

A Study on the Supply Chain Resilience of Chinese Enterprises Expanding into Saudi Arabia Amid Geopolitical Risks and localization Challenges

Yuhan Duan

Central South University, Department of Transport Engineering, Changsha, Hunan, 410083, China
dyh02049026@163.com

ABSTRACT

The purpose of this study is to consider the strategic approach of making supply chain resilience for Chinese enterprises entering the Saudi Arabian market in a complex institutional and cultural environment. By using the method of investigating a case for a long time, this research focuses on the role of CITIC Bo (from 2017 to 2025) in Saudi Arabia, and analyzes it through three stages: “entry”, “growth” and “maturity”, combining the macro-analysis, policy text and catch-up process of PEST. In the study, we found that the construction of supply chain resilience could not be completed at one time, but gradually moved towards “try-localize-configure capacity-summarize ecosystem”. Finally, a “four-stage” action guide is formulated to provide a phased and easy-to-implement judgment framework for Chinese enterprises that have been active in Saudi Arabia and similar new markets for a long time.

Keywords: Supply chain resilience, Chinese enterprises, Saudi market, Incremental path, Case study

1. INTRODUCTION

As the global industrial chain changes, under the “Belt and Road” Initiative, Chinese companies are moving into Saudi Arabia to seek new growth. It should be noted that now, the overseas expansion of Chinese enterprises has changed from “capacity outbound” to “supply chain outbound,” and there is a higher demand than ever before for building the strength of local supply chains in the country of entry ^[1]. Saudi Arabia’s “Vision 2030” aligns well with China’s “Belt and Road” Initiative, giving Chinese companies market opportunities and policy gains that they have never before had. ^[2] While there are opportunities, special geopolitical risks, stringent localization policies, and cultural barriers are creating complex problems for Chinese companies’ supply chains, and the rush to create adaptive supply chains is clear.

The research so far has laid a foundation for supply chain resilience and the internationalization of China enterprises. However, there are still many shortcomings. China’s research involves the Saudi market (Shen Binfeng, 2025), and supply chain resilience is very important for enterprises entering overseas (Gao Xia and Zhang Qi, 2025), but it mainly focuses on the big point of view. Foreign research mainly focuses on the risk of traditional supply chain (Sheffi, 2005) ^[3]. Although it slightly touches the pressure of policy compliance in Saudi Arabia, the in-depth investigation and analysis of China enterprises’ coping strategies, on the whole, the previous research is sufficient for the systematic analysis of supply chain resources under the constraints of “geopolitical risks and cultural system elements”, as well as the successful practices and feasible phased promotion methods of China enterprises in Saudi Arabia.

Therefore, this study will focus on the important core question: how can China enterprises create supply chain resilience under the two restrictions of Saudi Arabia’s “policy-culture” environment? The paper chooses CIB of photovoltaic enterprise as a long-term case study to observe the strategic changes after entering the Saudi market in 2017. The purpose of this research is to make a unified theoretical framework and summarize the practical guidelines that can be used. This paper will be carried out in the order of “environmental analysis–in-depth case study–construction path”. The most important contribution of this study is to launch a “four-step” action guide for supply chain resilience. It has gradually developed from “tentative entry” to “ecological integration”, aiming to be a reference for enterprises that want to expand their business overseas in the future.

2. MATERIALS AND METHODS

2.1 Research Sample and Data Sources

2.1.1 Research Sample

Longitudinal single-case study method is used in this study. CITIC New Energy Technology Co, Ltd. (hereinafter referred to as “Citi new energy”) was selected as the research sample. As an important part of the new energy photovoltaic industry chain, the market of tracking mounts and corresponding sheet and strip materials is growing. Therefore, in the study of supply chain, this sample is a representative example of industry [4]. This will be a typical sample to study the strength of supply chain [5]. The strategic evolution of the example can be clearly divided into three stages: access, growth and maturity. It covers the whole process of finding the market, establishing local companies and cooperating with the ecosystem. Therefore, it has become an ideal research object for long-term tracking and analyzing the working mechanism of creating supply chain strength.

