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Challenges and Optimization Paths of Online International Business

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Abstract. With the acceleration of the global digital transformation process, online international business negotiations have become the main method for multinational enterprises to carry out international cooperation. This study adopts a research method combining literature analysis and questionnaire surveys to systematically analyze the main challenges faced by online international business negotiations and their optimization paths. The study found that current online negotiations mainly face four core challenges: technical obstacles (network stability issues and data security risks), communication efficiency decline (non-verbal signals account for 63.5% of the loss), cultural misinterpretation intensification (communication differences in different cultural backgrounds), and difficulty in establishing trust (the rate of disputes in remote contract signing and performance is 33% higher than offline). To address these issues, this paper proposes a dual-track optimization path of technology-driven (including the application of intelligent tools and infrastructure upgrade plans) and institutional guarantee type (covering optimization measures at the enterprise level and government level). This study not only provides practical guidance for multinational enterprises but also offers theoretical references for the improvement of international digital business negotiation rules.

Keywords: online international business, challenges, optimization paths

1. Introduction

In recent years, the global digital transformation process has continued to deepen, and international business activities are undergoing unprecedented changes. According to the latest statistics, 83% of multinational enterprises worldwide have adopted online negotiations as their main means of business communication in 2023. This proportion has increased by 217% compared to before the pandemic in 2019 [1]. This transformation has not profoundly changed the basic paradigm of international business negotiations. Under the background of the normalization of the pandemic, the online negotiation model, with its advantages of breaking through time and space limitations and reducing travel costs, is gradually replacing the traditional face-to-face negotiation method and becoming the preferred channel for multinational enterprises to conduct international cooperation [2]. However, this virtual negotiation environment, while enhancing efficiency, also brings a series of new challenges and problems, which urgently require full attention and research from the academic and practical communities.

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This research focuses on the emerging field of online international business negotiations, aiming to systematically analyze the core challenges it faces and explore effective optimization paths. Choosing this research topic holds significant theoretical and practical significance. From a theoretical perspective, current research on international business negotiations mainly relies on the traditional face-to-face model, lacking systematic theoretical construction regarding the characteristics and patterns of negotiations in the digital environment [3]. From a practical standpoint, as the degree of global economic integration continues to deepen, the efficiency and quality of international business negotiations directly affect the operating performance and international competitiveness of multinational enterprises. Especially in the current complex and volatile international political and economic situation, enhancing the effectiveness of online international business negotiations becomes even more urgent [4].

By reviewing the existing literature, it is found that current research on online negotiations exhibits a distinct decentralized characteristic. In terms of research methods, most studies adopt a single case analysis or small sample surveys, lacking extensive empirical data support [5]. In terms of research content, the existing results either focus on technical aspects of network stability or concentrate on cross-cultural communication barriers, failing to conduct an integrated analysis of the systemic challenges faced by online negotiations [6]. It is notable that research on the trust-building mechanism in online negotiations is particularly weak, which is precisely the key factor influencing the success or failure of negotiations [7]. Moreover, existing studies pay insufficient attention to the online negotiation practices of enterprises in developing countries, making it difficult to reflect the full picture of global digital transformation [8].

This study adopts a mixed research method, aiming to comprehensively grasp the current situation of online international business negotiations. Through systematic literature analysis, the relevant research results over the past five years are sorted out and evaluated to establish the theoretical basis for analyzing the difficulties and solutions of online business negotiations [9]. Secondly, 200 international business professionals from 30 countries were interviewed to collect first-hand data. The questionnaire design includes four dimensions: technical barriers, communication efficiency, cultural differences, and trust building.

2. Difficulties and challenges of online business negotiations

2.1. Technical obstacles

The internet serves as the foundation for online negotiations, and the differences in the infrastructure of the internet are also the primary technical issue that online business negotiations face. Research shows that the difference in network bandwidth between developing countries and developed countries can be as much as ten times or more. The network differences can cause various problems such as audio and video synchronization failure and video lag during video negotiations. For example, in the 2022 African mineral resources negotiation, due to network delay, the quotation information was transmitted incorrectly, resulting in a loss of 3 million US dollars. It is worth noting that the issue of network stability becomes more prominent in negotiations involving major powers. The average network delay between Asia and Europe is 187ms, far exceeding the 100ms threshold that is acceptable for real-time communication.

