

Risk Management in International Construction Joint Ventures in Egypt

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Submitted in accordance with the requirements for the degree of
Doctor of Philosophy

The University of Leeds
School of Civil Engineering

November, 2014

Declaration

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Acknowledgements

Firstly, many thanks are due to God for his bounties and blessings. I would like to express my gratitude to my supervisors, Professor Steven Male and Mr. Krisen Moodley. Their insightful discussions, constructive comments, and reviews guided me through this research project. I wish to express my gratitude to Professor Nigel Smith for undertaking the responsibility for supervision after Professor Male's leave. This dissertation would not have been possible without their belief, encouragement, and advice.

I am also grateful to my family, friends, colleagues, and flat mates, Palesa and Trisha, for their friendship and the joy and laughter we shared during my time in England. Special thanks to Dr. Mohamed Abd Elghany, Dr. Samer Ezeldin, Dr. Mohamed El Gafy, Mr. Chatterjee, Dr. Ghada Gad, Dr. Hussein Omran and my friend Sara El Abhar to whom I owe a lot for her help, support and encouragement. No words exist to grant her the credit she deserves. I do not want to forget my friends Eng. Engy Mustafa, Eng. Eman Samir, Eng. Ghada Hassan, Eng. Manar Ewais, Eng. Mohamed Hazem, Eng. Riham Abd El Latif, and Eng. Shereen Khalifa for their full support throughout the whole research process.

Last, but certainly not least, I would like to dedicate this dissertation to my beloved and wonderful father who always gave me complete love, prayers and support. I know for sure that without his encouragement and patience, it would not have been possible for me to complete this dissertation. I hope he is proud of me. I would like to extend my deepest gratitude and dedicate this work to my aunt Amira Soliman for her love and prayers. I dedicate this thesis too to my mother's soul; I know if she were still with us she would be the happiest person in the world. I wish, every day, that she was still with us to see my accomplishment on this day. I also want to dedicate it to the person who is closest to my heart, Mahmoud El Kady, for his full support and love throughout the whole research process.

Abstract

Egypt is a developing country and the construction sector has a significant impact on GDP. The development and competitiveness of the Egyptian construction sector in local and international markets are affected by many risk factors. To overcome these risks, some joint ventures are arranged between the Egyptian and the International companies. These joint ventures needs studying to understand the risks and the changes, which are inherent in these companies, and the projects that they execute.

Positioning this research to introduce the risk factors to address the risks associated with the joint ventures in Egyptian construction market. This research taken place before 25 January 2011 when the Egyptian revolution began, deposing President Mubarak. Since then many changes have faced the Egyptian and international companies and have created risks in the political and economic situation. Some of project contracts were examined to find out the risk environment faced by joint ventures. In addition, the research established a theoretical model to identify those risk factors for International construction joint ventures in Egypt based on the collection and analysis of quantitative data collected through questionnaires.

The research investigated risk management process in the business of joint ventures in which a number of new risk factors identified for the Egyptian construction market, which can be added to the existing factors that noted from the literature review. The main contribution of this research is the identification of the risk factors in three levels, which are; the country, the joint venture company and the project specific levels. The top risks of the country level are: Different applicable law, Currency Exchange, Equipment Availability, Government act, and regulations; for the joint venture level are: Financial capability, Connections with the host government, Strategic complementary; and for the project specific level are: materials; location of the project; sub- contractor capacity. Considering these risk factors facilitates clear decision making in arranging joint ventures in Egypt. Moreover, it mitigates the potential of these risks to occur.

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Abbreviations

CBE	Central bank of Egypt
CAGR	Compound Annual Growth Rate
EFCBC	Egyptian federation for construction and building contractors
Engineer	The consultant of the project
Executive Committee	It is a committee between the Supervisory Board and the Site of the JV.
FATWA	An analogy might be made to the issue of legal opinions from courts in common-law systems. Fatwa generally contain the details of the scholar's reasoning, typically in response to a particular case
GAFI	General authority for investment and free zones
GDP	Gross domestic product
JV	Joint venture
MENA	Middle east and north Africa region
MPC	Monetary policy decisions
NFPA	National fire protection association “the authority on fire and electrical of building safety
SBU	Strategy business unit
Supervisory Board	It is the highest authority of the JV
UNCITRAL	United nations commission on international trade law
IIMF	International monetary fund
NABC	Netherlands- African Business Council
RMB	The Renminbi is the official currency of China

Chapter 1 Introduction

1.1 Background of the Research

The field of construction industry is generally surrounded by risk and suffered from poor performance as a result of it. Therefore, these risks typically can lead the project to failure in one of the following:

1. to be within budget;
2. to keep within the time contracted for handing over;
3. to meet the required technical standards for quality, or fitness for purpose.

Egypt has been progressively reforming the business and investment environment since 1991. The wide ranging reforms drove to a growth in the years prior to the global recession. Some of these reforms were successfully reduced subsidies, relaxed price controls, cut taxes, and partially in trade and investment liberalization. Sector reforms included construction, non-financial services, domestic wholesale and retail trades are largely private. Egypt's comparative lower debt and deficits, successive reforms, and growing private sector make an increasingly attractive investment picture.

These Egyptian economic reforms and the rapid growing of the market especially in the construction industry which have followed in Egypt and the need for funding and high technology for infrastructure projects have lead them to follow new methods of market approaches such as BOT, BOOT, joint venture, turnkey and many other types. The method which most commonly used in construction that the international companies entering in a joint venture with Egyptian companies.

The Egyptian market is classified as a high-risk market due to the high bureaucracy, and low income, raising of the unemployment ratio, and continued security threats, which have aggressively increased the country risk factors.

Joint venture projects in the Egyptian market are facing many risk factors such as; high fluctuations, currency exchanges and many other risk's factors. The need for this study is derived from the fact that both International and Egyptian companies can assess and mitigate these risk factors when they establish construction joint ventures.

1.2 Research Problem

Some scholars such as; Bing et al. (1999), Bing and Tiong (1999), Gale and Luo, (2004), and Rahman and Kumaraswamy, (2002_{a,b}), have been published concerning risk management factors in international construction joint ventures. However, until now limited researches has focused on risk factors in construction joint ventures in Egypt between Egyptian and International companies. This research is particularly inspired to

explore the risk factors within three levels; the country level, which is Egypt and its economic, political, legal, and financial environments. In addition, to investigate the risk factors in the other two levels which are: the joint venture company and project specific levels.

This research focuses on the joint ventures between Egyptian companies and International companies in the construction sector. By the end of this research, the risk factors in International construction joint ventures in Egypt can be revealed. Moreover, the development of understanding method of these risk factors can help the companies even Egyptian or International in assessing them and avoid the failure of the project.

1.3 Research Aims and Objectives

According to the above research problem, this research aims to:

Use the risk management approaches to identify and classify the risk factors of international joint ventures in the construction industry in Egypt. In addition, the research also aims to build a new method for effectively managing these risks for both the Egyptian and international companies and in turn, to enhance their decision-making processes and capabilities.

To achieve this aim, the research focuses on a number of objectives as follows:

1. To explore the existing political, economic, social, and legal systems in the Egyptian environment.
2. To explore the literature on strategic management in construction and to identify the structure of joint venture agreements/projects, including their formation and operation in general, but specifically in Egypt.
3. To review the literature of risk management to understand its approaches, process, and frameworks in construction and joint ventures in specific.
4. To develop an understanding of the risk factors based on existing risk factors in other countries to illustrate the risk factors for the international construction joint ventures in Egypt.
5. To explore the hierarchy of risk factors in Egypt and to develop a practical approach.

1.4 Research Methodology

In general, research follows several steps, which are mainly: research problem formulation; research design; sampling; collecting the data; analysis of the data; and finally the report writing. The research methodology, which is adopted by the author in building a quantitatively and qualitatively robust argument. As such, a selected modified

grounded theory approach is adopted and elaborated on herein. This also includes clarification of the spectrum from deductive to inductive approaches and from quantitative to qualitative methodologies. Drawing from this, a triangulation is used, one which adopts a questionnaire survey to gather quantitative data from the survey sample, and one which undertakes critical examination of documents in order to gather qualitative data which are analysed using the content analysis. Outlines of the questionnaire survey are provided. A critical review of the research methodology is given in the latter section of this chapter.

1.5 Research Scope and Limitations

This research is studying the risk factors in joint ventures in Egypt and in specific the construction industry.

The research focuses on joint ventures between the Egyptian companies and International companies from different nationalities; the definition of International companies in this research refers to all foreign construction companies, which operate projects in Egypt.

This research has its limitations. This research concerns only construction companies with major projects in Egypt; such as; the construction of the metro line of Cairo, a water treatment plant, a new city, an airport terminal building, a five stars hotel, and a harbour berth. The summary of those targeted projects (in Appendix E) and the approximate cost of each project in USD. The sample size was small as to get access to documentation proved problematic since firms treated it as confidential. Respondents also had busy work schedules, which affected on the response rate. The documentation data, which were verified and provide supplement to the questionnaires in this research are limited as they are treated as confidential data. Both the small size of the sample and the limited documentation can lower the accuracy of the research, but using the triangulation between the statistical analysis and the qualitative analysis can rigid the outcome of it.

To test the validity of the research findings, meaning to identify whether the researcher findings can be generalised to a wider scope beyond the immediate research environment, the researcher has sent a comprehensive survey based on research findings to many managers with good experience of joint ventures in Egypt. However, a small sample was reached but the good experience of these people can be valid.

1.6 Organization of the Thesis

This thesis is divided into ten chapters. The first chapter introduces the background of the research problem, the research questions, and research objectives. The research scope and limitations of this study are presented. The adopted research methodology is

briefly also described along with the proposed contributions made by this study to existing body of knowledge. Finally, the structure of this thesis is outlined.

Chapter 2 provides a critical review of the construction industry in the wider context of the global and Middle East. In particular, globalisation is defined and discussed in order to place the discussion in the wider international-political framework before exploring the Egyptian context in terms of the economic, political, and legal systems in which it operates along with the context and processes of investment in Egypt. For the purpose of this research this is specifically related to an exploration of the Egyptian construction industry which acts as a dynamic sector in the Egyptian economy as a whole, but moreover, a sector which is nonetheless, still vulnerable to changes in the global economic order.

Chapter 3 begins by conducting a review of the existing literature on strategic management in the chosen industry. The chapter applies a framework of main definitions and areas pertinent to the study, which relate to the nature and type of organisational structure of, and within, the industry. Furthermore, the chapter examines the mainstream theories, which relate to sources of competitive advantage for companies, in so doing critically reviewing the associated definitions and concepts. The scope of this research is extended to international companies and therefore, competition and strategy in the international business environment for construction is discussed in relation to the possible implications for the Egyptian construction industry.

Chapter 4 reviews the related literature on international contract agreements used in construction. In the first part of the chapter, the international alliances and the politico-economic settings in which they are formed are considered in detail. The advantages and implementation are reviewed to differentiate each type. This is followed by critical evaluation of the formation of consortia, a review of international contractual arrangements and the reasons for forming international consortia from the employers' and contractors' perspectives, and the types of consortia. Similarly, the same examination is undertaken for joint ventures, which constitute the central subject of this research. As with consortia, the motives and goals, which underpin the formation of joint ventures, is critically discussed. Moreover, the differences between the different types of collaboration and the reasons behind the failure of joint venture are highlighted.

Chapter 5 builds on the review and critical discourse presented in chapters 3 and 4 and undertakes a general risk management review and risk analysis along with an evaluation of the potential risks encountered in construction, as well as a critique of previous research on risk management. A literature review on joint venture risk factors provides an overview of risk management in construction projects, especially with regard to joint venture projects. The framework of definitions and approaches, which allows for

greater explanation of risk management, was identified. Moreover, this chapter advances the relevant tools for the main processes of risk identification, risk classification, risk analysis, and risk response. Finally, utilising these features the relationship between risk management frameworks and international joint ventures in construction are explored. This exploration is applied to Egyptian joint ventures, the risks that confront them and the implications of risk management for construction joint ventures therein.

Chapter 6 presents the research methodology. The selected modified grounded theory approach is elaborated. The spectrum from deductive to inductive approaches and from quantitative to qualitative methodologies is presented. From this, a combination strategy is justified that uses a questionnaire survey to gather quantitative data from the survey sample, and documents to gather qualitative data analysed using a modified grounded theory technique. Outlines of the questionnaire survey are provided. The research methodology is critically reviewed at the end of the chapter.

Chapter 7 establishes a theoretical model to explore risk factors in the construction industry in Egypt through a critical examination of potential risk factors. This is based on the reviews of existing risk factors in other countries' construction industries. Therefore, a theoretical model is developed and is derived from the review of international risk factors in other countries along with the review of Egypt as discussed in chapter 2. Moreover, although this model is capable of examining the strategy of the organizations, their structures, and risk factors it is specifically focused on joint ventures. As such, the risk factors of the joint venture project itself are examined.

Chapter 8 presents the empirical findings of the research and details the findings of the analysed contracts and the risk factors that might be encountered. The second part discusses the findings obtained from the theoretical model of risk factors in both the wider international context and more pertinently, the Egyptian context, which determines the focus of the research analyses. Part three summarises the chapter's findings and validates that fact that the research sample meets the research objectives. Overall, this chapter accounts for the validity of the research, which is proven by the credibility of the information, gathered in terms of the level that it supports the critical analysis and the development of the model as presented in Chapter 7.

Chapter 9 identifies and discusses the most important risk factors of international joint ventures in Egypt in each level i.e., those that require specific consideration by both Egyptian and international companies when working in the Egyptian construction market. However, the chapter also focuses on the relationship between the risk factors of the overall model, which are broken down into three levels (the country level, the joint venture company level, and the project specific level). The three levels practical process model is also established based on the empirical findings. the overall model provides

knowledge of risk factors of international joint ventures in Egypt. Moreover, an example which clarifies this relationship is also introduced in the chapter.

Chapter 10 provides a conclusion to this research by reflecting on the degree to which the objectives of the research and original contributions to the existing discourse have been achieved. The limitations that were found and experienced in the research are discussed. The research examined the stipulated risk areas that both Egyptian and International companies must pay due consideration to when seeking to begin joint ventures. Moreover, recommendations for further research are also provided.

Chapter 2 Overview of Egypt

2.0 Introduction

In this chapter, Globalisation is investigated as it affects all industries and the international companies, which enter the Egyptian market. The Middle East region is then reviewed, as Egypt is part of this region. The Egyptian legal, social, and political systems are also outlined, as well as investments and foreign trade. Finally, a comprehensive view of the Egyptian construction market is provided, as the focus market of the study.

This thesis studies the Egyptian market before 25 January 2011, and all the risk factors relate to this period. After this date, the uprising, which overthrew President Mubarak, and the continued unrest, has temporarily dampened the economic, political, and social prospects of Egypt.

2.1 Globalization

There is no universally agreed definition of Globalisation among the researchers. Chavkin and Maher (2010) defined Globalisation as “[the] increased interconnectedness of production and communication with reduced barriers to trade, the increased movement of people for trade and work, the rise of transnational corporations and of the involvement of supranational actors and economic institutions (International Monetary Fund, World Bank, World Trade Organization, etc.) in national social policy formation.”

Miskiewicz and Ausloos (2010) described Globalisation, as “the increase of similarities in development patterns.”

The OECD (2006) described Economic Globalisation as “a process of closer economic integration of global markets: financial, product and labour.”

Gerstenfeld and Njoroge (2004) defined Globalisation as “the construction of a global economy, largely through the activities of private firms that are moving their economic activities around the world.”

These definitions show that Globalisation provides international companies with the freedom to move between all the markets in all sectors. Moreover, Globalisation encourages said companies to practice and invest globally.

According to the World Bank classification, Egypt is classified as a developing country. The World Bank has many classifications, which are determined according to geographic region, income group, and lending category. These classifications divide countries into developed and developing countries. Moreover, countries with populations over 30,000 are classified into income groups according to their Gross National Income (GNI) per capita, calculated using the World Bank Atlas method. The groups are: low

income country (LIC) at US\$765 or less, lower middle income country (LMC) at US\$766–3,035, upper middle income country (UMC) at US\$3,036–9,385, and high income country at US\$9,386 or more. According to this grouping, developing countries (countries with low and middle-income economies) have an annual per capita income below 9,385 US\$ (Lewis, 2007).

Other characteristics of the developing countries group, which pertain to the construction sector, include the following (Lewis, 2007):

- High-income inequality, which results in low living standards.
- Poor health, inadequate education, and limited life expectancy.
- Limited resources, unskilled labour, weak management practices and backward technology that lead to low levels of productivity.
- Significant dependency burdens, which result from high population growth rates.
- Large-scale unemployment and underemployment.
- A small industrial sector with outdated technology that is unable to employ large numbers of poorly educated workers.
- A large but neglected agricultural sector and outward migration from rural to urban areas.
- Market imperfections and weaknesses such as in the financial sector.
- A colonial past, with numerous consequent problems.
- Limited technology, hindered infrastructure, and ineffectual social and political institutions.
- Low social capital and social cohesion.

The above characteristics can be applied to Egypt, as the country has one of the highest population growth rates in the Middle East at 1.8% in 2009 (World Bank, 2009). Limited technology and resources, as well as weak management practices can be considered part of the reasons for the formation of joint ventures between international and Egyptian companies.

In the same context, performance in the construction industry faces a number of hindering obstacles. The following are some internal and external factors, which exist in Indonesia (Ofori, 2002) and hinder the progress of the construction industry:

Internal factors:

- Weakness regarding management, technological expertise, financing, and lack of skilled workers.
- Lack of a strong structure for the national industry.

- Lack of synergy in terms of partnerships.

External factors:

- Inequality among suppliers and consumers.
- Lack of support from all other sectors including the financial sector.
- Unavailability of standardised materials.
- Lack of professional and managerial training, and development.

Moreover, Ofori (2002) stated other impediments, which face the performance of construction projects in Thailand such as: inadequate procurement systems, lack of resources, discrepancies between design and construction, lack of project management practices, variation orders, communication lapses, cultural issues, and differences in the interests of participants.

Abd El Razeq et al. (2008) have identified the most important factors relating to project delays in Egypt, which are: financing by contractors during construction, delays in contractors' payments by the owner, design changes by the owner or his agent during construction, partial payments during construction, and non-utilisation of professional construction/contractual management.

Globalisation allows local firms to enter international construction markets and compete internationally. Technology transfer and economic cooperation are common, and there is an increasing trend towards Globalisation (Jamil et al., 2008). The 2008/09 global economic downturn has been exceptionally severe and construction has seen a sharper collapse than other sectors. The global construction industry was worth US\$7.5 trillion in 2009. According to forecasts, the construction market is expected to grow to US\$12.7 trillion by 2020, with the emerging markets' share rising from 35 % in 2005 to 55 % by the end of this decade. The main areas of growth in construction include Asia, Latin America, and the Middle East. The infrastructure is the main beneficiary of increased investment (Langdon, 2010).

The global construction industry generated total revenues of US\$ 2,236.3 billion in 2009, representing a compound annual growth rate (CAGR) of 4.3% for the period 2005-2009. Whereas the global construction market declined by (25.5%) in 2009, to reach a value of US\$ 105.9 billion, the global construction materials market generated total revenues of US\$ 539.3 billion in 2009, representing a compound annual growth rate (CAGR) of 5% for the period spanning 2005-2009. The global home building industry generated total revenues of US\$ 5,779.5 billion in 2009, representing a compound annual growth rate (CAGR) of 6.5% for the period of 2005-2009 (Market Research, 2010).

The Egyptian construction sector is one of the most dynamic sectors in the Egyptian economy and has been growing rapidly since the 1980s. In 2000, the Egyptian construction market ranked 36th among global construction markets, with 0.4% of this market, estimated at a value of \$12.711 billion (NABC, 2010). Spending in the construction sector is driven by increased infrastructure investment coupled with increases in residential development, which were expected to translate into increasing construction spending throughout 2008 (Langdon, 2008). Foreign direct investments (FDI) in Egypt reached a net inflow of US\$ 11.3 billion (7.2% of GDP). The distribution of total FDI among economic sectors, excluding the petroleum sector, shows that the financial sector absorbed 11.6%, the manufacturing sector 9.1%, the services sector 4.4%, and the construction sector 2.1% (CBE, 2008).

The Egyptian economy was affected by the global financial crisis, and yet, it continued to weather the adverse effects of the crisis. Since the third quarter of the fiscal year 2008/09, the annual real GDP growth has continued to gradually improve, reaching 4.9% in the first quarter of the fiscal year 2009/10. Despite the improvement in the growth rate, it has not yet reached the level of the first quarter of the fiscal year 2008/2009, which was 5.7%, though it remained considerably higher than the average rate of the emerging countries (CBE, 2010_a).

In addition, the global financial crisis affected foreign direct investments (FDI) in Egypt, which declined by 16.7%, from US\$ 8.1 billion (4.3% of GDP) to US\$ 6.8 billion (3.1 % of GDP) during 2009. The breakdown of total FDI inflows by economic sectors, excluding the petroleum sector, revealed that the financial sector absorbed 7.9 %, the manufacturing sector 4.1%, the services sector 3.5%, the real estate and construction sectors 2.8 % each, the agricultural sector 2.4%, tourism 2.2%, and communication and information technology 0.6% (CBE, 2010_b).

Even though FDI was affected by the global recession, still, the construction sector has increased its share of these investments because of the need for infrastructure and houses created by the large population growth rate. International companies use joint ventures as one of the methods to enter new markets and compete internationally. These kinds of projects are now becoming popular, which results in the increased exposure of organizations to the worldwide business market (Jamil et al., 2008).

2.2 The Middle East Market

The Middle East market is explored in this chapter, because Egypt is part of it; therefore, an understanding of the importance of this market for international contractors is essential. The Middle East market is rapidly becoming important for western contractors and designers as they face dramatically decreasing opportunities in their home markets.

Langdon (2010) has indicated three key factors, which support the growth of the Middle East market:

1. Higher commodity prices and external demand, which can increase revenues and exports.
2. Government investment programmes, especially in infrastructure, which can increase the domestic demand.
3. Stabilisation of the financial sector, which can free up capital for businesses and investments.

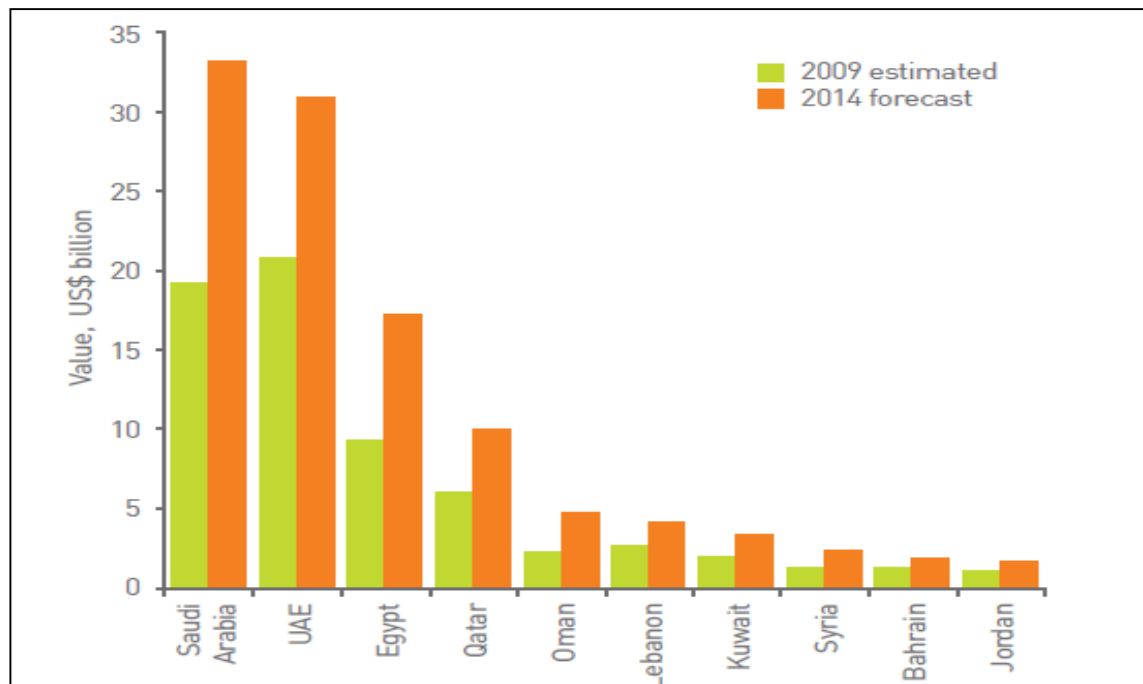


Figure 2.1 Construction values in Middle East countries (Source: Langdon, 2010)

Figure 2.1 estimates the value of construction in Middle East countries for the year 2009 and provides a forecast for 2014. Saudi Arabia has high levels of liquidity and strong demographics. Moreover, government efforts to increase private investment have led to developers and construction companies entering the market to gain a share of this growing industry. In the United Arab Emirates (UAE), construction is driven by Abu Dhabi, where the Government's investment programme can keep contractors busy, despite the slow progress of contract awards.

Egypt is the most populous country in the Middle East; its construction and real estate sector is unique, driven by favourable demographics, which, together with decades of under-supply of crucial infrastructure development, has produced considerable urgent demand. Prospects for construction, particularly infrastructure, housing, and tourism, are judged to be good, with demographic pressure creating the need for more investments (Langdon, 2010).

Many countries in the Middle East region are at risk of social and political unrest due to inadequate governance, economic conditions, and environmental conditions, contributing to a difficult operating environment. In addition, broad political instability and conflict, and natural hazards characterise this region (OCHA, 2010).

According to a report from the Big 5 Construction Conference and Exhibition held in Dubai in November 2010, most of the construction work in the Middle East is centred in the UAE and Saudi Arabia. There are 250 major construction projects in the pipeline with a combined value of US\$ 120 billion. There are 135 projects in the UAE and 60 in Saudi Arabia, their total value ranging from US\$ 12 million to US\$ 13.6 billion. In the entire Gulf region, more than 3,800 construction projects are either planned or under way, representing about US\$ 3.4 trillion in value (ENR, 2008).

The construction industry was negatively impacted in the Middle East by the Global financial crisis as well as the stopping or slowing down of many construction projects owned by the private sector (ENR, 2009). Many of the developer-driven markets in places like Dubai disappeared, and many petroleum-related projects were put on hold while oil prices stabilised. However, many governments in the Middle East continued to diversify their economies by investing in infrastructure and industry. In 2008, the top 225 contractors' revenues from projects in the Middle East region rose by 0.1% from US\$ 77.46 billion to US\$ 77.56 billion in 2009 (ENR, 2010).

Individual countries in the Middle East have their own regulations for the entry of international companies. In Saudi Arabia, there are different tax systems for Saudis and non-Saudis. Non-Saudi businesses are subject to a company tax of a maximum of 20%. Joint ventures between Saudis and non-Saudis are liable to tax on the non-Saudi portion of the profits (Encyclopaedia, 2012). In the UAE, the construction sector has been facing delays due to shortages in availability of labour, materials etc. International companies investing in the UAE are benefiting from cost efficiencies in power, gas, and water. Low tariffs, low currency risks, extremely low financial risks, no restrictions on repatriation of profits or capital, and numerous double taxation agreements are the attractive features of the UAE as an FDI destination.

Moreover, joint venture agreements in the UAE state that local equity participation must be at least 51%, but the profit and loss distribution can be agreed between the partners. There is no need to license the joint venture or publish the agreement. The international partner deals with third parties under the name of the local partner who - unless the agreement is publicised - bears all liability (PKF, 2009).

The Middle East market is still very different in its environment to that of developed countries but it is a large market. International construction companies from other

economies competing in this region must be aware of the market characteristics and the risks they will face, and they must plan to reduce those risks.

2.3 An Overview of Egypt and its Political, Legal, and Social Systems

Egypt occupies the north-eastern corner of Africa. It is bordered by Libya to the west, Sudan to the south, and Palestine and Jordan to the northeast. Its north coast is on the Mediterranean Sea, while the eastern coast is bound by the Red Sea. Egypt stands at the crossroads between Europe, Africa and West and South Asia.

According to the World Bank classification of economies by geographic regions, Egypt is classified as a Middle East developing country (World Bank, 2010_b). The Egypt State Information Service stated that the total area of Egypt is 1,002,000 sq km but the cultivated and settled area, that is the Nile Valley, Delta and Oases, cover only 78,990 sq.km, representing 7.8% of the total area. In 2008, the population was around 81.5 million with a 1.8% population growth rate (IDSC, 2010).

Egypt's high population growth burdens the economy by overloading the country's natural resources. Accordingly, there is a continuous requirement of investment for the Government in schools, hospitals, roads, electricity, water sanitation, and other basic infrastructure investments. Although economic reforms have been gradually implemented in the Egyptian market, there is still a shortage of finance to cope with the financial requirements of all the sectors. Foreign investment is needed in order to achieve the availability of funding for the required projects.

2.3.1 The Political System

Egypt is an Arab Republic with a socialist-democratic system under the 1971 Constitution (amended in 1980, 2005 and 2007); the Constitution states that there should be no discrimination on the grounds of race or religion. The country is divided into 26 governorates, with governors appointed by the President. There is universal suffrage with a voting age of 18. The President holds the executive power and takes emergency measures. Moreover, the President may dissolve the People's Assembly (the legislative body) prematurely, but a referendum, and elections, must be held within 60 days (Doing Business in Egypt, 2008).

The Economist (2008) stated that the Egyptian Constitution provides the separation of powers between the executive, the legislature, and the judiciary. Islamic law is officially the principal source of legislation, but the Napoleonic Code is a more significant progenitor. The President is the Head of State and Supreme Commander of the Armed Forces. The President usually makes the most important political decisions in consultation with ministers and advisers. The Prime Minister, although formally

accountable to Parliament, implements the President's policies, through his cabinet and the bureaucracy all over Egypt.

The President was elected by universal suffrage for the first time after the constitutional amendment in 2005. The constitution was further amended in March 2007 and now specifies that the nomination of a presidential candidate must have the support of at least 65 members of the *Majlis al-Shaab* (People's Assembly), at least 25 members of the *Majlis al-Shura* (Consultative Council), and at least ten members of municipal councils from at least 14 governorates. The candidate must also belong to a legal political party that has been in existence for a minimum of five years and that holds at least 3% of the seats in Parliament (either the Consultative Council or the People's Assembly). In addition, the amended constitution prohibits political parties based on religion, gender or ethnicity (The Economist, 2008).

Egypt was divided into 26 governorates, which comprise a number of administrative unites, cities and villages. In 2008, two more governorates were established in Helwan and in the 6th of October City; the administrative borders of some governorates were re-drawn by Republic decree no. 115, 2008. The Luxor governorate was also drawn up by Republic decree no. 378, 2009, issued on December 2009 (IDSC, 2010).

In summary, Egypt has a stable political system that includes its administrative function, which eases the operation of all the other systems in the country. This stable political environment encourages international companies to work in Egypt and enhances its competitive position among other countries in the region. Moreover, the policies and regulations are always changing in Egypt, which confuses companies, especially international ones. International companies usually rely on their personal contacts and networks, rather than rules and regulations, in order to pursue business opportunities efficiently.

2.3.2 The Legal System

The judicial system is based on English Common Law, Islamic law, and Napoleonic codes subject to judicial review by the Supreme Court and the Council of State, which review the validity of administrative decisions (Encyclopaedia, 2010).

The legal system in Egypt consists of two chambers; the People's Assembly; and the Shura Council (Consultative Council). The People's Assembly has the power to enact laws and to approve bilateral and multilateral treaties as well as determining the national budget. It consists of 454 members, 444 of whom are directly elected. The remaining 10 are appointed by the President. The Shura Council (Consultative Council) acts in a consultative capacity to the President, the executive branch, and the People's

Assembly. Unlike the People's Assembly, it does not have any legislative powers. While the President appoints eighty-eight members of the Shura Council, the people directly elect the remaining 174 members of the Shura Council (LOC, 2014).

The Egyptian Constitution stipulates that the judiciary is an independent body, and judges, who are independent, issue verdicts based on the law. The Egyptian Judiciary is comprised of civilian and religious courts, administrative and non-administrative courts, a supreme constitutional court, penal courts, civil and commercial courts, personal status, and family courts, national security courts, labour courts and military courts, as well as other specialised courts or circuits, which are economic courts (IDSC, 2010).

The Egyptian court system is composed of a number of tiers: the Courts of First Instance, the Court of Appeal, and the Court of Cassation are at the apex of the judiciary. The classical dichotomy of public and private law has resulted in the establishment of the Council of State, which consists of administrative courts vested with the power to decide over administrative disputes pertaining to administrative contracts and administrative decrees issued by government officials and ministries. The Supreme Constitutional Court has exclusive jurisdiction to decide questions regarding the constitutionality of laws and regulations, as well as negative and positive conflicts of jurisdiction.

Judges are familiar with the concepts of civil law systems, and despite the large case backlog and large number of time-consuming proceedings, the principles of due process and judicial review are inherently cherished and respected. However, the huge number of cases before the courts results in the heavy case backlog, which adversely affects the efficiency of the court system and the judiciary as a whole. Apart from the heavy case backlog, which might cause some delay and inconvenience, judges are competent, able, and impartial, which ensures the equality of the parties, and justice. Furthermore, fees to administer judicial proceedings are not very high (Abdel Wahab, 2008).

To avoid long court procedures, arbitration is used in solving disputes between companies. Egypt is a signatory to the New York Convention; moreover, Egyptian Arbitration Law No. 27, 1994 was issued based on the United Nations Commission on International Trade Law (UNCITRAL) Model Law with some modifications. Arbitration is applied to both domestic and international arbitrations.

