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Informatization-Based Risk Management for Overseas Projects Postprint

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Abstract

The new landscape of global economic development, the new normal of China' s economic development, and the new frontier of the "Belt and Road" initiative render it imperative for Chinese construction enterprises aspiring to expand overseas to intensify their efforts in overseas market deployment and to meticulously cultivate these markets. Given the unique characteristics of overseas construction markets, which involve the host country' s political and economic environment, policy barriers and protections, legal and cultural differences, divergent practices in international project operations, and numerous uncertainty factors, overseas projects are confronted with various risks. This paper, from an informatization perspective, elaborates on the analysis of various risks in overseas projects for construction enterprises, explores their underlying causes, and proposes preventive measures and mitigation approaches.

Full Text

Information-based Risk Management of Overseas Projects

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1. Introduction

Over the past three decades of reform and opening up, China' s construction industry market has become fully competitive, giving rise to a number of large-scale, powerful leading enterprises. With China' s economic development entering a new normal and domestic construction industry growth slowing, acceler-

ating overseas market layout and actively exploring new business growth points has become an inevitable strategic choice. However, overseas construction markets present significantly higher risk levels, more complex risk categories, and more frequent risk fluctuations than domestic markets. Effectively preventing risks, enhancing risk awareness, establishing sound risk management systems, and improving risk prevention capabilities constitute wise strategic decisions for every enterprise venturing abroad.

2. Risk Classification for Overseas Projects

While domestic construction enterprises focus risk prevention primarily on project management, overseas project risk prevention extends far beyond the project itself, encompassing a much broader and more complex scope. The main risks fall into two major categories:

2.1 Environmental Risks Environmental risks primarily include political, economic, social, cultural, and legal risks. These risks rarely manifest prominently in domestic projects but represent normalized challenges in overseas markets that many Chinese construction enterprises are ill-equipped to handle.

First, **political risk** involves regime changes, ruling party transitions, and political instability in host countries, which can lead to social unrest or even war, severely threatening business operations and employee safety. For instance, in 2011, China had 50 large-scale contracted projects in Libya with a total contract value of $18.8 billion. The political turmoil and civil war forced the evacuation of Chinese personnel, causing substantial impacts on project progress and business operations.

Second, **economic and exchange rate risks** arise from global economic slowdowns, host country economic distress, high government debt, shrinking local construction investment, or policy adjustments targeting foreign enterprises and labor to protect domestic interests. These factors can impede project implementation, cause capital shortages, and create performance difficulties. Most overseas projects are located in countries such as those in Africa, Myanmar, Sri Lanka, and Pakistan, where political and economic systems are underdeveloped and local currencies are "soft currencies" subject to significant fluctuations, creating substantial exchange rate risks.

Third, **cultural and religious conflict risks** stem from inadequate understanding of local religions, cultures, and customs. When project personnel behaviors conflict with local public values and practices—such as disrespecting local traditions and beliefs—disputes can arise.

Fourth, **legal risks** result from insufficient understanding of local laws and regulations, causing companies to violate local legal requirements and suffer fines, losses, or even work stoppages.

2.2 Project Operation Risks Project operation risks include several dimensions:

First, **contractual risks** arise from inadequate understanding of local standard contract terms and the application of domestic project operation patterns. Some enterprises bid below cost to win projects, planning to claim compensation after contract signing, only to face contract and cost overruns.

Second, **technical standard risks** result from insufficient understanding and analysis of local technical standards and specifications. Familiar domestic construction standards may not be internationally recognized or accepted, leading to technical and performance risks.

Third, **planning risks** stem from inadequate preliminary investigation, inaccurate technical solutions, insufficient resource allocation, and incomplete consideration of adverse factors. Projects often assume ideal conditions during early stages, only to discover during implementation that actual difficulties and adverse factors far exceed expectations, significantly increasing implementation risk.

Fourth, **performance risks** arise from local objective constraints during implementation, such as demolition difficulties, delayed government payments, or interference from local labor unions, affecting contract fulfillment.

Fifth, **preparation risks** result from failure to research, analyze, or develop contingency plans for project operation models, requirements, and details, leading to implementation risks due to inadequate preparation.

3. Our Countermeasures and Solutions

To successfully undertake overseas projects, Chinese construction enterprises must thoroughly prepare, effectively apply domestic project management experience to achieve controllability, leverage competitive advantages, utilize modern information technology to strengthen project management, and innovate management models to achieve risk control and profitability. Most importantly, enterprises must establish comprehensive risk management systems encompassing risk management strategies, financial measures, organizational functions, information systems, and internal controls to achieve risk management objectives and ensure smooth project implementation. Specifically, enterprises should implement the following measures:

3.1 Establish Organizational and Institutional Guarantees Enterprises venturing overseas must establish dedicated overseas project management organizations with clearly defined responsibilities and management processes. They should formulate risk management measures and improve relevant management systems. Risk databases should be developed for both environmental and operational risks, with corresponding emergency response plans formulated. Multi-layered, comprehensive risk assessments should be conducted during project

environmental evaluation, client assessment, project evaluation, and various project operation phases (initial, middle, and late stages). Monitoring mechanisms should be established to implement management decisions step-by-step according to different risks at different stages, thereby enhancing enterprise risk awareness and management capabilities.

