



CREC: How to Deepen its Internationalization Level?

Analysis Based on China Railway International Engineering Company in South Africa by Strategic Selective Model

中国中铁：如何推进国际化进程？
——基于中铁国际南非工程公司的战略选择分析

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Abstract: The paper discussed the strategies for China Railway Engineering Corporation under the circumstances of “The Belt and Road” (B&R) to deepen its internationalization level based on China Railway International Engineering Company in South Africa. We came up with three concrete strategies consisting of outsourcing, vertical strategic alliance and localization by using market matrix analysis, PEST model and diamond model. Besides, we did feasibility analysis to the three strategies by economic models.

Key Words: Market Matrix; Diamond Model; Internationalization; Outsourcing; Vertical Strategic Alliance; Economic Models

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摘要：本文以中铁国际南非工程公司为例，运用市场矩阵分析、PEST分析和钻石模型等方法，对一带一路大环境下中国中铁股份有限公司如何维护原有国际市场、加深国际化进行分析，提出了外包、纵向战略联盟和本土化三大具体战略措施，并运用经济学理论模型依次对其进行了可行性分析。

关键词：市场矩阵；钻石模型；国际化；外包；纵向战略联盟；经济理论模型

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1. Introduction

The proposal of The Belt and Road (B&R) will surely promote the cooperation between China and countries along B&R and go further encourage “going global” strategy of all kinds of Chinese enterprises to make best use of foreign production factors, such as market, capital, labor and nature resources. Firstly, the establishment of Asian Infrastructure Investment Bank (AIIB) gives opportunity for those countries who are not abundant with capital to do infrastructure, which will bring back a lot economic effects to economic development. Secondly, the reverse spillover effect of OFDI and technological knowledge will promote the internationalization of Chinese enterprises. According to Yuming Wu (2008), research and development (R&D) production have conspicuous spatial clustering, which means that the spillover effect of research is significant. Gede Xiang (2013) used an economic distance weighted adjacent matrix to replace geographical adjacency matrix, he found that the new matrix spatial econometrics model has better goodness of fit. As B&R builds up an efficient network among countries, which will reduce physical distances between any two of these countries to some extent, so it’s much easier to spread spillover effects as well as absorb them. And this kind of impact will cause the internationalization of enterprises.

Analyzing the internationalization strategy of enterprises and using internationalization analysis model may guide the strategic management. In early 19th century, David Ricardo came up with the theory of international trade, he discussed about the reasons of international trade. Samuelson etc. (1941) talked about the results of outsourcing, they found out the motive power of outsourcing. These are economic theories about the internationalization. Michael Porter (1990) came up with diamond model, he believed that the motivation to internationalization was very important.

We choose the China Railway Engineering Corporation (short as CREC) in construction services field to analyze the internationalization strategies with the propose of B&R. The CREC is a large-scale state-owned construction company in China under the supervision by the State Council of China. CREC group established China Railway International Group to implement its overseas strategy, which mainly focus on the projects outside China. Its projects operation modes contain EPC, EPC+F, BOT, PPP, Overseas Investment, etc. So far, there are 8 wholly-owned subsidiaries, 8 controlled

companies, 3 holding subsidiaries and 9 offshore offices belong to CRIG and its business expands to most of the countries in Asia, Africa, South America, Mid and East Europe and so on. As for the market of South Africa, CREC group invested two holding companies as one in charge of the investment and the other is responsible for projects construction in RSA, which is the main study objective of our paper.

In fact, as early as in 2006, CREC had already entered South Africa in order to take the High-speed railway construction project from Durban to Johannesburg. However, after years of negotiation and struggle, CREC still cannot take a closer step to South Africa market because of many obstacles. Therefore, our paper aims to make market analysis and proposed some strategy suggestions to deepen its internationalization strategies.

2. Literature Review

With the increasingly internationalization trend of Chinese cross-border enterprises, more and more scholars focus on the research on the internationalization strategies of multinational enterprises. At present, researches on the internationalization of enterprises could be divided into two categories. The first is pure theoretical analysis based on the economic models. The second is qualitative analysis.

In the aspect of pure theoretical analysis, Shengyong Zhang (2012) extended the Krugman model. He found about that if the scale effect was big enough, enterprises could export even if the revenue was smaller than zero. Zhuo Li (2006) created a model based on the international business background, he found that internationalization strategies in developing countries' enterprises followed the normal principles in globalization, but there were still many differences. Dengke Yu (2012) used mechanical model to analyze development of enterprise alliance, he found that the development of enterprise alliance followed the rules of commensalism, asymmetry of parity, law of large numbers and dynamic stability.

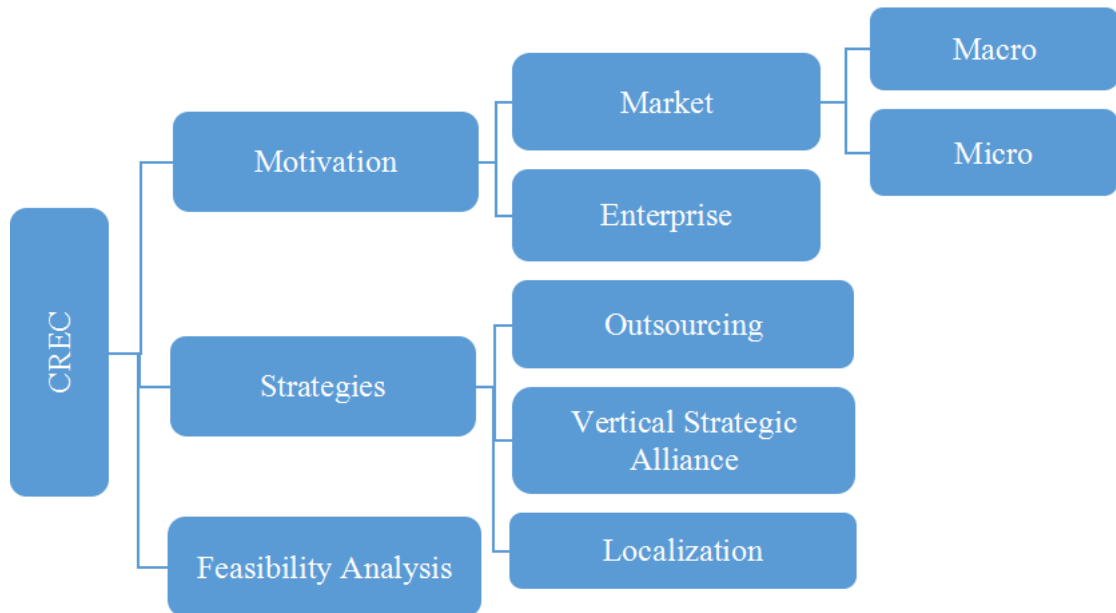
In term of qualitative analysis, Chunli Ji (2010) created different international strategy leverage models, he found that it was critical for small companies to start the internationalization. Shou Peng (2011) used BPSM model to analyze the internationalization of engineering survey design companies, he found that the pairings of SWOT was a good way to analyze companies' strategies. Jie Ding (2009) used matrix

to analyze the internationalization strategies, she found that the Latin America was a big market for Chinese telecommunication corporations. Jiangqiu Wu (2013) discussed about the cultural variances in internationalization, he created a model to measure the cultural blunt pain.

According to the existing literatures, we discover that almost all the scholars focus on the exploit of new market, but no paper focused on the deepen internationalization in the existing international markets.

The CREC has many subsidiary corporations around the world. We choose one of its subsidiary corporations, China Railway International Engineering Company in South Africa, to analyze its deepen internationalization strategies by using market analysis, PEST model and diamond model. Then we come up with three strategies to deepen its internationalization level in South Africa, which are outsourcing, vertical strategic alliance and localization and make feasibility analysis with economic models.

3. Research Framework



Graph 1 Framework

In this paper, we mainly talk about internationalization strategies of CREC by one of its wholly-owned subsidiary: China Railway International Engineering Company in South Africa. Basically, there are three sections in our paper.

The first section is the motivation of internationalization. In this section, we use two parts to state the motivation. The first part is the market analysis, and we analyze the market situation by using market matrix and PEST model. The second part is the analysis based on enterprise level. We analyze the motivation in diamond model.

Based on the market we choose in the first section, we discuss about the strategies to deepen internationalization in the second section. In this section, we come up with three strategies for the internationalization, and they are outsourcing, vertical strategic alliance and localization.

The last section is feasibility analysis to the strategies. We mainly use the Stolper-Samuelson effect to prove the necessity of outsourcing, game model to illustrate vertical strategic alliance and qualitative analysis to talk about the necessity of localization.