Data breaches and cyber-attacks pose another significant threat to online negotiations. The Advanced Persistent Threat (APT) attack incident that a certain cross-border e-commerce platform suffered in 2021 demonstrated that hackers infiltrated the terminal devices of negotiation representatives through phishing emails, stealing core business secrets including the bottom price

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strategy, resulting in direct economic losses of over 5 million US dollars for the participating enterprises [10]. The in-depth interviews in this study revealed that 92% of the experts listed data security as the primary concern. Statistical data show that the average loss for global enterprises due to online negotiation data breaches in 2022 reached 4.3 million US dollars, an increase of 65% compared to 2020 [11]. It is particularly noteworthy that commercial espionage activities are increasingly targeting the online negotiation process, using technologies such as screen recording and voice-to-text to steal negotiation information [12].

2.2. Reduced communication efficiency

Online videos have significantly impacted non-verbal communication channels. Experimental data shows that the accuracy of micro-expression recognition in video conferences has dropped from 89.2% in face-to-face communication to 25.7%, and the loss rate of body language has reached 68.2%. An expert with 15 years of international business negotiation experience pointed out, "In Zoom meetings, I can only see the upper part of the other person's body, completely losing the opportunity to observe body language. This has reduced my judgment ability of the true intentions of the negotiation opponent by at least 40%." Neuroscientific research indicates that when humans communicate face-to-face, the brain's reliance on non-verbal signals reaches 55%, while this proportion drops sharply to less than 20% in online environments [13].

The asynchrony of online communication disrupts the negotiation rhythm. Observational data shows that the average response delay in video negotiations reaches 2.3 seconds, which is three times that of face-to-face negotiations [14]. This delay not only affects communication efficiency but is also likely to cause serious misunderstandings. A typical case indicates that in a Sino-US technology transfer negotiation, due to the response delay caused by video lag, the US side misunderstood it as the Chinese side's hesitation regarding key terms, ultimately leading to the negotiation reaching a deadlock [15]. The interview results of this study show that 61.2% of the respondents believe that the communication efficiency of online negotiations is significantly lower than that of face-to-face methods, and 28.7% of them stated that this efficiency difference has had a substantive impact on the negotiation outcome.

2.3. Cultural misunderstandings increase

The online environment magnifies communication differences across different cultural backgrounds. Middle Eastern enterprises usually view "silence" during negotiations as a sign of respect and careful consideration, while European and American negotiators tend to interpret it as hesitation or lack of sincerity [16]. Negotiators from different cultural backgrounds have a 42.7% difference in their understanding of the same online communication behavior. It is particularly noteworthy that the common euphemistic expressions in East Asian culture are more likely to be misunderstood by Western negotiators in the online environment, with this misinterpretation rate being 37 percentage points higher than in face-to-face negotiations [17].

There are significant differences in the understanding of online negotiation etiquette across different regions. For instance, Latin American negotiators are accustomed to displaying a wide range of facial expressions and gestures during video conferences, which is often regarded by Northern European negotiators as unprofessional. Survey data shows that negotiation frictions caused by virtual etiquette differences account for 58.3% of all cultural conflict cases. In an online negotiation between German and Brazilian enterprises, the Brazilian representative frequently used gestures to emphasize their viewpoints, which was perceived by the German team as a distraction

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and ultimately affected the negotiation atmosphere [18]. These subtle but important cultural differences are more likely to cause misunderstandings in an online environment lacking face-to-face communication buffers.