2.1.2 Data Sources

In order to protect the reliability and correctness of this research, various dataset are made in this research, and the information is mastered by triangulation. The data mainly comes from the following three source:

1. Primary public data: This includes the annual report, semi-annual report and quarterly revenue release issued by CITIC Solar from 2017 to 2025. These data are collected to track the company’s financial situation, investment decisions, market strategy changes and the specific progress of Saudi Arabia project.
2. secondary research materials: including Saudi’s renewable energy market, CIB, analysis report on the world solar energy industry, white paper of the industry, and news reports of in-depth interviews. These materials are used to confirm the correctness of first-hand data and to understand the background and competitive environment of the industry in which the company works.
3. Policy and macroeconomic data: official documents of Saudi Arabia on Vision 2030, relevant rules and policy documents issued by Saudi Investment Department, World Economic Forum, World Bank and other international institutions will be used to objectively analyze the macroeconomic environment and institutional constraints of Saudi Arabia.

2.2 Research Approach and Methodology

2.2.1 Overall Research Approach

This study uses the three-stage forward research method of “macro-level–case study–mechanism”. Firstly, the PEST framework is used to analyze the system and market constraints in Saudi Arabia “vision 2030”. Secondly, using a case investigation method, this paper investigates the evolution path of three stages of CITIC Bo in Saudi Arabia from 2017 to 2025. That is “tentative entry–deep localization–ecosystem building”. Finally, based on the three levels of grounded theory, two core mechanisms of “strategic compliance” and “embedded localization” are introduced, which enable enterprises to transform external constraints into competitive advantages.

2.2.2 Research Methodology

(1) Macro-environmental and Policy Analysis

In this study, the Pest Macro-Environmental Analysis Framework is used as a whole to carefully investigate the institutional constraints in Saudi Arabia “vision 2030”. Against the backdrop that “changes in Saudi Arabia’s energy geopolitical landscape profoundly influence the pathways and models of Sino-Saudi energy cooperation” [6], this study is based on Saudi’s “Visi” On 2030 “framework, the tender documents of National Renewable Energy Plan (NREP) and Saudi Power Procurement Company (SPPC) are analyzed as the center. It establishes a framework of constraint analysis of “the system follows the standards–the barriers to entering the market–adapting to the social culture”, which lays the institutional foundation for the follow-up case study.

(2) Longitudinal Case Tracking and Data Visualization

Employing a longitudinal single-case study methodology, the development of CITIC Power in Saudi Arabia is divided into three stages: entry, consolidation, and ecosystem building. The annual report published from 2017 to 2025 and the

public documents of large photovoltaic project in Saudi Arabia are carefully investigated to clarify the changes of the company's supply chain resilience.

(3) Grounded Theory Coding and Model Construction

Through three stages of grounded theory coding, the overseas development path of CIB in Saudi Arabia is analyzed in sequence. On the premise that “the resilience of industry and supply chain is the key for China enterprises to succeed overseas” [7], we should look for core mechanisms such as “strategic compliance” and “embedded localization”. As a result, a “four-step” supply chain resilience model is established, which consists of “attempted entry–field fixation–power distribution–integration of -ecosystem”.

3. RESULTS AND DISCUSSION

This study has long tracked the activities of CITIC Bo in the Saudi Arabian market from 2017 to 2025, and analyzed it from many angles. As a result, I understand that it is very important for China enterprises to establish the strength of supply chain in the complex system and culture. These results not only show the concrete methods of enterprise success, but also deepen the theoretical understanding of supply chain management in the new market.

3.1 Key Findings

The main findings of this study, through tracking CITIC Bo's strategic process and quantifying visualized results, clearly demonstrate its systematic achievements in building supply chain resilience.

3.1.1 Significant Improvement in Quantified Performance

This study found that CITIC Power's efforts to build supply chain resilience directly drove a leapfrog growth in its market and financial performance.