3.2 Organize Professional Project Management and Support Teams For projects in specific overseas regions, enterprises should assemble professional teams comprising experts in construction technology management, business management, legal management, and external coordination who are familiar with international practices. These teams provide professional management and support services for overseas projects, offering assistance for emergencies and disputes throughout project implementation. They also provide research support, implementation management, and decision-making assistance during pre-, mid-, and post-project phases.

3.3 Provide Design and Technical Guarantees Embracing a value-output philosophy, enterprises should enhance service capabilities and technical standards to strengthen their competitive position. By taking the lead in design and technology and emphasizing value delivery, companies can gain the initiative in disputes and improve their ability to transfer risks. Enterprises should fully leverage their advantages to effectively transfer and circumvent risks through contract management in areas such as materials and technology, thereby maximizing the reduction of project operation risks.

3.4 Strengthen Contract Management Effective contract management requires pre-event avoidance, in-process response, and post-event remediation. First, enterprises should intensify research on FIDIC 条款 content and requirements, thoroughly understand project location laws and regulations, and establish risk point databases. Project team members should receive training to ensure full awareness of risks. Second, enterprises should conduct simulated risk identification for risk points during contract execution, assess risk severity accurately, and ensure risks remain controllable. Contract management must address several critical risk issues: (1) currency exchange risk allocation in contracts; (2) delays in owner-supplied main materials; (3) unilateral changes to measurement procedures, cycles, and payment ratios; and (4) interest liability for delayed payments.

3.5 Emphasize Construction Process Risk Control Chinese overseas projects fall into two categories: first, aid projects that follow Chinese standards and specifications with Chinese supervision and owners, representing politically significant projects. Except for stricter personnel qualification and equipment planning requirements requiring Ministry of Commerce approval, management approaches are similar to domestic projects. Second, cash, export credit, and government framework projects that fully implement FIDIC 条款 and British

standards, where technical standards and management models differ significantly from domestic practices. For instance, design drawings are often conceptual, requiring contractors to optimize designs and obtain supervisory engineer approval before construction.

Another example is the inspection and acceptance procedure. Domestically, construction typically precedes documentation, with supervisors signing inspection forms afterward. Overseas projects, however, follow strict procedures with specific requirements for submission timing and materials; violations can result in complete work stoppages.

Material and equipment procurement also differs significantly due to regional variations. Prices vary considerably, requiring market research in host and neighboring countries and detailed procurement planning to avoid delays that could cause breach of contract and interest payment risks.

3.6 Leverage Domestic Project Management Concepts and Strengthen Information Technology Application To address the aforementioned risks and countermeasures, enterprises should establish internal risk information management platforms through information technology. As shown in Figure 1, the platform encompasses all business functional modules for project management and control, including dedicated risk management modules, knowledge management modules, message reminders, process management, and risk early warning systems.

As illustrated in Figure 2, contract management risks are addressed through comprehensive contract management (specialized subcontracting, labor subcontracting, procurement, and logistics contracts), covering the entire process from contract review, signing, modification to settlement.

Figure 3 demonstrates the establishment of a risk management system based on contract settlement processes. According to established workflows, initiated by project departments, reviewed by regional offices, and approved by domestic departments and chief economists, the system completes payable reviews for overseas projects promptly and effectively, thereby realizing settlement risk control.

As shown in Figure 4, cost management involves importing budget results from Guanglianda or EXCEL to achieve budget cost importation. Based on preset WBS and cost account settings, budget cost preparation is realized, enabling target cost formulation according to management needs. Through project process management, actual cost collection is achieved, ultimately realizing three-way cost comparison.

To implement effective risk management, enterprises should:

1. **Establish overseas project implementation plans** with item-by-item evaluation and control, identifying and assessing all “risk points”and building an overseas project emergency response knowledge base and procedures

within the information system.

2. **Monitor overseas project progress and cost control processes**, using information technology to predict and provide early warnings for abnormal schedule and cost situations, preventing schedule and cost risks.
3. **Establish strict supplier and overseas equipment/material price databases**, identifying and evaluating market price and exchange rate trends, strengthening forecasting, and employing various financial instruments (such as futures markets and hedging) for risk avoidance.
4. **Integrate internet, IoT, cloud computing, and 3S technologies** in construction processes, utilizing e-commerce bidding systems and logistics supervision systems to implement transparent procurement and real-time logistics tracking, enhancing material procurement process risk control capabilities.
5. **Research local labor policies**, establishing complete labor risk systems, qualified subcontractor databases, and labor personnel databases (including local workers), clarifying risk control points to improve overseas project labor process risk control capabilities.

4. Conclusion

In summary, globalization is inevitable for China' s construction industry. The transformation from traditional contractors to value chain integrators, from single resource supply to global resource integration and sharing, and from traditional management to modern information technology and management integration represents the necessary path for development and growth. Large multinational construction enterprises employing information technology and modern management can achieve higher efficiency and lower costs than traditional management approaches, enabling them to better avoid, prevent, and resist risks for sustainable survival and development in overseas markets.

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Abstract: Due to the new development structure of world economy, the new normal for the development of Chinese economy and the new markets for the "one road and one belt" strategy, it is necessary for Chinese enterprises to further expand and cultivate overseas markets. However, overseas projects have to face all kinds of risks because of such uncertain factors as political and economic environments, policy barriers and protections, legal and cultural differences and different international project operation procedures. Based on information technology, this paper analyzes various risks for overseas projects of building companies and puts forward prevention measures and approaches.

Key Words: Overseas Projects; Building Industry; Capacity-cutting; Information Technology; Risk Management

Note: Figure translations are in progress. See original paper for figures.

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