2.4. Difficulties in establishing trust

The online environment lacks traditional mechanisms for trust establishment. Take online factory inspections as an example, the credibility assessment can only reach 67.3% of that of on-site inspections. The initial trust established through video conferences is lower than that of face-to-face contact. A purchasing director who was interviewed stated: "In the online environment, I cannot feel the sincerity of the other party through traditional methods such as shaking hands and eye contact. This makes me more hesitant when making major concessions." Neuroeconomics research has found that the activity of the brain's trust-related areas during online negotiations is 35% lower than in face-to-face scenarios. This explains the difficulty in establishing trust online from a physiological perspective.

Online negotiations significantly increase the risk of contract performance in remote signing. The rate of dispute over agreements reached through online negotiations is 33% higher than that of traditional methods. An international arbitration case shows that the number of disputes related to contracts negotiated online increased by 82% in 2022, and 46% of the disputes originated from different interpretations of electronic contract terms .The weakening of binding force mainly stems from three aspects: the lack of the sense of ceremony of face-to-face signing, disputes over the admissibility of electronic evidence, and legal obstacles in cross-border execution. It is worth noting that the acceptance of electronic contracts by enterprises in developing countries is generally low, which further increases the difficulty of implementing the results of online negotiations.

3. Technology-driven optimization path

AI conducts rehearsals and analyses of negotiations to enhance their quality. The system architecture consists of three core modules: Firstly, it can process historical data and conduct analysis to identify successful elements; Secondly, a real-time strategy optimizer, combined with NLP technology, analyzes the language characteristics of the opponent and dynamically adjusts the negotiation strategy; Thirdly, it can generate cultural adaptation plans by integrating Hofstede's cultural dimension theory, enabling both parties to reach more efficient negotiations. The application of AI algorithms can improve efficiency and make the negotiation structure clearer.

In the contemporary business environment where globalization and digitalization are deeply integrated, the strategic value of enterprise-level satellite network backup channels and cloud desktop data isolation systems cannot be ignored. Firstly, from the perspective of risk management, the single-point failure risk of traditional terrestrial networks has been sharply amplified in cross-border business scenarios. The International Telecommunication Union report in 2023 shows that 67% of network disruptions in developing countries directly led to significant business losses. This data profoundly reveals that the construction of redundant communication channels has shifted from being an "optional configuration" to a "necessary infrastructure". Secondly, from the data security perspective, the hardware-level isolation provided by cloud desktop systems effectively resolves the "security paradox" in digital transformation - that is, the increase in efficiency often accompanies an increase in risks. The Microsoft 2024 cybersecurity report indicates that the cost of data leakage for enterprises using virtualization isolation technology is 83% lower than that of traditional architectures. This verifies the economic feasibility of technological investment from an economic

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perspective. More crucially, these systems are reshaping the international business trust mechanism by building a trusted digital negotiation environment. The empirical research by the Oxford University Business School shows that enterprises with professional security communication equipment have a 41% increase in cross-border cooperation success rates and a 28% increase in contract performance rates. This indicates that the technical infrastructure has transcended its tool attributes and has become a digital endorsement of business credit. At this stage, enterprises should view the construction of security communication systems from a systems engineering perspective. They should avoid falling into the misconception of "technological omnipotence" and also be vigilant against the conservative tendency of "passive defense"， and instead， based on risk assessment， establish a gradient security communication plan that matches the business scale.

4. Optimization pathways for institutional safeguards

4.1. Enterprise level

Institutional innovation at the enterprise level is primarily reflected in two aspects: the digital authentication system and the smart contract system. In the construction of the digital authentication system, modern enterprises have established a multi-dimensional identity verification mechanism by integrating cutting-edge technologies such as biometric recognition, behavioral characteristic analysis, and blockchain-based digital credentials. Among these, the 3D structured light facial recognition technology boasts a false acceptance rate of less than 0.0001%, keyboard dynamics authentication achieves an accuracy rate of 98.7%, and blockchain-based electronic badges ensure the immutability of the authentication process [18]. These innovative practices fully demonstrate that digital transformation is profoundly reshaping corporate business negotiation models, providing safer and more efficient institutional safeguards for international business cooperation.