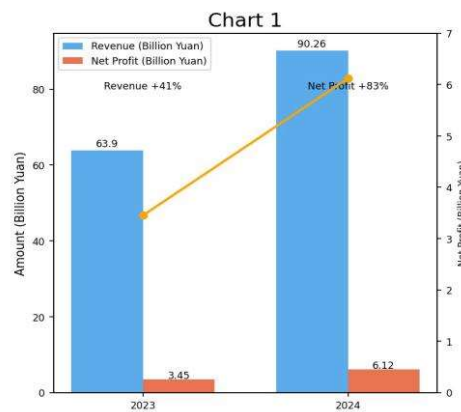


Figure 1a. Revenue and net profit growth (2023–2024)

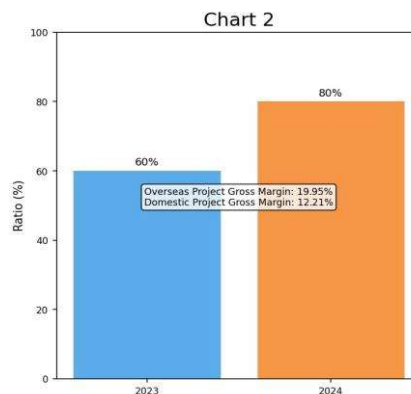


Figure 1b. Product mix optimization and gross margin improvement trend

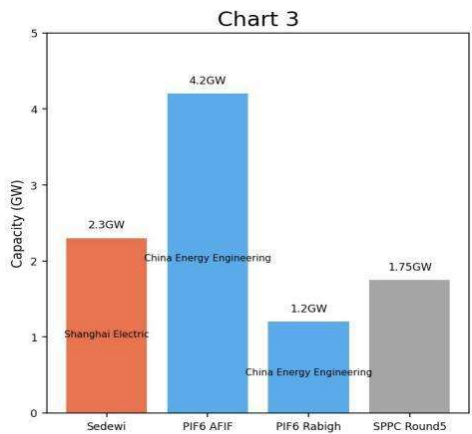


Figure 1c. Saudi renewable project contract award comparison

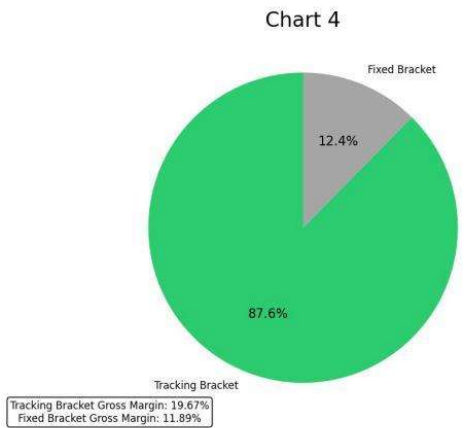


Figure 1d. Revenue and margin comparison: tracking vs. fixed-tilt trackers

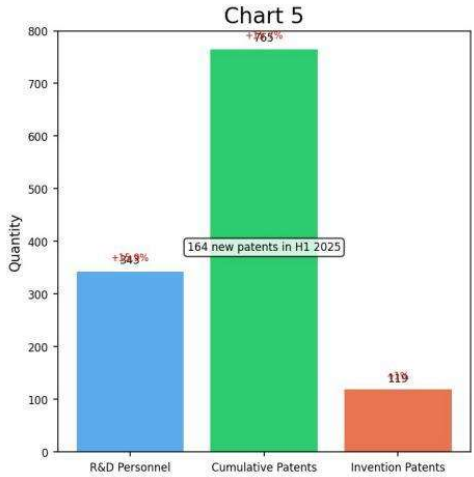


Figure 1e. Growth in R&D spending and intellectual property output

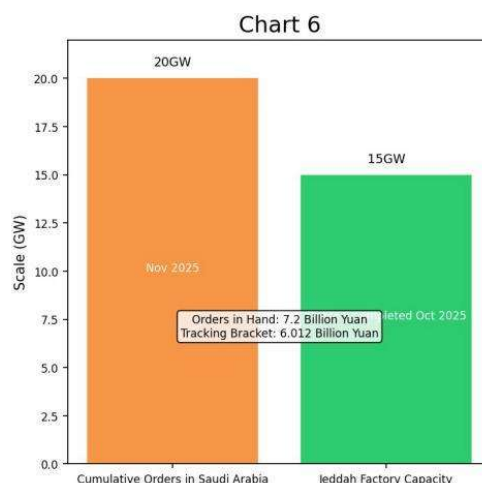


Figure 1f. Order backlog and local production capacity expansion in Saudi Arabia

The following is an explanation of the figures.

①Figure 1a: Revenue and Net Profit Growth (2023–2024)

This figure shows the changes of revenue and net profit of Arctech from 2023 to 2024. The data shows that revenue increased from 6.39 billion yuan to 9.026 billion yuan, and net profit increased from 345 million yuan to 612 million yuan. Compared with last year, it increased by 83%. This shows that supply chain resilience building has greatly helped the company's financial performance.

②Figure 1b: Trend of Overseas Revenue Share

This image shows the ratio change of overseas revenue to Arctech's total revenue. Overseas revenue share was 60% in 2023, but it rose to 80% in 2024. This indicates that the company's global transformation has made great progress, and overseas markets has become the main growth force.

③Figure 1c: Comparison of Contract Awards for Major Renewable Energy Projects in Saudi Arabia

This figure compares the contracted capacity of Arctech in several large photovoltaic projects in Saudi Arabia. Specific projects include Sedewi (2.3 GW), PIF6 AFIF (4.2 GW), PIF6 Rabigh (1.2 GW) and SPPC Round 5 (1.75 GW). The accumulated contract awards have increased significantly, indicating that the company has the ability to continue to develop in Saudi market.

④Figure 1d: revenue structure and gross margin comparison: tracking vs. fixed-tilt trackers

This figure shows the income structure of Arctech products and the difference of total profit from sales. Tracking trackers accounted for 87.6% of the income, the most. Fixed-tilt trackers is 12.4%. The gross sales profit of Tracking trackers is 19.67%, which is much higher than that of fixed-tilt trackers (11.89%). This indicates that profitable tracking has become the core profit source of the company, and it also indicates that product portfolio optimization has achieved great success.