In *Doing Business in Egypt* (2008), it was mentioned that Law no. 27, 1994 and its amendments (at 9/1997 and 8/2000) concerning arbitration in civil and commercial matters brought Egypt further into line with the UNCITRAL model on international commercial arbitration. It is a comprehensive statement of the law and therefore facilitates the conduct and enforcement of international arbitral proceedings in Egypt.

This law requires only that the following conditions be met for the enforcement of an arbitral award in Egypt:

- It does not contravene any judgment issued by Egyptian courts on the subject matter of the dispute;
- It does not contravene public order or policy in Egypt;
- The party whom the arbitration is against must be properly informed.

The General Authority for Investment and Free Zones (GAFI) opened a centre for the settlement of disputes with investors; this centre may help speed up proceedings specifically related to investments. Moreover, the resolution of disputes by the economic courts, which started in 2009, is another economic reform to encourage foreign investors (OECD, 2010_a).

The legislation in law no.120, 2008 created specialised economic courts. This law was to create a specialised judiciary that retains original competence over economic matters in both criminal and civil proceedings, and offers expedited commercial and investment justice. This law did not create a new order of courts, but established new circuits within the hierarchy of ordinary non-administrative courts, specifically at the level of the Court of Appeal. Appeals are usually available under this law for cases involving amounts of L.E. 5,000,000 (US\$ 84,000) or less. Cases in excess of this sum are mostly tried directly in appellate circuits. Review by the Court of Cassation is available for the latter larger cases, but not the former. Nevertheless, review by the Court of Cassation is available in all criminal matters (Al-Ghazzawi, 2010).

The kinds of companies allowed to work in Egypt are determined by the Law of Commerce No. 17, 1999 and Companies Law No. 159, 1981. The Law of Commerce deals mainly with the sole proprietor and simple partnerships, whereas the Companies Law regulates in detail: joint stock companies, partnerships limited by shares, and limited liability companies (UHY, 2010).

2.3.3 The Social System

Most of the Egyptian population live in the Nile Valley and the Delta. Approximately one third of the workforce is employed in agriculture. An estimated 47% of Egypt's economic and social establishments are in Cairo and Alexandria, which host 25% of the labour force.

Egyptian workers can be divided according to the basis of paid employment, the business segment, and economic activity. The number of workers in 2007 was 21.7 million of whom 12.7 million were paid employees, representing 59% of employed labour. The private sector held 48% of the paid employees, the public sector 6%, and the Government 43%.

The organized private sector within the facilities is easier to deal with in terms of the possibilities of joining trade unions. The informal private sector or the private sector outside the facilities is the most difficult to deal with, because it is distributed and disconnected; some of the workers are from rural areas and others from urban areas, such as technicians and construction workers. Although they form more than 3.2 million workers, they still need a strategy for dealing with them and reintegrating them as workers and as part of a trade union.

The breakdown by economic activity sector includes agriculture and fishing, which are the two largest sectors, comprising around 6.9 million workers, which represents 32% of the employees in Egypt. Next is mining, quarrying, and manufacturing at 2.7 million, representing 13% of the employees, with wholesale and retail trade at 11% and 10% for each of the sectors of construction and education. Then comes the transport sector, storage, and communications at 7% and 5%, the service industries, health, and social work at 3% and hotels and restaurants at 2%.

The productive sectors and commodities accommodate 55% of the total operations in Egypt. These sectors are agriculture, industry, quarrying, and construction. This means that the investments in these sectors could generate the highest opportunity for jobs rather than the other sectors, which are less (El-Marghany, 2009).

Before issuing the new labour law in 2003, legislation had been rather rigid, both for employees and for employers. It prohibited employers from terminating the contracts of employees after a probation period. In addition, employers were not allowed to recruit employees directly but through local employment offices.

The new unified Labour Law No. 12 for 2003 regulates the Egyptian labour market. This new law comprises of 257 articles that address all the legal aspects regulating the Egyptian labour market. The new law aims to increase private sector involvement while at the same time achieving a balance between employees' and employers' rights. Amongst the most important issues that the new law addresses is the right of an employer to fire an employee and the conditions pertaining to this, as well as granting employees the right to carry out a peaceful strike according to controls and procedures prescribed in the new law (Doing Business in Egypt, 2008).

The Egyptian Labour Law no. 12, 2003 permits the entry of foreign national persons provided they obtain a work permit. The number of foreign national persons employed in any company, regardless of how many branches it may have, cannot exceed 10% of the total workforce (OECD, 2010_b).

Wahba (2009) mentioned that Egyptian labour law identified the number of foreign (non-Egyptian) employees in any company, which may not exceed 10% of the

total work force for unskilled or semi-skilled workers. For skilled workers the limit of foreign labour is 25%. In addition, total compensation of foreign employees must not exceed 35% of the payroll of the company. There is flexibility in this condition depending on the nature of the work to be conducted (ICL, 2008).

This restriction of foreign employees limits international companies in benefitting from their expertise in projects and it limits Egyptian employees from benefitting from their experience. Foreigners who are employed in Egypt have to obtain work permits and follow the corresponding regulations issued by the Ministry of Manpower and Migration in this regard. After a work permit is obtained, the foreign national's visa (whether tourist or temporary) is converted into a work visa, with the same duration as the work permit (UHY, 2010).

2.4 Investments, Balance of Payments and Foreign Trade in Egypt

Egypt's economy has been growing rapidly since 2004, with a steady political position and a stable currency. It achieved an average GDP rate of 7% over the 4-year period up to 2008. This consistent growth was due to an improvement of the education system, reduction of income taxes by 50% and, in particular, the ongoing structural and financial reforms (ITDA, 2010).

Egypt followed many strategies in its economic reforms; one of them was the privatisation programme that started with the issuance of law 203 in 1991, which established the regulatory framework for the sale of shares and assets of 314 public enterprises affiliated to 10 holding companies. The law allowed the sale of public companies to private sector investors and does not prevent the purchase of assets by foreigners. Moreover, law 203 stated that the Government is committed to the sale of its outstanding stakes in 511 joint venture companies (JVCs) according to Presidential Decree 341 of 1996 to reform and reconstruct JVCs. This includes both state and joint venture banks and insurance companies.

Privatised companies are spread over a variety of sectors including agricultural, real estate and construction, food and beverages, milling, pharmaceuticals, cement, chemicals, fertilizers, engineering, retail, textiles, housing, tourism and telecommunications.

Doing Business in Egypt (2008) indicated that the macroeconomic policies and external financing, together with increasing the speed of structural reforms, including broad-based trade liberalisation, privatisation and financial sector reforms were implemented to push growth rates to higher levels, increase foreign investment and enhance macro-economic indicators. Moreover, it encouraged international companies to enter the Egyptian market.

Foreign investment in all areas was encouraged by the Egyptian Government. The barriers to entry and exit have been eased for both Egyptian and international investors, customs procedures and tax system have been simplified, and the corporate income tax rate has been cut to 20%. Project and property registration has become much faster and less costly. (IDSC, 2008_b)

Doing Business Report (2009), it was stated that Egypt is among the countries implementing reforms concerning government regulations, which attracted foreign direct business activities. As a result, the Fiscal year 2006/7 recorded high-implemented investments and it recorded LE 155.3 billion (US\$25.9 billion) compared to LE 68.1 billion (US\$11.4 billion) in 2002/2003 with an increase of 128% (IDSC, 2008_b). However, because of the global recessionary environment, the Egyptian economy received a moderate FDI inflow amounting to US\$8.1 billion in June 2009 compared to US\$13.2 billion in June 2008 (MOF, 2009).

The number of international companies was increasing until 2006, and these were established in a wide variety of sectors including more than 28 of the world's largest multinationals from the USA, Japan, Korea, China, India, Turkey, Germany, France, Switzerland, Britain, and Malaysia (ITDA, 2010).

A number of growth-boosting sectors constitute the driving force of the national economy; the average growth rate in 2007/8 was estimated at 7.2%. The leading growth of all sectors was tourism at a rate of 24.3%, the Suez Canal at 18% and building and construction at 14.8%. The slow-down of the global economy together with international price rises led to increased inflation rates in 2007/8.

The construction sector grew strongly in 2006/07 and became one of the major forces driving growth. Yet, the construction sector is constrained by a lack of finance, moreover, the Government was implementing a National Housing Programme that aimed to provide 500,000 units for poor and middle income groups during the period of 2005/11. Total investment increased from 18.7% of GDP in 2005/06 to 21.6% in 2006/07. The sectoral distribution of domestic investment is shown in Figure 2.2.

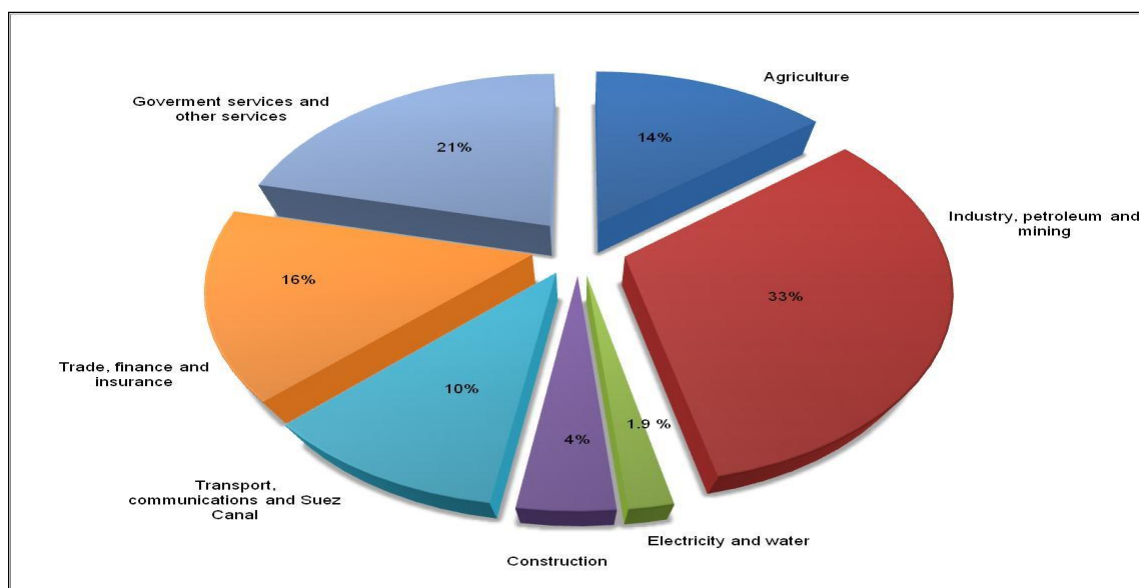


Figure 2.2 GDP by sector in 2006/07 (Source: OECD, 2008)

Inflation is a factor that affects the Egyptian economy; the increase in inflation between 2007/8 led to the increase in prices as shown in table 2.1.

Table 2.1 Inflation rate 2007/8

Inflation rate	July 07	June 08	July 08	Average rates of change
By month	0.7	0.6	2.2	1.6
By year	7.7	20.2	22	14.3

(Source: State Information Service, 2008)

The increase in inflation was reflected in the prices of building materials, which increased because of strong domestic demand and some monopoly practices (OECD, 2008).

2.4.1 Investments in Public and Private Sectors

The share of private investment as part of total investment increased by 5.3%, which represents 62.6% of the total implemented investment in the fiscal year of 2006/7 compared to the previous year. Private investment reached LE 97.3 billion (US\$ 16.2 billion) during the fiscal year 2006/7 compared with the previous year; at the same time public investment was LE 58 billion (US\$ 9.7 billion), the same as the previous year (IDSC, 2008_b). Table 2.2 below shows the share of investments for public and private sectors.

Table 2.2 Private investment in relation to public investment (2002/3- 2006/7)

	Value in LE Billion (US\$ Billions)				
	2002/3	2003/4	2004/5	2005/6	2006/7
Public investment	34.5 (5.8)	42.5 (7.1)	50.1 (8.4)	49.4 (8.2)	58 (9.7)
Private investment	33.6 (5.6)	37.1 (6.2)	46.4 (7.7)	66.6 (11.1)	97.3 (16.2)

(Source: IDSC, 2008_b)

One of the decisions, which improved investment in Egypt in late 2005, was Egypt's full subscription to Article VIII, sections 2, 3 and 4 of the IMF's Articles of Agreement. This obliged monetary authorities to refrain from imposing any restrictions on payments and transfers for current account transactions, or from engaging in discriminatory currency arrangements or multiple currency practices without the IMF's approval. International companies are thus allowed to freely repatriate profits and dividends. At the end of May 2010, Egypt's net foreign exchange reserves stood at US\$ 35.1 billion, up from US\$ 34 billion at the end of October 2009 (OECD, 2010).

2.4.2 Tax Policy and Tax Administration Reforms and Customs

One of the most significant reforms related to Government changes to taxation policy. Income taxes were dramatically reduced and these changes became effective from 2005/6 (1st July 2005 for state-owned firms and individuals, and 1st January 2006 for private companies). Companies' taxes were reduced from 40% to a flat rate of 20% for companies outside the energy sector, while the maximum income tax rate was fixed at 20%. In addition, the procedures were significantly simplified and streamlined, and the system of self-assessment coupled with random checks was applied (OECD, 2010).

According to the new taxation policy, foreign residents (i.e. staying in Egypt for more than 183 days in a calendar year), get the same tax treatment as Egyptians. Non-resident foreign employees are taxed at a rate of 10% without any deductions. International companies get the same tax treatment as Egyptian companies. (Doing Business in Egypt, 2008)

Egypt has concluded treaties for the prevention of double taxation with a number of countries, including: Austria, Bahrain, Belarus, Belgium, Bulgaria, Canada, China, Cyprus, the Czech Republic, Denmark, Finland, France, Germany, Holland, Hungary, India, Indonesia, Iraq, Italy, Japan, Jordan, Korea, Lebanon, Libya, Malta, Morocco, Norway, Pakistan, Palestine, Romania, Russia, Singapore, Serbia, Montenegro, South

Africa, Sudan, Sweden, Switzerland, Syria, Tunisia, Turkey, UAE, Ukraine, the United Kingdom, the United States and Yemen. In the absence of a tax treaty, unilateral tax relief is available by way of a deduction rather than by a tax credit (UHY, 2010).

The Investment Law still provides for all imported machines, equipment, and instruments that are necessary for projects to be subjected to a reduced Customs Tax of 5% (Riad, 2007).

2.5 The Egyptian Construction Industry

The construction sector has a significant impact on GDP. Employment and investment in this sector represents at least 4.7% of the total GDP. The development and competitiveness of the Egyptian construction sector in local and international markets are affected by factors that can be classified under five main categories: construction companies, government policies and strategies, available resources, institutional backing and supporting industries. Further growth and greater competitiveness for the construction sector can be reached through the modifications and developments throughout these categories (NABC, 2010).

Moreover, the Netherlands-African Business Council (NABC) indicated that the Egyptian construction sector had expected to experience a higher average annual growth rate at 8.3%, than that of the total GDP at 7.4% and of the total commodity sector at 7.8% during Egypt's fifth five-year plan from 2002/03 through to 2006/07. The forecast of total investment in construction for that period was LE 257 billion (US\$ 59.24 billion). The construction sector will increase spending at a compound annual growth rate (CAGR) of 3.9%, from US\$ 5 billion to US\$ 7.3 billion during 2005/15. Foreign Direct Investment (FDI) has been increased, coupled with various government-initiated development programmes, such as healthcare development (NABC, 2010).

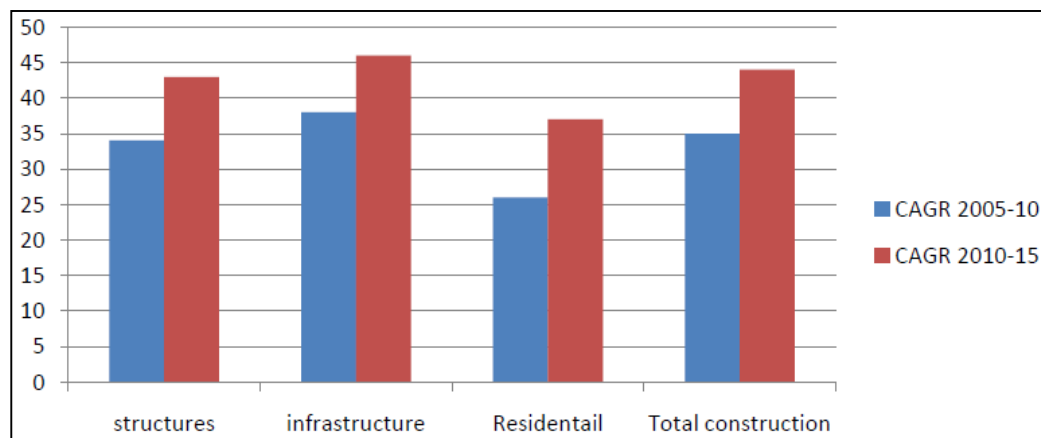


Figure 2.3 The Construction Sector Growth according to CAGR for the year 2010 and Forecasting for the year 2015 (Source: NABC, 2010)

Construction Suppliers and News (2010) reported growth in the construction sector according to CAGR for the year 2010 and in the forecast for the year 2015. This is shown in Figure 2.3; obtained from NABC (2010). Spending on residential construction will increase from US\$443 million in 2005 to US\$606 million in 2015 at a CAGR of 3.2%, owing to such factors as increased disposable income, the development of new residential regions, such as villages, and the formulation of government policies to develop the housing finance system during 2005-15.

In addition, spending in the non-residential construction sector will grow at a CAGR of 4%, from US\$4.6 billion in 2005 to US\$6.7 billion in 2015 (Construction Suppliers and News, 2010).

Tendering strategy in Egypt is the market mechanism for selecting, choosing, and appointing a contractor. There are two main approaches to contractor selection:

1. By negotiation where only one contractor is involved.
2. By competition, including some sub-sets as follows:
 - Open competition.
 - Selective: based on a pre-qualification process.
 - Two-stage tendering: combining selective competition in the first stage and then negotiation in the second stage.

The construction market in Egypt is quite large at around 4.3% of GDP in 2007/8 and an investment share of 1.7% (ECES, 2009). At the same time, the market is dominated by a few major players, and recently, privatised companies that specialise in housing and urban planning joined the Egyptian market. The number of private contractors has increased rapidly in recent years to account currently for 80% of investment in the industry (ADB, 2009).

The number of registered contractors in the Egyptian Federation for Construction and Building Contractors (EFCBC) reached 31,852 in December 2010. The number of registered international contractors from 2001 until 2010 was 22 contractors at grade 1 (EFCBC, 2011).

Figure 2.4 demonstrates the dominant trend; the majority of companies that registered with the Egyptian Federation of Construction and Building Contractors (EFCBC) perform as small-scale and unsophisticated activities. This group entails a minimum paid-in capital of LE 100,000 (US\$16,200) and a maximum paid-in of LE 500,000 (US\$ 81,000) which constitute 54.8% of the total activities performed by the registered contractors (EFCBC, 2011).

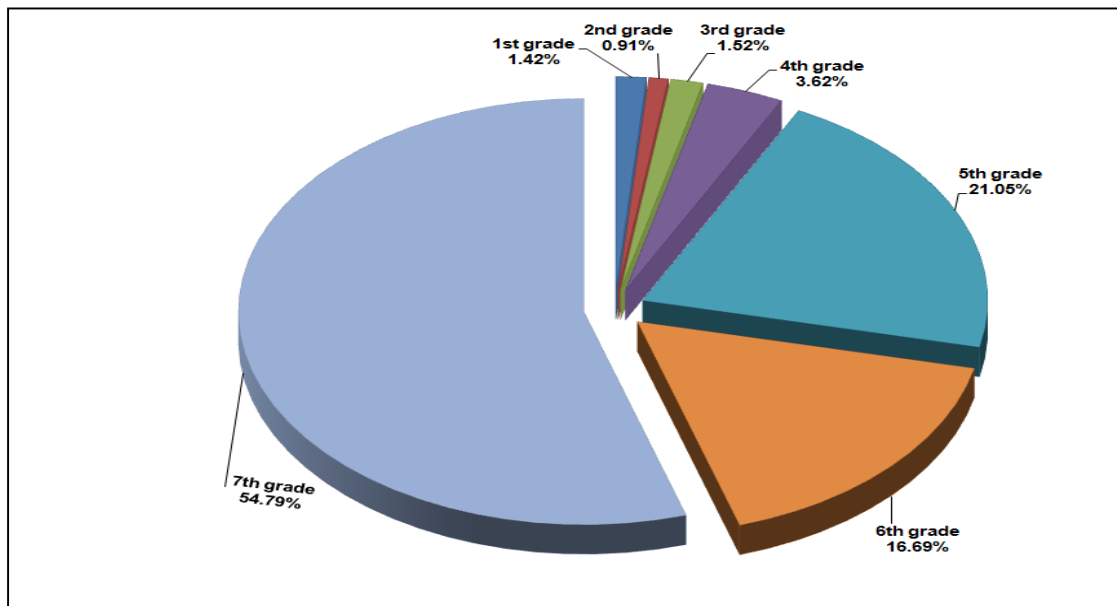


Figure 2.4 Breakdown by Grade of Activities Performed by EFCBC Members from 2001 until 2010 (Source: adopted from EFCBC, 2011)

Some companies work as sub-contractors and there are many specialist companies, for example, foundation works, or dewatering systems...etc. These companies are divided between public (owned by the Government) and private companies. Private companies can be family companies or shareholder companies.

The Government can tender some projects, which originally stem from a loan funded by a foreign government to the Egyptian Government. This kind of project usually has constraints on funding, for example, international companies can join Egyptian companies, and most of the equipment supplied by the foreign country is offered within the loan. For this kind of project, a joint venture is usually used especially for infrastructure projects such as the underground Metro, electrical plants, water supply plants...etc. Mainly, public companies issue tenders for these projects, but a few Egyptian private companies can engage in joint ventures for these projects.

For an international company to operate in the Egyptian market it must establish an Egyptian company in Egypt and this is usually carried out in the form of a joint stock company, or limited liability company. In this case, the international company would not be required to obtain a local contract to be able to establish the company, but can establish the company then search for projects in Egypt. Most of the international construction companies seek to establish the Egyptian company together with well-known Egyptian contracting/construction companies for better penetration into the Egyptian market, and to secure better cooperation and expertise in performing the local works (UHY, 2010).

The majority of international companies join Egyptian companies to overcome this barrier, because some projects that are presented via public tenders issued by the

Egyptian Government request the company, which will implement the project, to be a joint venture company. Moreover, within the joint venture, the international company can get more experience of the market and the policies and regulations, which are usually changeable and unclear.

Hassanein and Afify (2007_{a, b}) identified the most significant risks relevant to the construction contracts of two large-scale, fast-track power station projects in Egypt. The study investigated how risks were perceived and managed by using a large sample of Egyptian and international contractors who participated in these two projects. The risks were categorised into seven groups: owner's obligations; interface with other contractors; liability; financial; risks related to changes; technical; and consortium. In addition, a marked lack of consistency in the contractors' risk identification behaviour was observed. Only 7% of the contractors proved to be 100% consistent in their risk identification effort. The study was limited, and was for particular projects. Moreover, its perspective was that of contract clauses and procurement.

It can be noticed that the number of international companies registered in EFCBC is small when compared to the number of Egyptian companies, indicating that most international companies prefer to join Egyptian ones to tender for projects in Egypt.

As mentioned above, for international companies to be able to work in the Egyptian market, they must be registered by the EFCBC. According to EFCBC foundation law no.104, 1992 and its executive regulations issued by ministerial decision no. 1, 1993 for approving the rules of the classification and grades of the EFCBC members, the international and Egyptian companies applying for membership at EFCBC must follow the stated procedures. (See Appendix A).

It can be recognized from the conditions requested by the EFCBC that the international company cannot be less than first grade in its country and that the EFCBC guarantees that the Egyptian contractor's share is not less than 51% of the contract value. Moreover, the project amount should not be less than L.E 40 million (US\$ 6,666,666.67) which is a small amount when compared to project costs nowadays and the prices, which have changed since that date. In addition, Law no.104, 1992 is old and incapable of coping with new changes in globalisation and the current construction market.

On the one hand, an Egyptian company entering a joint venture considered 'First Grade' by the EFCBC, prefers to join foreign companies which specialise in, have the new technology for, or have the funding capability for the project (as joint venture projects usually require updated technologies or large funds). On the other hand, the international companies, which intend to enter the Egyptian market, usually choose a strong local partner. The factors relating to choosing the partner will be discussed later

in this thesis, and at the same time, taken into consideration when investigating the risk factors of this type of collaboration, and they will be examined in-depth during the study.

2.6 Summary

Classifications of countries were viewed according to the World Bank Atlas and Egypt was classified as a developing country as its construction sector shared many of the developing countries' characteristics. These characteristics explored many of the deficiencies in the Egyptian construction industry. In order to fill the gap Egyptian companies may benefit from joint ventures with international ones to enhance their components and functions, such as unskilled labour, weak management, low levels of productivity, limited technology, and infrastructure.

Furthermore, the global crisis affected the Egyptian economy by reducing Foreign Direct Investment (FDI) at a time when many essential projects are required for infrastructure, including home building projects due to the increasing population growth rates.

The Middle East market is attractive for international companies because it is full of prospective construction projects especially in the Gulf area and Egypt. Each country in this market has its own regulations for permitting international companies to work in its construction sector. Entry methods to these countries are determined according to regulations, such as shares in joint venture companies and taxes; said regulations can be considered as risk factors.

The judiciary system in Egypt is independent but court procedures take a long time to give decisions. Companies resort to arbitration to avoid the long trials. Egypt maintained law no. 27, 1994 concerning arbitration in civil and commercial matters, which is used more in resolving disputes. Moreover, law no. 120, 2008 created specialised economic courts to solve disputes between companies.

Egyptian law no. 12, 2003 has restrictions in allowing a maximum of 10% of the total work force to be foreign (unskilled or semi-skilled). For skilled employees, they are not to exceed 25% of the total workforce, and their total compensation not more than 35% of the company payroll. In addition, foreign employees must obtain a work permit for the duration of the project only.

Economic reform strategies have been undertaken in Egypt to increase investments; one of them was the privatisation programme, which encouraged private companies to invest in many sectors. Furthermore, the barriers to entry and exit have been eased for Egyptian and international companies. In addition, customs procedures and tax systems have been simplified and the corporate income tax rate has been cut to 20%. Project and property registration has become much faster and less costly.

The rate of inflation has increased, which has reflected on the high price of building materials. Furthermore, Egypt signed several treaties for double taxation with many countries, and customs taxes on equipment, which are necessary for projects, were reduced to 5%.

Egyptian contractors are classified into seven grades according to the Egyptian Federation of Construction and Building Contractors (EFCBC). The number of 7th grade members, registered at (EFCBC), is the largest number, which means that small scale and unsophisticated companies are the majority. International companies must register at (EFCBC) and they must be first grade in their home country. Furthermore, in cases of joint ventures between Egyptian and international companies, the share of the work must be 51% for the former and 49% for the latter, according to law no.104, 1992 and its executive regulations issued by ministerial decision no. 1, 1993.

In summary, international companies intending to enter the Egyptian construction market need to fully understand the unique characteristics of this market in order to succeed. In addition, the barriers still facing the entry of international companies into the Egyptian construction market, namely, the continuous change of laws and regulations can be treated as risks, which will be taken into consideration when building the new method of risk factors in chapter 7.

Chapter 3 Strategic Management

3.0 Introduction

This chapter reviews previous research on strategic management in the construction industry. Moreover, the main definitions will be introduced, and the mainstream theories relating to the sources of competitive advantage for companies will be critically reviewed. The scope of this research is related to Egyptian and international companies; accordingly, competition in the international business environment for construction will be discussed.

3.1 Strategic Management in Construction

The construction industry is one of the most important industries for any country's economy. Normally it represents between 7% and 15% of the country's Gross Domestic Product (GDP) (Stallworthy and Khanbanda, 1985). Global construction growth is forecasted to exceed the Global Domestic Product. The total volume will increase by 67% by the year 2020 from US\$ 7.2 trillion today. In addition, total global construction investment over that period will amount US\$ 97.7 trillion, equivalent to 13.2% of the Global Gross Domestic Product (ENR, 2011). Furthermore, the businesses involved in the construction industry could be government agencies, local authorities, construction companies, or property owners in the form of companies or private individuals. For the professional construction company which is regularly engaged in construction projects, the construction function is a well-defined part of the organization. Male and Stocks (1991) conclude that the construction industry, both domestic and international, is large and complex.

Applying this to the Egyptian construction market and the different types of projects, there are a variety of companies involved; starting from individuals' right through to large multinational and joint ventures.

3.1.1 The Construction Industry and Market

The two major factors, which define the domain within which competition takes place for competitive strategy in construction are; an industry and a market.

An *industry* is an arbitrary boundary within which firms compete with each other to produce related or similar products (Langford and Male, 2001).

Porter (1980) distinguishes between an industry and a decision as to where a company should compete. The structure of the industry has a direct impact on: (1) the nature of competition practiced by firms, (2) the competitive strategies available to the company.

Sutherland and Canwell (2004) defined the market to describe a group of potential customers who have similar needs. Moreover, Male and Stocks (1991) identified the market as an organisation where buyers and sellers of products are in close relation to determine the price of the product. The industry is a supply side concept and the market is a demand side concept.

Procurement, tendering strategies and associated contractual agreements bind the constituent parties together in construction. The design consultants in conjunction with the client choose the tendering strategies depending on client knowledge and the level of industry procurement (Langford and Male, 2001).

There are diverse market needs in the Egyptian market such as projects in healthcare developments, residential and non-residential construction. Investment in residential construction is expected to reach US\$ 606 million in 2015 and non-residential will be US\$ 6.7 billion in the same year (NABC, 2010). New methods were used by the Egyptian Government to overcome the lack of finance to construct these projects. In the past few years, the Egyptian Government has encouraged international companies to enter the Egyptian market by adopting many economical procedures such as: lowering the overall entry barriers by simplifying the tax systems and customs procedures (IDSC, 2008_b).

The Egyptian market is quite a large market for many industries; including the construction industry. Investment in the construction sector increased from 18.7% of GDP in 2005/06 to 21.6% in 2006/07 (OECD, 2008). Moreover, international companies are allowed to freely repatriate profits and dividends as well as paying the same rate of income tax as the Egyptian companies, which is 20% (OECD, 2010).

3.1.2 Construction as a Fragmented and Hierarchical Industry

Porter (1980) identified a *fragmented industry* as one in which no company has a significant market share, which means there is no leader company in the market. In addition, it means there is a large number of small and medium sized companies, and thus a small number of large companies. These companies are in a compromising relationship with both the supplier and buyer groups, and profitability is marginal.

Moreover, Porter (1980) has defined many economic reasons for the fragmentation of an industry, and indicated that the presence of only one of them can cause fragmentation. These economic causes are as follows: lack of scale economies or experience curve, low overall entry barriers, high transport costs, high inventory costs or erratic sales fluctuations, low overheads critical to success, diverse product lines, a high requirement for creativity, localisation, diverse market needs, smaller companies-greater efficiency, rapid product changes, local regulations, government prohibition of

concentration, novelty of industry, high product differentiation and presence of exit barriers. Ball and Cullen (1980) analysed the construction industry and indicated that construction is a hierarchical industry (by size of firm) where many small companies tend to work as sub-contractors to the large companies.

The economic causes of construction industry fragmentation are presented in the Egyptian market. Chapter 2, Figure 2.4 confirmed that the dominant trend of the majority of Egyptian construction companies, which is registered with the Egyptian Federation of Construction and Building Contractors (EFCBC), is that they are performing in small-scale and unsophisticated activities.

3.1.3 The Nature of a Construction Company

The construction industry faces many problems both domestically or internationally. These problems are mainly stated by Male and Stocks (1991): (1) that the economic theory is not easily applicable to construction; (2) the theoretical approach of the organisation theory has come from manufacturing but with little concentration on construction.

There are many definitions of organisation; Hunt (1972) defined an organisation as, “An identifiable social entity pursuing multiple objectives through the coordinated activities and relations among members and objects. Such a social system is open ended and dependent on other individuals and sub-systems in the larger entity-society.” Moreover, Male and Stocks (1991) defined it as, “A social organisation with one of its objectives being making a profit.”

Robbins (1983) defined an organisation as, “The planned coordination of the collective activities of two or more people who, functioning on a relatively continuous basis and through division of labour and hierarchy of authority, seek to achieve a common goal or set of goals.”

Male and Stocks (1991) pointed out that an organisation is an ongoing goal directed undertaking comprised of people whose activities are coordinated through some form of organisational structure.

The following section explains the detailed model of a company operating in a business environment, to give a better understanding of the joint venture formation as a company entity.

3.1.3.1 Types of Company Structures

The terms company, organisation, or firm will be used interchangeably throughout this research and have the same meaning.

A company, especially a large one, is a complex system of decisions, processes, procedures, rules, technologies, and people that are in constant interaction with each other. Several writers such as Shirazi et al. (1996) defined the organisation structure as one that links technology, tasks, and human components through formal and semi-formal means to ensure the accomplishment of project objectives. Moreover, Weber (2007) has distinguished between the organisational types according to authority and legality. They were divided into: charismatic, traditional and rational-legal “bureaucratic”, which can be expressed in a particular administrative organisation.

Pugh and Hickson (2007) studied the formal structures of organisations in terms of their degree of: specialisation of functions and roles, standardisation of procedures, formalisation of documentation, and centralisation of authority and configuration of role structure. Furthermore, Chandler (2007) adopted another opinion that the structure of an organisation follows from the strategy that is adopted, and defined the structure of an organisation as “devised to administer the activities, which arise from the strategies adopted”.