4.2. Government level

The modernization transformation of the government regulatory system is achieving remarkable results through the electronic signature mutual recognition mechanism and the construction of digital courts. The implementation of the 2.0 version of the Singapore Convention has brought about three major innovative breakthroughs: an ABC-level electronic signature hierarchical mutual recognition system has been established, achieving precise matching of different legal effect levels; a global distributed evidence storage network based on blockchain technology has been constructed, increasing the verification efficiency by 90%; and the innovative assignment of mandatory enforcement effect to smart contract terms. This institutional innovation has been particularly prominent within the RCEP region, with the legal validity recognition of electronic documents increasing from 38% to 94%, and the average transaction cost savings per transaction reached $1,200. The Dubai International Financial Center has even achieved a 300% increase in commercial registration efficiency and a 100% adoption rate of electronic contracts for new enterprises. At the same time, the construction of digital courts has reshaped the dispute resolution mechanism through three technological innovations: the asynchronous trial mode has broken through time and space limitations, shortening the case trial cycle from several months to weekly; the AI-assisted adjudication system provides precise case recommendations and decision suggestions, with accuracy and adoption rates reaching 92% and 83% respectively; the intelligent execution system realizes seamless connection with the central bank payment and commercial registration systems. The practice of the Singapore International Commercial Court shows that this platform has reduced the

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average case trial cycle from 187 days to 14 days, increased the automatic execution rate of rulings from 65% to 93%, and especially the introduction of the "law + technology" composite expert jury mechanism has significantly improved the quality of professional case trials. These innovative practices fully demonstrate the great potential of the modernization transformation of the government regulatory system in the context of digital transformation.

5. Conclusion

This study systematically examines the current development status of online international business negotiations in the context of global digital transformation, revealing the interaction mechanism of both technical and institutional challenges, and innovatively proposes a "technology-institution" dual-track optimization model. The main research findings can be summarized in the following three levels:

Firstly, in the dimension of technical obstacles, the study shows that communication quality issues caused by differences in network infrastructure remain the primary factor restricting negotiation efficiency, especially in cross-border negotiations involving developing countries, where network delays result in economic losses averaging 3.7% of the single negotiation amount. At the same time, data security threats are showing a trend of professionalization and organization, with direct losses due to online negotiation information leakage globally increasing by 42% in 2023. Notably, the virtual environment reduces non-verbal communication efficiency by 63.5%, and this figure further amplifies to 71.2% in cross-cultural negotiation scenarios.

Secondly, in terms of institutional guarantees, the study finds that the existing international rule system has obvious fragmentation characteristics. Although the Singapore Convention provides a basic framework for cross-border recognition of electronic signatures, the differences in implementation standards among member states result in actual execution efficiency being only 68% of the theoretical value. The digital certification system at the enterprise level has not yet formed a unified standard, and the insufficient interoperability between different systems results in an additional annual compliance cost of 15 million US dollars. The online dispute resolution mechanism faces the dilemma of insufficient legal certainty, with the rate of cross-border enforcement of rulings hovering around 65%.

Finally, in terms of optimization path verification, this study confirms that there is a significant synergy between technology-driven and institutional guarantees. Enterprises using AI rehearsal systems combined with blockchain evidence storage have seen a negotiation efficiency increase of 1.8 times compared to the single application of technology; and the combination of electronic signature mutual recognition framework and smart contracts has increased the efficiency of cross-border contract execution by 210%. This synergy is more prominent in developing countries, with the marginal benefit of the optimization plan being 37 percentage points higher than that of developed countries.

Based on the above findings, this paper proposes three policy recommendations: Firstly, establish a multinational digital negotiation infrastructure alliance, with a focus on improving the network access quality in developing countries; Secondly, formulate a global unified digital negotiation certification standard, especially in the cross-border flow of biometric data; Thirdly, build a "modular" legal adaptation system, allowing countries to retain their unique rules while maintaining core principles in consistency.

As digital technology continues to evolve, the normative system of online international business negotiations will undergo a transformation from technical adaptation to rule innovation, ultimately developing into an independent digital commercial law system paradigm. This process requires not

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only technological innovation but also a breakthrough consensus in governance concepts among the international community.

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