4. Motivation of Internationalization

4.1 Market Analysis

There are more than two hundred countries and regions in the world, and the politics, economies and culture differ in thousands of ways. To different infrastructure constructors, their profitability, market development potential and cultural fitness are at opposite poles. If we don't evaluate the market by efficient ways and set up irrational strategies, the goal of extending market share will not be satisfied. So, it's critical to have a sufficient solid meticulous market evaluation before choosing a market.

Traditionally, the allurements of a country to cross-border enterprises is the equilibrium among the profit, cost and operational risk. The long-term profit of an enterprise are functions of the following factors: market scale, consumers' purchasing power and consumers' expected incomes, which means the profitability equals to profit minus cost minus market risk. The cross-border enterprises could rank the attractiveness and long-term profit potential of different countries and choose the best market.

The analysis we have made above is the basic way to choose an international potential market. In practice, the profit is not the only key factor to consider, especially for the infrastructure construction. The long-term capital recovery ability, political stability and the non-profit factors should be considered by infrastructure construction

companies.

We divide those factors into two categories, and they are macro level and micro level. Only when the countries match the macro level factors analysis, can we continue with the analysis on micro level, which means that we analyze the market in macro level to make sure the range of the potential market and we make sure the accurate target market by analyzing the micro factors.

4.1.1 Macro Evaluation Factor Analysis

4.1.1.1 Evaluation factors

(1) Government openness level (X axis)

The different governmental opening policies and developing strategies in target area, especially the regulation policies, will cause a direct impact on infrastructure constructors. Because of the importance of infrastructure construction and its critical position in national economy, the government in target country may refuse the entering of foreign companies. If the resources are limited by government, especially the groundbreaking permits and certificate of land use right, the whole process of internationalization will face many difficulties, so the governmental openness level will influence the decision of cross-enterprise deeply.

Basically there are several measurements to measure the openness level according to previous literatures, for example the tariff rate, black market premium, FDI/GDP ratio and degree of dependence upon foreign trade. To measure the openness level in international investment, we use degree of dependence upon foreign trade to measure the openness level.

(2) Market demand (Y axis)

Profit is a key factor to an enterprise, especially for the cross-border enterprises. Effective market demand analysis is urged to enter a new market. If an enterprise adopts internationalization without market demand analysis, it will face huge losses.

According to the existing empirical analysis, the reciprocal of railway mileage per capita is a key factor to measure the potential market demand in infrastructure construction.

(3) Competition level (Z axis)

Because of the monopolistic and high input of infrastructure construction, advantaged constructors could make full use of the economies of scale and lower the

market price to increase the market entering barriers. So the competition level is critical to the enterprises by deciding the remaining market volume.

About the choice of index, domestic scholars often use structure indicator and behavioral indicator to measure the competition level, for example the market concentration. But because of the lack of non-listed enterprise data, we can't figure out the concentration of the industry by one or two big enterprises. Some scholars change this index, they believe that the performance indicator, for example the main business profitability and inventory turnover ratio. We decide to choose the main business (Fortune Global 500) profitability to measure the competition level.

4.1.1.2 Matric Analysis to Evaluation Factors

How do those three factors affect the potential market in infrastructure construction? We have a general analysis by combined matrix.

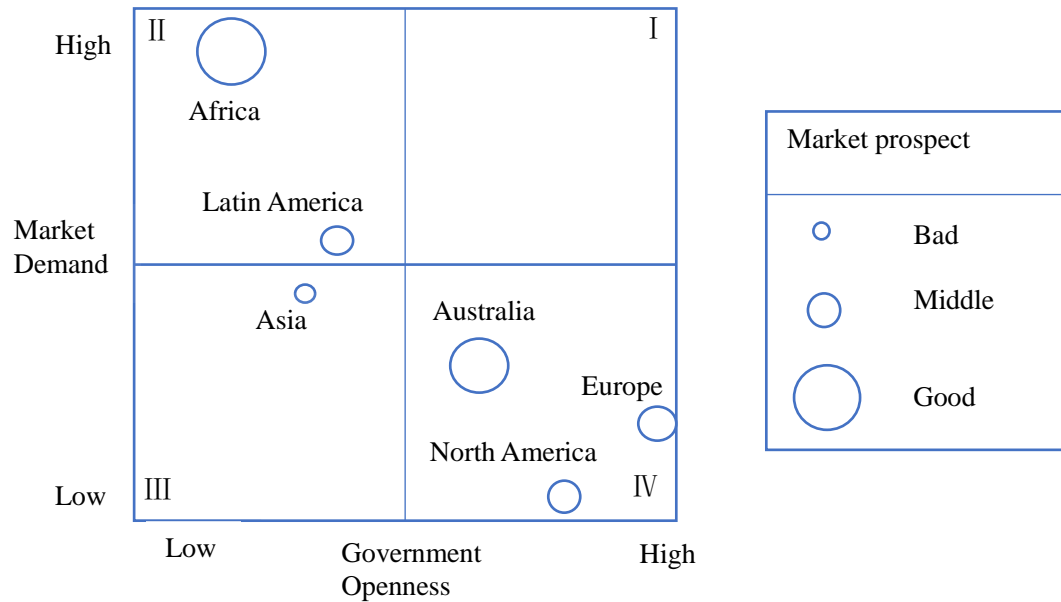
(1) Government Openness Level (X axis)--Market Demand (Y axis)

We collected data from the World Bank and CSMAR data base to calculate the Government openness level and Market demand. To reflect them objectively, we calculate the weighted index by GDP, and they are follows.

Chart 1 Ranking

Areas	Ranking of Degree of Dependence upon Foreign Trade	Ranking of Weighted Market Demand
Asia	5	3
North America	2	6
Latin America	4	2
Australia	3	4
Europe	1	5
Africa	6	1

Let's consider the ranking in the following graph.



Graph 2 Ranking-Matrix (1)

I quadrant: High government openness, high market demand.

The countries or areas that are classified in this quadrant have a great development potential, which means that there are huge market demand in infrastructure construction. At the same time, the entering barriers are low because of the enlightened policies.

There are no such kinds of country in the world now. But after world war II, Germany and France could be classified in this quadrant.

II quadrant: Low government openness, high market demand.

Countries that are classified in this area don't have good infrastructure, so there is huge market demand in those countries. But because of the unstable political situation or unenlightened policies, foreign investment is low in those countries.

The most parts of Africa belong to this quadrant. Because of long-term conflict, long-term authoritarian rule and long-term colonial rule, the development level of infrastructure in Africa is extremely low. So the potential market demand in Africa is very high. But the autocracy will surely limit the entering in infrastructure industry. Opportunities always come with challenges. Though the operational risk and political risk is high, enterprises could use effective measurement, for example, outsourcing, strategic alliances and localization to mitigate risk.

III quadrant: Low government openness, low market demand.

Countries in this area are in good economic standard and good infrastructure, so the market demand is low. Besides, governmental policies are cautious.

Asian countries are classified in this kind of category. Most Asian countries set up cautious policies to foreign investment, which means that market prospects are in bad conditions.

IV quadrant: High government openness, low market demand.

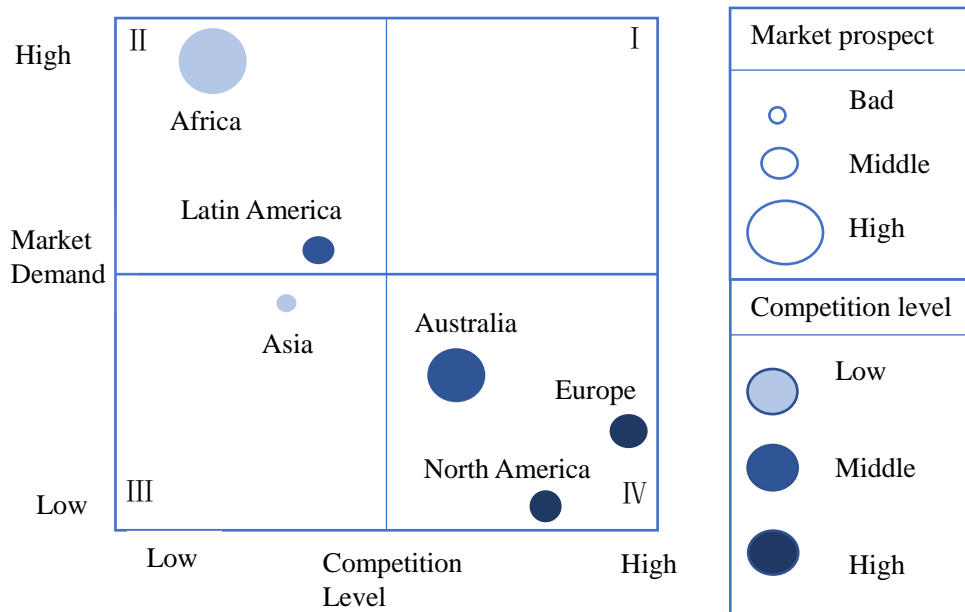
Countries in this quadrant are in high level of social development, and the infrastructure development level is high. So the potential market demand is very low. After long-term development, governments set up relaxed regulatory policies. So the entering barriers are low.

