

A KNOWLEDGE-BASE SYSTEM FOR JOINT-VENTURE PROJECTS IN CHINA

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ABSTRACT

Ever since China has implemented an open-door policy over the last two decades, China has been enjoying a fast economic growth. The growth is accompanied by an increasing amount of construction projects and an increasing number of foreign investors have been attracted to invest in China. Although joint venture projects are widely used in many countries, their successful use is relatively rare in the construction industry of China. There are aspects of the implementation of construction joint venture projects which are unique to the Chinese situation.

This paper focuses on the present state of the Chinese construction industry, especially problems encountered during the development and running of construction joint venture projects. It analyses the reasons for these problems and tries to suggest means to accelerate the operation of the joint-venture projects in overcoming the difficulties. It will also identify how a knowledge-base system can assist joint venture projects in China successfully.

KEYWORDS

Joint venture projects, construction industry, knowledge-based system.

INTRODUCTION

China has been enjoying fast economic growth and development over recent years. This growth is accompanied by an enormous increase in the construction sector. International investors are trying to expand their operations into this potentially huge construction market. However, they have been hindered by the lack of accurate information and a lack of understanding of the local market. Certainly, this has restricted their performance in China and discouraged other investors from trying to enter into the market.

The most common form of cooperative venture between internal and external organizations is the joint venture project (JV). This has been extensively used in many sectors including construction. There are however some major problem areas: lack of understanding between



parties, technology transfer, specific laws, financial regulations, cultural differences and others. To tackle and overcome these difficulties, it is important to make available much more information and knowledge, than is currently available to intending JV partners. This paper describes the work which is being done to provide a means of facilitating knowledge and information flow in JV projects.

The specific aim of this research is to look into the existing situation of construction joint ventures in the PRC with special emphasis on understanding strategic market entry process and paths in China, also on identifying the causes of joint venture problem. Under this foundation, to build a knowledge-based system which allows local and international construction organizations to rapidly access to a comprehensive array of data. This will be a system which will help identify huge Chinese market opportunities for investors in this rapidly expanding field and will provide general Chinese construction information for international construction organizations in order to assist their successful involvement in joint venture projects in China.

THE INVESTMENT ENVIRONMENT IN THE CONSTRUCTION INDUSTRY

Today, development of the world economy is integrated and interdependent. China, a developing country, needs to make efforts to develop its economy, but its economic strength is relatively insufficient. To accelerate the development of Chinese economic pace, China needs support and help from other countries. Therefore, China needs to open its door and to develop its economy making use of overseas capital, advanced technology and scientific management methods. In the environment of increasing competition, the state of capital prevails the trend of shortage. A country which can create better investment environment can absorb more capital and technology and can seize more development opportunities.

The average growth rate of the Chinese economy was 8-9% every year over the last 16 years. The foundation of the continuous economic increase is foreign direct investment and foreign trade. However, many infrastructure installation, such as energy source, transportation, telecommunication, can not catch up with the development of the economy. To facilitate investors and to improve investment environment, construction industry should be in the lead of the economy. It turns the construction industry into an important development stage in the historical moment.

In China, the construction industry is an important and independent industry including works of railways, roads, power stations, bridges, harbours, mining, metal mills, chemicals; etc. In the 90's, there is an

enormous need for construction works which will be revealed as follows:

- There are many major construction projects and infrastructure projects, such as "Three Gorges Projects" which budget is about US \$ 120 billion, including a large number of energy, transport, raw materials, water works and so on.
- Increasing demand for residential housing and alteration works. In order to achieve a moderate housing target, at least 1.65 billion m² of residential housing floor area must be provided in towns, and 6.5 billion m² in rural areas in the next 10 years. At present, there are 2 billion m² of residential housing that need to be refurbished (Xu, 1994).
- The demand for industrial buildings, commercial services properties and tourists' properties is also growing at full speed because of the rapid expansion of the national economy and life level's increase of people.
- There is a tremendous need for new town development. According to Tan and XU(1994), up to 2000 year, the number of new born towns will be about 3,000, in addition, 20% of the new towns should be remodelled to form a new type of town bearing local specialities in order to accelerate the development of production and living conditions. This also improves the investment environment.
- Taking advantage of China's flourishing economic development and further open-door policy, the construction industry has just entered the international market and is now engaged in overseas construction contracting as well as labour co-optation. Also, if China is re-admitted as a member of GATT, the construction industry will be confronted with the challenge of further developing in order to compete in the world market, in the same way that foreign construction companies compete in the Chinese construction market.

Despite recent improvements, the Chinese construction industry is still not equipped to meet the huge demand for construction projects. The industry lags behind international levels in terms of: building technology and equipment; quality of building materials; the quality of staff; and project management. This, coupled with a relatively low demand in foreign countries suffering from the effects of recession, has encouraged international companies and investors to explore the potential of the Chinese construction industry.

THE FORMS OF FOREIGN INVESTMENT IN CHINA

Basically, foreign investment in China may take several common forms listed as follow according to the relevant regulation and observation.

- **Equity Joint Ventures** - Walker(1987) defined equity joint ventures as "enterprises jointly invested in and managed by a foreign firm, enterprise or other economic organisation or individual together with a PRC company, enterprise or other economic organisation, which shares risks, profits and losses on the basis of equity and mutual benefit." An equity joint venture is a legal entity which is a limited liability company within Chinese territory.
- **Co-operative Venture** - co-operative venture is that a foreign construction firm form a company with local construction firm in which the overseas firm offering capital, advanced management and technology and local firm offering local regulations and, practices, land and labour. On the basis of mutual benefit and the contract two sides share the venture's profits, products, risks and liabilities. When the contract is expire, the venture itself and its property are taken over to the Chinese partner of the joint venture.
- **Wholly Owned Joint Ventures** - Foreign investors owns the ventures' everything , in construction industry, overseas sole constructs projects independently. Actually, it is also a special kind of equity joint venture in which 100% of the equity is held by the foreign partners(Walker, 1987). The use of wholly-owned subsidiaries with 100% foreign investment by the foreign investors for market entry requires the greatest commitment of capital and managerial effort.
- **Compensation Trade** - 'Compensation trade is a form of direct foreign investment through which PRC enterprises purchase technology and equipment from foreign investors and pay off the principal and interest of the purchase price with the products produced with the technology and equipment by instalment or on deferred terms' (Walker, 1987). Management of the production facility can be expected to be undertaken by the foreign investor.

For a particular project, investors may form joint venture projects with local firms. According to experience and observations, the common procedure to enter into the PRC's construction market is to form a foreign investment joint ventures with local major construction firms in which investors offering capital, advanced management, high technology and expertise and the local firms providing land, local construction market information, regulations and laws, also practices and staff.

The detailed procedure of setting up a joint venture is shown in Figure 1.

Basically, all construction firms regardless local or overseas need to be approved by relevant government departments, particularly, they need to

be assessed and approved by local province and city due to different condition in different area in China before a firm license is issued. Therefore, foreign investors set up a joint venture with a local firm or form a joint venture project, their qualification must be assessed in each project according their capital, technology, management and key personnel. Meanwhile, the local firm also needs to be assessed to meet relevant policies, regulations and laws.