Langford and Male (1991) utilised the term “spheres of influence” to indicate that the boundaries of a company, especially in construction, are very movable. These boundaries determine the company’s internal workings from the external business environment. In addition, the organisational structure was defined as the interrelationships between, and the coordination of, the division of labour selected to perform tasks and undertake responsibilities. The organisational structure has two main functions: (1) it is concerned with reducing the variability present in human behaviour so that the organisation has a common purpose, (2) it is the context in which power is exercised, decisions are made and information flows take place.

Mintzberg (1979) broke down the essential parts of the structure of organisations by using the analytic approach into: position, superstructure, lateral linkages, and decision-making systems. Moreover, a model was produced as shown in Figure 3.1 of a large organisation. The primary components of an organisation, which were set by Mintzberg (1979), are as follows:

- The Strategic Apex (Senior Management Level): concerned with the long-term survival and development of the company.
- The Middle Line (Integrative Level): managers at this level will exercise formal authority and act as the linkage between the strategic apex and the operating core.
- The Operating Core, the Technical Core (production level): managers and operators at this level are concerned with the input-transformation-output process.

- The Techno-Structure: these people are concerned with analysing, changing, and controlling the organisation. They are also concerned with standardising the operations of the organisation such as accounting or training departments.
- Support Staff: it supports the on-going organisation but is not usually involved directly in the main operational processes of it.

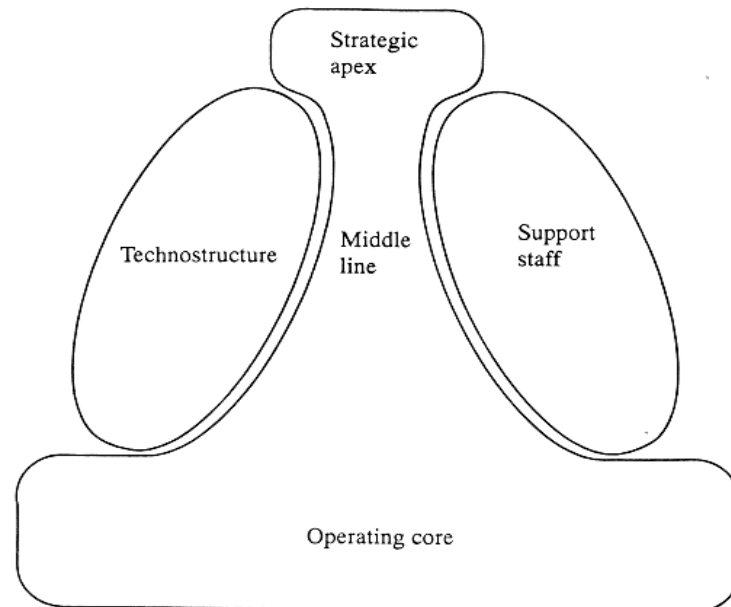


Figure 3.1 The five basic parts of an organisation (Source: Mintzberg, 1979)

Mintzberg's (1979) model is used by many researchers to understand the companies' structure. The model flexibility could be applied on local and international companies. Moreover, five types of organisations relating to the primary components were proposed by Mintzberg, which are: entrepreneurial structure, machine bureaucracy, professional bureaucracy, diversified form and adhocracy.

Daft (2009) admitted that each of Mintzberg's forms can be found in organisations today, which are still bureaucratic and hierarchical, and use a formalized approach. Moreover, Daft added that there is no specific structure of the companies, and the structure depends on the internal and external environment surrounding each company.

McCabe (2010) argued that the organisational structure is crucial because it is the way in which formal roles and responsibilities are assigned and thereafter interconnected. Moreover, McCabe (2010) specified standard types of organisational structure, which are: functional, multi-divisional, corporate, matrix and innovative.

The Functional type is where all the functions are grouped under the management of expertise in that area and usually this type is part of the multi-divisional type.

The Multi-divisional type is when smaller departments are allowed to carry out more quantities of work and the organisation expands. The control of this type may be confusing as they can be centralised or allow each division to manage its affairs, which leads to the application of its strategic objectives.

The Corporate type relates to organisations that have interests in various fields of operation, which can be entirely separate from each other. In construction, there is a rapid rise in this kind of corporation through joint ventures, alliances, and partnerships, which are then called “holding companies”. The control and decision making in these kinds of companies is usually without centralisation.

The Matrix type - this organisation is formed when there are various functions brought together in order to achieve dedicated objectives. The matrix organisation usually defines its strategy and implementation.

Finally, the **Innovative** type relates to the search for opportunities to carry out tasks or processes in new ways that are creative and novel. Therefore, Chandler (2007) has described the **Innovative** type as one that can have different broad functional activities, which can be placed in separate administrative units.

Mintzberg (1979) proposed four main characteristics of environment, which influence the organisation’s type of structure. They are: the rate of change, the degree of complexity, the diversity of customers/clients and the competitiveness of the environment.

Robbins (1972) mentioned three basic components of the organisational structure, which are: complexity, formalisation, and centralisation.

Complexity: There are three dimensions to complexity. The first dimension is *horizontal differentiation*, which is the extent of the sub-division of tasks among organisational members. This dimension concerns the degree of specialisation within an organisation. The second dimension is *vertical differentiation*, which refers to the depth or number of levels within the organisational hierarchy. The final dimension is *spatial dispersion*, which can be either vertical or horizontal differentiation, and refers to activities or personnel being dispersed spatially by separation of power centres or tasks (Robbins, 1972). In addition, Yan and Luo (2001) added further complexity, which involves inter-organisational relationships in joint ventures, which are: the relationship between the parent companies, the venture management’s relationship with foreign and local parent companies, and the relationship between the venture’s managers nominated by different parents.

Formalisation: This is often referred to purely in terms of written rules and procedures; in addition, unwritten norms and standards can be as effective for controlling human behaviour as written ones (Robbins, 1972).

Centralisation: This indicates; firstly, the extent to which power is centralised or concentrated within the organisation. Secondly, it is an indication of the extent of trust the organisation is prepared to place in individuals regarding decision-making. Decentralisation has a vertical and horizontal component. *Vertical decentralisation* refers to the formal distribution of power down the managerial line hierarchy. *Horizontal decentralisation* refers to the extent to which decision-making power rests outside the managerial line hierarchy (Robbins, 1972).

McCabe (2010) argued that centralisation/decentralisation is the main debate in management and organisations: Whether to keep all the main functions in one place or to distribute the resources around the organisation. In construction, which is project based, there is less centralisation as projects need responsiveness and local services.

Reviews of literature in the strategic management domain and in the construction industry provide that the “organisation” is a social entity functioning through labour and its goals are both to make a profit and to achieve common goals (Hunt, 1972; Robbins, 1983; Male and Stocks, 1991). Therefore, this is the fundamental definition of “organisation”. Moreover, the structure of an organisation depends on the complexity of the company and the centralisation of the decisions throughout it.

The existing literature on strategic management in construction has provided important implications to be investigated in the Egyptian construction market. In the Egyptian construction market there is no data available about the definition of organisation or the types of organisational structure. Therefore, the literature regarding organisational types was reviewed to identify the applied types in the international market and to understand, through the research which of these types are used in international joint ventures in Egypt.

3.2 The Construction Company as a Business and Social Entity

Cannon (1989) argued that there are still inherent difficulties in applying modern economic theories to contracting companies. The analytical framework of markets and hierarchies has been applied to construction. Tomilson (1990) defined a framework as being the means of describing the relevant portion of the organisational situation to the participants undertaking the study.

A company, as a business entity, is involved in both contractual and psychological relationships. The psychological contract determines the boundary of the organisation and what is inside or outside the company. Furthermore, the psychological contract

provides the sense of belonging to the company; the stronger this feeling, the greater the sense of belonging. In contrast, contractual exchanges involving transaction costs operate through the formal structure of a company (Kast and Rosenzweig, 1981).

3.2.1 Strategy of a Company

The phrases corporation, organisation, firm, and company are used interchangeably. Some would argue that these phrases are synonymous whilst others argue the differences between them. In this research there is no attempt to inhibit the use of one or the other.

Andrews (1987) defined corporate strategy as; “The pattern of decisions in a company that determines and reveals its objectives, purposes, or goals, produces the principle policies and plans for achieving those goals, and defines the range of business the company is to pursue, the kind of economic and human organisation it is or intends to be, and the nature of economic or non-economic contribution it intends to make to shareholders, employees, customers, and communities.”

Male and Stocks (1991) defined company strategy as: *“the implied or explicitly stated means that are developed by management, through cognitive and behavioural decision-making processes, to achieve the company’s objectives and guide organisational behaviour.”*

Huff et al. (2009) defined company strategy as; *“it is a desired objective and communications and what will be done, by whom, how, for whom, finally why the output is valuable.”*

Wit and Meyer (2010) defined company strategy as, *“a course of action for achieving an organisation’s purpose.”* Moreover, Wit and Meyer (2010) stated that for each organisation to be successful, it needs its external and internal consistency to be achieved for each organisational unit. There are three levels to ensure that each level fits its internal and external consistency. These strategy levels are as follows:

- **Functional Level Strategy:** This covers, for example, marketing, operations, finance, logistics, human resources, procurement, research, and development. The internal consistency at this level means an overarching functional strategy that integrates various functional sub-strategies. Meanwhile, the external strategy means the strategy aligned with the demands in the relevant external area.
- **Business Level Strategy:** The organisation can be effective by integrating the function level into only a consistent whole. For external consistency, the business strategy level is aligned with the specific demands in the relevant business area.

- **Corporate Level Strategy:** A company can operate in two or more business areas. Business level strategies must be aligned to form the internal consistency. For external consistency at this level, the corporation must be able to act as one tightly integrated unit or many autonomous, differentiated units depending on the demands of the relevant environment.

There is a fourth level added which is the *network level strategy* where the various firms work together to create economic value.

3.2.2 The Strategy Formulation of a Company

Hunt (1972) stated that strategy formulation is a behavioural process, and usually involves the management within a company analysing the business environment for opportunities and threats. Langford and Male (2001) stated that strategy formulation is the matching of the firm's capabilities with its environment. Wit and Meyer (2010) identified strategy formulation as "*the process by which an intended strategy is created.*"

The key concepts in the formulation process are: mission, objectives and policies, which will be discussed in sequence below.

3.2.2.1 The Mission of a Company

It is a general expression of the overall purpose of the organisation, which ideally is in line with the values and expectations of major stakeholders and concerned with the scope and boundaries of the organisation; it can be described as "vision or strategic intent", which is the desired state of the organisation (Johnson and Scholes, 1989).

Langford and Male (2001) stated that missions can be narrowly or broadly defined and they are often articulated by the founder. The mission statement should be precise, define the objectives, how they will be accomplished, and include the major parts of the strategy.

The mission must be clear when two companies join; usually their major mission is applying the project with their combined resources, to be finished by a planned time. This is usually stated clearly in the contract between them. Moreover, a mission clarifies the type of collaboration between the companies; whether it is short term or long term.

3.2.2.2 The Objectives of a Company

Glueck et al. (1987) mentioned that the series of objectives stems from the company mission that will be attained, and the key power holders within the company will shape them. In addition, Chakravarthy and Lorange (1991) stated that the first step in strategy planning is setting the objectives, which refer to the strategic intent of the firm in the long term.

The objectives of a company have a number of purposes, which can be achieved through strategy as follows (Glueck et al. (1987); Langford and Male, 2001): (a) they facilitate the coordination and integration of decisions and decision-makers, (b) they assist in defining the relationship between the company and its business environment, (c) they can be given time horizons for attainment and hence assist the company in defining its relationship with different future business environments, (d) they set standards of performance to be met, (e) they can be ranked to provide sub-objectives for organisational groupings lower down the hierarchy.

The strategic intent between the parties of a joint venture company is to build a new company with a new strategy, which applies to one or more projects.

3.2.2.3 The Policies of a Company

Policies are guides to action (Hunt, 1986). They are concerned with function execution, task accomplishment, and providing assistance in decision-making policies that flow from strategy (Wheelan and Hunger, 1987).

Adopting the previous definitions, it can be confirmed that the policies and guides of the joint venture company “JV” are set in the contract agreement between the allied companies. Furthermore, they set their shares, the work that will be undertaken by each company, the leadership of the company and projects, and profit shares... etc.

In section 2.5 of chapter 2, it was mentioned that EFCBC guarantees that the Egyptian contractor’s share is not less than 51% of the contract price. This can be considered one of the obstacles facing international companies in Egypt.

The strategy formulation of company was reviewed in order to determine the purpose of the company's composition. Regarding construction joint venture companies in Egypt, although there are many projects which utilise this type of alliance, there is no data on these joint ventures A sample of these projects is as follows: the Metro project, the harbour, a new city project as well as other projects. The works' contract and joint venture contracts determine the mission, the objectives, and the policies of the joint venture company, which are composed between the international and Egyptian companies.

3.3 The Strategic Management of a Company

Strategic management is concerned with the management of the long-term relationship of the company with its external environment. This will involve managers acting according to the different types of change. This section will focus on the strategy changes that are used when two companies form an alliance together.

3.3.1 The Nature of Change in an Organisation

Langford and Male (2001) indicated that the management of change is concerned with managing the impact of the external environment and diversification strategies necessitating new company structures, technology and people.

There are many types of environmental change; *operational change* can be handled by experience and the company's existing routines and procedures. *Strategic change* is sudden, non-incremental, and discontinuous (Tichy, 1983). However, this kind of strategy needs the manager's creativity and insight. The change involves the company in a fundamentally different relationship with its environment. Finally, *Competitive change* is a combination of both the operational and competitive changes and it needs the manager's experience, creativity, and insight simultaneously; it is incremental but substantial.

Clark (1989) differentiates between two changes: *recurrent change* and *transformational change*. *Recurrent change* is the repetition of activities over different scales, which may be appropriately or inappropriately triggered by events; an example is operational change. *Transformational change* refers to the modification of the recurrent patterns either deliberately or unintentionally such as strategic change.

Although there are many types of change in an organisation and each type has its characteristics, when two or more companies are allied together, their strategies are changed and usually undertake competitive changes, which allow them to compete in the market with their new competitive strategies.

3.3.2 Change and the Strategic Management Process

The strategic management process may reflect the future orientation of the organisation and how it handles strategic and competitive change. Langford and Male (2001) mentioned three key factors which are: future orientation, the ability to make strategic decisions about the relationship between the company and the business environment that it faces, and the management of strategic and competitive change.

Kast and Rosenzweig (1981) stated that in each level of strategic management there is a need for different skills. Managers at the strategic apex require conceptual and judgemental skills. They deal with unstructured and ambiguous information and it is a long time frame. The middle line managers are involved in an integrative function so they require organisational and political skills and their time frame is between long and short term. The operating core requires technical skills and the time horizon is short.

However, Kast and Rosenzweig (1981) and Mintzberg (1979) can be linked together and applied to the Egyptian construction joint venture companies in Egypt. The strategic apex of the new allied company (the joint venture) "JV" relates to the parent

companies which are concerned with the long-term decisions of the new company such as: selecting the partners, the type of company and the type of projects to be tendered.

For middle line management, it can be assumed that the JV Company itself is the link between the parent companies and the project itself. Finally, the operating core of the organisation is the project team itself.

3.4 Competitive Advantage

There is no universally agreed definition of competitive advantage in the history of strategic management during last four decades. Porter (1990) argued that competitive advantages lead to superior performances. Competitive advantages are achieved through establishing a competitive position in the market (Porter, 1990). The competitive position is achieved through implementing three generic strategies – cost leadership, differentiation, or focus (Porter, 1980, 1990). These strategies are regarded as offensive or defensive actions to create a defensible position in an industry, to successfully cope with the environmental forces (Porter, 1980). The implementation of the generic strategies includes coordination and configuration of the internal and external value activities of the company (Porter, 1990). Accordingly, competitive advantage is an indicator of superior performance of a firm compared to its competitors.

3.4.1 Sources of Competitive Advantage in Construction

Theories on sources of competitive advantage have evolved with the development of the understanding of competitive advantage. Langford and Male (2001) applied an analysis of value activities which needed to determine the competitive advantage of a company in a particular industry. Value activities of a company stem from the way the company manages its people, the technical systems, organisational structure, and processes, including linkage between inputs and outputs from suppliers and the transformation processes used by the company to turn these into outputs demanded by buyers. This transformation process is termed as the “value chain.”

Moreover, Porter (1990) proposed that competitive advantage could be sustained by being concerned with: (1) the source of competitive advantage within a possible hierarchy of sources, (2) the number of distinct sources of advantage a company possesses, (3) constantly improving and upgrading advantages.

Wit and Meyer (2010) suggested that competitive advantage depends on two factors which are: competitive definability, which sustains the company’s advantage due to its capacity to stay one step ahead of its competitors and outpace them in the race to stay ahead, and environmental consonance - the firm’s sustainability regarding its competitive advantage, which can be threatened by developments in the market.

Male and Stocks (1991) proposed a value chain analysis of the bidding process within the business strategy system of a contracting company. This can be divided between the pre- and post-contract stages. In the pre-contract stage, two major value activities proceed in parallel: estimating, and contract planning and management. Furthermore, in preparing the tender, the senior management together with the estimators and contract planners will assess:

- The probable competitors
- The conditions of the contract
- The client and consultants involved
- The extent to which the job is required by the company as a project itself and its contribution to the workload
- The estimate of the time it is likely to take to execute the project versus that specified in the conditions of the contract
- The relationship between the probability of winning the contract versus the level of mark-up and expected profit

In the pre-contract phase, experience is seen as paramount and competitive advantage is seen to be gained in the pricing of the preliminaries, where the objective is to devise a programme of work that is shorter than the other competitors (Langford and Male, 2001).

In addition, innovation is one of the key issues in sustained competitive advantage (Kay, 1993). There are two types of innovation identified by Clark (1989):

- Radical shifts, which involve short and painful periods of transformation
- Gradual incremental innovation, which lasts for many years, often goes unnoticed, and normally follows radical shifts

Langford and Male (2001) mentioned that there are many methods for innovation in construction. For a contracting company, innovation is 'knowledge-based' in that it is concerned with alternative ways of organising the resource transformation process during on-site production, creating new services, and designing new forms of corporate organisational structure, or manipulating capital flows.

3.4.2 The Elements of Competitive Strategy

Langford and Male (2001) addressed the elements of competitive strategy which needed to be considered by strategists: the internal factors within the company, its strengths, weaknesses and the key values of strategists, the external factors to the company, the industry opportunities, threats and the expectations of society about companies and the nature of business in general, the scope of the business which

considers the customers and their needs, resource utilisation, which is in the area of distinctive competence, the knowledge and skills that comprise these areas of synergy.

In addition, the interactions of activities and distinctive competencies across businesses or services, value activities that stem from structure and process, managing people, which includes the technical systems used by the company and the linkages in the value chain between the transformation process, supplier inputs and outputs demanded by customers. Value activities and the associated value chain are a product of the company's history, its strategic management process, and sources of competitive advantage, where the company has superiority over competitors, often located in the technical core.

Moreover, Langford and Male (2001) indicated that there are a couple of sources for the hierarchy of advantages, of which the higher sources are: proprietary process technology, product differentiation by offering a unique service or product, advanced skills and capabilities through specialised and highly trained personnel, brand reputation that represents the cumulative marketing efforts and customer relationships, sustained cumulative investment to create tangible assets or intangible assets that go towards creating reputation, customer relationships and specialised knowledge.

The Egyptian Labour Law no. 12 for 2003, which regulates Egyptian labour, affects the competitive advantages of joint venture companies in Egypt; in addition, it specified that the number of foreign employees in any company was not to exceed 10% of the total work force. This restriction limits the International companies from benefitting from the company's expertise, and limits the Egyptian company from benefitting from the international employees' experience. Moreover, the foreign workers must obtain work permits and follow the regulations issued by the Ministry of Manpower and Migration.

3.4.3 Competing in an International Business Environment for Construction

Jauch and Glueck (1988) argued that there are some main characteristics for competing in the international business environment which are: being more competitive, more heterogeneous and more complex due to differences in "societies, cultures, educational practices, legal frame works, economic-political systems and business ideologies"; in addition, there are the characteristics of government-to-government relationships and company-to-government relationships.

Moreover, Strassman and Welles (1984) added another group of characteristics to the above; some of which can be found domestically while others only apply internationally, which in combination make them unique. These characteristics are; construction is a fragmented industry structure, it is geographically large, there is a

decreasing demand and hence it is a buyer's market, the provision of "soft loans - credit-subsidised finance" to secure work and high levels of risk in addition to those identified earlier. The high levels of risk include: climatic conditions, exchange rate fluctuations, profit repatriation, early abortive tendering, the probable legal requirement for the host country partner with local market knowledge and contents, and the use of counter trade in goods as a method of payment.

Porter (1980) indicated that there are many differences when competing internationally that are usually emphasised when developing an international competitive strategy. These differences are cost differences among countries, various circumstances in International markets, the different rules of International governments, and differences in goals, resources and the ability to monitor foreign competitors.

3.4.4 Competitive Advantage in International Construction

There are two models developed from the economists' viewpoint, which can be utilised for analysing competitive advantage in construction. The first is the "National Diamond" proposed by Porter (1990). The second model is "the Eclectic Paradigm" formulated by Dunning (1981) which analyses the Multi-National Enterprise (MNE). Some scholars (Cuervo and Low, 2003; Enderwick, 1989; Male and Stocks, 1991; Seymour, 1987) synthesised the Eclectic Paradigm with the National Diamond model to analyse the international competitiveness of construction companies as shown in Figure 3.2.

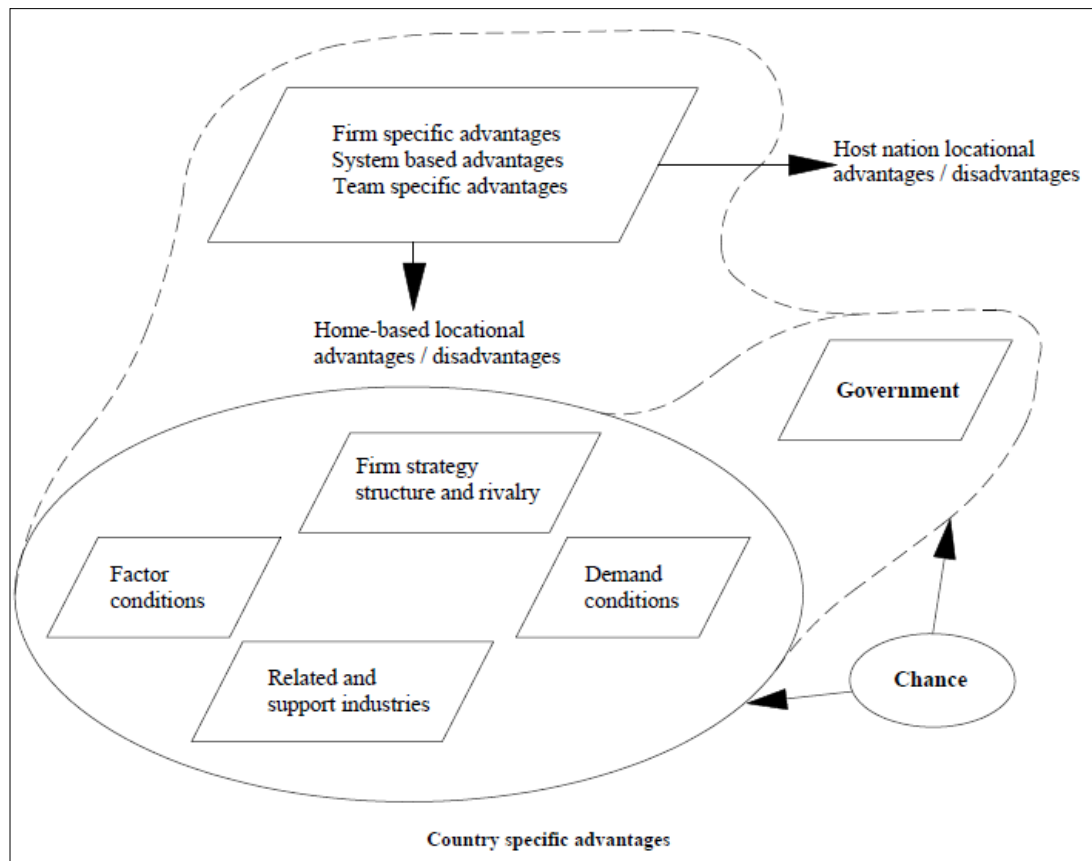


Figure 3.2 Competitive advantages in international construction (Source: Male and Stocks, 1991)

From both models, we can state the following about competitive advantage in international construction (Male and Stocks, 1991):

1. Early demand, advanced, demanding local buyers, and demand surges in international success heavily influence the internationalisation of engineering and construction services.
2. Competitive advantage in international engineering and construction services is influenced by linkages between related and support industries.
3. There are important conditions which have impact: the education system and the low wage countries, the quantity and quality of human resources in construction - both managerial and operative in the long term, national physical resources - especially land and climate, access to capital resources, the relative development of knowledge resources in design (architects and engineers), production methods (on site production technology and contracts management), surveying, commercial and business skills, estimating, bidding, materials and plant/equipment procurement, and strategic management.
4. The isolation of country specific factors is critical in determining competitive advantage internationally.

5. The isolation of firm specific advantages, which it possesses over international competition, indigenous host country competition, and competitors from its own nation, can facilitate advantages that are unique to a national contractor.
6. The isolation of location advantages; these are unique issues permitting the strategic decision to enter one market as opposed to another.
7. Governments have substantial impact on the operation of international construction.
8. A number of market servicing mechanisms exist in international construction, Foreign Direct Investment (FDI) and/or exporting, and licensing.
9. Competitive advantage in international construction is important in declining markets, because it will determine the survivors in these markets, in contrast to growing markets.

Male and Stocks (1991) argued that Porter's National Diamond provides the basic building blocks upon which country specific advantages are built. Meanwhile, the Eclectic Paradigm draws attention to the fact that the country specific advantages acting through the 'National Diamond' are focused and modified through company specific advantages to produce a competitive advantage for an individual company. Furthermore, Seymour (1987) showed that the competitive advantages of firms are not only derived from the firms themselves but also from country specific factors.

In addition, Male and Stocks (1991) highlighted the impacts of many country-specific factors on international construction including: the quality and quantity of human resources in the home country, national physical resources (especially the land and climate that encourage the generation of high-order advantages through advanced and specialist factors), access to capital resources, the relative development of knowledge resources in design and engineering, production methods, materials and equipment procurement and commercial and business skills, and the substantial impact of government on the operations of international construction.

The ownership advantages have acted as sources of competitive advantage at a company level and the 'National Diamond' presents sources of competitive advantages at a country level. The basic motive for international companies to generate firm-specific advantage is to differentiate themselves from others in the market, which includes differentiation of the company itself through building up a good reputation and differentiation of the products by offering lower prices, specialist construction skills, additional services (operation and maintenance) and various procurement services. Moreover, Male (1991) suggested that the "firm-specific" ownership advantages of international construction companies are derived from "system-based" advantages, the

global network of company activities that are mutually reinforcing, “team-specific” advantages, and the capability to manage inter-organisational adhocracies that rely heavily on relative national advantages in project management skills.

In addition, Seymour (1987) identified four major “company specific” ownership advantages that international contractors have used to enhance product differentiation: the name of the company, the human capital in terms of expertise and well trained workforces working overseas, the services that are provided based on advanced technical knowledge and vertical diversification, and the size of the company in relation to the ability to get access to cheap finance, better production resources and diversity into technical and construction related services.

Enderwick (1989) further demonstrated that due to the intangible nature of advantages in construction, by embodying a company’s name, reputation, and experience, companies are likely to display considerable specialization. This specialization facilitates the diffusion and evaluation of distinct company profiles in a world of imperfect market information and it reduces the probability of competition with indigenous companies.

Seymour (1987) illustrated three major country-specific factors influencing the generation of advantages in international construction: the size and nature of the domestic market, demand for related services, and home government support. Furthermore, there is the argument that the larger the domestic construction market is, the larger the average size of the contracting companies is and the greater is the opportunity for acquiring expertise and experience. In capital intensive, industrially developed countries, contracting companies are more likely to obtain high technology advantages, and in labour intensive low technology countries, the low labour cost is more likely to be the advantage with which to compete internationally.

Moreover, contracting companies can benefit if the related and supporting industries in the home country are internationally competitive. Home clients competing overseas can stimulate demand for home contracting companies abroad. Direct or indirect home government support via technical and financial assistance or political relationships plays an important role in international contracting.

The ownership advantages of the Eclectic Paradigm and the National Diamond allow the exploration of sources of competitive advantages for international construction from company-specific resources and capabilities and country-specific advantages generated from the home country environment. However, this method does not pay enough attention to the competitive context of the host country market. Demand for competitive advantages may vary according to the specific characteristics of local markets. International construction companies may be required to acquire local resources

and assets to achieve competitive advantages in the local markets, as well as the ownership advantages that they have already developed in their home country or other overseas markets.

As internationalization develops, the home market may no longer be the dominant market for a company. The 'national diamond' of home base no longer plays the dominant role in shaping the company's competitive advantages. The interrelated 'national diamonds' where the major markets are located, jointly affect the company's strategic decision-making and put pressures on its development of capabilities.

The country specific advantage in Egypt is that the labour market in the construction industry has more than 3.2 million workers; however, a major number of them are unskilled. Privatisation and financial sector reforms increased foreign investment and encouraged international companies to enter the Egyptian market. Moreover, the customs procedures and tax systems have been simplified and the barriers to entry and exit have been eased. The projects and property registration has become much faster and less costly. The Egyptian Economy has received a moderate FDI inflow amounting US\$ 13.2 billion in 2008.

3.5 The Implications of Strategic Management and Competitive Advantage in Egyptian Construction

Egypt is classified as a developing country according to the World Bank classification and many of the characteristics are recognized in the Egyptian market such as: poor health, inadequate education, unskilled labour, weak management practices and backward technology, significant dependency burdens as a result of high population growth rates, a colonial past, limited technology and hindered infrastructure.

The policies and regulations are always changing in Egypt, which can be considered a host country disadvantage according to Male and Stocks (1991), and can be considered as a risk factor in the Egyptian construction market.

Seymour's (1987) country specific factors can be found in the construction market in Egypt. The Egyptian construction market is a demanding market; it is considered the 36th among global construction markets. Accordingly, the Egyptian domestic construction market needs a larger average size of contractors and the greater opportunity of acquiring expertise and experience from international contractors.

The managerial and operative teams' experience in Egypt is limited, which affects the labour quality and the managerial management. Meanwhile, the combined resources and the technology transfer, which are gained through collaboration between the international and Egyptian companies, can be advantageous for the construction industry.

In summary, existing literature in strategic management provides implications regarding the sources of competitive advantage for JVs from different perspectives. These implications provide the foundations for building up a theoretical model to identify the risk factors of international joint ventures in Egypt. The development of the theoretical model is discussed in Chapter 7.

Chapter 4 International Contract Arrangements

4.0 Introduction

This chapter reviews the related literature on international contract agreements, which are used in construction. The international alliances, which can be consortia, partnerships or joint ventures between companies, will be considered in detail in the first part of this chapter. The advantages and implementation will be reviewed to differentiate each type, followed by: consortia formation, the contractual characteristics, the reasons for forming international consortia from the employers' and contractors' perspectives, and the types of consortia. Finally, joint ventures, which are the main subject of this research, and the motives and goals of forming them, will be explored. The differences between the different types of collaboration and the reasons of joint venture failure will be reviewed.

Reference to Eldin (1996) is heavily used in this research, as it is one of the sources that has valuable data about Egyptian law and its relation to these forms of organization in the Egyptian market. The implications of forming joint ventures in the Egyptian construction market will be identified.

4.1 Strategic Alliances

4.1.1 Introduction

Alliances occur when there are two or more organizations that share resources and activities to pursue a strategy. The organizations may need to obtain materials, skills, innovation, finance, or access to markets, and they recognise that these may be as readily available through co-operation as through ownership.

There are many reasons for forming alliances, but they are likely to be concerned with the assets involved in the alliance. The assets can be varied; they could be financial, access to market, skills, or intellectual property.

Caloghirou et al. (2003) defined the term "strategic alliance" to encompass the multitude of forms the agreements have taken. Furthermore, Contractor and Lorange (2002) defined alliances as, "any inter-firm cooperation that falls between the extremes of discrete, short-term contracts and the complete merger of two or more organizations".

Lorange and Roos (1993) defined strategic alliances in a theoretical way by taking markets into consideration, and, on the other hand, a total internalisation "hierarchy", which means that the ventures along this scale can be defined as shown in Figure 4.1.

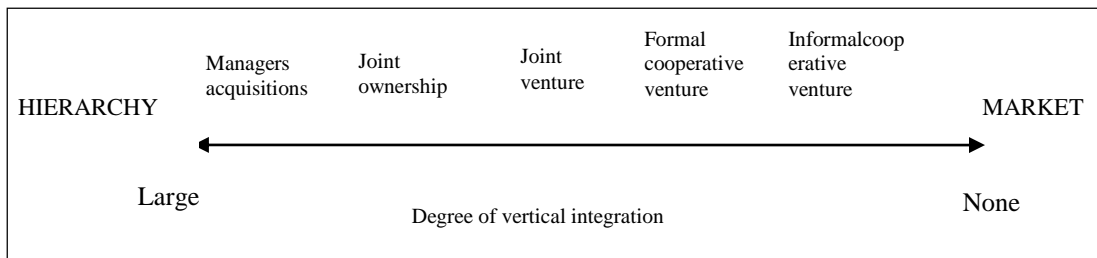


Figure 4.1 Strategic alliance options in terms of the degree of vertical integration with the parent firm (Source: Lorange and Roos, 1993).