Australia, North America and Europe are classified in this quadrant because most of the developed countries are in the three continents. Although the government openness level is very high, the market prospects are not good in these countries.

(2) Competition Analysis (Z axis)

Based on the analysis above, we can know that the metric analysis reflects the market prospects effectively. But it doesn't cover the competition level, which is a key factor for cross-border enterprises.

If we take the competition level into consideration, the competition level varies from country to country. And the differences among countries are as follows.



Graph 3 Ranking-Matrix (2)

(3) General Analysis

Based on the market demand-government openness-competition level metric analysis, we can know that there is a huge potent demand for infrastructure construction in Africa and the African market has the greatest potential in infrastructure construction. Though the government openness level is low in Africa, enterprises could gain huge revenue from African market if effective measures are taken for example the outsourcing strategy, the strategic alliances strategy and the localization strategy.

4.1.2 Microcosmic Evaluation Factors Analysis

To expound the advantage of South Africa market, we use PEST model and some quantitative indexes to evaluate different countries and get the evaluation results.

(1) Political factors (P)

To multinational enterprises, the political situation is a critical factor when operating international business. So, the political situation occupies an important part in evaluation system, and the main factors are as follows:

- a. Political System
- b. The Stability of Political Situation

- c. Governmental Intervention in the Enterprise
- d. Governmental Efficiency
- e. National and Social Conflicts

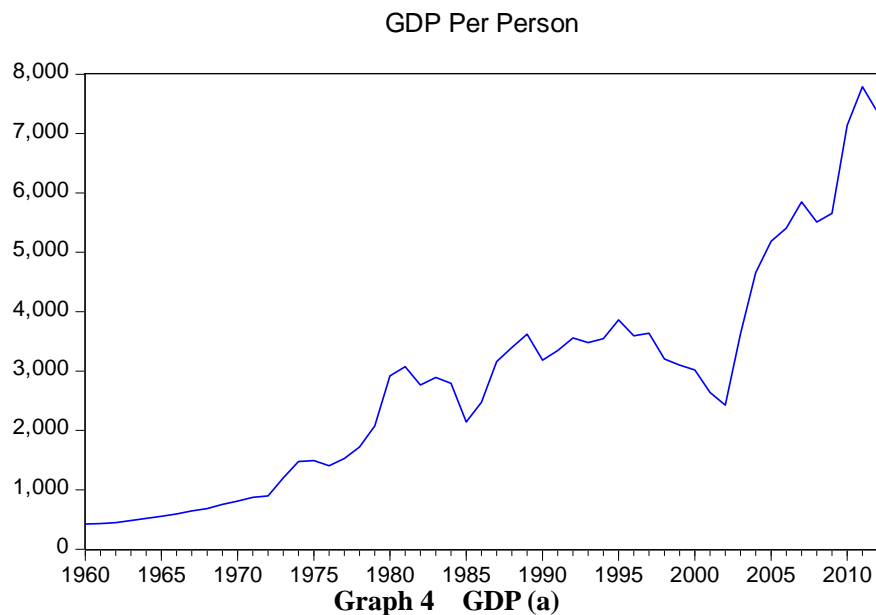
Based on the factors given above, we believe that the South Africa is really a good choice. After the racial apartheid was eliminated, South Africa was facing decreasingly low risk to huge social and national conflicts. Besides, because South Africa has fewer countries when compared with other part of Africa, South Africa has a lower risk to war. Generally, South Africa will not be in the turmoil in the next ten years except external factors.

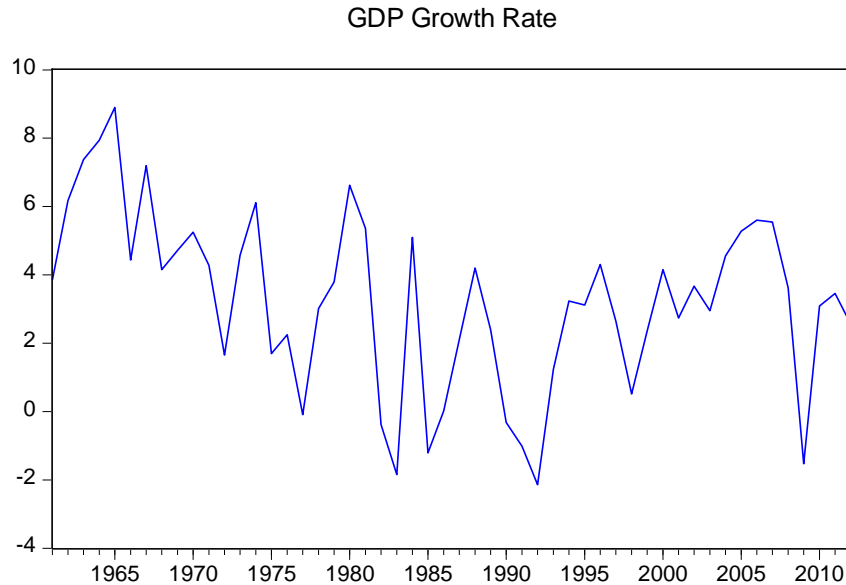
(2) Economic factors (E)

Basically, the international economic situation is the most important externality international factor for cross-border enterprises. There are mainly two parts in economic factors, and they are national economic situation and cosmopolitan economic situation. The main factors are as follows:

- a. Gross Domestic Product
- b. The Growth Rate of GDP
- c. Fiscal Policy, Monetary Policy and Economic Cycle in Host Country

South Africa has the highest GDP per person in Africa, and it has a stable and rational GDP growth rate, we can get evidence from the time series data.





Graph 4 GDP (b)

According to the graph, we can know that South African economic standard is good. The GDP per person is the highest in African and it is gaining momentum since 2000, which means that the demand for new infrastructure is large.

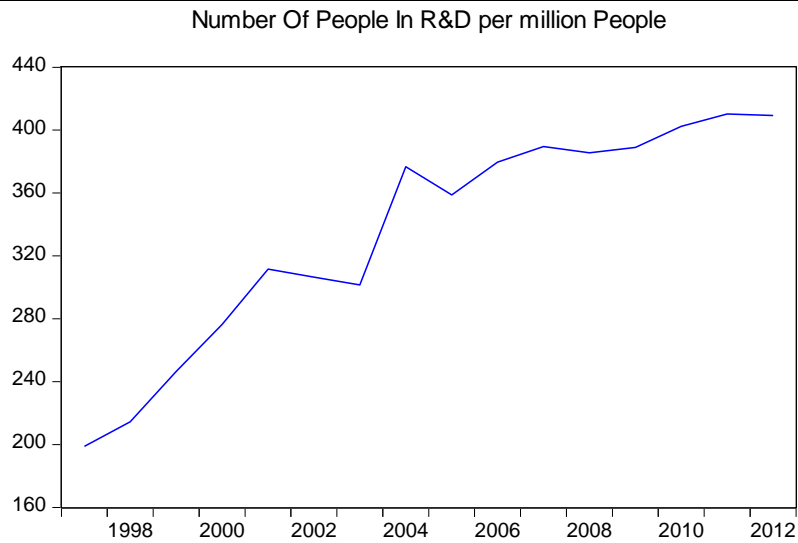
(1) Social factors (S)

Infrastructure industry is a labor-intensive industry, so the labor is very important when considering a given country. South African has a large number of population (about 50 billion), and the South African has the highest literacy rate in Africa (more than 93%). These factors mean that South Africa has large number of high quality labor, and it would be convenient for multinational enterprises to hire local workers.

