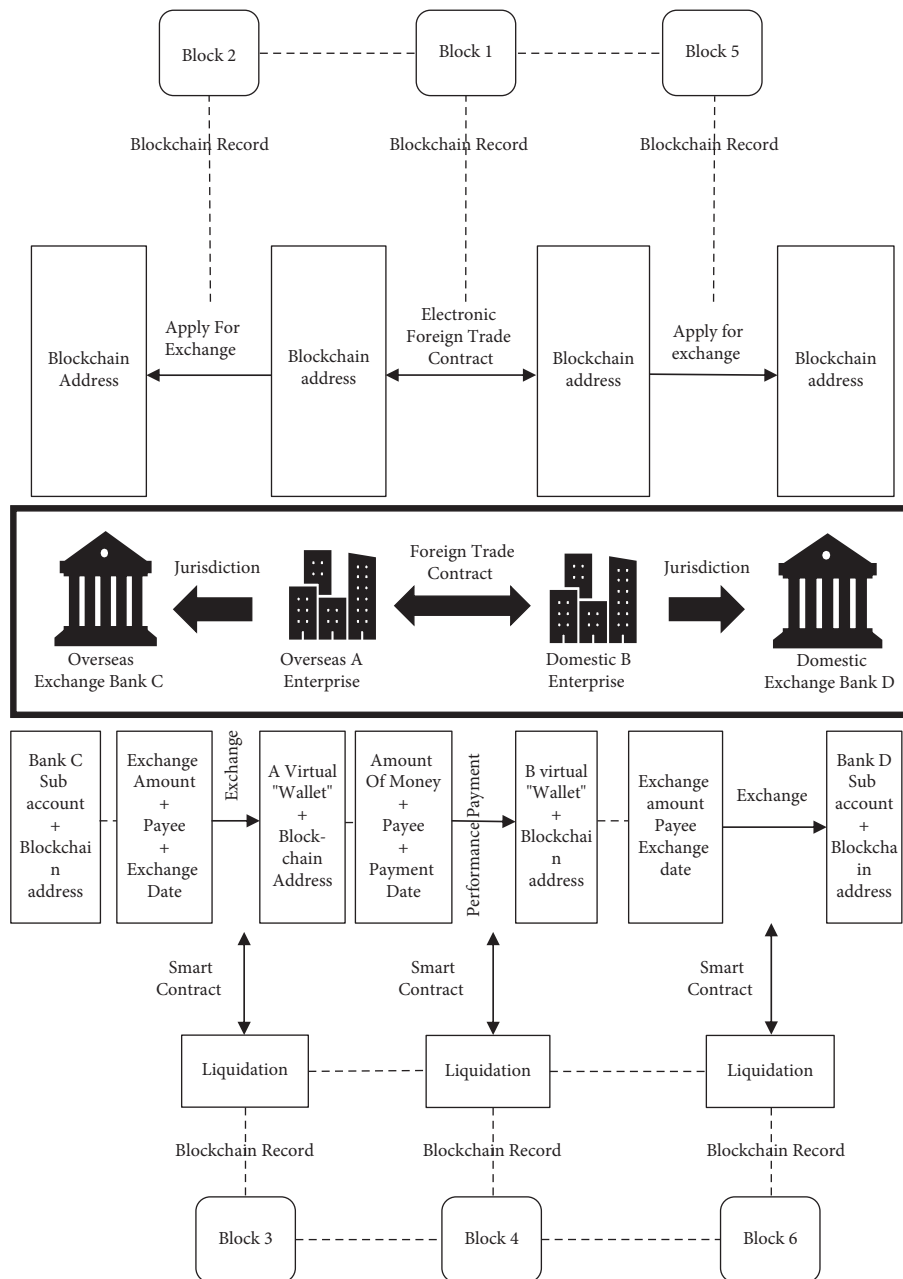
FIGURE 9: E-CNY foreign trade financial transaction path under blockchain Technology.

RMB transactions, promote the internationalization status of RMB, and not be constrained by cross-border financial transactions, the Central Bank of China started to organize the independent development of the CIPS People's Cross-Border Payment System in 2012 and went online in October 2015. The People's Bank of China organized the development of the E-CNY system in 2017 and started the internal closed pilot test in April 2020. In 2017, the People's Bank of China organized the development of the E-CNY system and started the internal closed pilot test in April 2020. The best way to promote the E-CNY is through trade with countries along the "Belt and Road." The E-CNY can be used directly in export trade by simply exchanging the local currency at the exchange bank, eliminating the intermediate procedure

of cross-border payment through the depositary bank, and realizing direct transactions on the blockchain platform.