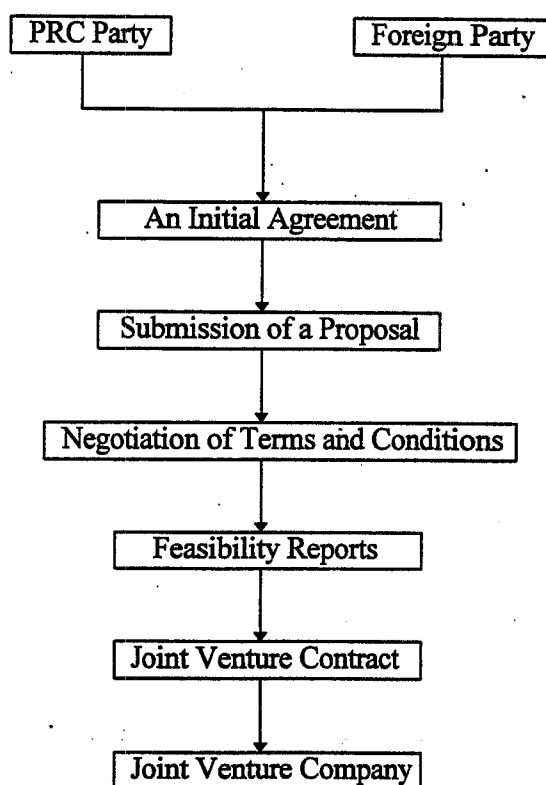


Figure 1

PROBLEMS ENCOUNTERED IN JOINT VENTURES IN CHINA

1. Foreign Exchange

One of the most commonly encountered problems in joint ventures in China is foreign exchange. According to the Joint Venture Regulations, foreign exchange shall be handled by the Interim Regulations license. After a joint venture was set up, it was expected to open foreign exchange deposit accounts and RenMinBi (RMB) deposit accounts with the Bank of China or other designated banks. As a general rule the law stipulates that

the joint venture must maintain a balance between these accounts. Foreign exchange shortage has been a major problem inhibiting the rapid growth of foreign direct investment in China (Chen, 1994). Chen also pointed out that FE difficulties not only cast doubt on the investors' ability to repatriate capital and profits but, more seriously, also disrupted the operations of firms.

Generally, a large amount of need for foreign exchange is not only to import the necessary technology and equipment but also to export products. Joint ventures need foreign exchange in order to generate requisite funds through exports. However, it is very difficult that a joint venture can convert RMB into foreign currency for the targets. Many potential investors have been reluctant to establish operations in China because of the restrictions placed on the RMB.

Although RMB is not convertible into foreign currency, some joint ventures could convert RMB within a specified period after the Chinese authorities have given investors the legal right because some joint ventures' problems had been arisen and led to the attention of China's top leadership.

The progress of reform forces that foreign exchange balancing regulations have to meet the requirement of market. To resolve the above problem, foreign exchange balancing regulations have been revised several times respectively in 1986, in 1987 and in 1994 by the Chinese government.

2. Investment System

Foreign capital used in China can be classified into three forms: (a) Foreign loan, including loan from foreign government and international financial organisations, such as World Bank and Asian Development Bank as well as foreign commercial banks. (b) Foreign direct investment. This kind of investment can transfer advanced experiences and technology to China and Chinese Government gives some preferential policies to investors. (c) Other forms, including compensation trade, processing and assembling foreign materials and international leasing.

In general, a project financing "system" will involve a viable project whereby the financier will look initially to the cash flows and earnings of the projects as the source of fund from which a loan will be repaid and to the assets of the economic units as collateral for the loan (Nevitt, 1979). China is in a special historical period, transforming from planned economy to market economy, its investment system is still immature and imperfect. Many problems are caused because the mismatch of the financing investment system and construction projects systems. Although the investment in construction projects is huge, it is impossible for the construction industry to have adequate capital to bear all the investment. According to Chan (1992), one basic divergence of the two systems is that

the financial activities are generally very dynamic with variables changing by seconds. Construction activities, on the other hand, are relatively low-tech and the information transmission has to take long time. This is compounded by a financial investment system which is not conducive to the development of construction management system.

To break the deadlock between the investment system and the construction management system, an effective project monitoring system is necessary. Although the monitoring function in construction loan monitoring is still passive, a better understanding of the financial construction systems together with advances in information technology may enable the creation of an automated feedback mechanism in project finance (Chan, 1992). An effective and comprehensive Project Finance Monitoring System for joint ventures is under development in order to reduce the investment risk.