(2) Technology factors (T)

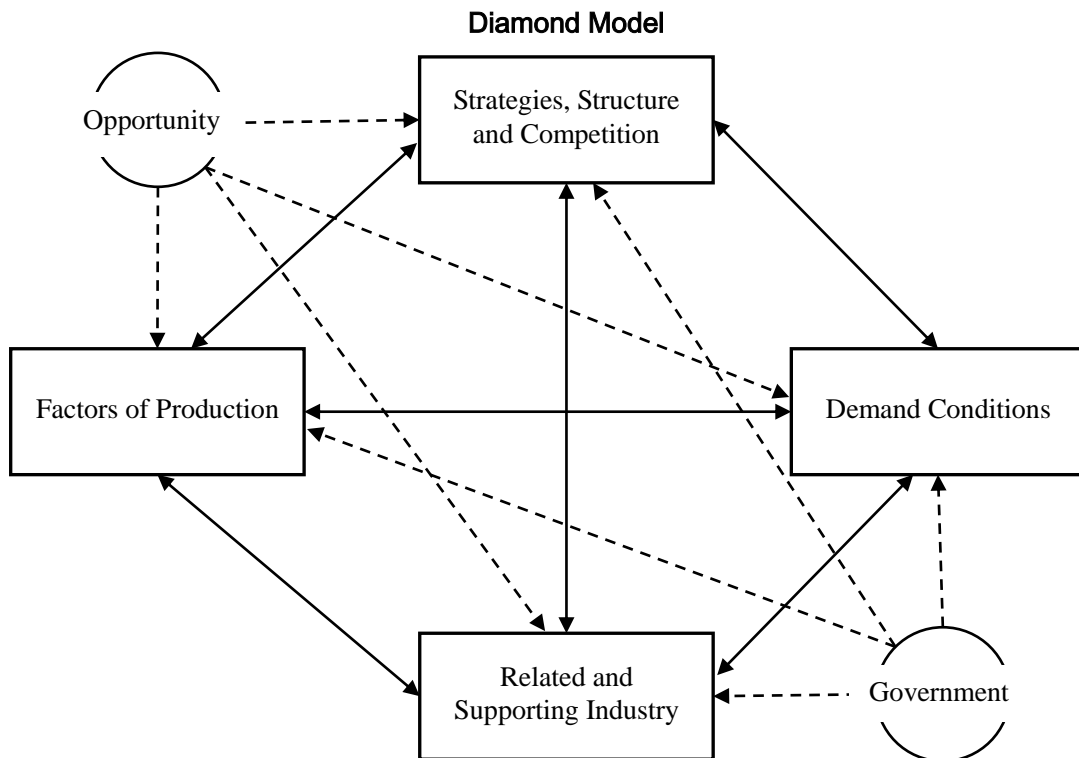
It means that the driving force to technological development in a country will affect the innovation in cross-border enterprises. South Africa has high R&D investment compared to other countries in Africa. Generally the innovation in host country will influence the technological innovation.

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In according with the graph given above, we can know that the number of people in R&D per million people is gaining momentum since 1998, and the number is far bigger than the average African level (about 200). So it means that South Africa has a good atmosphere in innovation and research, which may benefit cross-border companies.

4.2 Enterprise Analysis



Graph 6 Porter Diamond

4.2.1 Factors of Production

Factors of production are totally social resources being needed in an economic entity's process of production and management, which are capital-mental inscapes. It includes labor, land, capital and other common factors of production. In the Michael Porter Diamond Model, in order to distinguish the effects of industry competitiveness, porter divided factors of production into two parts, primary and advanced production factors. And primary production factors include natural resources, unskilled labor, geographical environment and so on, while advanced production factors include high educational labor, communication, information, traffic and other infrastructures.

(1) Primary production factors

South Africa is known for its rich resources in the world, it has more than seventy kinds of mineral which have already explored, and the reserves of gold occupied sixty percent which is the first in the world. The reserves of copper, iron, chromium and

silicate are relatively rich and those elements have closed relationship with engineering construction. In addition, African has the relatively cheaper unskilled work labor, all of which create feasible condition to local infrastructure work.

Chart 2 Distribution of Main Mineral

Categories	Rank in the World	Percentage in the World
Gold	1	12.8%
Manganese	2	24.1%
Vanadium	3	23.0%
Diamond	4	12.1%
Coal	6	5.4%
Iron Ore	14	0.8%

(2) Advanced production factors

Its parent company CREC is one of the Fortune Global Five Hundred; the company has 1355 new research projects and 19 new country major research projects, through the independent research and cooperation with Chinese related research organization(according to the annual report in 2013). It provides sufficient skills to the local company of South Africa, at the same time, parent company delivers abundant talents with professional skills and management to the subsidiary corporation in the world, and it promotes the development of relative projects.

4.2.2 Related and Supporting Industry

Related and supporting industries have a closed relationship with competitive industries, in other words, one competitive industry could not exist by itself, and it must develop with other domestic related strong industries at the same time. If one industry wants to form its competitive advantage, the top supplier and closed partnership with upstream and downstream firms are necessary.

CREC in South Africa has powerful upstream industries in The Republic of South Africa, which contributes to the development of engineering construction. On the one hand, the rich mineral resources in South Africa bring great benefits to the engineering constructions. As one of the five biggest mineral states in the world, production technique of deep mine in South Africa takes the leading position, the known economic reserves in places have already got more than seventy kinds. Meanwhile, the enterprises

of raw material has accordingly developed under huge resources; the two kinds of upstream industries contribute to the development of CREC in South Africa greatly, and the downstream industries such as traffic and logistics industry are the solid support to CREC in South Africa.

4.2.3 Strategies, Structure and Competition of Enterprise

(1) Strategies

The CREC contributes to build up an international classic structural engineering Company all the time, exploit the international horizon, insist on the oversea strategy, firm the “going global” pace and increase the overseas market effects. There are 47 second level subsidiaries, 4 mainly not wholly-owned subsidiaries, and include 2 subsidiaries which work on the overseas business in total in the CREC. Besides, CREC and its subsidiaries have more than ten overseas subsidiaries and executive offices.

Chart 3 Distribution of Business

Area	Operation Revenue	Development Rate
Chinese Mainland	538,014,041	21.90%
Hong Kong and Macao	157,696	81.96%
Overseas	22,272,434	0.89%
Total	560,444,171	15.80%

(2) Structure

The management realization of the CREC is classic in China even all over the world, advanced management pattern increased the competitive advantages of the CREC.

(3) Competition

The CREC ranked 102 in Fortune Global Five Hundred (2013year), and it has relatively huge advantages in international market competition and occupied absolute advantages in the market of South Africa.

4.2.4 Demand Conditions

(1) Infrastructure

The infrastructure of South Africa is incomplete; though South Africa is the most

developed country in Africa, it still has many points to complete when compared with other countries in the world. Some related industries such as tourist industry and agriculture which based on this infrastructure could not be developed completely. South Africa needs to focus more on the construction of infrastructure, and the government in South Africa has already put much element in this area.

(2) Construction

The construction level of The Republic of South Africa is relatively low and the domestic needs of advanced skills are enormous, thus the CREC in South Africa has huge market needs.

4.2.5 Opportunities

(1) The Belt and Road

The Belt and Road Initiative is a way for win-win cooperation that promotes common development and prosperity and a road toward peace and friendship by enhancing mutual understanding and trust, and strengthening all-around exchanges. The Chinese government advocates peace and cooperation, openness and inclusiveness, mutual learning and mutual benefit. It promotes practical cooperation in all fields, and works to build a community of shared interests, destiny and responsibility featuring mutual political trust, economic integration and cultural inclusiveness. Accelerating the building of the Belt and Road can help promote the economic prosperity of the countries along the Belt and Road and regional economic cooperation, strengthen exchanges and mutual learning between different civilizations, and promote world peace and development.

(2) The Establishment of BRICS

The participation of South Africa in 2010 means that the cooperation system which includes Asian, African, Latin America, and American the four continents formed finally, the five countries all have its special advantages and strong economic complementarity, they have solid foundation to carry out cooperation and promote joint development. Meanwhile China is the biggest partner to South Africa all the time, the form of BRICS promotes the communication and cooperation between China and South Africa.

(3) The Increase of International Participation

As China joins more and more international organizations and has more and more communications with other countries, China knows about the international market

operation well and trained advanced international talents. It will prompt the international course and go further to host country market.