Another definition by Contractor and Lorange (1988) has defined the strategic alliances based on the degree of interdependency between the parties involved as shown in Figure 4.2.

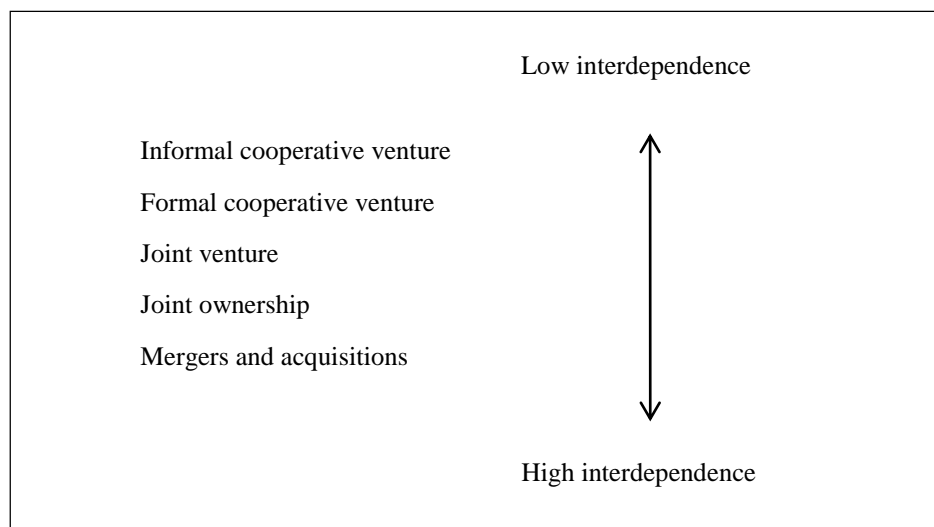


Figure 4.2 Strategic alliance options in terms of the degree of interdependence between the parent firms (Source: Lorange and Roos, 1993)

Accordingly, a strategic alliance is a web of agreements whereby two or more partners share the commitment to reach a common goal by pooling their resources together and coordinating their activities. The type of alliance can be differentiated by either the market or the degree of dependency. According to Lorange and Roos (1993) and Contractor and Lorange (1988) a joint venture agreement is a middle way agreement.

4.1.2 Entering the International Construction Market

There are three mechanisms for a firm to enter a foreign market: firstly, by opening a local office or subsidiary, secondly, working with a local firm through a joint venture and forming an alliance and finally, through a combination of all the preceding methods.

The alliance can be considered as a long-term cooperative agreement between firms with the purpose of meeting the mutual needs of the involved parties. In an alliance, the

partners agree to share resources, technology, risks and rewards, and to offer mutual assistance (Badger and Mulligan, 1995).

Pietroforte (1997) described alliances as long-term goals, results, procedural flexibility, and continuous reconciliation of organizational cultures and informal relations, which are assumed to be important. Moreover, the evolving organization needs to be negotiated within the framework established by the venture terms that require resources and implementation schedules, and the criteria used to measure progress towards goals need to be clearly stated and agreed upon.

4.1.3 Market Trends and Challenges

The size of the large global construction market caused an increase in the need for new forms of collaboration between construction firms. Moreover, the growing organizational, technical, and procedural complexity of projects requires the construction companies' active participation in all phases of the project, from initiation to building operations. In addition, limited resources have caused government agencies to consider the use of non-traditional procurement systems for public projects all over the world, such as Built-Operate-Transfer (BOT) agreements and the concept of privatisation (Reinhardt, 1993; Worenklein, 1994). The alliance of two or more companies needs development in their capabilities such as; access to financing, building alliances, coordination of different services and public responsiveness.

Furthermore, the growth of construction companies needs a change of culture within the corporation at all levels. Organizational flexibility and cultural sensitivity are required for coordinating and integrating different roles and contributions by independent firms, and for developing products and processes that fit local cultures and procedures, particularly in the international domain (Pietroforte, 1997).

There are many facilities, which encourage organizations to operate internationally such as; Internet advances in telecommunications, global procurement of human and physical resources, improved transportation infrastructures, and internationalisation of financial markets (Pietroforte, 1997).

According to ENR's top 400 contractors (2010) for the construction industry, the Top 400 generated US \$259.41 billion in contracting revenue in 2010. Moreover, domestic revenue for the top 400 was US \$208.16 billion, and international project revenue was US\$51.24 billion. The Egyptian construction sector is one of the most dynamic sectors in the Egyptian economy and has been growing rapidly since the 1980s. In 2000, the Egyptian construction market was ranked 36th among global construction markets, with 0.4% of this market estimated at a value of \$12.711 billion (NABC, 2010).

Pietroforte (1997) stated that the globalisation of the market is changing the competitive strategies of construction and engineering companies. Centralised procedures and bureaucratic cultures may be at a disadvantage in this changing environment.

4.1.4 Advantages of Alliances

Pietroforte (1997) stated, “The formation of international alliances is a promising and flexible strategy for taking advantage of the opportunities and coping with the challenges created by the increasing globalisation of the economy and the growing intensity of competition”. The benefits of international alliance can be classified according to three business aspects: marketing capabilities, organization capabilities and project execution capabilities.

Marketing capabilities: Alliances allow the firm to retain clients who operate internationally and to obtain new clients procured by an allied firm in a foreign country. In addition, alliances can give access to local markets or distribution channels at lower costs, improve knowledge of local culture, increase technology transfer for local companies from foreign companies, and shorten learning curves in initiating international projects by knowing the regulations and market conditions. Furthermore, they can increase the competitive and pre-qualification chances of the venture, enhance the local reputation of each firm, and circumvent local government trade barriers (Pietroforte, 1997).

International companies in Egypt are allowed to freely repatriate profits and dividends, as Egypt fully subscribed in 2005 to Article VIII, sections 2, 3 and 4 of the IMF’s agreement. Under the terms of the agreement, monetary authorities are obliged to refrain from imposing any restrictions on payments and transfers for current account transactions, or from engaging in discriminatory currency arrangements or multiple currency practices without the IMF’s approval.

Organizational capabilities: Alliances expand the scope of service and product portfolios. Furthermore, alliances can undertake projects that otherwise would not have been considered before, whereas access to outside technology or the availability of expertise allows firms to reconsider these projects. Finally, alliances broaden the cultural and technical background of personnel directly involved in the venture (Pietroforte, 1997).

Wahba (2009) mentioned that the Egyptian labour law specified the number of foreign (non-Egyptian) employees in any company, which may not exceed 10% of the total work force for unskilled or semi-skilled workers. For skilled workers the limit of foreign labour is 25%. In addition, total compensation of foreign employees must not

exceed 35% of the payroll of the company. This restriction of foreign employees limits international companies in benefitting from their expertise in projects and it limits Egyptian employees in benefitting from their experience.

Project execution capabilities: Pietroforte (1997) argued, “the sharing of risks and increased capital and bonding capacity, alliances allow firms to engage in larger projects and enter unfamiliar markets.” The utilisation of the proper comparative advantage of each firm during the execution of projects, and the economies of scale and rationalisation of production, can be achieved through the larger purchasing volume of the venture.

Joint ventures in Egypt have been used in many projects such as the Underground Metro that was the first in the Middle East, and the need for new technology, which the Egyptian companies did not have, resulted in the project becoming a joint venture between French consortium companies and Egyptian companies. Another project is the Harbour, which has used new technology to build a berth. This project comprised of a Korean company and an Egyptian company. There are many other projects, which have used joint venture, which will subsequently be discussed in detail in this thesis.

4.1.5 The Formation Process

In this section strategic intent and the strategic match will be reviewed in order to understand alliance formation, and how competitive advantage can be met through an alliance.

4.1.5.1 Strategic Intent

This can be considered as the mission of an alliance according to Wit and Meyer (2010). Hamel and Prahalad (1989) argued that different strategic intents among strategic alliance partners are healthy. Furthermore, Hamel and Prahalad (1989) stated that strategic intent includes two dimensions: first, it perceives a desired leadership position and establishes the criterion that will be used by the organizations to chart progress. Second, it encompasses an active management process that includes focusing the organizations’ attention on the essence of winning, motivating people by communicating the value of the target, sustaining interest by providing new operational definitions as circumstances change, and using intent consistently to guide resource allocations.

In addition, Hamel and Prahalad (1989) identified more three typical characteristics regarding the meaning of strategic intent: it captures the essence of winning, it is stable over time, and it sets a target that deserves personal effort and commitment.

Lorange and Roos (1992) believed that the foundation of a successful strategic alliance is formed during the initial formation process; at the same time, the analytical and political dimensions and issues have to be dealt with in such a way that clear and

realistic intents are established and the foundation for trust and behavioural compatibility is placed.

4.1.5.2 Strategic Match

Lorange and Roos (1993) argued that the early assessment of the match between the prospective partners involved two overall potentials for cooperation: that concerned with analytical consideration, and that which concerns the resource input/output and strategic position. Moreover, the win-win strategic match earns a great deal of attention, not only during the initial formation, but also during the transition from one phase to another evolutionary phase when the alliance goes through the stages of restructuring.

4.1.5.3 Competitive Advantages

Lorange and Roos (1993) illustrated how one might assess the competitive advantages for the business strategy of the strategic alliance as shown in Figure 4.3.

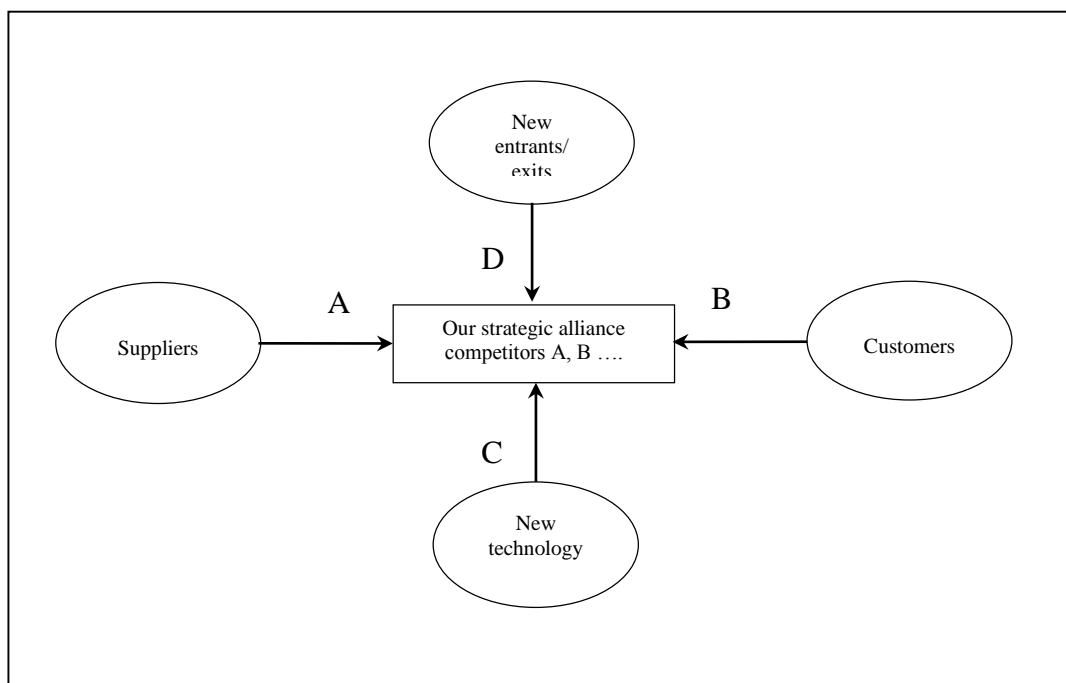


Figure 4.3 Assessment of competitive advantages (Source: Lorange and Roos, 1993)

According to Figure 4.3, competitive strength can be created in four areas:

- Combined efforts relative to *suppliers* to create a stronger bargaining strength in this area, in terms of purchasing power and/or developing favourable long term-contracts.
- Combining efforts vis-à-vis *customers*, by offering a fuller range of products and maintaining a stronger sales force, thus being in a better position to satisfy customers' needs.

- Combining efforts to develop and exploit *new technology* by joint efforts/or combining complementary technologies. This might lead to the possibility of surpassing competitors.
- Combining efforts to achieve a size that pre-empts *new entrants*; that is, the creation of more effective entry barriers and/or combining efforts to diminish the number of independent players in the particular business and coming to grips with excessive overcapacity.

The main aim of combining efforts is to gain more advantages in the market and to overcome many defects in each company. Moreover, international companies overcome the entry barriers of the market.

As mentioned in section 3.4.1, innovation for the contracting company is “knowledge-based” in that, it is concerned with alternative ways of organising the resource transformation process during on-site production, creating new services and designing new forms of corporate organisational structure, or manipulating capital flows. This kind of innovation is needed for the Egyptian contracting companies and is one of the reasons for joint ventures with international companies.

4.1.6 Implementing an Alliance

The CII report (Badger et al., 1993) proposed an implementation model and addressed the characteristics of a well-structured alliance. Typically, between 18 and 24 months are spent in sharing information and in understanding the nature of the alliance before beginning active involvement. The implementation model consists of six steps:

- Define the alliance and how it will differ from standard business practices such as a joint venture or a partnership; the differences between these types will be discussed in section 4.1.8.
- Develop goals and missions.
- Identify challenges and obstacles, such as contribution requirements, corporate support, risk assessment, and quantification, the need for changing organization models and selection of a proper agreement.
- Define measurement criteria, cost estimate and implementation schedules.
- Identify responsibilities for the management of the alliance.
- Implement continuous evolution and improvement.

An alliance denotes some degree of strategic and operational coordination and may include things such as technology exchanges, exclusionary markets and manufacturing rights, and co-marketing agreements. Strategic alliances may, or may not, involve equity

investments and include JVs as a special form. Although inter-firm collaboration may take many forms, studies regarding collaborations showed that a high number of them are focused on technological issues (Caloghirou et al., 2003).

In Egyptian law, there was no mention of long-term co-operation between contracting companies. Joint ventures and consortia were mentioned and both will be explored in the following sections.

4.2 Consortia Agreements in the International Construction Industry

4.2.1 Introduction

A consortium is a type of alliance between companies; its definition and identification of contractual characteristics will be defined. Following that, the main features of an international construction consortium will be reviewed, which include: the contractual characteristics, formation, duration, decision making between the parties, and the different motivations to form the consortium from the employer and contractor perspectives. Finally, the types of consortia will be discussed.

A construction consortium is defined as “a contract by which two or more enterprises agree to join their skills and resources, without creating a formal economic or legal entity to offer a joint bid and perform a works contract, with each party within the consortium solely responsible for its portion of works”(Eldin, 1996).

Lorange and Ross (1993) stated that a consortium is a type of collaboration between various parties, which are willing to share more resources between each other than with the ad hoc type of collaboration. Simultaneously, the values created within this type of collaboration are still disbursed back to the partners.

The members of the consortium can act as joint consultants, main contractors, or as joint sub-contractors. In addition, the members can be nationals of, or domiciled in, the same country, or nationals of, or domiciled in, different countries and performing the works contract in a foreign country. Furthermore, collaboration can be between international companies and companies from the country where the project is performed.

Eldin (1996) mentioned that the agreement usually includes provisions concerning the following items: (1) the purpose of the agreement; (2) the nature of the collaboration between the members; (3) the duration of the agreement and its termination; (4) the responsibilities of the members for the preparation and submission of the joint bid; (5) the negotiation and signing of the works contract with the employer; (6) the supervision by the members (the co-operation committee) and their powers and procedures; (7) the leading party's rights and duties; (8) the division of works under the works contract;

(9) the allocation and apportionment of internal liability during the performance of the contract; (10) the credit and payment terms with the employer, the insurance; (11) the guarantees, and common costs, sub-contracting and personnel; (12) the external liabilities to the employer, and other third parties' confidentiality obligations; (13) the exchange of information, and exclusivity of obligations; (14) the assignment, adjustment, and amendment of the agreement, and the settlement of disputes and applicable law. The most important factor is that the members of the consortium do not share profits or losses arising out of the contract.

Finally, the agreement is usually accompanied by schedules that include in detail all matters concerning the description of the entire works under the contract, the scope of the works of each party, the time schedule, and the format for the tender.

In English law under the English Income and Corporation Tax Act (ICTA 1988), a consortium refers to a particular company for which 75% of its share capital is owned by UK companies with each owning at least 5% of the total share. In French law a consortium is an unrecognised separate legal concept. Moreover, the International European Construction Federation (F.I.E.C) treat it the same. In Italy law No. 584 of 1977 allowed two or more companies to enter into a temporary contract to undertake large public projects with a purely contractual relationship without the need of forming a company (Eldin, 1996).

The consortium and International Joint Venture (IJV) forms are commonly used in Egypt, and most of the Arab countries in the Middle East, for infrastructure projects. There are no standard forms or models for internal practices. There are legal issues under Egyptian law, which were examined in some arbitration cases and not recognized in the Egyptian courts (El Sharkawi, 1992).

4.2.2 The Main Features of the International Construction Consortium

Consortia agreements do not fall under a particular set of legal rules in modern legal systems, and are not recognised as a separate legal concept. According to the European Commission Proposal (1979) each party to the consortium is solely responsible for its work, and individually liable for its defaults to other third parties including the employer, unless agreed otherwise (European Commission Proposal, 1979).

Eldin (1996) identified that there are a series of universal characteristics, which are associated with all types of consortia and, on the other hand, there are internal terms of consortium agreements, which vary from one case to another, such as:

- The nature and complexity of the project.
- The employer's requirements.

- The terms of the works contract.
- The technical and financial capacity of the parties and their previous experience in working together.
- The legal and administrative regulations imposed by the host country and the home country.

Moreover, Eldin (1996) outlined the major contractual characteristics of a consortium agreement that distinguish it from other forms of co-operation, which are as follows:

- It is a purely contractual relationship so the partners do not contribute any capital, and no company assets exist.
- It is a collaborative relationship.
- It is of a personal nature, which considers the importance of the technical and financial capacity and business reputations of the other parties.
- The internal relationship of the consortium's members is dependent on the works contract in many respects.
- The members of the consortium are jointly and severally liable to the employer.
- Each member within the consortium is solely responsible for its own works.
- The general framework of decision-making is standardised.

4.2.3 Formation of the Consortium

It is useful for the members of the consortium to know the nature of the works and the particular requirements of the employer, before they begin to draft the agreement. The final precise terms of the agreement cannot be determined in detail in advance until the works contract with the owner is in its final form. In some cases, the members enter into a preliminary agreement before the final works contract is signed with the employer, and then it is changed to the final contract after signing the works contract (Eldin, 1996).

In Egypt, the Metro line project (which will be used in the survey in this research) used consortium contracts. First, the French companies entered into a consortium between each other, and then they joined the Egyptian company to carry out the work. Moreover, the French companies, in order to implement the special work for this type of project, entered into a consortium with specialist French waterproofing companies.

4.2.4 Duration of the Agreement

Eldin (1996) stated that the consortium agreement could be terminated prior to the conclusion of the works contract in the followed cases:

- If the joint bid was rejected by the employer or the negotiation failed.

- If the employer abandoned the project for its own reasons.
- If the joint bid was not accepted by the employer within the period of the validity of the tender or any agreed extension.
- If the employer, for whatever reason, terminated the works contract.

The consortium would terminate only after all the liabilities of the members have been settled and paid under the works contract, otherwise the agreement would continue until all the warranty periods have expired. In addition, some of the provisions of the consortium agreement would be enforceable only at the date of enforceability of the works contract.

4.2.5 Decision-Making within a Consortium Agreement

Eldin (1996) stated that under the consortium agreement, each member acts as an independent contractor within the organisational framework established under the agreement. Moreover, each member is responsible for its share of work. The relationship and activities between the members are interconnected and the undertakings of them should be co-ordinated. This co-ordination between the members' *vis-à-vis* third parties is usually vested to one of them, which is called the "leading party", "sponsor company", "pilot", or "project manager". There is a committee, which is called the "supervisory committee", which includes representatives of the members of the consortium. Consequently, this committee takes the decisions in substantial matters and they are usually taken unanimously. In some cases, one of the parties can be "passive", so it has no effective involvement in the committee. In addition, each member is responsible for the required personnel at its own costs.

Recent experience in the Egyptian construction field would seem to indicate that decision-making is adopting the above-mentioned process, and this will be proven in the subsequent chapters.

4.2.6 The Employers' and Contractors' Motivations in an International Consortium

Several legal and business advantages from the views of the employers and contractors in the international consortium are as shown:

- **From the employers' view:** Contracting with joint bidders has the following advantages (Eldin, 1996): (1) joint and several liabilities on the part of the members of the consortium; (2) no co-ordination liability on the part of the employer; (3) use of local resources and improvement of domestic staff skills.
- **The contractors' perspective:** The consortia agreement is used to achieve one of the following (Eldin, 1996): (1) strengthening the technical and financial

capacity of contractors; (2) satisfying local participation requirements; (3) flexibility and confidentiality; (4) antitrust considerations.

4.2.7 Types of Consortia

Several types of consortia can be arranged: horizontal agreements or vertical agreements, agreements with joint and several liability and consortia agreements without several liability. Each type will be discussed in the following sections.

4.2.7.1 Horizontal Agreement

Horizontal agreements can be described as those where all the members of the consortium sign the contract with the employer or the leading party on their behalf as shown in Figure 4.4.

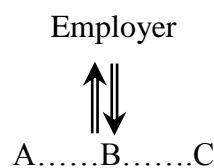


Figure 4.4 The horizontal agreement (Source: Eldin, 1996)

The majority of consortium agreements are horizontal agreements, and in this case, the parties are viewed as a single contractor. Furthermore, the horizontal agreement can be made between two groups of contractors, each with a separate agreement, and all the parties conclude a third agreement (main agreement) to enter into the works contract with the employer as shown in Figure 4.5.

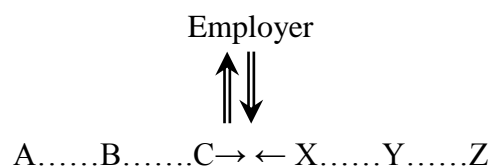


Figure 4.5 The horizontal agreement between two groups (Source: Eldin, 1996)

The horizontal agreement was adopted in the Metro line project in Egypt; the French parties signed a consortium agreement between each other, and at the same time, they signed consortium agreements with the specialist sub- contractors. The main French consortium signed a joint venture agreement with the Egyptian company.

4.2.7.2 Vertical Agreement

The vertical agreement or the “closed consortium agreement” is an agreement between the leading party or some of the members of the consortium and the employer as shown in Figure 4.6.

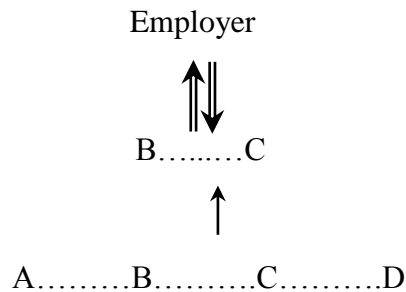


Figure 4.6 The vertical agreement (Source: Eldin, 1996)

Non-contracting parties under the works contract are viewed as sub-contractors *vis-à-vis* the employer and other third parties. In some situations, the sub-contractors form a consortium between themselves to carry out sub-contracting works for the main contractor. The main contractor in turn is responsible for the works of the joint sub-contractors *vis-à-vis* the employer.

4.3 Joint Venture Agreements in the Construction Industry

4.3.1 Introduction

Richards and De Carolis (2003) defined joint ventures as, “representing a form of collaborative arrangement in which two or more partners form an entirely new entity, with each partner maintaining equity in the venture”.

Yan and Luo (2001) defined the international joint venture by saying that it involves firms from different countries cooperating across national and cultural boundaries.

Many authors defined international joint venture as, “a new business entity that is created by two or more legally distinct organizations (parents), among which at least one is headquartered outside the country where the new firm is located. Parent organizations hold ownership interests and actively participate in the decision making activities relating to the owned business entity”. These authors include: Hajidimitriou and Georgiou (2002) adopted from (Geringer, 1991; Park and Ungson, 1997;Geringer, 1988, Geringer and Hebert, 1989;Shenkar and Zeira, 1987), and Ott (2006) and Ozorhon et al. (2007).

Segil (1996), and Norwood and Mansfield (1990) defined joint venture as, “the commercial agreement between two or more companies in order to allow greater ease of work and cooperation towards achieving a common aim through manipulation of the appropriate resources”.

An OECD publication gave a classic definition of joint ventures (JVs) as activities in which the operations of two or more organizations are partially, but not totally, functionally integrated in order to carry out activities in one or more of the following areas: (i) buying or selling operations; (ii) natural resource exploration, development and/or production operations; (iii) research and development operations; (iv) engineering and construction operations (OECD, 1986).

A joint venture is a one-time, short-term formal association between two or more organizations. The typical advantages of international joint ventures, particularly between an international and local organization (Anon, 1985; Schriener and Angelo, 1995; Sridharan, 1994), are:

1. Political risk reduction.
2. Technology and know-how exchange or transfer.
3. Overcoming local government trade barriers.
4. Increased joint reputation and liability limitation.

Yan and Luo (2001) suggested that joint venture resulted from government insistence, gaining access to overseas markets, risk sharing, and allowing the company to tap outside resources to build competitive strength with reduced cost, and with much less investment than the company could achieve by itself. Finally, the joint venture can use complementary resources, competencies, and skills possessed by different organizations, and which none of these companies would be able to utilise alone.

Moreover, government restrictions can be added as an advantage for local companies (Ott, 2006).

4.3.2 Motives and Goals behind Joint Ventures

Motives are reasons or drivers to form a joint venture and they should be clearly distinguished from the goals of the joint venture (Brockmann and Girmscheid, 2009). There are many motives given in joint venture literature (Mead, 1994; Büchel, et al., 1998; Contractor and Lorange, 1988). Badger and Mulligan (1995) referred specifically to the case of ICJVs and divided the motives into common motives such as, economies of scale, risk reduction, reducing competition and broadening the financial base, and separate motives, such as, access to markets, access to local resources, key account management, local content, technology transfer, know how transfer and training, and

profits in hard currency. Some of the separate motives are beneficial to the local partner(s) in an ICJV while others are of value to the foreign partner(s).

Luo (2001) and many scholars stated that an (IJV) was increasingly a method for companies to expand their opportunities in both the developed and developing countries' markets. In developing countries, foreign investment is seen as a market development simulation, and new technology and managerial skills development, which are needed for economic growth.

From experience, the Egyptian construction market is suffering from the lack of finance, managerial skills and advanced technology as discussed in Chapter 2.

Harrigan and Newman (1986) give a detailed analysis of goals and draws distinctions between internal, competitive, and strategic reasons for JVs (Source: Büchel et al., 1998 and Harrigan and Newman, 1986):

Internal Reasons

1. Spreading costs and risks (uncertainty reduction).
2. Safeguarding resources, which cannot be obtained via the market.
3. Improving access to financial resources.
4. Benefits of economies of scale and advantages of size: (1) to avoid wasteful duplication of facilities, (2) to utilise by-products and processes, (3) to share brands, distribution channels, wide product lines, and so forth.
5. Access to new technologies and customers: (1) through superior information exchange, (2) through technological personnel interactions.
6. Access to innovative managerial practices: (1) by superior management systems, (2) through improved communications among SBUs.
7. Encouraging entrepreneurial employees.

Competitive Goals The following goals strengthen the current strategic positions for joint ventures:

1. Influencing the structural evolution of the industry: (1) pioneer the development of new industries, (2) reduce competitive volatility, (3) rationalize mature industries.
2. Pre-empting competitors: (1) gain rapid access to better customers, (2) capacity expansion or vertical integration, (3) acquisition of advantageous terms and/or resources, (4) alliance with best partners.
3. Defensive response to blurring industry boundaries and globalisation: (1) ease political tensions (overcome trade barriers), (2) gain access to global networks.
4. Creation of stronger competitive units: (1) hybrids possessing the owners' strengths, (2) fewer more effective firms. (3) buffer dissimilar partners.

Strategic Goals

1. Creation and exploitation of synergies
2. Transfer of technologies and skills.
3. Diversification: (1) method of entry into new markets, products, or skills, (2) of the rationalisation of investment, (3) effectiveness of related owners' skills for new uses.

Consequently, joint venture goals must be clear to reduce any conflicts that may appear during the venture. The expectations and goals of the joint venture, "the new entity" usually influence the structuring of the JV organization.

4.3.3 Control Management of the Joint venture

The management of a joint venture is more complex than that of the stand-alone company. Ownership control and management control of a joint venture must be separated from each other. Ownership represents a static decision reached between the partners in the founding negotiations, while management control is both structural and process-based, depending on the interactions during decision-making. Partners exercise their influence over behavioural aspects of the venture through the selection of personnel, shaping the organizational structure and quality control.

Yan and Luo (2001) specify five types of parent international joint venture control:

1. Dominant control means that one of the parent companies controls the venture, either the foreign or the local parent company.
2. Shared control can be achieved through the installation of a jointly participated board or executive committee, which exercises its power through the venture's operations as well as through decision-making.
3. Split control where each party functionally has a separate role in the management of the venture by exercising control along different functional lines.
4. Rotating management where each parent company has a team in the venture and each team controls the venture periodically according to a pre-agreed term of two or three years.
5. Independent joint venture; neither of the parent companies is actively involved in the management of the joint venture.

In Egypt, it can be recognized from the conditions requested by the EFCBC that the international company cannot be less than first grade in its country, and the EFCBC guarantees that the Egyptian contractor's share is not less than 51% of the contract. This condition does not clarify the control management of a joint venture between companies.

With the Harbour project in Egypt, the joint venture was between a Korean company and an Egyptian company. To avoid the Egyptian law restriction that the Egyptian company's share of work was not less than 51%, the owner requested that the two companies were jointly and severally liable and they were treated as one entity. At the same time, in the joint venture agreement between the parties, the Korean company's share was 60% and the Egyptian company's was 40%.

4.3.4 Termination of a Joint Venture

There are common reasons for terminating a joint venture such as: the duration of the venture has expired; failure to obtain the agreed income or performance or any other condition; bankruptcy procedures against any of the partners; any loss of financial credibility of the partner such as a declaration of debt; failure to comply with the contractual terms of the joint venture, a change; in control of the partner company; a force majeure such as war or earthquakes; and the failure of management to act because of voting power on the range of selected items (Wolf, 2000).

4.3.5 Distinctions between the different Forms of Collaboration

A conceptual distinction is necessary to underline the different legal consequences attached to each form. For that reason, a distinction is made between three forms of international construction co-operation:

1. Consortium.
2. Companies having a legal entity "equity joint ventures".
3. Integrated joint ventures.

4.3.5.1 Consortium v. Equity Joint Venture

An equity joint venture or incorporated joint venture is when two or more enterprises establish a corporate entity with an independent legal personality owned and controlled by its constituents.

An Equity joint venture may take different forms for legal purposes, according to the law in which it is established. Usually international contractors constitute capital companies with local partners when the contracting opportunities in the host country can be expanded and profits can be increased. This kind of company is not suitable for single overseas projects or limited timescales; it is usually established for an indefinite period or a long period (25 years). Table 4.1 specifies the differences between the two contractual forms.

Table 4.1 A comparison between Equity joint ventures and consortia

Equity joint venture	Consortium (non-integrated joint single venture)
1. It is established through a corporate form and a separate legal personality is created.	1. It is a purely contractual relationship.
2. It is established for an indefinite duration.	2. It is formed between the parties to carry out a single project.
3. The work is carried out by the new entity itself under the common control of the ventures.	3. The parties undertake their respective portions of the work separately.
4. The liability of the shareholders to the employer is limited to their shares in the capital.	4. The parties are jointly and severally liable to the employer irrespective of their share of works under the contract.

(Source: Eldin, 1996)

4.3.5.2 Consortium v. Integrated Joint Venture

An integrated joint venture is an association between two or more enterprises who reach agreement, for the purpose of furnishing engineering, consulting and construction procurement of a specific project, by combining their resources and sharing the losses and profits of their joint undertaking, so they have a risk sharing venture. This kind of joint venture is classified for legal purposes as a partnership.

Table 4.2 specifies the similarities and differences between the contractual formats as developed in the international construction industry. It can be concluded that a consortium and an integrated joint venture are almost similar and they can operate in the same way.

Table 4.2 A comparison between integrated joint ventures and consortia

Integrated joint venture	Consortium (non-integrated joint venture)
1. The purpose of the agreement is limited to undertaking a particular works contract.	1. Same.
2. The joint ventures must agree unanimously on the terms of the joint bid or any variation to it.	2. Same.
3. The joint ventures share profits and losses resulting from the execution of the works contract in accordance with their share participation.	3. Each member of the consortium is solely responsible for its own works. Any liability arising from claims made by the employer will be the full responsibility of the defaulting party.
4. The joint ventures are jointly and severally liable to the employer.	4. Same.
5. By operation of law, the joint ventures are jointly and severally liable to other third parties for acts carried out in connection with the joint venture activities.	5. Each member of the consortium is individually responsible for its own acts vis-à-vis third parties.
6. Each venture must indemnify the others for damages caused due to its fault.	6. Same.
7. The joint ventures must contribute the working capital required to perform the works.	7. In principle, each member is responsible for its own costs. Thus, there is no capital contribution. However, common costs are shared between members in accordance with their proportional share in the works.
8. The joint venture may hire its own employees.	8. Each member is responsible for supplying its own employees.
9. The bank account is usually opened in the name of the joint venture.	9. The bank account must be opened in the name of the members.
10. The leading party or the project manager is the legal representative of the venture <i>vis-à-vis</i> third parties including the employer.	10. The leading party is not a legal representative of an entity, however, it may be authorised to act as an agent vis-à-vis the employer for the purpose of the works contract. This agency generally is not extended to other third parties.
11. The co-operation committee is responsible for decisions related to policy matters.	11. Same.