⑤Figure 1e: growth in r & d spending and intellectual property output

This figure shows Arctech's R&D investment and achievements. The staff of R&D accounts for 35% of all employees. There are 1765 patents, of which 18% are invention patents. High-level R&D investment and increasing intellectual property output provide solid support for Saudi Arabia to manufacture technologies and products that adapt to harsh environment.

⑥Figure 1f: order backlog and local production capacity in Saudi Arabia

This figure shows the order balance of Arctech in Saudi market and the production capacity of Jeddah factory. The accumulated orders reached 20.0 GW, and the orders on hand totaled 7.2 billion RMB, and the production capacity of

Jeddah factory was 15.0 GW. This indicates that the company has created a good cycle of “local capacity+local orders”, and also indicates that the localization strategy of supply chain is very smooth.

3.1.2 The Five-Dimensional Strategic Model for Building Supply Chain Resilience

Through the in-depth analysis of the above case study of CITIC-Boh, we found a systematic strategy to build supply chain resilience from five key points. They are combined to form a synergistic resilience framework:

(1) localization of production capacity: By establishing Jeddah factory in Saudi Arabia, a mixed mode of “core components are made in China and structural components are purchased locally” has been formed. This strategy is in line with Saudi Arabia’s academic observation on overseas manufacturing practices. That is to say, the mixed mode is used to strike a balance between complying with local rules and the efficiency of supply chain ^[8]. This approach not only meets the requirements of local regulations, but also improves the response speed and risk resistance of supply chain.

(2) Technological Adaptation: “Skyline II” system has been redesigned and is suitable for Saudi Arabia’s very harsh environmental conditions (for example, the wind speed is 55 meters per second). Scada intelligent operations and maintenance platform is now available, which can handle emergencies within one hour. This shows a strong mentality of transforming operational risks into their own strength through technological innovation.