E-CNY exchange nodes in specific jurisdictions are set up in countries along the line, which can support each country's local currency to exchange E-CNY or convert E-CNY back to local currency. After an overseas enterprise A signs a blockchain electronic foreign trade transaction contract with domestic B enterprise, overseas payer A, the overseas E-CNY exchange bank in its region applies for the exchange of digital currency and pays the same amount of local currency. After the exchange bank receives the local currency, the smart contract starts to transfer the equivalent amount of digital currency into the virtual "wallet" of enterprise A on the blockchain and liquidates. Domestic B

enterprise performs the contract according to the provisions of the contract, and uploads the performance certificate to the blockchain platform for confirmation by enterprise A. Enterprise A confirms the performance certificate, and automatically pays the digital currency to the virtual "wallet" of enterprise B's blockchain and liquidates. After receiving the E-CNY payment, enterprise B can have a virtual "wallet" for future transactions, and can also apply to the exchange bank in its jurisdiction for local currency exchange. After receiving the application of enterprise B, the domestic exchange bank shall verify the capital compliance of enterprise B. After passing the verification, it will be converted to the equivalent amount of local currency of enterprise B, and the E-CNY will be transferred to the sub-account of the domestic exchange bank to continue to exchange for the enterprises with foreign trade transaction purposes in the jurisdiction. The transaction process is as follows Figure 8:

The digital trading mode of people's foreign trade is as follows Figure 9:

At present, due to the change in exchange rate caused by the economic fluctuation of the United States, countries have gradually lost confidence in the US dollar, and the dominant position of the US dollar in international trade has gradually weakened. However, China has adhered to the road of stable development for many years, and countries have begun to place high hopes on the foreign exchange reserves of RMB. The research and development and promotion of E-CNY technology are of great significance to the improvement of the international status of RMB, it may even become a key step in reshaping the world financial structure.

5. Conclusion and Outlook

5.1. Conclusion. In this paper, by analyzing the current export status of the steel industry and foreign trade financial transaction status, preferential price is the biggest advantage of China's steel export, but the problems of a long time, low efficiency, and high cost of cross-border payment, monopoly of payment system, and trust risk of both sides of the transaction also restrict the development of steel trade. Using blockchain decentralized, untameable, smart contracts, and other technologies to simulate the construction of a financial transaction path for foreign trade of steel can solve the current problems of cross-border trade as follows:

(1) Blockchain's special cryptographic bookkeeping, which makes it extremely difficult to tamper with transaction records, can effectively avoid transaction risks in business transactions between cross-border enterprises.

(2) Smart contract technology, which presets the triggering procedure in advance and automatically makes payments and repayments when the triggering conditions are reached, which is not restricted by time difference and working hours and greatly saves the time of capital turnover.

(3) Both parties to the transaction and their respective depository banks can transmit information on the blockchain platform, eliminating the intermediary

bank link, and saving the intermediary costs of the transaction.

(4) The joint operation of the blockchain system and digital currency technology provides a new solution for the cross-border payment model and is an effective attempt to avoid the monopoly of the SWIFT system.

5.2. Future Research Directions. Nowadays, with the continuous development of blockchain technology, at the same time, countries have carried out research and development of digital currency and taken the lead in piloting in some cities around the world. Blockchain technology and digital currency can fit perfectly, and there will be a wide application space in future development. Of course, the real application of blockchain technology on the ground requires the joint efforts of many parties.

(1) Government guidelines: Albeit the unique encryption strategy for blockchain innovation can ensure the security of exchanges, hypothetically, when the quantity of plot individuals arrives at a specific number, obliterating the activity mechanism is conceivable. Consequently, the activity and upkeep of blockchain innovation require the compelling management of important government divisions and the presentation of pertinent regulations and guidelines, guaranteeing the precise consistent use of blockchain innovation in monetary exchange situations.

(2) Follow up the innovative work of relating advancements. Since the disclosure of blockchain innovation, it has just been over a long time since the blockchain innovation was found. Although nations are continually investigating the comparing innovation and attempting to consolidate the execution way of the innovation in various situations, the advancement season of over 10 years is excessively hurried for the execution and advocacy of arising innovation. If blockchain innovation is to be broadly utilized, the advancement of related basic advances should be constantly extended, and the *R&D* accomplishments toward PCs are the critical stages for the mix of arising advancements and application situations.

(3) The effect of advanced money issuance on lawful delicate. Digital currency is profoundly proficient in monetary exchanges, particularly in cross-line monetary exchanges. Nonetheless, the issuance of digital currency absolutely affects the legitimate paper cash given by national banks of different nations, which might debilitate the situation with lawful cash. Obviously, the issue of legitimate paper currency is in accordance with the monetary circumstance of the country, the state can manage and control the market economy by changing the issue of lawful paper currency to keep away from expansion and flattening. The issue of digital currency might

break this equilibrium. Then, in the time of computerized cash, how could the foundation of another financial environment and the issue proportion of legitimate paper currency and advanced money be viable with the ongoing financial framework are the issues that national banks need to think about from now on.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflicts of Interest

The author(s) declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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