(Source: Eldin, 1996)

From the experience of the Egyptian construction market, most of the Egyptian companies sign a consortium with the international companies, then, after they are awarded the working contract, the consortium changes to an integrated joint venture to execute the project.

4.3.6 Reasons for the Failure of Joint Ventures

Harrigan and Newman (1986) stated some reasons for the failure of joint ventures, which are as follows:

1. Partners could not get along.
2. The joint venture market disappeared.
3. Managers from disparate partners within the venture could not work together.
4. Managers within the ventures could not work with the owners' managers.
5. The technology, which one partner thought was good, did not prove to be as good as expected.
6. The owners' contributed information or resources could not get to personnel down the line to deliver what had been promised.
7. Partners simply reneged on their promises to deliver on their part of the agreement.
8. Other reasons that destroyed the partners' cooperative spirits.

More reasons for failure were identified by Han et al. (2005) which are as follows:

1. Inadequate business plan development.
2. During initial stages of the venture, there was a lack of commitment from top management.
3. Inadequate development of strategies for the international market.
4. Inadequate recognition of demands in a cross cultural environment
5. Failures in weighing foreign requirements with respect to their political, social, legal and government procedures.

Ozorhon et al. (2007) noted that the failure rate of international joint ventures is higher than with domestic joint ventures.

4.4 Differences between Alliances, Joint ventures and Partnerships

The alliance partners should define their relationship in the beginning. An alliance can include international co-operation agreements, multi-project joint ventures, or some partnerships.

A construction joint venture differs from an alliance in that the joint venture is typically short term or is an agreement for one project.

Badger et al. (1993) differentiate a partnership from an alliance in that it legally binds together two or more organizations into an independent organization. Moreover, the participants in a co-operation agreement agree to work together to seek out business opportunities in a geographic area and to participate together for the mutual benefit of the parties.

4.5 Implications of Joint Ventures in Egyptian Construction

Globalization encourages companies to compete internationally, moreover, the availability of the Internet 24 hours a day, the global procurement of human and physical resources and the improved transportation infrastructures facilitate the entry to new markets. These facilities are applicable in Egypt as government expenses in 2008 reached 10% of the GDP in transportation and communications.

The Government has a lack of finance, which delays the implementation of many projects. Meanwhile, the construction sector is growing and becoming one of the major factors that drive economic growth. To overcome the problem the Egyptian Government has encouraged the private sector, which has investments reaching 97.3 Billion L.E (US\$ 16.3 billion), to work and be involved in major projects. Moreover, international companies have been allowed to freely repatriate profits and dividends according to Egyptian law. In contrast, there are some restrictions for international construction companies operating in the Egyptian market; Law no. 104 (1993), in which the international company is required to be first grade in its country, and the shares are to be divided between the Egyptian company and the international company at a ratio of 51% to 49% respectively. Another obstacle is the constant change of regulations and policies in Egypt.

In order for international companies to overcome the obstacles, which are required by Egyptian law, a joint venture with an Egyptian company is used as an entry method to the Egyptian construction market. As mentioned in chapter 2, section 2.5, the number of international companies registered by the EFCBC is very low compared to the Egyptian registered companies. From experience in the Egyptian construction market, the joint venture is short term or on a per project basis.

In summary, the literature on strategic management was reviewed in the previous chapter. In addition, this chapter reviewed the different types of contract agreements between companies. Both chapters provide a complete view of the company from different strategic and contractual directions. It was argued that the advantages of alliances could be classified according to their marketing, organizational, and project execution capabilities. The joint venture definition, and motives and goals were explored through this chapter to understand the characteristics of this type of agreement. The main motives of international companies are to overcome entry barriers to countries and to

increase competitive advantage; at the same time the local company gets advanced technology, enhances managerial and labour skills, and receives financial capability.

From experience in the Egyptian construction market, it would seem that before forming an international joint venture, the consortium agreement is usually signed prior to making the project bid, and after the works contract is signed, the collaborating parties change the agreement to a joint venture agreement according to the owner's request.

The previous chapter and this chapter have contributed to the achievement of two research objectives, which are identifying the joint venture, and identifying the joint venture's formation and operation. Chapter 5 now goes on to provide a review of risk management in the construction industry, with a particular emphasis on joint venture projects.

Chapter 5: Risk Management with Joint Ventures

5.0 Introduction

Chapter 3 reviewed the literature on strategic management with an emphasis on the construction industry. Chapter 4 reviewed types of international contract arrangements. Together, the two chapters provided a complete view of company policy from different strategic and contractual perspectives. This chapter provides an overview of risk management in construction projects, with specific focus on joint venture projects. First, definitions of risk and risk management are explored. Following this, the approaches that manage risk are explained. Frameworks are then introduced and descriptions are given of relevant tools for the main processes of risk identification, risk classification, risk analysis, and risk response after which, the relationship between risk management frameworks and international joint ventures in construction are explored. Finally, joint ventures, the risks that confront them and the implications of risk management for construction joint ventures in Egypt are examined.

5.1 Risk Definitions

Flanagan and Norman (2000) indicated that 'the word risk is quite modern and entered the English language in the mid-17th century, [originating] from the French word *risqué*. In the second quarter of the 18th century, the anglicised spelling began to appear in insurance transactions'. Smith et al. (2006) stated that it is very difficult to distinguish between risk and uncertainty.

There are various ways to define risk. The PMBOK (Project Management Body of Knowledge) Guide (2008) defined a project risk as 'an uncertain event or condition that, if it occurs, has a positive or negative effect on at least one project objective'. HM Treasury (2004) defined risk as 'uncertainty of outcome, whether positive opportunity or negative threat, of actions and events. It is the combination of likelihood and impact, including perceived importance'. The BSI (British Standards Institution) (2000) identified risk as 'uncertainty inherent in plans and the possibility of something happening that can affect the prospects of achieving project goals'. Yeo (1995) wrote, that 'The concept of risk is usually expressed as a function of the uncertainty associated with such events'.

Smith et al. (2006) argued that risk exists when a decision is expressed in terms of a range of alternative outcomes, and when known probabilities can be attached to the outcomes. The RAMP (Risk Analysis and Management for Projects Guide) (2005) defined risk as 'a threat (or opportunity) which could affect adversely (or favourably) achievement of the objectives of an investment'. Tweeds (1996) identified risk as the

chance or possibility of loss or bad consequence. Meredith and Mantel (1985) defined risk as 'the chance that outcomes will not turn out as planned'.

The terms of risk and uncertainty are used by Smith and Bohan (1999) interchangeably, and in the context of construction projects there is little to distinguish between them. In contrast, Tweeds (1996) defined uncertainty according to the *Oxford English Dictionary* as 'not certainly knowing or known; not to be depended on, changeable', which suggests that uncertainty exists in many circumstances and is a source of risk.

The PRAM (Project Risk Analysis and Management) Guide (2004) had different definitions of risk. One relates to risk event, which is 'an uncertain event or set of circumstances which should occur and which will have an effect on the achievement of one or more of a project's objectives'. Another definition relates to project risk which is 'the exposure of stakeholders to the consequences of variations in outcome'.

Risk can be demonstrated in the uncertainty of events (BSI, 2000; HM Treasury, 2004; PMBOK, 2008; PRAM, 2004; Yeo, 1995), or the chance of loss (Meredith and Mantel, 1985; RAMP, 2002, 2005; Tweeds, 1996). Broadly speaking, risk contains uncertainty from various sources that give rise to and shape risk. Even the PRAM Guide (2004), which divided risk into risk event and project risk, agreed with the concepts of uncertainty and the chance of outcome loss.

There is no specific data about risk and risk management in Egypt, as discussed in Chapter 2. Further, there are restrictions on international companies working in Egypt, such as work permits related to foreign expertise, which limit a company's capabilities. Other restrictions include regulations, tax policy, customs, and access to the construction market. In addition, some Egyptian companies suffer from an unskilled labour force, unqualified management staff, and a lack of financial capability. According to the theoretical definitions discussed above, there is no universally accepted definition of risk, but the adopted definition is the chance or possibility of loss or negative consequence. Thus, although joint ventures in Egypt between international and Egyptian companies offer the possibility of profit, there are clear risks, which must be considered.

5.2 The Need for Risk Management

5.2.1 Risk in the Construction Industry

Construction is associated with high risks and uncertainties. The construction industry has a poor reputation for coping with risk because of the complexity of projects, many of which fail to achieve their cost and schedule goals. The complexity of any construction project, whether a building or civil project, depends on its scale. A project team usually comprises a client, an architect, a structural engineer, a building service

engineer, and miscellaneous members such as health and safety regulators and sub-contractors (Anumba et al., 2003). Each team member has specific, varied risks to consider. The relationships within a project team are often complex and are affected by many external, uncontrollable factors which may cause delays to schedules, an overrun of costs, and which may influence project quality. The relationship between risk, consultants, and contracting will be explored in this section.

Flanagan and Norman (2000) divided construction industry workers into two groups: principals and agents. Principals charge a commission and can be from the public sector or a major development company. These risks can even include individual householders. Agents undertake activities that produce buildings, roads, bridges, etc. They include professionals such as architects, engineers, surveyors, general contractors, and a wide range of specialist subcontractors and suppliers.

According to Flanagan and Norman (2000), consultants are advisers who offer professional services to a client regarding investment, design, cost, contractual arrangements, and all the other facets of construction. They use their skills, knowledge, and experience to ensure that an owner's interests are protected. Mintzberg (1979) considered that support team consultants are an essential part of organisational structures.

The main responsibility for construction project risk falls between the contractor, the owner, and the insurers who bear low probability, high impact risks when an unexpected event occurs. The insurer is a company to whom project parties transfer certain risks in return for a premium. For joint venture contracts, risk is usually best placed with the party involved in the management of the project. This party is able to manage the risk factors and distribute the risk between the other project parties (Flanagan and Norman, 2000).

Yates et al., (1991) stated that in international construction, risks are usually exacerbated. These risks could be political and economic instability in the host country, price discrimination in favour of local contractors, currency restrictions, and/ or legal confinement. The Yates et al., (1991) examine risk factors from a range of countries; hence, each of these risks can be considered as a risk factor facing joint venture parties in the Egyptian construction market.

To reduce the risks that construction projects face during their life cycles, it is worth engaging in risk management.

5.2.2 Risk management in Construction

Risk management is nowadays a critical factor for successful project management because projects tend to be more complex and competition is increasingly tough. Construction projects usually involve long timescales, many uncertainties, and complex

relationships among the participants. To enhance the assessment of a project, potential risks should be identified and analysed as early as possible. Risk management in construction is a comprehensive and systematic way of identifying, analysing, and responding to risks to achieve a project's objectives. The benefits of the risk management process include identifying and analysing risks, improving construction project management processes, and highlighting effective use of resources. Moreover, risk management helps project participants, (the client, contractors, consultants, and suppliers) to meet their commitments and minimise negative impacts on construction project performance in relation to cost, time, and quality (Nerija and Banaitis, 2012). The definition of risk management of various authors is shown in Table 5.1.

Table 5.1 The definitions of risk management

Author	Definition
Flanagan and Norman (2000)	Risk management as a discipline for living with the possibility that future events may cause adverse effects
BSI (2000)	Risk management as a systematic application of policies, procedures, methods, and practices to tasks which identify, analyse, evaluate, treat, and monitor risk
Minto and Ashely (1998)	The process of risk management includes three phases of risk: Identification, risk qualification, and risk control
PRAM Guide (2004)	The risk management process using five phases: Initiate, identify, assess, plan responses, and use a management process to implement responses. The entire risk management process must be repeated throughout a project's life cycle.
HM Treasury (2004)	The risk management process as all the processes involved in identifying, assessing, and judging risks; assigning ownership; taking actions to mitigate or anticipate risks; and monitoring and reviewing progress.
Wysocki (2009)	The risk management process consisted of the following key steps: risk identification, risk assessment, risk mitigation, and risk monitoring.

Scholars and other authorities (BSI 2000; Flanagan, 2000; HM Treasury, 2004; Minto and Ashely, 1998; Nerija and Banaitis, 2012; PRAM, 2004; Wysocki, 2009) argued that risk management is built upon a set of similar processes such as identification, analysis, and control. Moreover, some of these authors go further by providing more detail, and adding mitigation, monitoring and review.

Generally, a risk management process in construction projects is the best way to manage uncertain components, control negative effects, discover and create potential opportunity, and save projects from overruns, delays, and unsatisfactory quality.

Within the Egyptian construction market there is a lack of data concerning companies that use risk management for their projects. Some companies specify a risk management process in their tenders, but do not use it in the projects. The reasons for not using risk management are: (1) the cost of applying risk management is high, and (2) there is no database of project risks. For these reasons, one of the main objectives of this study is to define the risk factors in construction joint ventures in Egypt by adopting one of the risk management processes. This aspect will be discussed later in the chapter.

5.2.3 Approaches to the Management of Risk

There are two types of approach to the management of risk. Each one influences the procedures and processes used to manage risk. They are the informal and formal approach (Smith et al., 2006).

The informal approach views risks in a subjective manner. The most widely used technique of this approach is the provision of contingency funds, which divide into two types: lump sums and percentage contingencies. A lump sum is an amount of money put aside for extra requirements during a project. This technique does not allow for all the risks that a project may encounter. A further technique for managing risks within an informal approach is to interview experts and take their views into account when reviewing possible risks.

The formal approach to the management of risk consists of a set of procedures laid down by an organization for use in the risk management process. These procedures are structured and give guidelines to be followed, so that they can be used by any member of the organization (Loosemore et al., 2006; Smith et al., 2006).

There is no single methodology for all projects; the procedures for managing risk must be designed to suit the particular needs of an organisation. There are frameworks for formalised risk management procedures, which do not specify the method to be applied, but allow the user to choose suitable techniques. Tomilson (1990) defined a framework as being the means of describing the relevant portion of the organisational situation to the participants undertaking the study. A formal process is dependent on:

- Management awareness;
- Motivation among project personnel;
- The methodical approach adopted;
- The information available.

The assumptions and limitations, which a risk analysis is based on, are:

The qualifications and knowledge within the project;

The experience and personality of the risk analysts.

The pitfalls of a process include:

Management bias;

Expert bias.

The pitfalls can lead to an underestimation of any uncertainty. PRAM (2004) and RAMP (2005) are two formal techniques that can be used as formal approaches in risk management. Both are particularly concerned with financial and strategic aspects, and are usually applied over a project's life cycle.

5.2.4 The Risk Management Process

There is no precise framework that can be applied for the risk management of projects. Each participant in a project uses a framework that appears to be most suited. Furthermore, there is not enough data in the Egyptian construction market concerning risk management and its application in Egypt; therefore, a review of applied risk management processes will be undertaken so as to adopt one of them to apply within this thesis. For example, Flanagan and Norman (2000), and Tweeds (1996), proposed a risk management framework, which is broken down as shown in Figure 5.1.

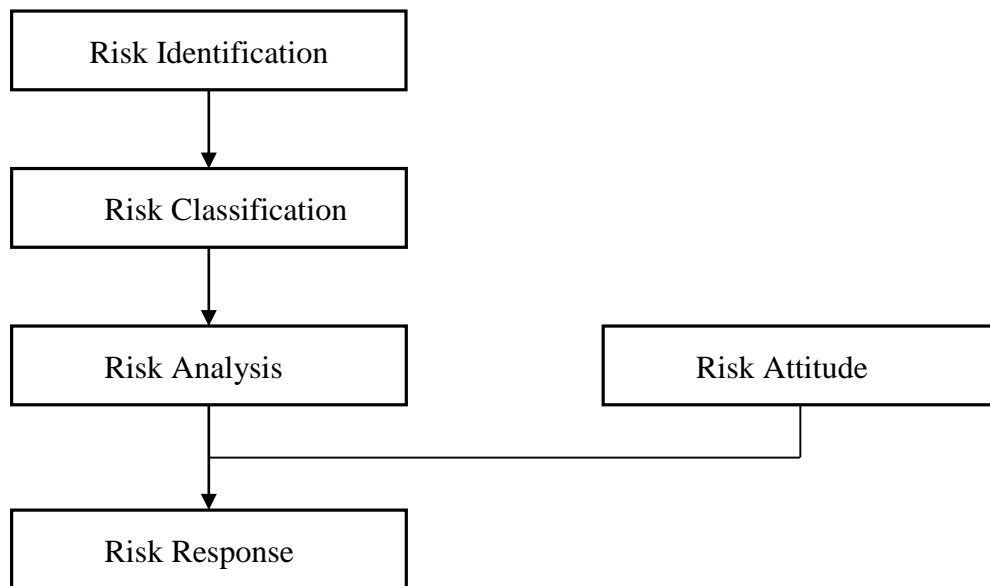


Figure 5.1 A risk management framework (Source: Flanagan and Norman, 2000)

The framework in Figure 5.1 consists of a baseline of risk management processes, which can be used to identify risks and mitigate them. This baseline appears in many risk management processes such as PRAM (2004), Merna and Lamb (2004), and RAMP (2005).

The stages of the framework are summarised in Table 5.2 (Flanagan and Norman, 2000).

Table 5.2 The stages of the risk management framework

Risk Identification	Identify the source and types of risk.
Risk Classification	Consider the types of risk and their effect on the person or organisation.
Risk Analysis	Evaluate the consequences associated with the types of risk, or combination of risks, by using analytical techniques. Then assess the impact of risk by using various risk measurement techniques.
Risk Attitude	Any decision about risk will be affected by the attitude of the person or the organisation making the decision.
Risk Response	Consider how the risk should be managed by either transferring it to another party or retaining it.

(Source: Flanagan and Norman, 2000)

Risk attitude can be divided into three types of people or organisations: risk loving, risk averse, and risk neutral. Most decisions are made based on detailed analysis, but such analysis cannot prevent a bad decision being made because of uncertainty. The decision-making process will be discussed at the end of the chapter; it is the most important process after risk management analysis. Other management processes is discussed in Table 5.3.

Table 5.3 Other risk management processes

Models	The Model Details
Merna and Lamb (2004)	The model was designed for the construction industry. However, the model may be used for most other industries such as manufacturing. It consists of risk identification, risk analysis, risk response, risk review, and risk control.
The PRAM Guide (2004)	It is framework for use during project phases. PRAM clearly describes a number of specialist techniques for risk identification, analysis, and management, and expresses them as actual practices. It described a number of special techniques for risk identification, analysis, and management, and showed how to put them into practice
The RAMP (2005)	The RAMP (2005) concentrated on the strategic aspects of risk appraisal and management, taking into consideration the financial implications. This consists of four activities: process launch, risk review, risk management, and process closedown. These activities are carried out at different stages of the life cycle of an investment. In addition, the RAMP process dealt with extremely complex risk issues. Moreover, it is a systematic and disciplined approach to controlling risks to improve project success.

Models	The Model Details
The British Standards Institution (BS ISO 31000, 2009)	These frameworks comply at all the organization levels. In addition, the organisations should adapt the framework components to meet their specific needs. The risk management process comprises the activities which are: communication and consultation; establishing the context which defines the external and internal parameters to be taken into account when managing risk; risk assessment which is the overall process of risk identification, risk analysis and risk evaluation; risk treatment; and monitoring and review.

In general, the risk management process discussed in this section consists of risk identification and the classification, which records each risk and qualifies it. Subsequently, risk analysis estimates a risk factor's likelihood of occurrence and the potential impact on a project in terms of timescales, cost, and quality. Risk response then identifies the team, which will be responsible for risk planning. Finally, risk mitigation strategies are used to execute a risk control plan. As mentioned earlier in this chapter, there is a lack of data about projects in Egypt; consequently, a simple risk management framework will be adopted. This follows the Flanagan and Norman (2000) framework because it contains the baseline of risk management processes. These are identification, classification, analysis, attitude, and risk response. The RAMP and PRAM frameworks are commonly used for projects, which are still running and need detailed data. Such data are not available for Egyptian companies. Furthermore, the RAMP and PRAM frameworks are more concerned with the financial and strategic aspects of risk and are usually applied over the life cycle of a project.

The following sections will review the risk management processes, which form the baseline of most of the known frameworks, which can be applied in this thesis.

5.2.4.1 Risk Identification

The RAMP (2005) framework addressed risk identification as a critical stage and stated that the objective are; to identify all significant types and sources of risk and uncertainty associated with each investment objective, and the key parameters relating to these objectives; establish the causes of each risk; evaluate the relationships between each risk and the other risks; ensure the risks are classified and grouped for evaluation. In addition, the deliverables provided by the identification phase of the PRAM (2004) framework usually include a risk list, log, or register, indicating at least one assumed response, one of which is 'do nothing'.

Smith et al. (2006) stated that there are many techniques, which can be employed to identify project risks. Brainstorming is one such technique and involves a project's key owners and experienced senior personnel. Another technique is to interview personnel from different disciplines within an organisation, who have experience of similar projects. An adjunct to this technique is to examine the data from previous similar projects, although this data might not prove very useful. However, a risk register, which includes documents, spreadsheets, and a database, could help to define a previous project and its associated risks.

Flanagan and Norman (2000) discussed the factors, which should be considered at the risk identification phase (see Figure 5.2). Controllable risks represent the actions of decision makers whose outcomes are within the direct control of project parties. In contrast, uncontrollable risks represent risks, which cannot be, controlled such as potential damage and delays caused by inclement weather or a change in planning regulations.

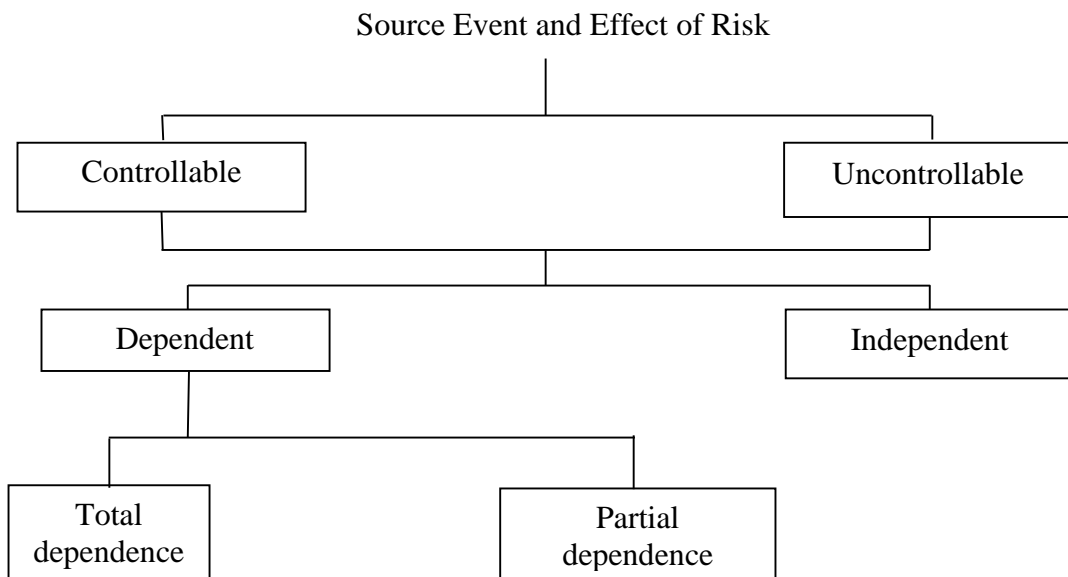


Figure 5.2 Risk identification (Source: Flanagan and Norman, 2000)

Flanagan and Norman (2000) draw attention to the dependency between controllable and uncontrollable risks, and break these down into no dependency, total dependency, and partial dependency. They also include an independent factor for risk identification.

Moreover, Flanagan and Norman (2000) distinguished the sources of risk from the effects of risk. The sources can be inflation, ground conditions, inclement weather, late delivery of materials, incorrect design details, bankruptcy of the main contractor, and poor coordination among designers. The effects of risk can be: failure to keep within the cost estimate; failure to achieve the required completion date; failure to achieve the

required quality; failure of the project to meet the required operational needs; damage to the construction site as a result of fire or flood; and injury to a worker because of an inadequate system of working.

Hassanein and Afify (2007_{a, b}) stated that contractors in Egypt lack consistency in their efforts to ensure risk identification. Such contractors may have limited project experience and inadequate expertise. In contrast, international contractors are used to identify relevant risks and take appropriate action.

However, the point to be made here is that the identification process plays an important role in risk management. In fact, it is believed that the main benefits of risk management originate from the accuracy of identification rather than the analysis stage (Uher, 1993). For joint venture projects in Egypt, the risk identification stage includes sources of risk such as access to finance; the coordination of different services and public responsiveness; cultural issues; use of the internet and telecommunications; the means of transport: infrastructure and financial markets; and the global procurement of human and physical resources (Pietroforte, 1997). Moreover, Egyptian legal restrictions on foreign employees affect international construction companies (ICL, 2008; OECD, 2010). International contractors must therefore coordinate with Egyptian partners to identify risks and meet expectations.

5.2.4.2 Risk Classification

Tah and Carr (2000_{a, b}) classified risks into external and internal in accordance with the nature of the risks. However, when they combined fuzzy logic and a work breakdown structure, they grouped risks into six categories: local, global, economic, physical, political, and technological change. Wang et al. (2004) approached the subject differently and stated that risk classification depends mainly upon whether a project is local or international. They also said that internal risks are applicable to all projects, local and international. Furthermore, international projects tend to be subject to external risks such as unawareness of social conditions; economic and political scenarios; unknown and new procedural formalities; regulatory frameworks; and governing authorities.

The PMBOK Guide (2008) classified risks into the following groups: technical, external, organisational, environmental, and project management. Some categories of risk, which affect construction projects, are similar to those for projects such as investments in common stocks or government bonds; others are specific to construction.

The RAMP (2005) and PRAM (2004) processes stated that task classification is required for the deliverables provided by the identification phase. These deliverables should be included through a suitable structure for risks and responses, aggregating and disaggregating as appropriate.

Flanagan and Norman (2000) suggested classifying risk by identifying the consequence, types, and impact of risk. Each of these three types will be discussed in this section (see Figure 5.3).

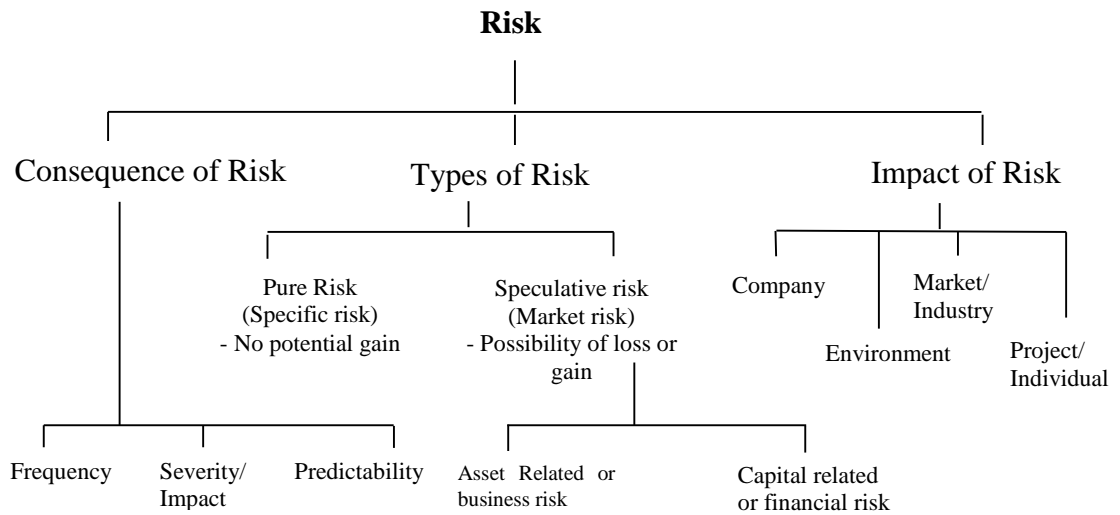


Figure 5.3 Risk classifications (Flanagan and Norman, 2000)

Further, Flanagan and Norman (2000) stated that portfolio theory was used in construction as the basis of an investment portfolio. Such a theory classifies risks into market and specific risks. Market risks are related to the way that the general market behaves, while specific risks are specifically related to a company. Portfolio risk can be considerably reduced by increasing the number of investment holdings. The performance of such investments depends on changes in commodities' prices, government spending, and overseas economies. All of these factors affect companies to varying degrees. Moreover, Smith and Bohn (1999) mentioned that portfolio theory is used by organisations to choose an efficient set of projects. In this context, the types of risk can be classified as follows.

Pure risk (static risk) occurs when there is no potential gain. Such risk will typically arise from the possibility of an accident or technical failure, exceptionally inclement weather, or a national strike.

Speculative risk (market risk) occurs when there is the possibility of loss or gain, which might be financial, technical, or physical. Examples are unfair contract conditions, inflation causing a dramatic increase in the cost of land, and failure to identify a structural defect.

Smith (2006) divided risks into global and elemental. Global risks are in four groups: political, legal, commercial, and environmental. Each group includes many risks within it. Elemental risks are associated with project risks such as implementation, operation, finance, and revenue. Such risks are manageable and controllable. Hastak and

Shaked (2000) argued that to analysis risk in the international construction market, it must be studied at three levels: macro (country), market, and project.

The use of joint venture companies is a method of reducing risk because risk is then borne by each of the local and international partners. The performance of most companies depends on economies. These affect money supply, interest rates, exchange rates, taxation, commodities' prices, and government spending. Overseas economies affect most companies to varying degrees. In addition, those companies, which hold market portfolios, are subject to market risk. Each of the aforementioned economic factors can be considered as risk factors for construction joint ventures, and will be taken into consideration in this thesis.

The use of portfolio theory can reduce the risks borne by each party in a project. Such use can be mentioned in the contract between a project owner and the joint venture partners, or in the contract between the joint venture partners. The contract should state the types of risk, and the parties who will bear them. This means that each party, whether contractor or owner, should arrange a method of mitigation and control each risk.

Risk impact hierarchy, shown in Figure 5.4, is divided into four classifications: the environment, the market/industry, the company, and the project/ individual. Environmental risk impact has two parts. The first is physical and includes the weather and other natural phenomena such as landslips and earthquakes. These risk impacts cannot be controlled, but they can be identified, and steps can be taken to mitigate their effects. The second part is political, social, and economic. These are controllable in part by the government of each country. However, these parts cannot be controlled globally because they change rapidly.

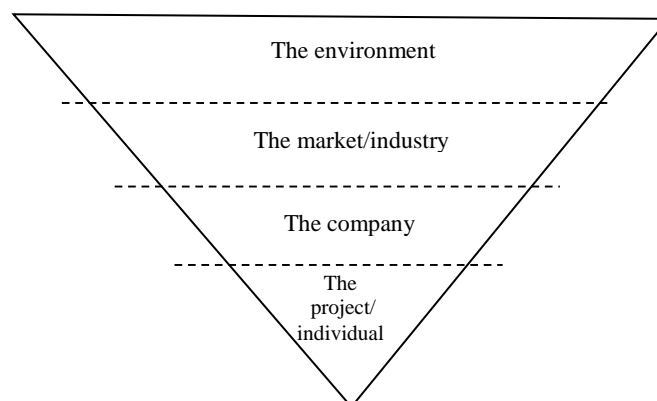


Figure 5.4 The risk impact hierarchy (Flanagan and Norman, 2000)

Market risk could affect an entire industry. An example such a risk is fragmentation. The construction industry, which is characterised by a behavioural form of risk, includes a small number of relatively large companies, and a large number of

small companies. The reaction of a company to market risk may have to take account of the likely reactions of other companies in the industry. All companies must be able to protect their market share of available projects.

Company risk and project risk are linked because a company must ultimately accept the consequences of a risky project during the operational phase. To avoid overexposure to risky projects, some companies prefer to establish a separate company for a particular project, such as consortia and joint ventures, which can be local or international.

As for project risk, if a project loses money this affects a company's financial performance, usually at operational level. In such a situation, a company may face many risks, all of which must be considered in the context of risk management.

The risk impact hierarchy proposed by Flanagan and Norman (2000) will be applied in this thesis with the objective of exploring the risk factors for joint venture companies in the Egyptian construction industry. This risk hierarchy enables the researcher to investigate risk factors from country level to project level, and to consolidate these in a framework for the consideration of all joint venture parties, both international and Egyptian, when establishing a partnership. Thus, environmental risk includes political, legal, social, and economic systems (which were explored in chapter 2) and which establish related risk factors for joint ventures. Market risks, which in this thesis refer to the construction industry, include the fragmented nature of the industry as discussed in Chapter 2. Such fragmentation also involves labour issues such as skills and the availability of raw materials. Company risks for a joint venture include risk factors such as scope, structure, partner selection, relationships, and leadership. These will be discussed in this chapter. Finally, project risks for a joint venture include risks related to finance, raw materials, labour skills, location, and project leadership, each of which will be discussed in this thesis.

The consequences of risk, as stated by Flanagan and Norman (2000), require taking relevant factors applicable to the effects of risk, into consideration. There are different types of risk consequence such as maximum probable loss, the most likely cost of loss, the likely cost of servicing a loss if no insurance is in place, the cost of insuring against an event occurring and the reliability of the prediction about an event.

Each risk can be studied by examining the frequency of occurrence compared to the severity, and can then be quantified. Moreover, some risks, which have no data available about their sources, can be predicted and should be considered as part of a risk management process. Using the consequences of risk can provide a guideline for contractors and owners to help them take correct decisions within a risk management process.