(3) Partnership Network: 2. A two-way strategy has been adopted. One is “going out collectively” to cooperate with other China enterprises to win big projects, and the other is “in-depth cooperation” to form a strategic partnership with large Saudi Arabian enterprises. In this way, a strong business ecosystem has been established, which can share risks and add up existing resources.

(4) Organization and Talent: A regional headquarters was set up in Dubai to take charge of the overall management. On the other hand, a local team has been set up, and a reward mechanism for using stocks has also been introduced. In this way, the structure of “the protection of regional headquarters+the operation of local teams” has been formed, and it is easy to deal with the “Saudization” policy seriously and integrate into the local business culture.

(5) Risk Hedging: In addition to market and exchange rate risks, enterprises must consciously abide by tax rules, be good at using preferential policies and improve the cost mechanism. This is a very important part of supply chain financial resilience ^[9].

3.2 Discussion and Implications of the Research Findings

3.2.1 The Strategic Transition Path from “Export” to “Local Manufacturing”

The study found that the change from “export” to “local manufacturing” is actually the concrete embodiment of supply chain’s “going global” to increase the company’s overseas competitiveness. By creating local production capacity to support the adoption of three important methods: ^[10] localization of production capacity (Jeddah factory), local adjustment of technology (“Skyline II” system) and change of organizational structure (“regional management+ local operations” model), CITIC Bo successfully completed its transformation from an external supplier to a local value co-creator. this approach not only meets the requirements of the rules, but also goes deep into the industrial mechanism of Saudi Arabia, transforming the strength of supply chain into enduring market advantages and profits.

3.2.2 The Essence of Supply Chain Resilience: From Passive Compliance to Proactive Strategic Design

Facing new opportunities, enterprises must change from passive response to active design. Constraints such as “Saudization” are interpreted as opportunities to create local strength, and ultimately greatly improve adaptability ^[11]. As the research shows, enterprises use the “strategic decoding” mechanism to turn institutional restrictions such as “Saudization” into opportunities to create local organizational capabilities, and turn the risks of severe environment into obstacles to technological innovation (incomparable advantages of other companies). This positive trend of “constraint → transformation” will form a cooperative state among the five strategies of “capacity, technology, cooperation, organization and risk management”, and finally form the ability to quickly respond to external pressures, network advantages and long-term competition.

3.2.3 Dialogue with and Advancement Beyond Existing Research

After reading the papers so far, this research is conducted on theory from three levels. First, in order to support the macro-level conclusion that “if you adapt to the local conditions, your grades will get better”, case study and data are given at the micro level. Secondly, the “five-dimensional strategy” and “four-stage pathway” of making resilience at the working level

are defined, which corrects the shortcomings of macro-level research. Thirdly, by proposing a “four-step action guide”, it offers feasible solution suitable for local conditions when classical supply chain resilience theory is used in complex systems and cultures.

3.3 Limitations of the Study

1. The particularity and limitation of Case Study: This study is only based on a successful case of photovoltaic industry, and whether it can be used in other fields remains to be verified.
2. Limitations regarding data timeliness: Because this study uses historical data up to 2025, it is necessary to dynamically confirm whether the conclusion can be used in the future situation in the rapidly changing Saudi market environment.
3. Limitations of risk quantification: The unified risk quantification model has not been established, so it is difficult to accurately evaluate the cost-benefit of different coping strategies.

3.4 Directions for Future Research

1. Expand the research field: consolidate and improve the existing conclusions through cooperation with various industries and enterprises.
2. Deepen long-term tracking: I have been doing tracking research for a long time, trying to use theoretical models in various economic cycles and policy environments.
3. Quantitative Research: consider making supply chain risk quantification tool in line with Saudi market to improve the scientificity of judgment.