4.2.6 Government

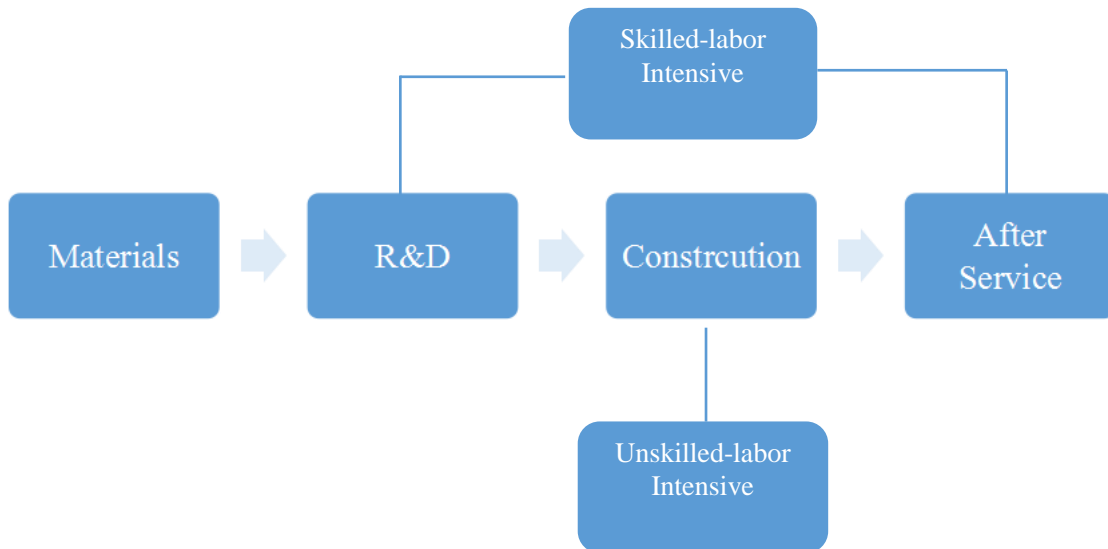
The only thing the government could do is to provide required resources for enterprises, create stable industry developmental environment. Only the government plays its role well, can the power of diamond system be enlarged, government could create new opportunities and pressures to the firms, and the areas which the government should put into is where the firms could not reach.

On the aspects of China, government encourages the enterprises to be more international. From The Report of the 17th National Congress of CPC, we learn clearly that the government wants to combine “bringing in” and “going global”, increase the open field, and improve the open structure. “Going Global” is the important condition which China joins in the economic globalization and the important rules which China joins in the international competition.

On the aspects of South Africa, the government is very welcome to the foreign-owned company, the government tries his best to join in the worldwide political economic area and put forward a series of preferential policies to attract foreign companies entering into South Africa market.

5. Strategies

5.1 Outsourcing



Graph 7 Outsourcing Strategy

5.1.1 Definition and Profit Source of Outsourcing

According to the definition of business dictionary, services outsourcing refers to that changing the services provider from inside to external organization on the basis of the contract of standard, cost and condition that agreed by both side. Its general meaning is the transaction from internal to external for producing activity. Outsourcing can promote the economic division; make the enterprise obtain additional profit via changing it from a complete build-in production system to high level of outsourcing production system.

The additional profit of enterprise can explain from the several aspects in the following.

(1) Comparative Advantage Effect

Enterprise can make full use of the comparative advantage by services outsourcing. The specialization in producing the product that has the comparative advantage can reduce the production cost of company so as to make additional profit for enterprise.

(2) Scale Economies Effect

The quantity of the production in unit time is inversely proportional to the average production cost. On the basis of high level of outsourcing, the specialization in producing can lower the average production cost efficiently, so enterprise can get additional profit.

(3) Experience Economy Effect

At the process of workers' practical work and business operation, the learning effect is always related to total output of one worker. The accumulation of experience and the improvement of skill can cut down the cost and improve the producing efficiency so as to increase the additional profit. High level of outsourcing can enhance the learning effect so that enterprise can obtain more additional profit.

(4) Slimming Structure Effect

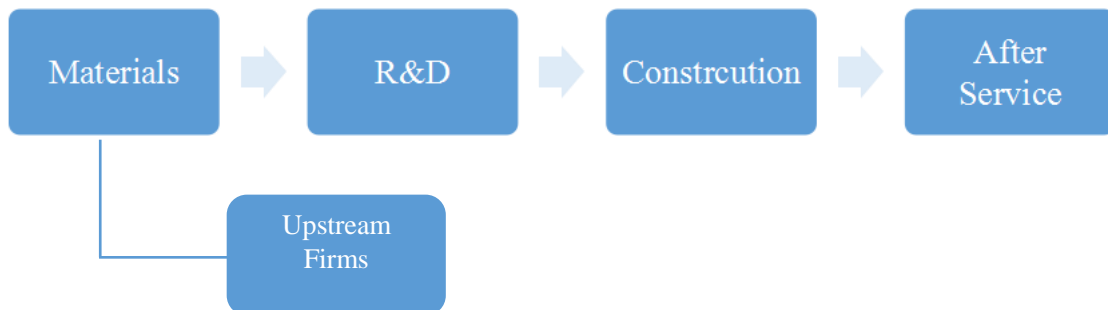
Because of the sunk cost, a complete build-in production system hardly changes the yielding pattern. It would bring large adjusted cost when the enterprise facing the alteration of market. However, it is more flexible if the enterprise outsources some parts of final production or service in order to achieve the simplification production. In addition, it would have large advantage at the fickle market. It would reduce the adjusted cost apparently so as to increase the profit for the enterprise.

5.1.2 The Case in the South Africa

The construction of infrastructure construction can be divided into two parts, design and construction and after service. And each part accomplished by engineers and ordinary workers. Engineers are skilled labor while ordinary workers are unskilled labor. On the contract to the South Africa, China has advanced technology so China has comparative advantage in project design. On the contract, the South Africa has the comparative advantage in unskilled labor.

In view of the advantages, CREC can outsource the part of construction to the relevant company in the South Africa. It would produce the best possible results for the comparative advantage in CREC's design sector. Via outsourcing, CREC can get rid of the construction sector in order to achieve the specialization of design. It can develop the scale economic effect, experience economic effect and slimming structure effect. So CREC can reduce the cost sufficiently in order to improve the profit.

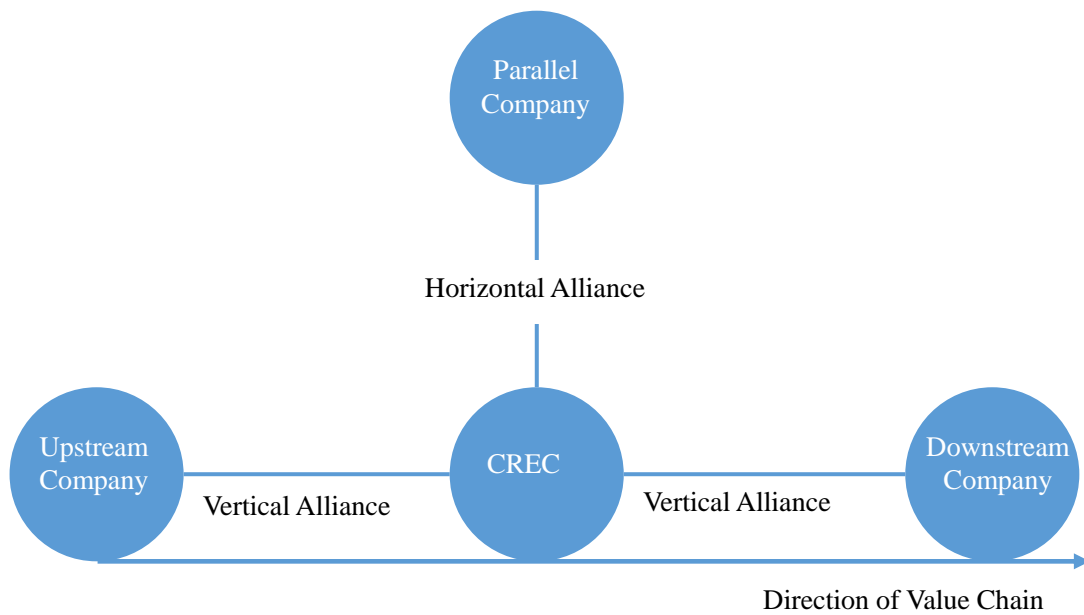
5.2 Vertical Strategic Alliance



Graph 8 Vertical Strategic Alliance Strategy

As the analysis of industrial value chain to infrastructure, we apply outsourcing to labor-intensive and low-value-added production process to lower costs and enhance core-competitiveness by specialization, while we think it's a good way to establish vertical strategic alliance with upstream firms, suppliers, and to go further to enlarge the market share.