Most contractors, whether international or Egyptian, insure against the occurrence of certain events. However, events or risks must be identified, and there is a lack of expertise among Egyptian construction management, which hinders this. Some contractors in the Egyptian construction industry take out their own insurance because of their inability to divide risk response between parties.

5.2.4.3 Risk Analysis

Risk analysis is an integral part of the risk management process. The main purpose of risk analysis is to help companies investigate properly those risks, which could be faced during operational processes. Smith et al. (2006) stated that risk analysis is a systematic approach, which follows the identification of risks in order to quantify their impact. The PRAM Guide (2004) defined risk analysis as the assessment of the risks, which affect a project in order to gain an understanding of the impact upon project objectives to prioritise risk responses.

The RAMP Guide (2005) described the advantages of risk analysis: as allowing for profitable opportunities, which in some cases can be too risky, to be utilised, and also minimising risks when the right actions have been taken, assuming the risks are predictable and the actions economic. In addition, risk analysis methods recognise the uncertainty, which surrounds the best predictions by generating probability distribution based upon expert judgement.

There are a number of successful risk analysis methods suitable for different project characteristics and purposes. Flanagan and Norman (2000) structured a systematic way to analyse available data by considering all the various options; considering the risk attitude of the decision maker; considering what risks have been identified which are controllable and what the impact is likely to be; making both quantitative and qualitative measurements; explaining the results of the analysis and developing a strategy to deal with the risk; and deciding which risks should be retained and which risks should be allocated to other parties.

Figure 5.5 shows common risk analysis techniques (Flanagan and Norman, 2000). These techniques can be qualitative or quantitative, and must match the objectives of a project. In practice, qualitative analysis is applied first, and then if this analysis cannot provide sufficient detail, quantitative analysis is applied to obtain numerical evidence.

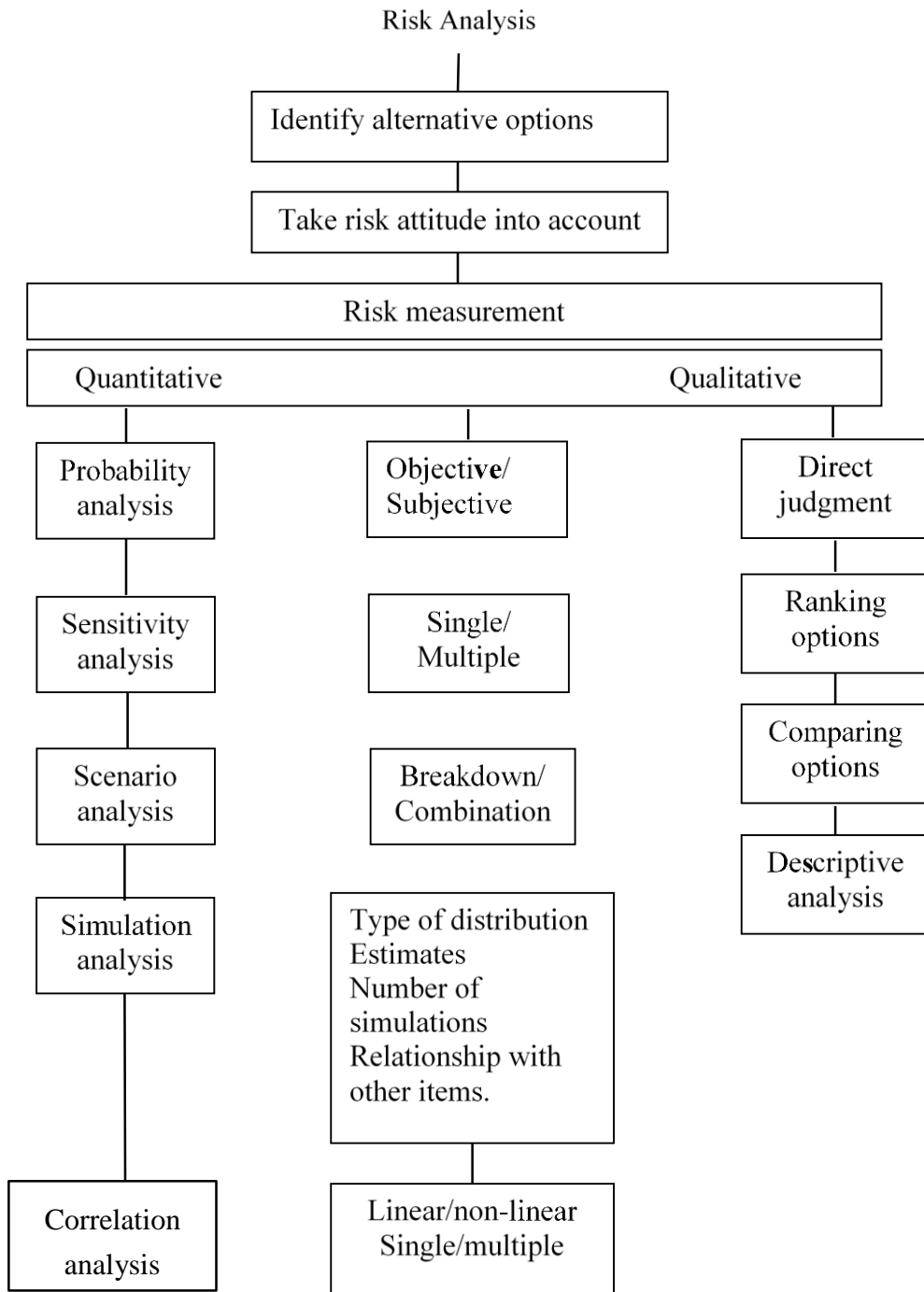


Figure 5.5 Risk analysis (Source: Flanagan and Norman, 2000)

The PRAM (2004) process used influence diagrams, which provide a powerful means of constructing models about the issues in a project, which are subject to risk. These are now used as the user interface for a computer-based risk-modelling tool, thus allowing the development of very complex risk models, which can be used to analyse the cost, time, and economic parameters of projects.

In contrast to the aforementioned, BS ISO 31000 (2009) stated that risk assessment is the overall process of risk identification, risk analysis, and risk evaluation. However,

it seems reasonable to conclude that the main purpose of risk analysis is to find out the estimated impact of a risk on a project, and then to decide on a suitable response to mitigate the risk.

There is a lack of data about the risk management process in construction joint ventures in Egypt. Accordingly, Flanagan and Norman's (2000) risk analysis process and its classification system will be adopted in this research. This enables the researcher to explore risk factors at all levels, starting with the environment in Egypt and then analysing each further risk aspect of a joint venture project.

5.2.4.4 Risk Response

Risk response and mitigation are the actions, which are required to reduce or eliminate the potential impact of risk. Risk response or allocation can take one of the following forms: retention, reduction, transfer, or avoidance (see Figure 5.6).

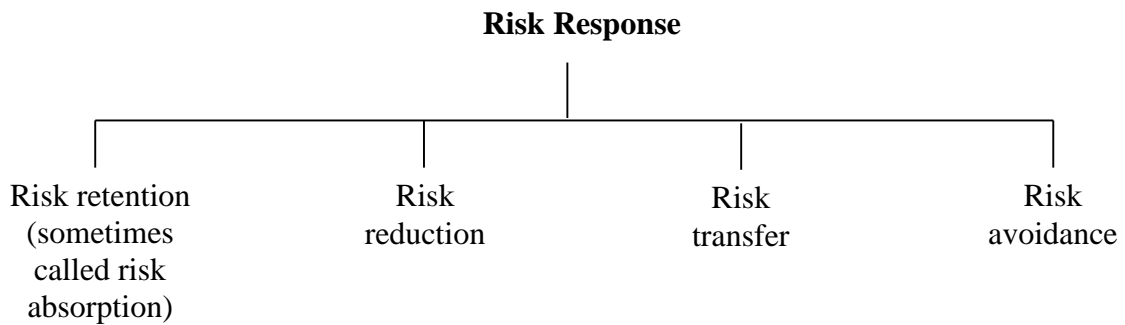


Figure 5.6 Risk response (Source: Flanagan and Norman, 2000)

In addition to the aforementioned, the RAMP Guides (2005) discussed a number of response approaches such as eliminating risk, aborting, pooling, and insuring or reducing uncertainty. Smith et. al. (2006) added the contingency fund as a response approach. In contrast, the PRAM (2004) process divided risk responses into (1) planned risk event responses, which start early on in the identification phase, and (2) planned project risk responses, which are joint specific and general responses.

Some scholars have agreed about certain response approaches. These are as follows.

Risk retention. Not all risks can be transferred; sometimes, for economic reasons, they must be retained. It is also preferable to retain a portion of the risk in certain circumstances. Risks that are suitable for retention are those, which occur frequently but result in small losses (Flanagan and Norman, 2000).

Risk reduction. Exposure to risk can be reduced by sharing it with other parties. The reduction of risk falls into four basic categories: education and training to alert staff

of potential risks; physical protection to reduce the likelihood of loss; systems, which ensure consistency; and physical protection to protect people and property (Flanagan and Norman, 2000). Further, risk can be reduced by obtaining additional information, performing additional tests/simulations, allocating additional resources, improving communication, and managing organisational interfaces (Smith and Bohn, 1999).

Risk transfer. Generally, the transfer of risk does not reduce the criticality of the source of risk; it just shifts a risk to another party. Thompson and Perry (1992) stated that risk transfer could take two basic forms. The property or activity responsible for the risk may be transferred by, for instance, hiring a subcontractor to work on a hazardous process; or the property or activity may be retained, but the financial risk is transferred by using an insurance company.

Risk avoidance. Risk aversion is synonymous with the refusal to accept risk. Normally, risk avoidance is associated with pre-contract negotiations, and sometimes it is extended to the execution of a project (Flanagan and Norman, 2000).

Contingency. Contingency refers to an additional sum in the project estimate to cover unknown eventualities such as those risks which are assessed as low likelihood and impact, and which have not been revealed during the identification process. Contingency is often formalised in the project estimating process (Webb, 2003).

The researcher conducted a review of samples of joint venture contracts. This review showed that Egyptian joint venture companies use contract clauses to incorporate risks and the parties who adopt them. A transfer risk through an insurance company is another approach that is used. Some Egyptian joint venture companies also use the contingency approach. Usually, an amount is added to a works contract by the joint venture parties when they submit a tender to an owner. It was noted that some contractors hide contingency allowances in their estimates to reduce the cost of a bid in order to submit the most competitive price and win a contract.

5.3 Risk Management Frameworks and International Construction Joint Ventures

The success of a risk management framework depends on its effectiveness, its foundations, and the arrangements that are embedded throughout an organisation at all levels. According to ISO 31000 (2009), a risk management framework is a set of components which provide the foundations and organisational arrangements for designing, implementing, monitoring, reviewing, and continually improving risk management throughout an organisation. The conceptual structure, known as the framework, assists in managing risks effectively through the application of the risk management process at each level of an organisation. The framework ensures that information about risk derived from the risk management process is adequately reported,

and is used as a basis for decision making and accountability at all relevant organisational levels (BS ISO 31000, 2009).

The management of risk at strategic programme and operational levels needs to be integrated so that the levels of activity support each other. In this way, the risk management strategy of an organisation is led from the top and embedded in the normal working routines and activities of an organisation. Consequently, all staff should be aware of the relevance of risk to assist them in achieving their objectives. Training to support staff in risk management should also be available.

The application of a risk management strategy should be embedded in an organisation's business systems, including its strategy and policy-setting processes, to ensure that risk management is an integral part therein. In this context an organisation has a series of levels arranged in a pyramidal structure. The strategic apex is concerned with long-term survival and development (Mintzberg, 1979). The middle level concerns the exercise of formal authority and acts as the link between the strategic apex and the operating core. Finally, the operating core managers and operators are at the bottom of the pyramid. They are concerned with the input-transformation-output process of a project.

This research examines joint venture construction companies created by international and Egyptian contractors. The structure of the organisations was discussed in Chapter 3, and from the pilot interviews, which were conducted during the research, it was confirmed that the pyramidal levels of Mintzberg (1979) are applied in Egyptian joint venture companies. The joint venture committee sits at the strategic level where all strategic decisions are taken whereas the programme level in the middle is the joint venture company itself and the base of the pyramid (the project level) is where the operations take place.

Some researchers such as: (Bing et al. (1999); Kapila and Hendrickson (2001); Luo (2001); Tah and Carr (2000_{a,b}, 2001) ; Tah et. al. (1993);) and Walker and Johannes (2003)) have studied risks for construction companies in general, and for joint venture construction companies in particular, at different project stages, as shown in Appendix B. These studies can be broken down as follows:

International joint ventures (IJVs) have been used in different countries to improve access to global markets and reduce costs. Walker and Johannes (2003) investigated the nature of the JV relationship between partners in Hong Kong, and the way they design their behavioural responses in an organisation to meet challenges and goals. Walker and Johannes (2003) also discussed the motivation for forming joint ventures in large-scale construction projects. These include a reduction in risk exposure for owners who may have cash flow or other financial, problems.

Luo (2001) investigated the management and operating performance of Sino-foreign construction joint ventures, and the relationships between ownership, management control, and performance. Shen et al. (2001) established a risk significance index, which showed the relative significance among risks associated with joint ventures in Chinese construction procurement. The authors also classified construction joint venture risk factors into six groups: financial, legal, management, market, policy, and political and technical risk (see Appendix C).

Bing and Tiong (1999) studied the risk factors within international construction joint ventures (ICJVs), and grouped them as internal 'joint venture specific'; project specific; and the external 'environment where a JV operates'.

Internal joint venture specific risk factors are factors, which are unique to JVs. They are developed from the nature of operations, which cause conflicts within a JV organisation. The factors are as follows: a partner's parent company in financial problems; disagreement about accounting for profit and loss; employees from each partner distrusting each other; policy changes of parent companies towards an ICJV; a partner's lack of management competence and resourcefulness; too much interference by a parent company in the business affairs of partners; disagreement about the allocation of staff positions in an ICJV; disagreement about the allocation of work; and a dispute over technology transfers.

Project-specific risk factors refer to expected developments during construction, which lead to time and cost overruns or shortfalls in performance parameters. These factors are: cash flow problems of the owner; poor project relationships; incompetence of subcontractors/suppliers; excessive client demands and variations; disagreement about conditions of a contract.

External risk factors are the risks that stem from the competitive macro-environment in which a JV operates. These factors are as follows: inconsistency in policies, laws, and regulations; economic fluctuations; changes in exchange rates; force majeure and social disorder; inflation; restrictions on fund repatriation; import restrictions; security problems; language barriers; different social, cultural, and religious backgrounds; and pollution.

Tah and Carr (2000_{a,b}, 2001) and Tah et. al. (1993) classified construction project risk factors using the hierarchical risk breakdown structure (HRBS). With this, risks are separated into those related to the management of internal resources and those, which are controlled by the external environment. External risks are not controllable by the company, and because of the nature of such risks, they need continual scanning and forecasting. Internal risks are more controllable, and vary between projects. Some of these risks are specific to individual work packages of a project, which is the local risks,

while others affect every aspect of a project and cannot be associated with any particular work package, which is the global risks. Tah and Carr (2000^{a,b},2001) also presented a methodology for evaluating risk exposure, taking into account project time, cost, quality, and safety performance measures. This was based on fuzzy estimates of risk components. The authors also suggested a common language for describing remedial actions.

Bing et al. (1999) proposed a model incorporating risk mitigating measures which included partner selection, agreement, employment, control, subcontracting, engineering contracts, good relationships, and renegotiation. Kapila and Hendrickson (2001) identified the financial risk factors for international joint ventures before examining the most effective mitigation measures, which could be adopted by the parties of a project to manage such risks. The principal measure was to minimise the foreign exchange rate risk.

Gale and Luo (2004) investigated the key factors for success at the formation stage of joint ventures and compared perceptions of Chinese and international managers towards joint ventures. It was concluded that there is no significant difference among such managers about their perceptions of the key factors, which lead to the success of joint ventures at the formation stage.

ElShabassy (2002) studied the classification of risk factors for international joint venture projects; in addition, ElShabassy (2002) performed an analysis to classify country related risks into country operating, socio-political, and financial risks. Risk factors were then identified and grouped into three main groups: internal, project specific and external risk factors. Moreover, ElShabassy (2002) proposed an easy to use (decision support system) that would help companies in assessing the risks encountered during planning and operating joint venture projects in order to avoid affecting the project time schedule and cost overruns.

In the context of joint risk management (JRM), Rahman and Kumaraswamy (2002^a) considered a study based in Hong Kong, and examined preferred risk allocation, including JRM, in construction contracts. The findings indicated that the risk allocation trend is towards more collaborative teamwork based in working environments. Further, Rahman and Kumaraswamy (2002^b) conceptualised a basic model for improved project delivery using JRM.

In the context of project risk, several applications were reviewed. Ward and Chapman (2003) discussed the reasons for transforming project risk management into uncertainty management, and outlined important differences in perspective, which included an enhanced focus on opportunity management. Abd El Said (2003) presented a detailed study of project risks, which may be materialised in projects, and different techniques for risk management. Project risks were categorised into nine groups. The

relative weights of these risks vary from one project to another depending on project characteristics. Moreover, the factors were ordered according to the points of view of contractors, owners, and consultants. In addition, the principles of risk management, risk allocation, and simulations were outlined. Abd El Said's (2003) research results indicated that there is a lack of systematic risk management procedures in the Egyptian construction industry and that risk analysis is not a separate job in most of construction companies. Both contractors and owners prefer to work with international companies with a second preference of public sector. Moreover, both contractors and owners consider it necessary to check the financial stability of each other.

Ashley and Bonner (1987) presented an approach to help international contractors take capital investment decisions so as to adequately address contracting risks. Instead of traditional political risk analysis, the authors identified primary political source risks and their impacts on project cash flow.

Dawood (1998) developed a methodology, which can accurately model activity dependence, and realistically predict project duration using a risk management approach. The author also proposed a simulation model, which used a modified Monte Carlo technique to summarise methodology and run experimental work.

Bajaj et al. (1997) identified, investigated, and evaluated the process of risk identification at the tendering and estimating stage for construction contractors in New South Wales, Australia. The authors proposed a top-down technique, which led to guesswork in terms of contingency for risks accepted by contractors. According to the research, contractors do not discuss risk allocation with clients.

Kangari and Boyer (1981) studied the selection of construction projects, which maximise the value of a company to its owners. A new procedure was developed for selecting projects based on the portfolio approach. This model was advanced, and described the relationship between each individual project.

Jaafari and Schub (1990) studied the results of a technical and technological risks survey at engineering projects and organisations in the Federal Republic of Germany. The work indicated the need for a radical revision of risk identification, assessment, and mitigation of risk. An approach was presented based on a higher level of risk assessment and work organisation, and which required a different management philosophy to achieve a successful project.

A risk model suggested by Al-Bahar and Crandall (1990), the construction risk management system (CRMS), identified project risks and systematically analysed and managed them. Influence diagramming and the Monte Carlo simulation were used as tools to analyse and evaluate project risks. Management strategies were suggested such

as risk avoidance, risk transfer, risk retention, loss reduction, and risk prevention and insurance.

Hastak and Shaked (2000) presented the international construction risk assessment model (ICRAM-1). This evaluated the potential risk involved in expanding risk operations in international markets by analysing the risk at several levels such as country, market, and projects. Results obtained from the analysis of the model were: high risk indicators; the impact of a country's environment on a specific project; the impact of market environment on a specific project; and overall project risk. The results were deemed crucial for investment decisions in an international construction environment.

Wang et al. (2000) used the findings from an international survey of risk management on build, operate, and transfer (BOT) projects in developing countries, with an emphasis on infrastructure projects in China. Political and force majeure risk criticality were considered, and respondents evaluated the mitigation measures for each of the risks.

For strategic risks, two papers were reviewed. Mulholland and Christian (1999) described a systematic way to consider and quantify uncertainty in construction schedules incorporating the experience of experts; project-specific information; decision analysis techniques; and a mathematical model to estimate the amount of risk in construction schedules at the start of a project. Kumaraswamy (1997) developed strategies for appraising the synergistic potential and risk-carrying capacities of prospective project parties for joint ventures or other projects. Kumaraswamy (1997) suggested that the best way to control risks was to identify, analyse, and respond to them. He also proposed multidimensional frameworks to help engineers deal with project risks.

In summary, the strategic risks, which companies face from uncertainty, are embedded in their technological, market, and competitive environments. Further, relationships between companies in an alliance are often risky, in and of themselves.

In the context of contracting risks, four papers were reviewed. Hassanein and Afify (2007_{a, b}) studied two major power stations contracts in Egypt and identified a marked lack of consistency in contractors' risk identification. Moreover, the Egyptian companies with vast experience in Egypt but limited project management experience were shown to lack the necessary expertise to properly identify risks and take the appropriate exceptions.

Wang et al. (1999) explored the adequacy of key contract clauses in the BOT agreement for power plants. These clauses related to the political and force majeure risks in China from the perspective of project parties. Hartman et al. (1997) tested the revised Canadian Standard Lump Sum Contract against the previous contract from the

perspective of improvements in wording, not the legal terms. The measure used was the extent to which there was agreement about the interpretation of who was bearing particular risks.

Abdou (1996) studied the relationship of construction with finance, time, and design. Within these contexts, Abdou (1996) outlined the contractual relationships that exist between different parties involved in the design, development and construction of a project. The identification of these relationships in the analysis and management of construction risks was also considered. For each party involved in risk generation and management it was concluded that strategies were needed to overcome risk at different construction phases.

Kangari (1995) concluded that contractors in recent years assumed more risks than before. The risks identified were contractual and legal problems shared with an owner; change order negotiations; third party delays; contract delay resolutions; and indemnification and hold harmless. Kangari (1995) also noticed that contractors quantify the allocation of defensive engineering risk.

Numerous decision models have been formulated to analyse construction risks. Ibbs and Crandall (1982) focused on the manner in which individuals make decisions. The authors conducted a field interview, and the results substantiated the hypothesis that decision-making is multi-attributable in nature. The study also explained that construction risk is a function of competitive economics and relates to project characteristics.

Ahuja and Arunachalam (1984) proposed a risk evaluation model (REM) to evaluate the uncertainty of resource availability and to generate several alternatives taking into consideration varying project completion times, costs, and performance probabilities. The authors stated that the model helps contractors with 'bid/no-bid' decision-making, and assists consultants with planning. Ye and Tiong (2000) developed a new risk method based on net present value (NPV) by combining the weighted average cost of capital and dual risk return methods to provide decision risk evaluation in privately financed infrastructure projects.

Han and Diekmann (2001) stated that the globalisation of the construction industry provides tremendous opportunities for contractors to expand into new foreign markets. However, international construction involves all of the uncertainties common to domestic construction projects as well as risks specific to international transactions. Moreover, Han and Diekmann (2001) discussed the current approaches related to entry decisions into international construction markets, before developing a comprehensive approach for making stable and systematic go/no-go decisions for international projects, which was supported by a number of authors who have described the risks specific to

international construction projects such as (Ashley and Bonner 1987; Demacopoulos 1989; Lee and Walters 1989; Messner 1994; *Seminar* 1995; Kalayjian 2000). Han and Diekmann (2001) added that the scope of these risks (political, economic, cultural and legal, technical and related to construction and other risks need the support of a formal methodology to incorporate the risks into a go/no-go decision.

Flanagan and Norman (2000) stated that construction projects are complex, with solutions that are unforeseeable and unpredictable. Therefore, decisions are rarely clear-cut. The goal of all decision-making techniques is to map out the probabilities, consequences, and financial options, with the intention of constructing balance sheets, which can provide guidance to decision makers. The basic components of decision making can be summarised as follows: the objectives of a decision maker must be clear and simple; a range of choice must be available to a decision maker; factors from the perspectives of owners, contractors, consultants, and other interested parties must be taken into consideration; possible strategies should be able to cope with uncertainties; analytical techniques must be used to aid a decision maker; the attitude to risk of the decision maker is crucial; time preferences (short or long term) and the timing of decisions must be considered; finally, the bias of a decision maker must be recognised to ensure consistency. This research has analysed a sample of international joint venture construction contracts in Egypt, which have shown that there is a committee of joint venture members, which takes decisions about significant matters.

According to BS ISO 31000 (2009), risk management helps decision makers to make informed choices, prioritise actions and to distinguish among alternative courses of action. Decision makers at all levels of an organisation should ensure that risk management remains relevant and up-to-date.

With regard to finance and cost control, Neufville and King (1991) discussed the implications of the need for work and risk premiums for owners, contractors, and the insurance industry. Consequently, Neufville and King (1991) presented a revised bidding model. Minato and Ashley (1998) used the historical cost-control data of a company, and provided managers of construction companies with a theoretical framework of risk analysis methodology that supported the project risk analysis in these companies. Mak and Picken (2000) used the methodology of estimating risk analysis (ERA) for contingency to identify uncertainties and estimate the financial implications. The results showed a significant difference in variations and consistency between projects, which used non-ERA, and ERA.

In the same context, Smith and Bohn (1999) investigated the use of contingency in small to medium-sized construction companies, and summarised recent literature on the classification of construction contract risks and mitigation measures. The

classifications included eight major groups of risk: natural, design, logistics, financial, legal and regulatory, political, construction, and environmental. In addition, risk-modelling techniques were reviewed for their contribution to contingency estimating. Tah et al. (1993) applied fuzzy theory to the subjective assessment of risk during tender preparation for contingency allocation. Moreover, a hierarchical risk breakdown structure for contractor risk assessment and a model for contractor contingency allocation were developed.

Akinci and Fischer (1998) identified major uncontrollable risk sources, which cause cost overburden for contractors. The authors suggested that uncontrollable risk sources should be considered during the estimation stage. Here they can be managed before construction begins. Javid and Seneviratne (2000) explored the sources of investment risk in airport parking infrastructure development. Monte Carlo simulation was used to estimate and understand the implications of cash flow uncertainties on project feasibility. Griffis and Christodoulou (2000) presented a methodology for determining the expected loss to an insurance company when it insures for a construction company's liquidated damages.

Finally, BS ISO 31000 (2009) provided the principles and guidelines for managing any form of risk in a systematic, transparent, and credible manner, and within any scope and context.

As explored in this section, the risk management process is important for most construction projects throughout their life cycle. In addition, joint ventures were adequately addressed through research in many countries. This research studied various elements of a joint venture such as, the relationship between partners (Luo, 2001; Walker and Johannes, 2001); the identification of risk factors and their classification (Bing and Tiong, 1999; Bing et al., 1999; and Kapila and Hendrickson, 2001); and key success factors for forming JVs (Gale and Luo, 2004).

However, despite this variety of risk management studies a limited number of studies have identified the risk factors in construction in Egypt and none has studied the risk factors for international construction joint ventures, which is one of the main objectives of this research.

To illustrate the risk factors for construction joint ventures in Egypt through this research, it was essential to understand the risk factors in other countries by using existing methodologies. Further, the purpose of the review of existing risk management frameworks in this chapter was to understand the importance of applying risk management processes to identify the risks which face international joint venture companies, and which need to be controlled by all involved parties to achieve a project's objectives with minimum losses. Hence, the development of a new method to address

the risk factors for construction joint ventures between Egyptian and international companies will be based on comparisons of empirical findings and existing risk factors in other countries, as reviewed in this section. The applicability and ranking of these factors in the construction market will also be studied. The next section will provide detail about the implications of risk management for joint ventures in the Egyptian context.

5.4 Implications of Risk Management Literature for Joint Ventures in Egypt

The construction industry contains risks, which emerge during a project's life cycle, from initial inspection to occupation. The risk management process is used to reduce the effect of risks that are identified through risk analysis. There are several risk frameworks used for analysing risks, some of which, such as RAMP and PRAM, are more concerned with strategic and financial processes.

Moreover, the fragmented nature of the construction industry's structure means that a large number of companies compete within fragmented segments. The size and expense of construction products and the long production periods generate high risks for construction companies, especially if they compete in another country. It is well known that all parties involved in construction projects would benefit from reductions in risk before making any financial commitment.

Reviews of the literature on risk management and joint ventures have provided many implications for risk factors applicable to joint ventures in Egypt. Several authors and guidance from other countries such as BS ISO 31000 (2009), Flanagan (2000), PRAM (2004), RAMP (2002), Smith and Bohn (1999), and Tweeds (1996) have provided primary textual references. Forty – one journal papers, which discussed the different aspects of risk management and in some instances reviewed the risk factors of joint ventures, have provided supporting information, as considered in Section 5.3. However, very little research has considered the risk factors in the construction industry in Egypt and none has studied the risk factors for international construction joint ventures. Accordingly, this research investigates the gap in theory for such risk factors.

Many framework processes used for risk management are similar. However, Flanagan and Norman's (2000) framework will be applied in the analysis of joint venture projects in the Egyptian construction market because it has a baseline for a risk management process. Many authors agreed that in the international construction market, studying risks must occur in three levels: macro (country), market, and project such as (Hastak and Shaked, 2000; Flanagan and Norman, 2000).

Accordingly, in this research this analysis was adopted for the country, the joint venture, and project levels. In addition, according to the risk management process, which

will be adopted in this research, the first step is the identification and classification of risks. Globalisation was discussed in Chapter 2 and it was clear that the characteristics of developing countries can be applied to Egypt. The Breakdown Structure of Risks (BSR) mentioned by Han and Diekmann (2001) will be adopted for the country risk factors category as it is supported by certain authors (Ashley and Bonner 1987; Demacopoulos 1989; Lee and Walters 1989; Messner 1994; *Seminar* 1995; Kalayjian 2000). In addition, for the project specific level the risk factors suggested by Tah and Carr (2000^{a, b}, 2001) and Tah et. al. (1993) will be adopted with some modification in this research.

In summary, the existing literature on risk factors in international construction joint ventures has been explored from several angles. This exploration, combined with studies on the Egyptian political, legal, social, and economic systems, can give a clear view of the economic and business environment in which Egyptian and international companies operate (as discussed in Chapter 2). Joint ventures may be formed for a variety of reasons. The most common reasons are as follows: that the project is too large or complex for a company to undertake with its available resources; a project requires specialist skills or abilities which a company is unable to provide by itself; and in developing countries, including Egypt, the skills and expertise of emerging companies can be developed through their association in joint ventures with well-established experienced companies. In Egypt's construction sector, foreign equity is limited to a 49% ceiling, and joint ventures with a domestic partner are mandatory. The Tenders Law 89 of 1998 requires the government to consider both price and best value when awarding contracts, and to issue an explanation for any refusal of a bid. However, the law contains preferences for Egyptian domestic companies. These are accorded priority if their bids do not exceed the lowest foreign bid by more than 15%. For Egyptian joint ventures, the adopted definition of risk for either international or Egyptian parties is the possibility of loss or bad consequence (see Section 5.1). The risk management process, according to the Egyptian context, consists of risk identification in which international contractors must coordinate with Egyptian partners to identify risks and follow up the expectations of the Egyptian market, and then use risk classification to record each risk and qualify it. Subsequently, risk analysis estimates a risk factor's likelihood of occurrence and its potential impact on a project in terms of timescale, cost, and quality. Risk response then identifies the team, which will be responsible for risk planning. Finally, risk mitigation strategies are used to execute a risk control plan. It is also worth noting that most contractors in the Egyptian market insure against events occurring in order to transfer risk. They do this because of an inability to identify risks in the first instance (see Section 5.2).

This study analysed a sample of international joint venture construction contracts in Egypt, which showed that there is a committee of joint venture members that makes decisions on significant matters (see Section 5.3).

This chapter investigated the gap in theory regarding the risk factors for international joint venture construction companies in Egypt. The emergence of three levels of risk were adopted. The researcher utilised the Breakdown Structure of Risks (BSR) as mentioned by Han and Diekmann (2001) for the first level, which is the country level risks. In addition, the second level, which is the joint venture level risk factors, which is investigated in chapter 3 and 4 of this research. Finally, Tah, and Carr's (2000^a, ^b, 2001) and Tah et. al.'s (1993) risk factors for the third level, which is the project specific, level; these levels together will build the new method, which in turn will present the risk factors in the international joint ventures in Egypt. These risks can be the most appropriate risk factors, which are suitable for the new method to identify the risk factors in international construction joint ventures in Egypt. The successful operation of a joint venture requires a high degree of trust and cooperation between its members. Nevertheless, it is a recipe for possible disaster if a joint venture is not constituted by means of a comprehensive and fair written agreement, which sets out obligations, rights, risks, and rewards. Usually, a joint venture is formed prior to the award of a contract, with the objective of securing it. Alternatively, a joint venture may be created as a condition for the award of a contract. This approach is often used to secure a particular preference when evaluating tenders. In this context, a new method is required to explore the risk factors for international construction joint ventures in Egypt. This will be discussed in Chapter 7.

Chapter 6 Research Methodology

6.0 Introduction

The dictionary defines the first syllable of research as 'again', 'new', or 'over again', and the second syllable as a verb meaning 'to examine closely and carefully', 'to test and try', or 'to probe'. The noun 'research' describes a careful, systematic, patient study and investigation into a field of knowledge, undertaken to establish facts or principles (Grinnell, 1997). Further, Grinnell (1997) stated that 'research is a structured inquiry that utilises acceptable scientific methodology to solve problems and create new knowledge that is generally applicable'. Moreover, according to Kerlinger (1968): 'scientific research is a systematic, controlled empirical and critical investigation of propositions about the presumed relationship about various phenomena'. This chapter introduces the research methodologies, which have been applied to achieve the aim and objectives of this research.