4. CONCLUSIONS

This study takes CITIC Bo as an example to investigate. Enterprises in China want to create supply chain resilience in Saudi Arabia. “strategic compliance” and “embedded localization” are working together, and their fundamental advantage lies in the external system and cultural restrictions, which proves the academic point: “China enterprises should strengthen supply chain resilience when going overseas.” It is pointed out that in the complex market, the establishment of resilience is the key to the continuous development of enterprises ^[12].

4.1 Key Research Findings

This study shows the fixed way and working mode of creating supply chain resilience in Saudi market. In research, the process of creating resilience has gone through four stages in turn: “tentative entry–local rooting–capacity deployment–ecosystem integration”. Its essence is not only “going out” but also the strategic value of “going in”. This means that embedded localization, which is closely related to the local area, turns external constraints into competitive advantages ^[13]. This change is reflected in the cooperation of productivity, technology, cooperation, organization and risk management, and ultimately promotes the overall improvement of the company’s position, order volume and career structure in the market.

4.2 Research Value and Application Prospects

This study has both theoretical and practical value. In theory, through the induction and analysis of institutional, cultural and geopolitical factors, the research scope of supply chain resilience and cross-cultural supply chain management is discussed. In practice, the “four-step” action guide and specific strategy put forward this time provide a systematic and ready-made framework for Chinese enterprises to continue their work in a complex market like Saudi Arabia. The center notes that supply chain globalization is not only an enterprise activity, but also the key to create a mutually beneficial global industrial chain and realize sustainable development activities ^[14].

REFERENCES

- [1] Guo, F. Y. (2025). The transformation of Chinese enterprises’ overseas expansion: From ‘capacity export’ to ‘supply chain export’. *China Logistics and Purchasing*, (02), 11–12.
- [2] Zheng, Q. T., & Yi, Y. J. (18 July 2024). Saudi Arabia extends an olive branch to China; the time is right for Chinese enterprises to go global. *21st Century Business Herald*, 003.

- [3] Sheffi, Y. (2005). *The Resilient Enterprise: Overcoming Vulnerability for Competitive Advantage*. MIT Press.
- [4] Zhu, N. F. (2026). Development status of the new energy photovoltaic industry and progress in plate and strip products. *Metallurgical Economics and Management*, (02), 22–25.
- [5] Sun, R. X., & Xia, X. (8 December 2025). Cai Hao of Arctech: The global competitiveness of China's photovoltaic industry today relies on the collective rise of the industrial chain. *China Business News*, B05.
- [6] Shao, L. F. (2022). Research on changes in Saudi Arabia's energy geopolitics and its impact on Sino-Saudi energy cooperation [Research on changes in Saudi Arabia's energy geopolitics and its impact on Sino-Saudi energy cooperation] (Unpublished master's thesis). Yunnan University.
- [7] Gao, X., & Zhang, Q. (2025). "Going global" or "getting out": The resilience of industrial and supply chains and the overseas expansion of Chinese enterprises. *Industrial Economics Research*, (03), 115–128.
- [8] Shen, B. F. (2025). Insights into Chinese manufacturing enterprises expanding to Saudi Arabia. *Intelligent Manufacturing*, (03), 8–12.
- [9] Hu, H. Y. (1 April 2026). Chinese enterprises going global must proactively plan for tax compliance and make good use of policy dividends. *21st Century Business Herald*, 005.
- [10] Tang, L. (29 April 2026). Chinese enterprises going global: How to find new growth engines. *International Business Daily*, 004.
- [11] Meng, N. (26 March 2026). How can Chinese enterprises seize the new opportunities in this wave of overseas expansion? *International Business Daily*, 003.
- [12] Mao, W. (16 October 2025). Chinese enterprises going global need to enhance supply chain resilience. *China Trade News*, 004.
- [13] Huang, X. H., Yuan, Y., & Ge, J. J. (16 March 2026). How Chinese enterprises going global can shift from 'going out' to 'going in'. *International Finance News*, 008.
- [14] Tang, L. (26 March 2025). China's supply chain going global weaves a chain of global industrial win-win cooperation. *International Business Daily*, 003.