3 Objectives of the Partners

Another difficulty encountered quite often in joint ventures is that two parties (PRC party and foreign party) have different investment objectives for entering into equity relationships.

Basically, the Chinese want to not only acquire overseas capital, high technology, advanced management methods and design expertise but also enter into the international market to export domestic products. The foreign investors wish to exploit the potential huge Chinese market, at mean time, they use the market as a base to further develop Asian market. In some cases the Chinese and foreign partners have had different objectives for entering into equity relationships. The Beijing Jeep Company is an example. The main objective of the American partner (AMC) was to gain access to the Chinese market, while the main objective of the Chinese partner(Beijing Jeep Plant) was exports. The latter desire to acquire the latest production technology also conflicted with the American partner's interest in low-cost production. Thus, their objectives conflicted, and led to problems, including mutual suspicion of the partners, difficulty in finding domestic components of adequate quality, production difficulties within the plant and an unrealistic export target (Chen,1994).

Essentially, the Chinese do not want to open their domestic economy to the exploitation that has characterised much foreign investment in Africa, and hope to pay as little as possible for technology and knowledge transfer. The protectionism in the construction industry can be classified into organisational-wise and area-wise. The foreign investors on the other hand, desire access to a potentially massive domestic Chinese market. They are aware of the current problems of using the PRC. as an export base. They wish to maintain as much control as possible over their

specialist technology and knowledge; if these have to be transferred then the desire is that an economic rent should be paid for the transfer.

It is not doubted that the Chinese construction market is huge and lucrative, but the foreign investors have to be patient and conduct the same economic feasibility studies they would for investment in any other developed country. If the open-door policy continues, the prospects for joint venture projects is good in the future.

4. Technology Transfer

The importance of technology has been one of the main Chinese objectives in attracting foreign direct investment (FDI). A joint venture project in the PRC often has a need for investors to provide advanced specialised technical and managerial expertise. However, China's current economic situation, particularly with relevant legal system as well low level of foreign exchange reserves can not be used optimally. This means that the Chinese professionals can not absorb all of technology instead of being restricted of the development of local indigenous construction technology.

The often unsophisticated technology transferred to China by foreign firms resonates with the prediction suggested by product cycle theory. The product cycle theory states that as the technology of a product becomes more standardised and static, the product migrates to lower-income countries where labor cost becomes a more important basis for comparative advantage than research and development.

5. Culture Differences

The culture of any given society influences the values and behaviour of its members. Culture affects the way individuals perceive themselves with respect to others, the way problems are approached, and in the way responsibilities are shared within a group. Cultural differences also can be seen in the Chinese attitude to construction contracts because foreign investors are familiar with standard building contract conditions, i.e. FIDIC, but the PRC party's construction regulation and rules are adapted for local use, but they are not suited to foreign contractors. Certainly, this influences the operation of joint ventures and leads to misunderstandings even causes a hostile attitude so that co-operation in joint venture is destroyed.

In addition, cultural orientation affects the decision making process. Besides planning and management, a decision-making also play an important role in an organisation. In western societies, individuals make decisions at various levels in the organization consistent with their responsibilities. The culture rewards those who seek out and accept

responsibility. By contrast, in Chinese group decisions are more predominant.

If a joint venture project's decision can be made under the condition of equality and mutual benefits by two partners, cultural difference influences in a joint venture project can be cleared up. Bases on this perspective, the successful management of a multi-national project must go beyond the technical and task oriented issues, and address the cultural influences which affect organizational behaviour-in decision making, labor practices and in the execution and supervision of the work (Nutwell, 1992).