6.1 The Question to be answered in this Research

Chapter 2 explored the Egyptian PESTLE systems, the ways in which international companies enter the Egyptian construction market, Egyptian companies, and the law, which governs the operation of such companies in the construction market. Chapters 3 and 4 explained the strategy of companies, their competitive advantages, and the types of contract used for collaboration between companies. Chapter 5 identified the risk factors, which face international joint venture companies in many countries. Some scholars such as Bing et al. (1999), Bing and Tiong (1999), Rahman and Kumaraswamy (2002a), and Gale and Luo (2004) published studies concerning risk management factors in international construction joint ventures; however, until now little research has focused on risk factors in the construction industry in Egypt. This research explores the risk factors within Egypt such as economic, political, legal, and financial. It also investigates the risk factors in joint venture companies and at the project specific level. It was clear from the literature that there is no specific method applied to Egyptian construction joint ventures to identify, categorise, and quantify the risk factors, which the companies face.

This research is only concerned with the construction companies involved in large projects in Egypt such as the construction of the Cairo metro line, a water treatment plant, a new city, an airport terminal building, a five star hotel, and a harbour. Further, it is hoped that by the end of this research, the risk factors associated with international construction joint ventures in Egypt can be revealed. Moreover, the development in understanding these risk factors can help Egyptian and international contractors assess these risk factors. Thus, a new method will be proposed containing the risk factors in construction joint ventures between Egyptian and international companies based on

comparisons of empirical findings and existing risk factors in other countries to fill the knowledge gap for this type of collaboration.

In the following sections, the research philosophy and approaches, including the methods adopted to collect the data, will be discussed.

6.2 Research Philosophy and Approaches

Research methodology is 'the philosophy or the general principle which guides the research' (Dawson, 2007). Moreover, research philosophy represents different ways through which knowledge is developed and judged as being acceptable (Remenyi et al., 1998). Because of different research philosophies, different research approaches are preferred. This study has considered two such approaches: deductive and inductive. With the deductive approach, a theory and hypothesis (or hypotheses) are developed, and a research strategy is designed to test the hypothesis. The objective of this approach is to explain the causal relationships between variables. It entails the development of a conceptual and theoretical structure prior to testing through empirical observation (Gill and Johnson, 2002). When the definition of what is going to be observed is made, indicators and measurements of the empirically observable instances are designated. Thus, the abstract concepts are linked with something that is observable and measurable in practice. Generalisation is a significant characteristic of the deductive approach (Saunders et al., 2003), but in order to generalise regularities in human social behaviour, it is important to select samples with sufficient numerical size. Thus, it is often expensive and time consuming to undertake a deductive approach.

The inductive approach is the logical ordering of an induction approach, and is the opposite of deductive. Explanations and theories are created or constructed from what has been observed in the empirical world. In addition, inductive methods emphasise that social phenomena are not 'it-beings' or 'things' of nature: social scientists are required to explain human behaviour adequately. In the inductive approach tradition, people are more likely to work with qualitative data and to use various methods to obtain this data in order to establish different views of the phenomenon under study (Easterby-Smith et al., 2002). However, inductive research is usually unstructured. Thus, it is sometimes unreliable because it is not replicable, and the presence of bias cannot be excluded (Gill and Johnson, 2002).

The selection of an appropriate research approach depends on the problem the researcher seeks to solve. In principle, different approaches could be combined in order to solve particular research questions. The following sections provide a general description of the features of the established methods and strategies used for business and management research. Based on an understanding of these methods and strategies, an appropriate research design for this study is adopted.

6.2.1 Research Methods

Research methods are the techniques, which are used to collect data (Dawson, 2007). There are two techniques: quantitative and qualitative. The quantitative method is the traditional, positive, or experimental approach. With this approach, the researcher stands apart from the subject and observes an independently existing reality. The design is usually a logical structure in which theories determine the research problem, which is presented in the form of a hypothesis or statement of a proposed relationship subject to a test. The researcher tests a theory by using hypotheses, which contain the variables, which need to be measured. Quantitative data is structured and tends to be better suited to explaining the cause and effect of why phenomena have occurred (Patton, 1990). The benefits of construct and internal validity gained by using the quantitative approach are highly appropriate for testing large populations where one can apply a sample to represent the whole population.

The qualitative method has been called the 'constructivist' or 'naturalistic' approach by Lincoln and Guba (1985). Qualitative data is usually unstructured and allows the researcher, through an inductive approach, to understand the interrelating characteristics, which emerge without making prior assumptions about their correlation. In addition, Lincoln and Guba (1985) indicated that this methodology is particularly suited to situations where the topic is complicated or sensitive, or involves an interaction or change process. Walker (1985) noted that the method is suitable if the population is small. Typically, qualitative methods use large volumes of rich data obtained from a limited number of individuals. They permit the evaluation of issues in depth, and where data collection is personal and requires interpretive and creative analysis.

Chisnall (1986) identified three types of qualitative design, which he called exploratory, descriptive, and causal studies.

Exploratory studies are concerned with identifying the real nature of research problems and formulating relevant hypotheses for later tests. They provide valuable insight and a firm grasp of the essential character and purpose of the proposed research, and encourage the development of alternative research strategies.

Descriptive studies, in contrast to exploratory studies, are derived from prior knowledge. For this type of research to be productive, questions should be designed to secure specific kinds of information.

Causal studies attempt to identify factors underlying behaviour, and to evaluate their relationships and interactions. The concept of causation needs to be approached with caution, and an understanding of its nature is useful. Cause and effect relationships are very difficult to deal with in a realistic and objective manner. Walker (1985)

suggested that quantitative and qualitative methods may be used to complement each other, and that early qualitative studies may initiate quantitative research at a later stage. The nature of such research is exploratory so as to identify the nature of the research problem and to use the qualitative method of data collection and analysis.

This research is concerned with the risk factors in international construction joint ventures in Egypt, and aims to develop a new method, which contains these risk factors based on existing methods in other countries. Hence, qualitative data is required to answer the research questions and explore the risk factors. In the literature review, the data discussed some of the risk factors in international construction joint ventures in Egypt. Hassanein and Afify (2007_{a, b}) studied two major power stations in Egypt and identified a marked lack of consistency in contractors' risk identification. Moreover, Egyptian companies with significant experience in Egypt but limited project management experience were shown to lack the necessary expertise to properly identify risks and take appropriate action.

The prevailing research methods in the literature included sampling, interviews, secondary data, and questionnaires (Saunders et al., 2003). The main methods are reviewed as follows.

6.2.1.1 Sampling

Sampling is a technique, which enables the researcher to reduce the amount of data collection by considering only the data from a subgroup rather than all possible cases or elements (Saunders et al., 2003). Sampling techniques generally include two types. The first technique is random or probability sampling, which is further divided into five types, which are: systematic, stratified, quota, cluster, and multistage. The second technique is non-random or non-probability sampling, which is further divided into four types: purposive, snowball, theoretical, and convenience (Denscombe, 2003, 2007). The representativeness of random samples can be statistically determined, while this is never known in non-random samples and can only be guessed (Berdie et al., 1986).

Regarding sample size, Swetnam (2004) stated that small sample results are less generalisable than large ones, and judgement is needed about feasibility and cost compared to representativeness in order to determine sample size. However, in qualitative research, a small size is required in keeping with the nature of qualitative data. Furthermore, for qualitative researchers, the choice of people and events for inclusion in the sample tends to be based on non-random sampling (Denscombe, 2003, 2007). Graham (2000) supported this approach when he suggested that qualitative research generally uses small, purposive samples within a specific context and which are then explored in detail.

In this research, purposive sampling will be selected. This entails 'hand-picking' the sample for the study. Further details will be discussed later.

6.2.1.2 Interview

An interview is a purposeful discussion between two or more people (Kahn and Cannell, 1957). Through interviews, the researcher will gather valid and reliable data, which is relevant to the research questions and objectives. The methods of personal interviewing include a standardised format involving direct questions and answers (structured interview), exploratory in-depth interviewing used for seeking ideas and insight on the subject (semi-structured interview), or unstructured interview which allows for flexibility (Open University, 1979). McCracken (1998) described interviews as one of the most powerful qualitative tools to use, particularly for descriptive and analytical purposes. Interviews reach respondents in their own environment, and the physical presence of the interviewer helps build mutual confidence and trust (McCracken, 1998). There are also other benefits to interviews. For example, they can use open-ended questions which allow for greater probing for information on a particular subject; they provide alternatives to uncover information, particularly through observations and notes; they can give a better explanation of the purpose of a study than a covering letter to a questionnaire, thus achieving better quality information; they have better response rates; and they enable on the spot assessments to be made about emerging issues which can provide interesting leads to be pursued (Open University, 1979; Easterby-Smith et al., 1991; McCracken, 1998).

However, interviews have a number of disadvantages compared to the use of questionnaires. For example, it takes more time to conduct and analyse information by interview. Interviews are more expensive with respect to dispersal over a wide geographical area compared to sending a large batch of questionnaires. The propensity for bias is also much higher when interviewing, as opposed to analysing questionnaires, because of respondent bias; hostility to a particular interviewer; hostility to being interviewed; interviewer bias; appearance and manner; voice tone and delivery; the interviewer's attitude; the interviewer's sex, age, and position; on the spot coding; inconsistent use of verification; situational bias; and the place of the interview (Bell, 1994). Moreover, Kahn and Cannell (1957) added that the interviewer could exhibit bias when trying to understand the responses of the interviewees. In addition, interviewees can hide the truth because of confidentiality or other reasons, and can follow the lead of the interviewer and provide information, which the interviewer may want to hear.

Structured interviews were used to collect data in the pilot stage of this research.

6.2.1.3 Secondary Data

The objective of documentation is to collect secondary data and provide triangulation and supplementation for questionnaire data. Research of documentary data is directed by the pilot interview questions, and the categories and relationships, which emerge from the data. This ensures the consistency of the data collection process, and enables efficient and effective collection of valuable information from a potentially significant volume of documentary data. Research into documentary data for this study was difficult because of the confidentiality of the data. Secondary data could come from documentary data, survey data, and specific area- or time-based sources. Secondary data has advantages such as saving time and reducing the effort in collecting unknown data; providing longitudinal (time-series) information; and facilitating comparative and contextual analysis for the research project setting. Secondary data have usually been collected for specific purposes, and may not exactly match the research objectives of a project. Further, secondary data is usually less up-to-date than newly collected data (Saunders et al., 2003).

Documentary data in this research were collected by following two steps. In the first step, the documentary data were used to validate the data from the pilot interviews. However, some categories and relationships emerged which were new to the pilot interview findings. These new findings were verified through multiple documentary sources, and with prior interviewees.

In the second step, documentary data were collected by following the emerging categories and relationships through the data of six joint venture projects collected from a variety of existing documents to support and extend the research data. The major sources of documentary data included:

- internal documentation of international joint ventures (IJV) such as contracts between owners and JV companies, and contracts between JV parties;
- websites of JV projects which include project summaries;
- journals written in English about joint ventures in other countries;
- reports generated by important international and national organisations such as the World Bank, the International Monetary Fund (IMF), the American Chamber of Commerce in Egypt, the Egyptian Cabinet (IDSC), the Egyptian Federation For Construction and Building Contractors (EFCBC), the European Commission, and GMA Capital Markets Limited;
- other useful data sites on the internet which provide information about construction companies – the Engineering News-Record (ENR), the Financial Times, and Market Research.

Documentation is an important method for collecting data. Moreover, the documentary data provided efficient supplementary information and triangulation for questionnaire data, which ensured the value and rigidity of this research.

Content analysis was employed to analyse the documents and the pilot interviews. It is simplistic to determine the main facts of a set of data by reference to the topic mentioned or the number of times an activity occurs. Consequently, content analysis must have a theoretical basis to assist the development and testing of data. The initial step with content analysis is to identify the material to be analysed; then to determine the form of content analysis to be employed: qualitative, quantitative, or structural. In addition, the choice of categories depends upon the issues to be addressed in the research (Fellows and Liu, 2003).

6.2.1.4 Questionnaires

By using questionnaires, each respondent is asked to respond to the same set of questions in a predetermined order (De Vaus, 2002). Questionnaires are usually not particularly good for exploratory or other research, which requires a large number of open-ended questions, and are best used with standardised questions (Robson, 2002). Questionnaires can be either self-administered or interviewer administered. Self-administered questionnaires can be delivered online, through the post, or by hand. Questionnaires can also be completed during structured interviews.

Questionnaires allow a large number of people to be involved in research, and the sample is likely to be representative. Because every respondent receives the same questions, consistency is ensured. However, questionnaires could be invalid if the non-respondents differ significantly to those who do respond. Questionnaires could also be limited and biased because questions are predetermined, and important assumptions have already been made. On the other hand, questionnaires, which are personally administered, serve several functions, as reported by McCracken (1988). These are as follows.

- They ensure that the researcher covers the entire environment in the same order for each respondent.
- They allow for prompts, which are necessary to manufacture distance.
- They establish channels for the direction and scope of discourse.
- They allow the researcher to give all his/her attention to the informant's testimony.

In this research, the questionnaires were used in two ways, firstly by sending emails, and secondly by hand delivery to the respondents.

6.2.2 Research Strategies

Saunders et al. (2003) classified six different styles of research method in a social science study, namely, experimental, survey, case study, grounded theory, ethnography, and action research. These methods are either deductive or inductive or both. Along the methodological continuum from deduction to induction, experimental style research is at the extreme of deduction. Ethnography, action research, and grounded theory are at the inductive extreme. Survey and case study are set between these two extremes. Figure 6.1 provides further guidance.

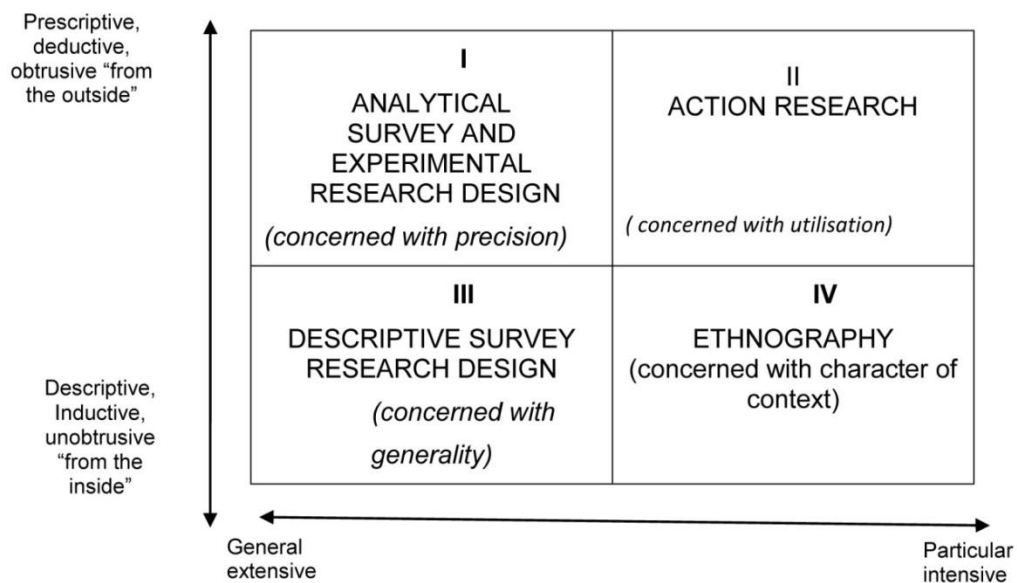


Figure 6.1 Choosing research strategies (Source: Gill and Johnson, 1997)

Generally, experimental research can be divided into two types: 'true/classical' experiments and quasi-experiments. True experiments usually take place in laboratories to test relationships between identified known variables, holding all except one of the variables constant and examining effects by changing the one independent variable. This method is relatively unusual in social science because 'in the true experiment the relevant behaviour of interest is not observed in its natural everyday setting' (Gill and Johnson, 2002). Quasi-experiments, on the other hand, focus on real-life and naturally occurring events. Because subjects cannot be randomly or systematically allocated to experimental and control groups, in quasi-experiments there can be a lack of manipulative control over the independent variables, and a lack of equivalence between experimental and control groups. This may result in a loss of control over extraneous variables (Gill and Johnson, 2002).

An experimental approach is not commonly used in business and management studies because the same individuals cannot always be used when experiments are

repeated, and individual people are decidedly not homogeneous (Remenyi et al., 1998). Ethnography and action research are suitable for other types of research: an ethnographic strategy identifies patterns of human activities in a social environment, and relies to a great extent on observation. However, the risk factors in international construction joint ventures in Egypt cannot be discovered through observations of companies' daily activities. Observation is also very time-consuming.

A survey allows the collection of a large amount of data from a sizable and selected population in a highly economical way. 'The aim of a survey is to obtain information which can be analysed and patterns extracted and comparisons made' (Bell, 1999). During a survey, the same questions are required to be asked to all the selected population. When answers to the same questions are obtained from a large number of individuals, the researcher can not only describe phenomena but also compare and extract patterns (Bell, 1999). Gill and Johnson (1997) stressed that an essential skill in undertaking a survey is the ability to structure, focus, phrase, and ask sets of questions in a manner which is understandable to respondents. Such questions also need to minimise bias, and guide the respondents in order to optimise the interrelated issues, which need to be considered in the questionnaire design. The questionnaire is either mailed or personally administered to respondents. The main advantage of the mailed questionnaire is that a wider geographical distribution can be obtained. However, if the respondents require clarification of questions asked, this can cause a low response (Kanuk and Berenson, 1975).

A survey is not suitable for this research because it is not sufficient in itself to answer the research questions. As discussed in the objectives, the purpose of this research is to explore the risk factors in international construction joint ventures in Egypt. Qualitative data is required to provide answers to the research questions. However, a survey's strategy is primarily about collecting quantitative data in a widespread way, and with relatively shallow depth (Remenyi et al., 1998; Saunders et al., 2003). In this research, a survey was used for quantitative analysis.

Case study is defined as 'a strategy for doing research which involves an empirical investigation of a particular contemporary phenomenon within its real life context using multiple sources of evidence' (Robson, 2002). It gives an opportunity for one aspect of a problem to be studied in some depth within a limited time scale, and allows a researcher to concentrate on a specific instance or situation and identify, or attempt to identify, the various interaction of factors and events. It generates answers to the question 'why' as well as 'what' and 'how'. 'The essence of a case study, the central tendency among all types of case study, is that it tries to illuminate a decision or set of decisions: why they were taken, how they were implemented, and with what result' (Schramm, 1971).

Case studies can be employed as a means of identifying key issues, which merit further investigation. However, the selection of which cases to be studied is crucial. There is always a danger of distortion because of the difficulty of cross-checking a large amount of information (Bell, 1999). 'The extent to which findings from the case study can be generalized to other examples in the class depends on how far the case study example is similar to others of its type' (Denscombe, 1998). Case studies have their disadvantages because small numbers of individuals are usually involved. Such a sample could be unrepresentative, and generalisation would not be possible.

Case study is not suitable for this research for two reasons. First, this research studies six joint venture projects, and the international partners operating in Egypt are from different countries. Furthermore, the joint venture companies vary in size; they are involved with a variety of project types; and they have different histories in the Egyptian market. Usually, case study is primarily narrative with evidence, which is largely embedded in individual case contexts (Remenyi et al., 1998; Saunders et al., 2003). Therefore, it is not possible to select a certain number of case study companies to represent all the targeted joint ventures. Second, the topic of this research is related to the contracts of companies. Contract issues are usually confidential; it is therefore difficult to obtain substantial in-depth primary data about competition and competitive advantages from targeted companies. Consequently, a case study strategy, which requires a large amount of in-depth data about individual cases, is not appropriate for this research.

Grounded theory is often considered the best example of the inductive research approach (Glaser and Strauss, 1967). In contrast with the deductive approach, data collection in grounded theory starts without the formation of an initial theoretical framework. Instead, grounded theory entails theory generation from a body of collected data, and involves multiple stages of data collection, and the refinement and interrelationship of categories of information (Strauss and Corbin, 1998). It is a process about theory generation rather than theory testing. Theories are developed progressively from the data obtained by a series of observations. The procedures of the grounded theory approach are summarised in Table 6.1. Within grounded theory, it is important that the researcher has the ability to recognise the directions and meaning in the data. The data should be continually questioned so that the sensitivity is enhanced; thus any theory generated from the data is more grounded. Bryman (1988a) gives three reasons for the popularity of this approach within qualitative research:

- It allows a theory to emerge from the data in such a manner that it does not lose connection with its empirical referent.

- It provides a framework for the researcher to cope with the complexity, and lack of structure, of social reality, and makes it manageable.
- It allows the development of theories and categories, which are significant to the subject of the research.

Table 6.1 The processes of grounded theory study

Step	Activity	Comment
1	Collect data	Any source of textual data may be used, but semi-structured interviews or observations are the most common.
2	Transcribe data	It is necessary to produce the full transcripts of the data for the purposes of analysis.
3	Develop categories	Categories are developed from data by open coding of transcripts.
4	Saturate categories	Further examples are gathered as one proceeds through transcripts until no new examples of a particular category emerge.
5	Abstract definitions	Once categories have been structured, formal definitions in terms of properties and dimensions of each category may be generated.
6	Theoretical sampling	The categories, which have emerged from the first samples, are tested and developed further.
7	Axial coding (the development and testing of relationships between categories)	Using the method of axial coding, possible relationships between categories are noted, hypothesised and tested against data which are obtained from ongoing theoretical sampling.
8	Theoretical integration	The core category is identified and related to all the other subsidiary categories by means of the coding paradigm, and links with existing theory are established and developed.
9	Grounding the theory	The emergent theory is grounded by returning to the data and validating it against actual segments of text.
10	Filling in gaps	Finally, any missing detail is filled in by the further collection of relevant data.

(Source: Payne and Bartlett, 1997)

Ethnography is another research strategy that is firmly rooted in inductive thinking. The purpose is to interpret the social world in depth. It allows 'the fieldworker to use the socially acquired and shared knowledge available to the participants to account for the observed patterns of human activity' (Gill and Johnson, 2002). Ethnography depends heavily on observation, and complete or partial participation in the social environment which is being studied is usually required (Bell, 1999). Thus, an ethnographic strategy is very time consuming, and the researcher has to be accepted by the individuals or groups

being studied. He/she has to do the same job or live in the same environment and circumstances as the subjects for lengthy periods (Bell, 1999; Saunders et al., 2003). Ethnography is not appropriate for this research: an ethnographic strategy is about identifying patterns of human activities in a social environment, a method which relies heavily on observation; and as aforementioned, the risk factors in international construction joint ventures in Egypt cannot be discovered through observations of companies' daily activities.

Action research is described as an 'on-the-spot procedure designed to deal with a concrete problem located in an immediate situation' (Cohen and Manion, 1994). During action research, a systematic process is constantly monitored over varying periods to ensure feedback that is translated into modifications, adjustments, or directional changes in order to bring benefits to the ongoing process itself rather than to some future occasion (Cohen and Manion, 1994). Thus, 'the purpose of action research and discourse is not just to describe, understand, and explain the world but also to change it' (Coghlan and Brannick, 2001).

Within action research, a planned intervention by a researcher or a consultant takes place within a targeted natural social setting such as an organisation (Saunders et al., 2003). When planned actions are implemented, the effects of the intervention are monitored and evaluated, and further amendments are made. After the first cycle, the intervention is revised, and amended planned action is implemented in the social setting. Then further monitoring and evaluation takes place. More such cycles continue as necessary. Thus, action research is about evaluating and solving a problem in an immediate situation, which does not suit the research problem of this thesis.

6.2.3 Triangulation

Fellows and Liu (1997) stated that triangulation is the use of two or more research methods to investigate the same thing. Whatever methods are adopted, it is important to avoid bias and to obtain appropriate amounts of data. There are four types of triangulation: data (the use of different data sources); investigator (the use of several researchers); theory (the application of different perspectives to interpret data); and methodological (the combination of two or more methods to carry out the research) (Denzin, 1978; Patton, 1987). There are some advantages to triangulation: it improves accuracy (which is a means of validation); it gives a fuller picture (and thereby provides a source of complementary data); and increases confidence in research data and findings. On the other hand, the disadvantages are that it needs more time and money; increases the complexity of data analysis; and can be risky in terms of contradictory results (Denscombe, 2007). The process of triangulation between qualitative and quantitative data, which will be used, can confirm and validate the findings. In this research,

triangulation is used through questionnaires, pilot interviews, and documentary data, thereby applying qualitative and quantitative methods simultaneously, a technique, which increases the robustness of the research findings.

6.3 Research Process of the Thesis

The overall research process of this study is illustrated in Figure 6.2. The research begins with a review of the literature about Egypt's political, legal, economic, and social systems, as well as the construction industry, construction companies, the types of company structure, international contract arrangements, joint venture agreements, and reasons for the failure of such agreements.

A contextual analysis is undertaken to explore the general features of the Egyptian construction industry and international construction companies within the country. The purpose of contextual analysis is to provide a basic understanding of the environmental context of the research problem. It also provides guidance for further data collection. Details of the contextual analysis are discussed in Section 6.3.2.

The main question of the research aims to develop a new method, which contains the risk factors of construction joint ventures between Egyptian and international companies in order to fill the gap in knowledge about this type of collaboration. Accordingly, a modified grounded theory approach is selected. Further, questionnaires and documentation are the major data collection methods, which are used under the modified grounded theory strategy. The data collection process starts with pilot interviews, which include open-coding, axial-coding, and selective-coding. Interview questions for the pilot interviews are open-ended. They are also designed using the implications of existing theories and the contextual analysis. Four pilot interviews are conducted to evaluate the clarity and relevance of the interview questions before the final questionnaire is used. After the analysis of the questionnaire is complete, a report, which contains the major findings, is generated and sent back to a number of the respondents for verification. Details of the final questionnaire process are discussed in Section 6.3.6. In this research, documentation is another important method for collecting data. The selected documentary data provide efficient supplementary information and triangulation for questionnaire data, which ensures the value and rigidity of the research.

A systematic process is adopted to analyse data collected through questionnaires and documentation, including content analysis, categorisation, labelling, and abstracting. Content analysis facilitates qualitative data analysis (as illustrated in Appendix I). In addition, the findings from the SPSS software adopted for the quantitative analysis will be discussed in Chapter 8. An empirical model, which reveals the risk factors of international joint ventures in Egypt, is then developed based on the empirical data. The analysis process and model-developing process are described in the next sections. These

empirical findings are verified and validated (see discussion in Section 6.6). Finally, an overall model is developed based on comparisons of empirical findings with existing findings. This model is the new method, which provides answers to the research questions.

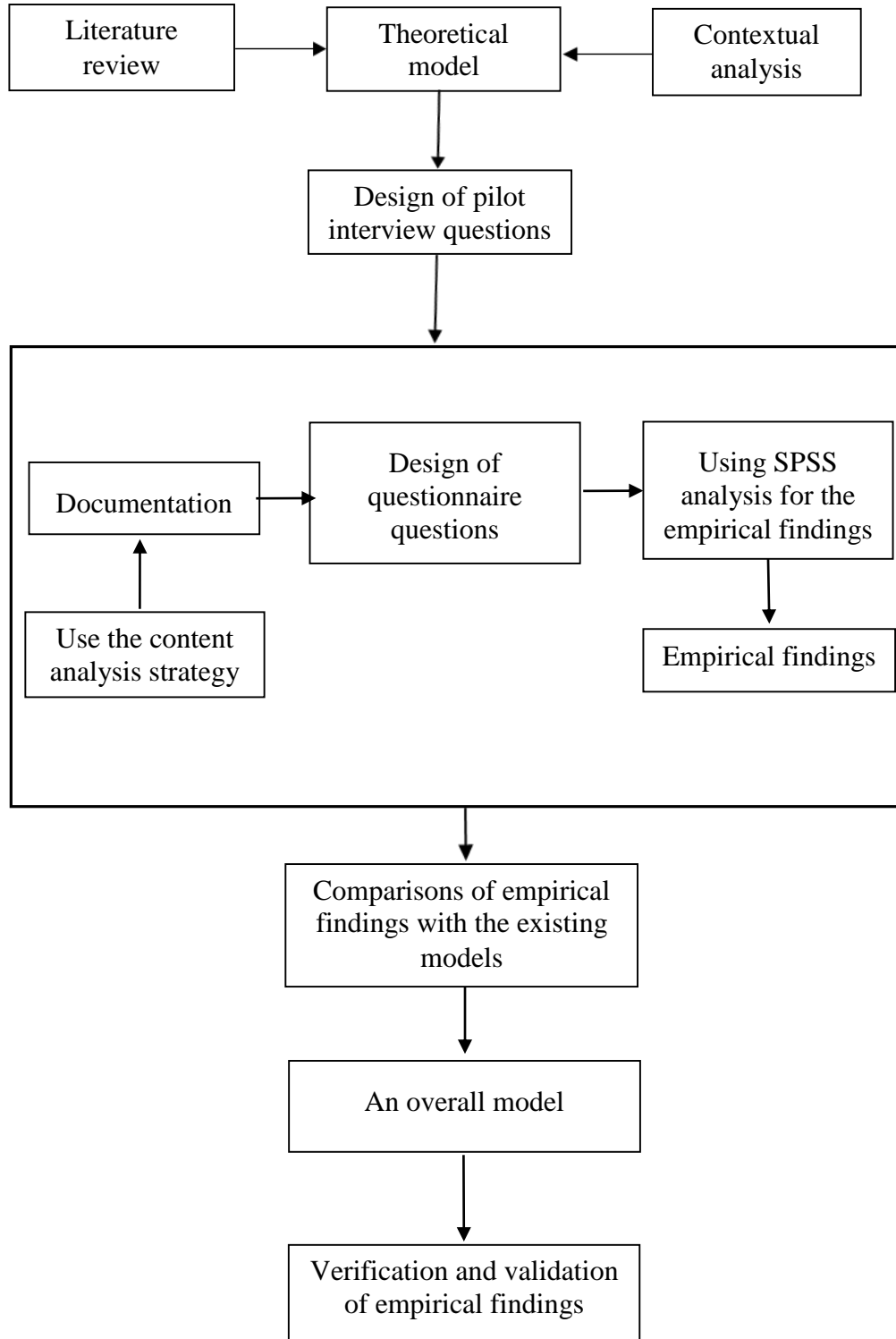


Figure 6.2 Research process of this study

6.3.1 Selection of Research Strategy

There is no single best approach to research: the most effective approach for solving the research problem should be chosen based on the research aims, problem type, and the availability of resources (Gill and Johnson, 2002).

Qualitative data is required to answer the research questions (see earlier discussion). Hence, data gathered through the literature review, and later in the contextual analysis, will build on this research, and accordingly, the modified grounded theory approach is selected. Questionnaires and documentation are the major methods used for collecting data under this strategy.

Pilot interviews were the most direct and efficient way to obtain primary data for this research. Four pilot interviews were conducted to evaluate the clarity and relevance of the questionnaire before proceeding further; then the modified grounded theory process was adopted. The modified grounded theory strategy enables the testing of existing theories while exploring risk factors in international construction joint ventures in Egypt. Further discussion about the modified grounded theory strategy is presented in Section 6.3.5.

6.3.2 Contextual Analysis and the Literature

A general understanding of the research problem is necessary before formal data collection is undertaken. In order to identify the risk factors in construction joint ventures in Egypt, a general contextual analysis studying the Egyptian construction industry environment and international activities within it had to be undertaken prior to formal data collection (as discussed in Chapter 2).

The literature used in qualitative analysis should be consistent with the methodological assumptions. These assumptions are that the literature is used inductively, and the study is exploratory. In grounded theory, the literature is used to a lesser extent to set the stage for the study. Creswell (1994) suggested using the literature sparingly in the beginning of the plan to convey the inductive design.

According to Creswell (1994), in a qualitative study the literature is placed towards the end of the thesis. However, in this thesis it has been placed at the beginning as part of the research methods chapter. The literature in this research has been used to identify a shortfall, and to frame the problem. In fact, the researcher has noted the publications with the most information about risk management and joint ventures (see Appendix B). The literature review shows that there is information on risk factors and joint ventures in various countries, but very little of this relates to Egypt.

A PESTLE literature approach was adopted to guide the contextual analysis. The PESTLE literature approach analyses the macro-environment for organisations from four

aspects: political, economic, social, and legal. Political factors refer to how, and to what degree, there is government intervention in the economy such as tax policy, labour law, price intervention, political stability, trade restriction, and tariffs. Economic factors refer to issues such as economic growth, interest rates, foreign exchange rates, and inflation. Social factors include social trends and cultural aspects, which can influence demand for a product, and the availability and willingness of individuals to work. Legal factors refer to the legal environment in which organisations operate, and include consumer, employment, and discrimination laws.

The application of political, economic, social, and legal (PESTLE) factors is not an attempt to guide data collection. Rather, the aim is to provide important aspects, which should be considered in order to gain a general understanding of Egyptian construction's industrial environment for joint ventures. The contextual analysis only draws an outline of the Egyptian construction industry as a business environment for joint ventures. It provides the researcher with a general background for the research problem, which will facilitate later data collection and interpretation.

6.3.3 The Theoretical Model

The use of models to assist managers in complex situations has been cited as beneficial because they are considered to reduce the risk of failure; impose consistency; integrate decision making through a formal process; and provide a common, generic, and logical structure (Coxhead and Davis, 1992; Bell, 1994).

Fellows and Liu (1997) noted that models should capture the reality being modelled as closely as is practical, and must include the essential features of the reality whilst being reasonably cheap to construct and easy to use. Moreover, Fellows and Liu (1997) added that theory can be used to build a model of the proposed research, the variables and relationships, the points of issue, and those of substantiation.