Strategic alliance was proposed by American DEC president J. Hopland and managerialist Roger Nagel, which have made a great echo in business circle and theory circle. From early 1980s, this type of organization was rapidly developed among western and Japanese enterprises. Generally, strategic alliance refers to the basis of anticipation to whole international market and own strategic willingness to business objective, two or more than two multinational enterprises establish a type of enterprise's operation, which is at complementary advantages, risk sharing and with loss organization structure, in the way of some contracts. Anticipating in the whole international market and taking enterprise's target and operation risk into account, the aim of strategic alliance is mutually having market, using resources and enhancing competitive advantages. Strategic alliance can be divided into horizontal alliance and vertical alliance in accordance with the operation character of both parties.



Graph 9 Vertical Alliance Structure

Vertical alliance refers to the alliance established among those enterprises that connected by the value chain. The key function of vertical alliance has many points, which include making enterprises in different value chain to take professional division and cooperation; focusing on themselves' core competitiveness and resources, and using professional advantages and the long-term stability of alliance to create value. While both sides of alliance usually take not shareholding cooperative ways, it maintained the flexibility of economic activity.

In September 2009, Poland expressway is the first constructional engineering which Chinese undertook in European Union, the order of Poland expressway came from China Oversea Engineering Company (the overseas subsidiary of CREC), but CREC lose all capitals, so the order failed. Except for the underestimated cost of CREC, the alliance of Poland suppliers leads to the tragedy of CREC. Transnational Corporation will face the risk of market price inevitably if the company are not familiar with the local environment, and the phenomenon of downstream industry squeezed by upstream industry often occurs, to reduce the production risk and risk cost, promote the internationalization strategy, and increase the market influence of transnational corporation in host country, CREC should establish vertical strategic alliance with local upstream enterprises.

In addition, the strategic alliance is a business operation formed with loose organization structure; it's based on market expectations of transnational enterprises.

When the market environment changes in the supplier market expectations and interests, it may lead to strategic alliance disintegration. Therefore, when it comes to the south Africa market which needs long-term investment, CREC in South Africa should pay close attention to market conditions to adjust to the strategy, to establish or cancel the strategic alliance that aren't suitable.

5.3 Localization

The essence of the localization is that the multinational corporation integrate the operational aspects such as product, marketing, management, personnel matters into the economics of the host country, which takes the citizen's responsibility in the host country indeed and also the process of integrating the enterprise's culture into the local culture. The CREC registered and established the China Railway International Development Company in South Africa and the South Africa Engineering Company in Johannesburg of the South Africa. On the basis of fully respecting the local laws and regulations of the South Africa, the CREC started up the scheme of image promotion of the "China Railway" quickly. The flag of the CREC, the identification of the CREC and the pictures which present the important performance and abundant strength of the CREC are fixed up in the corresponding places of the company, in order to amplify the CREC'S influence in South Africa. Nevertheless, the CREC must pay much attention to the problem of the localization to gain better development in South Africa. Combining the reality of our multi-national enterprises management, the following aspects should be considered to strengthen and perfect the localization management strategy.

5.3.1 Culture Localization

The culture is the soul of an enterprise. Whether the enterprise's culture is suitable is critical to the problems that whether the enterprises can integrate into the mainstream culture and whether the local consumers give identification to the enterprises. As for the CREC, the subsidiary corporations established in the South Africa take the great responsibility of developing localization, the culture localization should be done firstly. According to statistics data, we can see that the failure in the national economic cooperation is less caused by the aspects of the technology, financial or strategy, the percentage is only 30% while the conflict of the multi-culture nearly 70%. It is concluded that the success of the multi-national enterprises' management of localization

depend on the success of the enterprises' culture localization. When the enterprises go abroad, what they are faced with is no longer the familiar environment, but a completely new cultural environment with different values, religious beliefs, ethics, aesthetics and the customs etc. In the factors which affect the macro environment of the enterprises' management, we collectively referred to as the cultural factor, although it is not as rigid as politic and legal, its impact on the enterprises' management cannot be underestimated.

Enterprises' culture localization is not abandoning the original culture or reconstructing the new culture, not the simple superposition of different culture and to piece together, either. It is the integration and sublimation of the best parts to establish a new culture which includes the characteristic of the original enterprise, also is adapt to the local culture and habits, which is the integration and remodeling of the different culture. Multi-national enterprises should pay great attention to the respect and understanding of the internal culture, finding a meeting point of different cultures and making full use of the cultural advantages, in the process of the integration of the advantages, neither cut one's feet to fit the shoes, nor stand still and refuse to make progress, at the same time, creating and promoting advanced and healthy cultural idea makes the enterprise become the promoter of the local mainstream culture.

5.3.2 Human Resources Localization

Human is the carrier of culture. The key problem is the localization of human resource in order to achieve cultural identity. People-oriented management and human resource localization can not only strengthen the local consumption psychology, consumption habits and the understanding of emotional needs, but also have benefit to reduce the conflicts on the management and the low efficiency caused by the cultural differences. Human resource localization can also help enterprise to be adapted by the local market environment as soon as possible, and to enhance the host country's trust and recognition of the enterprise, as well as improve the international image of the enterprise.

Human resource is very important to the CREC. Because of CREC's industrial characteristics, the enterprise requires more labor and management talent. Organizing actively the project team is the prerequisite for the success of the project, so it is very essential to solve the problem of human resources. The CREC should try to employ

local staffs and achieve localization in staff recruitment. The human resource localization is not only a simple use of local human resources, but also the cultivation and development of the local human resources. So the CREC can also speed up the process of localization of human resources through merger and acquisition, the establishment of training center and the management school.

5.3.3 Management Mode Localization

It is proved that the only copy of previous successful management idea, management mode and standard operation is not desirable in the multinational management. The essence of the localization is the innovation on the basis of inheritance, so as to make the replication continue. The CREC should strive to learn the previous successful business ideas, management mode and standard meter statue in South Africa in the multinational operation, but due to the particularity of the industry, the CREC must carry on the innovation on the basis of inheritance. For example, the CREC can adopt more local industry management talent to enter the sub company management through merger and acquisition, they will be more familiar with the local industry management mode when compared with Chinese management talent of the company in South Africa. As a result, the process of a project will be quicker so as to achieve half the effort with double results. In addition, the CREC can also form the strategic alliance with local industry, they can share the resources and manage commonly so as to study local management mode of the local management talent and to achieve the localization of the management mode.

5.3.4 Capital Localization

The infrastructure occupies the main income of the CREC's revenue every year. It provides the relevant technic of High-Speed Rail construction for South Africa. In spite of the help of the overseas construction, Chinese enterprises should seek to be listed overseas actively in order to raise local capital. On the one hand, China can solve the shortage of capitals of the enterprises. On the other hand, Chinese firms are more likely to get local consumers' recognition and attention. In year of 2010, Johannesburg Stanford projects and Sandton projects have been entered into the actual operation stage while the new Durban Development Zone Project develop steadily. CREC is negotiating with the South Africa about a high-speed railway project which valued \$30 billion. The

negotiation is in the early stage because of the shortage of capitals. It requires the CREC's subsidiary corporations to seek methods to achieve capital localization in South Africa and implement this project as soon as possible.

6. Feasibility Analysis

6.1 Outsourcing

It can be proved that outsourcing the product with comparative disadvantage would improve the welfare of the country by using the function or graph.

We assume that the construction of the infrastructure construction is product y_1 , and the design of the infrastructure construction is product y_2 , the final infrastructure construction is y_n . And the construction uses the unskilled labor ordinary workers L while the design uses the skilled labor engineers H . All those products use capital K . The prices for $L H K$ is $w q r$. And the prices for y_i is $P_i, i=1,2,n$.