6. The Legal Framework

Although with the increase of foreign investment in Chinese construction industry, the relevant divisions of the Chinese government has made and enacted many related laws, regulations and rules trying to provide an open, fair, well regulated and ordered construction market system. However, due to the incompleteness of the legal system and the local protectionism as well as project management system, this has hindered overseas investors in entering the PRC market. Clients often delay payments to contractors at their own will and at any length of time because most construction firms were their subsidiaries or under the same government hierarchy. The contractual terms could be overruled by the senior management of clients or senior officials of the government. This has formed a main obstacle for overseas contractors.

At present stage, economy play a significant role in technology transfer. and the continuous growth of economy has to be relied on sound laws and regulations. The construction industry is a booming industry in the PRC. To attractive more investors, making necessary amendments to the relevant laws and regulations is a burning issue of the moment.

PROBLEMS REVIEW

The review of problems was based on a framework which included the application procedure of setting up a joint venture in China and current situation of the Chinese construction industry.

The major problem areas in joint ventures have been identified. The intentions should be not only to identify problems in joint ventures but to find solutions. Standard solutions which will fit all problems can't be found because of the unique features of every joint venture. However, if methods and processes which aid or assist joint venture performances can avoid or overcome problems means to resolve the problems, this will be a major step forward.

One major change which could bring about significant improvement is the provision of relevant information in joint ventures and improvement access to this information. Even minor improvements in data access would reduce the problems.

Therefore, the research is to develop an information system which will permit Chinese and overseas investors rapid access to extensive qualitative and quantitative data. The development of a knowledge-based system uses an existing relational-database system as the application program while adapting the existing expert-system techniques. Specific data requirement and presentation features shall require more definition and specification work to be carried out in conjunction with potential users.

An essential element of this research is the use of established links with individuals and international groups who can be considered as being representative of the organisations involved in joint ventures, co-operative projects, partnering or anything related to joint ventures. An appropriate set of quantitative and qualitative data will first be established by identifying the specific interests and technical requirements of the representatives. This data will be used for establishing a knowledge-based system and data presentation features. In addition, a system specification will be established using this data as its basis.

Information has been collected from joint ventures internationally, particularly in China. The criteria of data collection depends on the joint ventures specific needs. All information has been stored and transferred on electronic media. For quantitative data, data-base and spreadsheet format has been used. For qualitative information, electronic scanning has been used to store documents, figures and diagrams.

These data will permit joint ventures to take objective decisions as to the viability of potential projects. The aim of this project is also to establish the needs of the system, develop the system and demonstrate its viability on a large scale. The system is designed for both sides in a joint venture, which assists their involvement in joint venture activities.

CONCLUSION

Since the advent of the open economy policy of the PRC, investments in many industries have been successfully entering the huge market. There are many opportunities for the overseas investors to stimulate investment, particularly construction industry in China where some giant construction projects and infrastructure projects are concerned. If the present "open door policy" is maintained and the modernization movement continues, China offers a large market with a huge potential for construction. The market needs foreign investment and is very anxious to seek other nations' advanced management knowledge and technology. Technical transfer in

this respect can be improved and construction boosted if there are more joint ventures.

Nevertheless, there are many problems have been encountered in joint ventures in China. The foreign investors from many different countries have been troubled by the lack of accurate information and a lack of understanding of the Chinese market because of the incompleteness of the legal system and the local protectionism as well as universe competitions. Although Chinese policy is to transfer the planned economy to market economy, the differences of managing business and conflicts die hard within the current transitional period. This has restricted their involvement in China and discouraged some other investors from trying to break into the Chinese construction market. On the other hand, China wishes to acquire high technology, management and expertise, and the ability to export high quality goods in order to further enter the world market.

Therefore, there is a great need to resolve these problems. The Chinese governments is trying to improve the investment environment and strengthen investment information system construction for assisting joint venture projects operation in China. These are being incorporated in a knowledge-based system which is under design and development to facilitate data collected from steps entry, retrieval, electronic transmission, revision, storage, query, autosearch, indexing and reporting functions in The Hong Kong Polytechnic University.

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