An equation can be easily established:

$$P_i = c_i(w, q, r) \quad (1)$$

After doing total differential to this equation, we will get another two equations:

$$\hat{P}_1 = \theta_{1L}\hat{w} + \theta_{1H}\hat{q} + \theta_{1K}\hat{r} \quad (2)$$

$$\hat{P}_2 = \theta_{2L}\hat{w} + \theta_{2H}\hat{q} + \theta_{2K}\hat{r} \quad (3)$$

θ_{ij} represents the cost share for production factor i in product j , and they appreciate the formula $\sum_j \theta_{ij} = 1$. We assume $\theta_{1K} = \theta_{2K}$, then we can get another equation from the previous twos:

$$\hat{P}_1 - \hat{P}_2 = (\theta_{1L} - \theta_{2L})\hat{w} + (\theta_{1H} - \theta_{2H})\hat{q} \quad (4)$$

Because:

$$\theta_{1L} + \theta_{1H} + \theta_{1K} = 1, \theta_{1K} = \theta_{2K} \quad (5)$$

We can get:

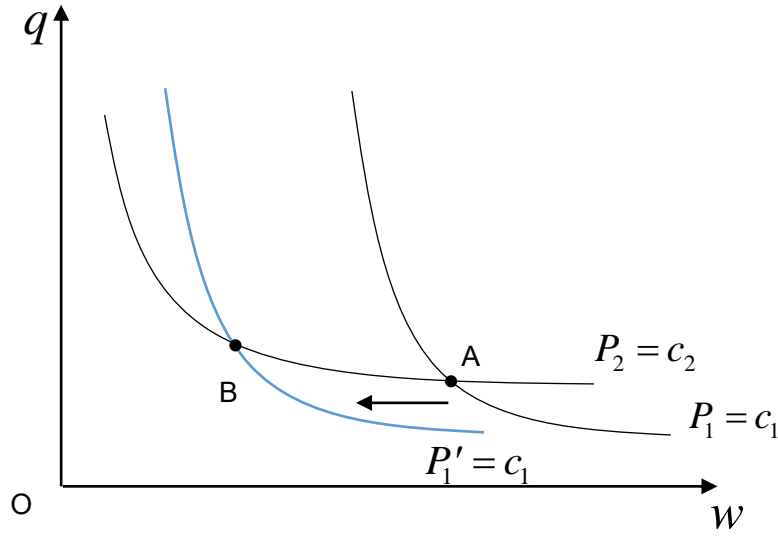
$$\begin{aligned} \theta_{1L} + \theta_{1H} = \theta_{2L} + \theta_{2H} &\Rightarrow \theta_{1L} - \theta_{2L} = -(\theta_{1H} - \theta_{2H}) \\ \Rightarrow \hat{P}_1 - \hat{P}_2 = (\theta_{1L} - \theta_{2L})(\hat{w} - \hat{q}) &\quad (6) \end{aligned}$$

According to the equation, we can get the conclusion that the decrease in the relative price would reduce the relative wage of ordinary workers:

$$\hat{w} - \hat{q} = \frac{\hat{P}_1 - \hat{P}_2}{\theta_{1L} - \theta_{2L}} < 0 \quad (7)$$

It means that CREC outsources the construction to the company in the South Africa would benefit CREC. So outsourcing would make additional profit for CREC.

We can illustrate the results by the following graph. The cost curve would shift to left when P_1 decreases. The cross point changes from A to B. We can easily find that the relevant wages between ordinary workers and engineers decrease. Therefore, the decrease of relevant price would increase the welfare of engineers.



Graph 10 Outsourcing Theory Analysis

Now, we consider the change of final service's price P_n . On the basis of duality theory, we can get the price equations:

$$P_n = c_n(P_1, P_2) \tag{8}$$

$$\hat{P}_n = \theta_{n1}\hat{P}_1 + \theta_{n2}\hat{P}_2 \tag{9}$$

The last equation give us an obvious information that the price change of final service equals the weighted average of the price changes of intermediate products. So we can get $\hat{P}_1 < \hat{P}_n < \hat{P}_2$ if P_1 decreases. It stands for that the income gap between China and the South Africa becomes larger. In other words, outsourcing makes CREC gets more benefits in the trade between China and the South Africa.

6.2 Vertical Strategic Alliance

6.2.1 Game Model Analysis

Assume that suppliers and producers could gain revenue R_1, R_2 , if they produce goods solely. If they choose vertical strategic alliance, producers could be more

competitive than before because of the decreasing in cost. Suppose that the whole system could gain ΔR more unit of revenue. Suppliers could gain S of it and producers could gain $1-S$ of it ($0 < S < 1$). Suppose that the two parties would cost C_1 and C_2 before they collaborate with each other and the age limit of the cooperation is t . So we can get the revenue matrix of the two parties.

Chart 4 Pure Strategies in Alliance Game

		Producers	
		Cooperation	Non-cooperative
Suppliers	Cooperation	$t(R_1 + s\Delta R) - C_1$ $t[R_2 + (1-s)\Delta R] - C_2$	$tR_1 - C_1, tR_2$
	Non-cooperative	$tR_1, tR_2 - C_2$	tR_1, tR_2

Based on the revenue matrix, suppose that the producers are likely to choose co-operation strategy by p and choose non-cooperation strategy by $1-p$. The suppliers are likely to choose cooperation strategy by q and choose non-cooperation strategy by $1-q$ ($0 < p, q < 1$). So the expected revenue of suppliers and producers are as follows.

$$\begin{cases} V_s = pq \times [t(R_1 + S \times \Delta R) - C_1] + p(1-q)(tR_1 - C_1) + (1-p)tR_1 \\ V_p = pq \times \{t[R_2 + (1-S) \times \Delta R] - C_2\} + (1-p)q(tR_2 - C_2) + (1-q)tR_2 \end{cases} \quad (10)$$

To get the highest revenue for the two parties, the first order partial derivative must equal to zero.

$$\begin{cases} \frac{\partial V_s}{\partial p} = tSq\Delta R - C_1 = 0 \\ \frac{\partial V_p}{\partial q} = t(1-S)p\Delta R - C_2 = 0 \end{cases} \Rightarrow \begin{cases} p = \frac{C_2}{t(1-S)\Delta R} \\ q = \frac{C_1}{tS\Delta R} \end{cases} \quad (11)$$

So based on the two equations given above, suppose the S , ΔR and t is constant, C_2 is in direct proportion to p , which means that the higher the producers pay before cooperation, the more possible the suppliers will choose to cooperate with the producers.

China have taken the first step into Africa market, but it is not enough. As well as,

the potential benefits are larger than the prior-establishment expenditure. So we are willing to pay more before cooperation, there is a serious possibility for the establishment of the vertical strategic alliance.

6.2.2 Meeting Mutual Interest

The upstream and downstream firms are inter-dependent to each other. If there are not enough raw materials which come from upstream enterprises, then the downstream enterprises could not run well; if the downstream firms do not produce and put products into market, then the raw materials formed upstream firms will be useless. Therefore, the strategic alliance is easier to meet both the needs of the upstream and downstream firms. CREC is one of the Fortune Global 500 companies, which is full of reputation in the international market as well as its subsidiary. CREC in South Africa is also a strong company because of the international guarantee of its parent company. The upstream suppliers ally with CREC, which ensured the stability of sales channels of raw materials and improved the reputation in the market. On the other hand, South Africa is rich in mineral resources, and mining and steel manufacturing are the country's pillar industries. The alliance between CREC and the relevant local businesses is beneficial to obtain sufficient raw materials with low price.

6.2.3 Reducing International Market Risk

Because of the differences in operating environment, international construction market has more risk factors that different from domestic market. These risk factors include cultural risk caused by national culture of unfamiliar target market, market risk due to being unfamiliar with the change of target market, operating risk due to customer default, political risk due to the turmoil of target country's politics, exchange rate risk and so on. Strategic alliance multinational operations can share a series of profit losing caused by various risks with strategic partners. Moreover, the international operating experiences and skills of strategic partners are crucial factors in resisting to the international operating risk. Thus strategic alliance multinational operations can reduce various of risks caused by the implementation of international operating strategy.

6.2.4 Boosting the Localization

Translational enterprises are those who allocate and use resources and finally

realize the profit maximization on a global scale under the guidance of unified enterprise strategic plantings. In order to achieve this transformation, the localization is the only way. The foundation of strategic alliance between the CREC and the upstream enterprises provides the opportunity of contacting the local customs and the local enterprise operation modes. It helps to avoid frictions during the course of business and promote the development of localization.

6.3 Localization

6.3.1 Internationalization Pattern

Since the accession to “The Belt and Road” strategy, China enterprises speed up the pace of internationalization and the ultimate aims of those firms are to create the multi-national corporations for China. Meanwhile, the localization is the necessary route which the enterprises must take to realize internationalization. The real multi-national corporation is not only registering a subsidiary company overseas; many things should be included in the staff internationalization; product internationalization, sales internationalization and R&D internationalization. Only by hiring the local personnel, using local resources, understanding the local legal culture and the establishment of independent production and sales channels in the host country, can the localization be achieved in all aspects. The localization and internationalization are the two sides of one thing and the relationship between the process and results is inseparable. The CREC established a subsidiary in South Africa, which is a basis for the realization of the internationalization and the aim of the company is to achieve the internationalization earlier.

6.3.2 Operational Risk

The culture localization is the most important part of the enterprise localization. In the previous, many multi-national enterprises made a lot of losses because of the conflict with the different culture; many firms lacked the knowledge of the host country and countered the increasing of the operational risk. If the enterprises make use of the local resources, understand the local legal culture; integrate into the local community, then the needs of local consumers will be very clear and the enterprises could not just stare at the competitors. It is not exaggerated that the enterprise localization becomes

the key factor to the success of the multi-national enterprises. The CREC mainly takes the responsibility of the construction of infrastructure, which needs to know more about the culture localization of South Africa, understand the needs of people, and consider the problems on the angle of enterprise citizen, all of which contribute to operate and develop the enterprise in South Africa.

6.3.3 Low Cost and High Technology

Setting up R&D institutions in the host country, hiring local high-quality technicians and scientists, making full use of the hardware conditions and having rich technology information are the key factors to improve the competences of enterprises. As for the CREC, it masters advanced building skills of infrastructure, while it still strives to find ways to reduce cost and develop higher-end technology. Recruiting staff in the local place, approaching the local financing and the local agents will reduce costs undoubtedly. In addition, the enterprise could establish R&D institutions in the local market and have more high-technology research with the researchers from all over the world.

6.3.4 Allocation of Resources

Localization means that enterprises are integrated into the local society highly and it's more convenient to use the capital, technology, raw materials, human resources and others in host country. So the multi-national enterprises can allocate all kinds of resources in the global scope with the help of its internal advantages, the internal advantages of the enterprises is to turn the material resources into perfect utility and realize the profit maximization of the business objective. The multi-national enterprises' localization strategy is always the organic part of its global strategy, optimize the allocation of resources is an important way to reduce costs and improve the competitiveness of the enterprises.

6.3.5 Continuous Marketing Innovation

Marketing innovation means the process that the enterprises adopt corresponding marketing strategy according to the situation of different market environment. Continuous innovation is the original power of long-term development of enterprises. The marketing internationalization results in the competitiveness internationalization.

The survival and development of enterprise depends on its ability to vary with the business environment. An enterprise which wants to survive must have the ability to seek for new strategy measures continuously and innovate rapidly. The process of Multi-national corporation localization is the process of enterprise marketing innovation.

6.3.6 International Trend

With the development of “One belt and road” strategy, the competition among multinational enterprises becomes more and more fierce. They will not only occupy the market share with local company, but also share the achievement with other foreign competitors. Therefore, those who know more about the market and more familiar with the culture of the host country will occupy an advancing area in the fierce competition. From the aspects of product differentiation and personality, the enterprises must research the local society and culture; develop the product for the local market to cater to the different needs for production for different society and culture.

7. Analysis Drawback

Under the background of “one belt and road” strategy which put forward by our country, we pick up CREC as a typical enterprise. We started with market analysis, providing some related strategies for enterprises to deepen internationalization from the example of CREC in South Africa. However the time, knowledge and other conditions are limited, our paper still has some drawbacks as following.

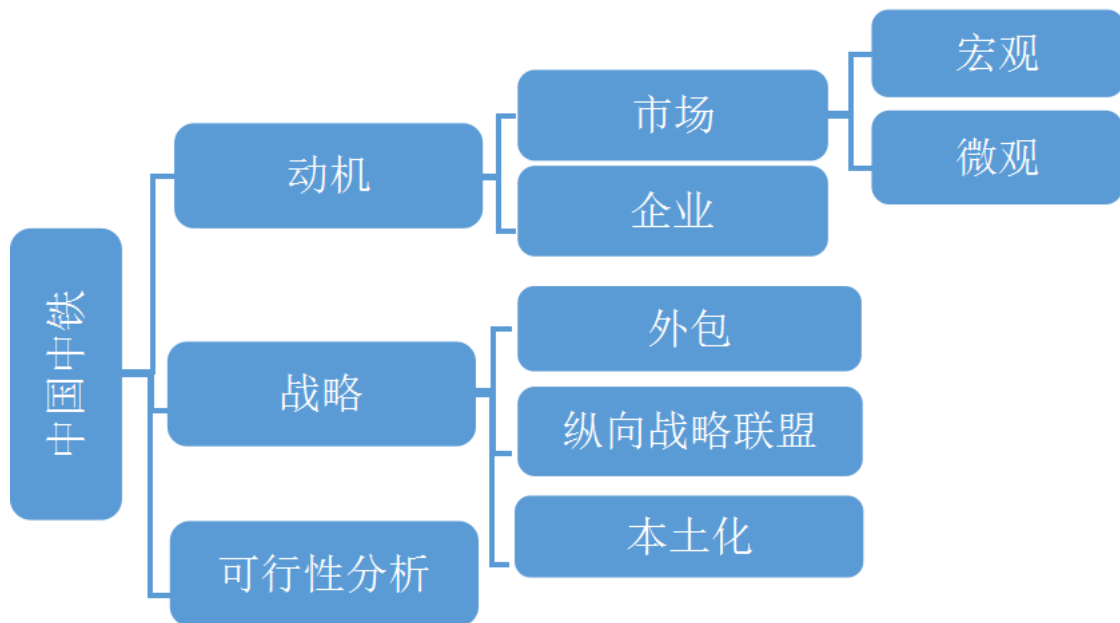
During the analysis to macro-market, we chose the government openness level, competition analysis and market demand as research index and give the specific criteria of quantization, but it’s difficult for us to collect data and we do not learn enough professional knowledge to deal with them, so we don’t make quantitative analysis, and we just get the market matrix from the analysis of the results from related researchers.

We put forward three general strategies for the enterprise, which are outsourcing, strategic alliances and localization. Since we lack the related data of host country and it’s not easy to find an upstream firm, we cannot propose more particular strategies and give analysis in detail.

Reference

- [1] Yeaple S R. The complex integration strategies of multinationals and cross country dependencies in the structure of foreign direct investment [J]. Journal of International Economics, 2003, 60(2): 293-314.
- [2] 刘海明,郭菲.产品市场竞争情况与公司资本结构的实证研究[J].武汉金融,2009 (9):27-29.
- [3] 丁婕.电信运营商国际化战略决策模型研究[D].北京邮电大学,2009.
- [4] 孙巍,赵天宇.市场需求对重工业投资影响的非对称性诱导效应研究[J].产业经济研究,2014 (1):31-39.
- [5] 王家庭,贾晨蕊.中国区域创新能力及影响因素的空间计量分析[J].中国科技论坛, 2009 (12):73-78.
- [6] 张盛勇.规模经济,异质性企业及其国际化——对 Krugman 模型的一般性扩展[J].经济经纬, 2012 (4):51-55.
- [7] 卢锋.我国承接国际服务外包问题研究[J].经济研究,2007.
- [8] 卢锋.当代服务外包的经济学观察:产品内分工的分析视角[J]. 世界经济,2007.
- [9] 赵忠秀,吕智.国际贸易:理论与政策[M].北京:北京大学出版社, 2009
- [10] 梁觉,李福荔.中国本土管理研究的进路[J].管理学报, 2010, 7(5): 642-648.
- [11] 高明.关于我国跨国企业“本土化经营”的思考[J].商场现代化, 2008 (22): 128-129.
- [12] 张鲲.浅析跨国企业本土化战略的关键要素——跨文化管理[J].中国商贸,2011,32:111.
- [13] 谭长春.跨国企业本土化的精髓在哪里?[J].企业文化, 2005 (9):74-76.
- [14] 金钢.本土化:中国企业跨国经营的重要战略[J].国际经济合作, 2003, 5: 11-13.
- [15] 俸军.跨国企业“人才本土化”概念初探[J].边疆经济与文化, 2004 (8): 28-30.
- [16] 陈楠.我国企业的本土化战略探析[J].中国海洋大学学报:社会科学版,2006 (1): 92-94.
- [17] 汤锦春.中国跨国公司本土化发展研究[J].特区经济, 2007 (9): 197-199.
- [18] 姚书杰,蒙丹.中国企业跨国投资中的本土化问题研究[J].当代经济管理,2013,35(4):16-20.

Outline



本文以中国中铁股份有限公司的全资子公司中铁国际南非工程公司为研究对象，分析该公司进入南非市场的动机，进而提出如何巩固国际市场，深化企业国际化的战略，并对其进行可行性分析。因此，我们的文章分为三个部分，动机分析，三大战略和可行性分析。

第一部分动机分析中，我们内外结合，从市场分析和企业分析入手，探究中国中铁进入南非市场的原因，其中市场分析分为宏观因素分析（采用市场矩阵分析法）和微观因素分析（采用 PEST 分析法），而企业分析主要依据波特钻石模型，研究企业施行国际化战略的竞争力。

基于市场和企业自身特点，我们应用相关经济模型和理论研究为企业提出外包、纵向战略联盟和本土化等三大具体措施，随后，将理论与实际相结合，对三大战略进行可行性分析。