Churchman et al. (1957) classified the models, which are cited in Fellows and Liu (1997), for research purposes:

- **Analogue**: employs one set of properties to represent some other set of properties which the system possesses (e.g. an electrical circuit to mimic heat flow through a cavity wall).
- **Symbolic**: requires logical or mathematical operations (e.g. the equation of an S curve of project cash flow).
- **Iconic**: the visual or pictorial representation of certain aspects of a real system, such as computer screen icons to denote programs, the detailed drawings of parts of a building, information flow, or business process models.

Fellows and Liu (1997) suggested that for the construction industry, the iconic models are relevant. Accordingly, in this research the iconic models are adopted because they permit the flow of information, and allow the details to emerge later.

From the literature review analysis, the questionnaires, and the documentary data analysis, a theoretical model of the risk factors of international construction joint ventures in Egypt was established. This theoretical model is the new methodology, which is one of the main objectives of this research; further, the theoretical model contains the main categories and labels for coding the qualitative and the quantitative analysis. This model is based on Han and Diekmann's (2001) classification, the Breakdown Structure of Risks (BSR), for the country's risk factors, and then the joint venture (JV) company as an organisation. It consists of the JV scope/structure, which as mentioned by Male and Stocks (1991) is complex, formalised, and centralised. Further, Mintzberg (1979) added to these with personnel, organisation, hierarchy, scope, and performance. Partner selection and relationship is also one of the most critical factors of the success of a joint venture. In addition, Bing et al.(1999) and Bing and Tiong (1999) discussed the importance of the financial capability of partners, connections with the host country, and strategic compatibility for the success of JVs. For joint venture leadership there are many types of control. Li et al. (1999) identified certain factors, which are composition, process, and incentive. One other issue is joint venture competitive advantage.

The final level is a joint venture project's specific risk factors, which Tah and Carr (2000_{a,b}; 2001) identified. These factors together integrate into a model, which studies the risk factors of international construction joint ventures in Egypt. This model can help owners and contractors, whether Egyptian or international, in assessing the risks associated with a construction joint venture in order to avoid adversely affecting deadlines and cost overruns. The theoretical model will be discussed in detail in Chapter 7.

6.3.4 Pilot Studies

The pilot studies of this thesis include four pilot interviews and documentary data. These two methods provide triangulation for each other, which ensures that valid and reliable data are collected. Pilot studies are a critical and essential step for successful research. They are small trial runs of an investigation to check whether the procedures and methods planned actually work (Walsh and Wiggins, 2003). The pilot study was carried out with four joint venture experts in order to check and test whether the interview questions were suitable, if they could be answered, and if they were unambiguous. The pilot study also helped the researcher to judge the interview length, and to identify and close gaps. Moreover, the information gained from the pilot study was used to inform the approach and update it (Bower and Moodley, 2009), and aimed to refine data

gathering plans with respect to the data content as well as the approaches to be applied (Yin, 2003). The pilot study was also used to acquire an understanding of the joint venture companies within the Egyptian market, and to help refine the research scope.

The pilot interviewees' expertise includes more than ten years' experience of several large joint venture projects. Moreover, each of the interviewees has working experience with international construction companies operating in the Egyptian construction industry. One of them also has a doctoral degree in construction management.

The first interviewee is the construction manager of a harbour project. This interview was recorded, and the data about the construction joint venture project was considerable. The second interviewee is an international contractor, and head of the planning sector of the harbour project. The third is a deputy project manager (owner's representative) of a hotel project. The fourth is a project manager of the Egyptian company of a joint venture project executed in Egypt.

During the pilot interviews, interviewees are asked to give feedback on ambiguous and difficult-to-understand questions. Interviewees are also asked whether these questions are effective enough to collect the necessary data to answer the research questions. Suggestions about how to fully explore their knowledge and experience about the topic are also requested. The time taken to complete interviews is recorded, and the reasonableness of this is judged. Interview questions are in English, and the questions are open-coded. Because these interviewees know the researcher in person, they are willing to provide information; nonetheless, it was difficult to get the data, especially about contractual issues, because of confidentiality. This was one of the most significant obstacles, which faced the researcher during the study. Most companies, which work in the Egyptian construction market, are concerned about providing any data or documentation. In accordance with suggestions given during the pilot interviews, the interview questions were adjusted.

After the pilot interviews were completed, the data collected were carefully analysed. Categories, and relationships among categories, were identified. However, the researcher was aware that some categories might not be well developed, and some relationships might be implicit. At this point in the research, a final questionnaire was undertaken in order to complete categories, which were not well developed, tighten consistency, and strengthen logic. Respondents from different groups such as owners, and international, Egyptian and joint venture companies, were then contacted to take part in the main study.

6.3.4.1 Design of Pilot Interview Questions

In the literature, a set of questions was available from Walker and Johannes (2003). These questions were examined against the research objectives. Some fitted the scope of the objectives; others were eliminated or clustered.

Fixed general questions ensure that an interview follows the research problem, and enables the data collection process to be consistent. Such questions are general in nature and open-ended; thus, interviewees are encouraged to talk about anything related to each question. This allows substantive information to emerge from the field, and avoids restriction within existing theories.

An interview process interplays data collection and data analysis. Collected data is analysed immediately after the interview is completed. Incidents are categorised and recorded under the broad questions from which they have emerged. Each category identified from a prior interview is recorded under the same broad fixed questions in preparation for the following interview. Newly emerged categories from each interview are also added into following interviews under the same general question.

According to Strauss and Corbin (1998), initial interview questions, or areas of observation of the grounded theory approach, could be based on concepts derived from literature, experience, or preliminary fieldwork.

For this research, at the beginning of each interview, basic information about the interviewee was gathered by asking the following questions:

What is his/her position and work title?

How much experience does he/she have in the construction field?

What is the type of company ownership?

How large is the construction project?

It should be noted that the questionnaires were divided according to company type such as owner, Egyptian, international, and joint venture companies. After the aforementioned questions, the next sections were divided according to the literature review data, which grouped risks into categories such as political, economic, cultural/social, technological, environmental, and legal. These questions were pre-designed based on the theoretical implications and findings from the contextual analysis. This enabled relevant data to be collected and existing theories to be tested in the field. Any issues, which were implied, but not mentioned, by an interviewee, were raised and taken into consideration.

The questions asked to the Egyptian company interviewee regarding economic risks included: 'How do you manage currency exchange fluctuations for your company?'

How do you treat these as a risk factor? How do you manage them?'; 'From your point of view, do you regard the Egyptian economy as stable, bearing in mind factors such as inflation, growth, number of available projects, capacity, skills, labour, and technology? If not, how do you manage such risks?'; 'Is there any burden in the cost of borrowing which you face which influences your projects? If yes, how do you manage borrowing in terms of risk?'; 'Are there any tax benefits/disadvantages according to Egyptian law, and how do you manage these?'; 'With regard to import/export regulations, are there any problems? If yes, state them. What are the implications? And how do you manage them?'. These questions explore in-depth the Egyptian company interviewee's awareness of the different economic risks which face Egyptian companies in the Egyptian market.

The questions asked to the international company interviewee with regard to economic risks included: 'What is the geographical spread of your operations internationally?'; 'Can you explain your reasons for being interested in the Middle East?'; 'What encouraged you to work in the Egyptian Market?'; 'How long have you been in the Egyptian Market?'; 'What category of projects is your firm interested in (building/civil engineering)?'; 'In which method of procurement do you work (alliance, JV, BOT, etc.)'; 'What is your criteria for choosing which contract to bid for?'; 'What risks do you face in the Egyptian Market? If more than one, please categorise them sequentially in terms of risk (economic, political, cultural/legal, labour skill management, other)'; 'How do you manage currency exchange fluctuation for your company? How you regard it as a risk factor? How do you manage it?'; 'Is there any repatriation of funds or profits to your home country? If yes, how do you manage it?'; 'From your point of view, do you regard the Egyptian economy as stable, bearing in mind factors such as inflation, growth, number of available projects, capacity, skills, labour, and technology? If not, how do you manage such risks?'; 'Is there any burden in financing which you face which influences your projects? If yes, how do you manage this in terms of risk? Is the situation similar to other projects in the Middle East? How do you manage it?'; 'Are there any tax benefits/disadvantages according to Egyptian law, and how do you manage them?'; 'Are you content with your present position in the Egyptian market? How do you manage it?'; 'With regard to import/export regulations, are there any problems? If yes, state them? What are the implications? And how do you manage them?'

The questions differed according to company type for the same group of risks, such as the aforementioned economic risks. The main objective of the questions was to identify the risk factors, which face each type of company in the Egyptian construction market, and to establish how each type of company mitigates the risks. The four types of questionnaire enabled the collection of primary data to answer the research questions. Both theory-related data and new information were gathered.

One aspect of the pilot study explored the competitive advantage of joint venture companies and produced the following findings:

1. Joint ventures can increase resources in order to cover large-scale projects which one company cannot handle alone.
2. Some projects need advanced technology.
3. Local companies in Egypt or other Arab countries in general prefer to join with international companies in order to improve the performance of their works and to provide the knowledge and experience to execute large-scale projects by themselves in the future.
4. International companies, which work abroad, are usually looking for a qualified partner with the ability to execute works for special project types. In addition, international companies save money because they use their partners' resources instead of importing equipment and labour from their own countries.
5. International companies wish to enter new markets other than in their own countries.

Another pilot interview inferred that:

1. International construction companies are interested in the Egyptian construction market.
2. There are not many Egyptian large-scale construction companies in the Egyptian market, so there is not much competition for international companies.
3. Labour costs are relatively low.
4. Advanced technology is needed for projects in the Egyptian construction market.
5. International companies usually have good management systems, and advanced technology.
6. Joint venture companies usually employ local staff.

From another pilot interview, the interviewee stated that: 'The project should be divided between partners according to their capabilities, and each one has its responsibility.' Moreover, the respondent from the international company suggested providing a policy framework for joint ventures.

In general, some important issues, which largely influence the effectiveness of interviews, were also identified during the pilot interviews, such as the following:

- Interview questions should be sent to the interviewees before the interviews are undertaken. This gives interviewees sufficient time to gather their thoughts and therefore provide rich information.
- Immediate data analysis after each interview is important; the researcher can still remember the tone and attitude of an interviewee while he or she responds. This provides greater understanding of an interviewee's intended meanings.
- Because the interviews are open-coded, it is necessary to arrange for appropriate interviewees who are knowledgeable and willing to talk. The interviewer must inform the interviewee up front that the interview may take a long time, and that the interviewee should arrange his or her schedule accordingly. This is particularly important because most of the interviewees are busy first line managers, so their time is limited.

It is worth noting that all the interviewees suggested that the questionnaire in the final stage should be the same one for all the company types, and should use pre-coded questions together with a Likert scale. The advantages of the latter are ease of use and a higher response rate from participants.

The pilot interviews for this research were undertaken to check the clarity and relevance of the interview questions for the different company types in the study. The pilot interviews were additional to the original design of the research methodology.

6.3.5 A Modified Grounded Theory Strategy

Classical grounded theory proposes building theories from pure data without any theoretical background (as discussed in section 6.2.2), according to Glaser and Strauss (1967). However, in some cases a grounded theory approach can be modified with a combination of existing theories and the grounding process of these theories. A modified grounded theory strategy not only enables theories to be built upon data collected from the ground, but also allows the identification of relationships between conclusions and existing literature (Gill and Johnson, 2002).

The modified grounded theory strategy in this research combines existing theories into a grounding process of data collection by gathering the data about risk factors in construction joint ventures in general. Although, there are no properly documented risk factors in construction joint ventures in Egypt, it is generally accepted that the risk factors, which are known in other countries, can be tested in the Egyptian market. This understanding has guided the exploration of international construction risk factors in joint ventures in Egypt.

6.3.6 The Final Questionnaire's Design and Structure

After the pilot interviews were conducted, the data were carefully analysed. Categories, and relationships among categories, were identified. Questionnaires were revised to improve category development, tighten consistency, and strengthen logic. As aforementioned, a set of questions was available from Walker and Johannes (2003). These questions were examined with the research objectives, and changed, deleted, or combined to fit the scope of the study.

The following procedures were used to distribute the final questionnaire and covering letter to respondents:

- The covering letter was typed on Leeds University departmental headed notepaper and signed by the main supervisor. A copy of the questionnaire can be found in Appendix F.
- The final questionnaire was sent by e-mail to the respondents as well as delivered by hand.

The issue of questionnaire length was of some concern. Research evidence indicated that there is no correlation between questionnaire length and lack of response (Berdie, 1986; Kanuk and Berenson, 1975). However, each respondent's available time could have proved problematic. A number of issues were considered important for the final questionnaire design:

- The format of the document and the sensitivity of the questions.
- The structuring of the questions.
- The scaling of items, which were used.

Each of these issues will be discussed in turn in the following sections.

6.3.6.1 The Format of the Final Questionnaire

The experts' recommendations in the pilot study were to change the final questionnaire from open-ended questions to multiple choice, and to use a Likert scale to increase the response rate and reduce the reply time for respondents. The final questionnaire was divided into six parts as follows:

Part 1: The initial part of the questionnaire solicited general information about the individual to be interviewed, and his / her company, such as personal details and information regarding the respondent's employment.

Part 2: General information applicable to all the companies.

Part 3: Related to owners.

Part 4: Related to Egyptian companies.

Part 5: Related to international companies.

Part 6: Related to joint venture companies.

Each respondent was asked to answer parts 1 and 2, and then the part, which related to his or her company.

6.3.6.2 The Structuring of the Final Questionnaire's Questions

There are three main types of questionnaire according to the question to be asked: closed, open-ended, and a combination of both (Dawson, 2007). Closed questions are those, which have structured answers which fit into categories, and which have been created in advance by the researcher. It is suggested that 'other, please state' options should be added wherever possible to allow some freedom of response. The responses to these questions are quick and easy in terms of data analysis. In this research, the final questionnaire required respondents to answer mostly closed questions. Many of the questions requested responses, which applied to the respondent's work. For example, in question 2.16, which asked what each partner seeks to gain by forming a JV, the respondents were allowed to choose from the following answers, which were adopted from Male and Stocks (1991) and Langford and Male (2001):

- Customer access, which means that in some cases such as international companies, they do not have knowledge of local customers, so they need their local partners to facilitate access to local clients.
- Reputation and brand image.
- Access to a new country.
- Access to a larger market share.
- Access to new technology.

These closed questions avoid asking for information, which involves searching for and providing answers. This would have been too demanding for the respondents.

6.3.6.3 The Numerical Rating of the Final Questionnaire's Questions

The standardised questions were to be answered on a five-point Likert-type scale. These answers were analysed by the SPSS software for the quantitative analysis for part 2 of the questionnaire, because this is the general part which all the groups - the owners, and the international, Egyptian, and joint venture companies - replied to. This is considered justifiable because the information required was appropriate to the respondent's organisation and work practices. For the other parts of the final questionnaire, which were specific to a group such as the owners, the international companies, the Egyptian companies, and the joint venture companies, the responses were

tabulated for comparison and further analysis (see Appendix I). In these parts, the number of responses was low; accordingly, software analysis was not used.

6.3.6.4 The Standardised Questions of the Final Questionnaire

There are several advantages of questionnaires: they are cheap; easy to arrange; have wide coverage; supply standardised answers; have pre-coded answers; and the data is accurate. On the other hand, the disadvantages are that they: have a poor response rate; provide incomplete or poorly completed answers; and limit and shape answers. Further, the truth of the answers cannot be checked and ensured (Denscombe, 2003). The scale was developed on the basis of a sample of engineers and managers. It was then verified and validated on a small sample of expert managers.

6.3.6.5 Respondents of the Final Questionnaire

Because this research is qualitative, purposive sampling was selected. This entails using a 'hand-picked' sample for the study. This approach was chosen mainly because specific respondents are seen to provide the most valuable data (Denscombe, 2007). Therefore, all the respondents were selected based on their expertise and experience in the field; thus they have in-depth knowledge of the research issues. In other words, they are senior managers within their organisations. All of them have many years of experience in the research area, ranging from ten to fifteen years. A weakness of this approach is the small size of the sample. However, in qualitative research such as this, a small sample is acceptable, and in fact, the 33 respondents (together with the documentation) produced sufficient data. As described in Chapter 1, the respondents are either owners, or professionals who work in joint venture, Egyptian, and international construction companies (see Appendix D).

Of the 33 people chosen to participate in the research, 25 replied to the questionnaires. This is a response rate of 76%. A summary of targeted projects, which are used in this research, is given at Appendix E. The summary includes their locations and the cost of their current projects. The targeted Egyptian contractors are either in the private or public sectors. The projects differ in type, and include an underground metro project, a harbour, a new city, an airport terminal, and a five star hotel. The international contractors are from countries, which include the United Arab Emirates, France, and Turkey. The value of the projects is between US\$3,000,000 and US\$520,000,000. Table 6.2 summarises the types of respondents.

Table 6.2 Types of respondent

Types of respondent	Number of questionnaires
Total number of sent questionnaires	33
Total responses	25
Owners	9
Egyptian companies	5
International companies	4
Joint venture companies	7

Most of the respondents are senior and experienced managers in their organisations who have worked and been involved in different joint venture projects. In addition, the owners use joint venture contract agreements in their projects. The owners, nine of whom responded, include eight private shareholder and one public shareholder companies. Five Egyptian companies responded to the questionnaires; four international companies replied; and seven joint venture companies responded.

Details of the data analysis process are described in the next section.

6.4 Data Analysis

6.4.1 Quantitative Data Analysis

The statistical program SPSS software was used to obtain the mean of each risk factor, and to rank the first 30 risk factors of all those which were studied. These risk factors will be discussed later. One of the tests used was the Kruskal-Wallis Test in order to know if there were any differences among the responses of the four different groups, namely the owners, Egyptian companies, international companies, and joint venture companies. This test was used because the sample was small with only 25 respondents.

6.4.1.1 Kruskal-Wallis Test

The Kruskal-Wallis Test is a non-parametric test with free distribution, which is more flexible in application. The test (also referred to as the Kruskal-Wallis H Test) is used for data analysis in this research, and used to determine the significance of the item, which is tested. Howitt and Cramer (2008) stated that the Kruskal-Wallis Test is used in circumstances where there are more than two groups of independent or unrelated scores. In addition, it used when the studied sample size is small. In this study, there are four groups under consideration, namely the owners, Egyptian companies, international companies, and joint venture companies. Further, the sample size is just 25 respondents.

6.4.2 Qualitative Data Analysis

Coding is the primary tool for data analysis in the grounded theory approach. It is a process of breaking down, labelling, and categorising (Strauss and Corbin, 1998). Grounded theory interplays data collection and data analysis. In this research, data are analysed over three stages.

Firstly, data collected from each pilot interview are immediately analysed. Through this process, important categories, and their properties and dimensions, are identified. Each question of the interview is reviewed. Data is labelled and categorised under general concepts. The categories and subcategories are also identified. These factors are grouped into broader categories: economic risks, political risks, etc.

Each category is developed fully in terms of its properties and dimensions. Comments are also written down to record the researcher's understanding of the category, and to interpret the data in the context of the risk factors of joint ventures.

Prior labelling and categorising are checked and adjusted. As more data was collected, the researcher gained a better understanding of the research problem and could see the entire picture. As more information emerged, some categories could be grouped under a higher order concept, and some factors were developed into subcategories, which provided clear specifications. Finally, a system of categories interlined through various relationships was developed through the data analysis to answer the research question.

The documentary data have provided abundant information about international construction joint ventures in Egypt. Appendix G shows the types of documentary data from each targeted company which was used in this research.

Documentary data of the six joint venture projects were collected from the contracts between the owners and the joint venture parties, or between the parties of the joint venture. Most of the obtained documentation data were qualitative. Further, based on the literature review and pilot interviews, the categories began to emerge. The documents were analysed by qualitative content analysis as mentioned in section 6.2.1.3.

Triangulation was the main approach used to confirm the outcome of this research. The outcomes of the questionnaires and document analysis were triangulated. The respondents were all experts in their fields; moreover, using qualitative and quantitative analysis strengthened the results. Accordingly, a table linking the analysed joint venture project contracts in columns, and the risk factors in rows, was produced. In addition, the questionnaire's questions were linked to the risk factors, which emerged, from the literature review and the responses of the participants. This data and method triangulation enhanced the results of the small sample size.

Data collected from the paper journals and documentation were also analysed through the content analysis process, labelling and categorising, and identifying relationships. Established categories, and relationships identified from completed questionnaires, were confirmed.

Through the literature review, and the analysis of the questionnaires' data and the documentary data, a substantial theoretical model for solving the research problem was established as shown in Appendix H. This model then had to be verified and validated.

6.5 Verification and Validation

Verification ensures the validity and reliability of a research study (Morse et al., 2002). 'A good qualitative research moves back and forth between the design and implementation to ensure congruence among question formulation, literature, recruitment, data collection strategies, and analysis' (Morse et al., 2002).

Verification strategies proposed by Morse et al. (2002) are adopted in this research to ensure rigour. They include: ensuring methodological coherence; ensuring sampling sufficiency; developing a dynamic relationship between sampling, data collection, and analysis; thinking theoretically; and developing theory.

In a valid study, the research methods should match the research question. In this research, a modified grounded theory approach is adopted due to the lack of solid theoretical frameworks/models to probe the research problem. The design of the pilot interview questions is built upon an in-depth understanding of risk factors in many countries, and a substantial contextual analysis of Egyptian PESTLE data regarding risk management and joint venture companies. The contextual analysis allows the pilot interview questions to be practical and well connected to the studied subject.

During the initial stage of the pilot interviews, the researcher reviewed the collected data and evaluated their suitability to answer the research questions. The evaluation is based on the knowledge of the researcher about the existing theories. The collected data are linked to existing theories about risk management and risk factors. It is identified that the pilot interview data reflect some risk factors within theories. As a result, it appears valid to say that the designed pilot interview questions are appropriate to the research problem. This process confirms the sufficiency of the pilot interview questions. Following this, a final questionnaire is prepared as mentioned in section 6.3.6, and each respondent answers the part, which applies to his or her company. The first and second parts apply to all respondents.

A valid study also requires that respondents are appropriate and can provide in-depth knowledge of the research topic. Respondents selected for this research are senior engineers and project managers who have been working in the targeted joint ventures in

Egypt for more than ten years. They know a great deal about the construction activities of joint ventures in the Egyptian market. Each respondent provided valuable information about construction risk factors from different angles. Moreover, documentation data provided triangulation and supplementation to the primary data collected from the questionnaire.

After data analysis of the questionnaire and documentation, the researcher sent emails to verify significant information, which emerged during the analysis. This procedure ensured that data are understood in the manner, which the respondents intended.

The coding process of this study's projects used a method of interplay of data collection and data analysis. Data collected were immediately analysed. Categories and concepts were developed. Responses to the same issues provided validation. The interplay of data collection and data analysis also allowed the researcher to think theoretically, and enabled the research to move with deliberation between a micro perspective of data and a macro conceptual/understanding.

Throughout the process, the researcher always stood back and checked whether the research was moving towards its objectives. The logic and consistency of the research process was constantly checked, especially when the research was moving from one stage to the next, such as flowing from theoretical concepts to pilot interview questions, transferring from one interview to the next, and shifting from pilot interviews to documentation and questionnaires.

Braud (1998) defined validity as 'the assessment of whether one's findings or conclusions are faithful or true to what one is studying'. Validity may be assessed in terms of inferences, which may be made from the findings, and the type and accuracy of information derived from the individual samples. The validity of scientific experiment depends upon how what is assumed to constitute knowledge, is measured. Using a realist's view of the world, scientific validity is based upon reliability and the ability to generalise with a wider population. Berdie (1986) maintains that 'sample representativeness is uncertain without high response rates'.

Supporters of qualitative methodologies have developed techniques, which safeguard against the possibility of error in excessive subjectivism and delusion, whilst ensuring trustworthiness, credibility, transferability, dependability, and conformability (Lincoln and Guba, 1985). Credibility depends on instrument construction in quantitative research, while 'the researcher is the instrument' in qualitative research (Patton, 1990; 2002). This enhances the researcher's role in the quality of the qualitative research. However, 'member checking' is the most important technique for creating credibility (Lincoln and Guba, 1985), and is one of the three techniques highlighted by Driessen et

al. (2005) as follows: triangulation, which combines various information sources; prolonged engagement, which invests sufficient time; and member checking, which tests the data with their providers. For this research, all these techniques were used as indicated earlier in order to achieve credibility.

Transferability (external validity or generalisability (Denscombe, 2007)) has been achieved through the tactics for external validity as aforementioned; although, as indicated earlier, the aim of conducting a questionnaire is to expand and generalise theories (analytic generalisation). Nevertheless, it is possible to generalise to many types of company because the questionnaire studies were selected from different types of project (metro, airport, and harbour), while the groups studied were owners, international companies, Egyptian companies, and joint venture companies.

Dependability (or reliability) has been achieved through the tactics for reliability. There are additional techniques to strengthen dependability such as fully describing the methods used to collect and analyse data, and using consistent methods of data coding and recoding (Denscombe, 2007; Alalshikh, 2010). These techniques were used for this research to satisfy dependability because the methods of data collection and analysis are fully described in the prior sections, and the data were coded, assembled, and systematically and rigorously analysed, as illustrated in the empirical results chapter.

Confirmability (or objectivity) is 'concerned with establishing the fact that the data and interpretation of inquiry were not merely figments of the inquirer's imagination. It called for linking assertions, findings, interpretations, and so on to the data themselves in readily discernible ways' (Schwandt, 2001). It is about ensuring that the researcher is unbiased during data collection, analysis, and interpretation (Denscombe, 2007). This bias can be mitigated by providing the reader with the raw material from the data, so that he or she may evaluate the quality of the researcher's interpretations (Alalshikh, 2010). Therefore, quotations from the raw material are presented in the empirical results chapter to satisfy confirmability.

Thus, it can be concluded that these procedures achieved validity for this research. Consequently, the approach resulting from this research should be valid. The research approach and its models were developed incrementally in line with Male et al.'s (1998) incremental validation approach. This has been done through two stages as follows. The research approach has been conceptualised from the literature as discussed in Chapters 2, 3, 4, and 5, and used as a datum to be continually updated throughout the research. According to Yin (2003), such a theoretical model also becomes the main vehicle for generalising the research results, thereby achieving external validity. The empirical results were discussed and compared with the literature to update and develop the

research model through critiquing and improving the theory. According to Patanakul and Milosevic (2009), this also ensures external validity for the model.

Finally, there were limited questionnaires conducted for verification and validation in this research because of the time limit.

6.6 Summary

In this chapter, research design, approaches, strategies, and methods have been studied as well as their features, strengths, and weaknesses. Furthermore, other aspects such as data analysis, sampling, triangulation, and validation were discussed in the first part of this chapter. In the second part, the adopted methodology for this study was chosen and justified after considering all possibilities and comparing them. The methodology is a qualitative approach based on grounded theory strategy and quantitative analysis using SPSS software (triangulation method). The data were collected mainly using questionnaires and documents (data triangulation). Data analysis was carried out using qualitative and quantitative methods. The choice of framework/model was reviewed. Different types of model and modelling approaches were presented. The iconic descriptive model was adopted to fulfil the generic need, and provided the basis for defining and analysing the process in order to enable improvement.

The validity of the research was highlighted. Finally, conclusions and recommendations were drawn and the thesis was written up. Following this review of the research methodologies, and the adoption and justification of the most appropriate methodology for this research, and in Chapter 5, Chapter 7 moves forward to present a theoretical model of risk factors in international construction joint ventures in Egypt.

Chapter 7 Theoretical Model of Risk Factors in International Construction Joint Ventures in Egypt

7.0 Introduction

Construction joint ventures involve risks common to domestic construction projects as well as risks specific to international joint venture projects. These risks were explored in different countries, which presented in chapter 5. In this chapter, a theoretical model is developed and built in three levels. The first level is the country, the second is the joint venture company, and the third is the project. The primary drivers of the theoretical model are the review of international risk factors in countries other than Egypt and the review of Egypt as discussed in chapter 2. Further drivers are the findings regarding organisational strategies, structures, and risk factors, with particular reference to joint ventures. Finally, the risk factors of joint venture projects were adopted for the model. The model is then applied to construction joint venture projects to explore the risk factors in international construction joint ventures in Egypt.

7.1 Theoretical Model of Risk Factors in International Construction Joint Ventures in Egypt

From the review of Egypt as a country which presented in Chapter 2, and its economic and political situation. Egyptian law no. 12, 2003 has restrictions in allowing foreign employee (unskilled or semi-skilled) to work in the Egyptian market. For skilled employees, they are not to exceed 25% of the total workforce, and their total compensation not more than 35% of the company payroll. In addition, foreign employees must obtain a work permit for the duration of the project only. These restrictions can affect the international joint venture companies in Egypt as their companies cannot benefited from their foreign expertise in the projects. Moreover, the economic reform strategies, which have been undertaken in Egypt to increase investments; one of them was the privatisation programme which encouraged private companies to invest in many sectors. Furthermore, the barriers to entry and exit have been eased for Egyptian and international companies. In addition, customs procedures and tax systems have been simplified and the corporate income tax rate has been cut to 20%. Project and property registration has become much faster and less costly. The rate of inflation has increased, which has reflected on the high price of building materials. Furthermore, Egypt signed several treaties for double taxation with many countries, and customs taxes on equipment, which are necessary for projects, were reduced to 5%. Moreover, most of the economic reforms done by the government encourage investing in infrastructure projects, which need more technology and financial investments.

In addition, Egyptian contractors are classified according to the Egyptian Federation of Construction and Building Contractors (EFCBC). The number of 7th grade members, which is the lowest grade, registered at (EFCBC), is the largest number, which means that small scale and unsophisticated companies are the majority. In contrast, International companies must register at (EFCBC) and they must be first grade in their home country. Furthermore, in cases of joint ventures between Egyptian and international companies, the share of the work must be 51% for the former and 49% for the latter, according to law no.104, 1992 and its executive regulations issued by ministerial decision no. 1, 1993. These restrictions can encourage the nationalization and limit the international companies to enter the Egyptian construction market. Otherwise, the international companies work in the Egyptian market and face more risks by their owns. The other option is to enter in a joint venture which increase the financial capability of both the Egyptian and International companies and they both can overcome most of the risk factors, which each of them face by itself such as: the unskilled labour, unqualified management, the financial capability, and the need for advanced technology for some projects.

In order to study companies, their strategies, and structures, construction industry strategic management in general and specifically in joint venture companies was explored in Chapter 3. Such strategic management is used as a tool to control organisations. An overview of the different international contract arrangements, specifically for joint ventures, was presented in Chapter 4. Finally, Chapter 5 set out a review and analysis of risk management and the risk factors for projects in the construction industry in general, and the implications of these risk factors for joint ventures in Egypt.

Because of the impact of the country, JV scope/structure, partner selection and relationship, JV leadership, JV competitive advantage, and the project specific risk factors on the joint venture company, a theoretical model (illustrated in Figure 7.1 and an extended version of the theoretical model can be seen in Appendix H and on the attached CD). This model is revealing the risk factors in international construction joint ventures in Egypt and it is established by synthesizing the existing risk factors in other countries and literature review together.

In this context of the theoretical model, the global market was discussed in Chapter 2 and it was clear that the characteristics of developing countries could be applied to Egypt. Then, the first process of the risk management is risk identification and classification as discussed in chapter 5 (illustrated section 5.2.4.1 and 5.2.4.2). It attempt to structure the diverse risks that may affect a joint venture company. The Breakdown Structure of Risks (BSR) mentioned by (Han and Diekmann, 2001) which is supported

by some authors such as (Ashley and Bonner 1987; Demacopoulos 1989; Lee and Walters 1989; Messner 1994; *Seminar* 1995; Kalayjian 2000). The Breakdown Structure of Risks (BSR) will be adopted for the country risks which allows risks to be separated into several categories, these risks are relatively uncontrollable by individual or private companies, such as political, economic, cultural/ legal, technical/construction and other risks; thus, there is a need for continued scanning and forecasting of these risks and a company strategy for managing their effects. All these risk factors were developed in other countries. These risks will be considered according to the exploration of the political, legal, social and economic systems, which were discussed in detail in Chapter 2 about Egypt.

The next category to be discussed is the joint venture (JV) company as an organization. The nature of construction industry organisation was discussed in Chapter 3 (see 3.1.3). The nature of JV scope/structure (see 3.1.3.1), as described by Male and Stocks (1991), is complexity, formalization and centralization. Moreover, Mintzberg (1979) added personnel, organization, hierarchy, scope, and performance

Partner selection and relationship are critical factors for the success of joint venture as discussed in 4.3.6. In addition, Bing et al. (1999), and Bing and Tiong (1999) discussed the importance of: the financial capability of the partners, connections with the host country and strategic compatibility for the success of JVs, otherwise they are treated as risk factors.

For joint venture leadership there are many types to control them, these types were discussed in section (4.3.3). Li et al. (1999) explored the effectiveness of the joint venture leadership team and they identified certain factors, which are: composition, process and incentive. Finally, with regard to joint venture competitive advantage, there are goals which strength the strategic position of a joint venture, as discussed in section 4.3.2.

There is a further category relating to risks that are project specific which have impact on the joint venture company. For the project specific category, Tah and Carr (2000_{a, b}; 2001) identified that the project itself involves risk, and that no two projects have the same level of risk and they should be treated separately. The adopted risks as follows: financial, material, labour skills, subcontractor, client/owner, contractual, location with some modification of the original authors.

All these risk factors are developed from different countries. In these countries there are different economic, legal and political regulations and policies as well as cultural differences. In such cases, the business market where these risks emerged is different than the Egyptian market. The theoretical model of risk factors of International construction joint ventures in Egypt is discussed in detail in the following sections.

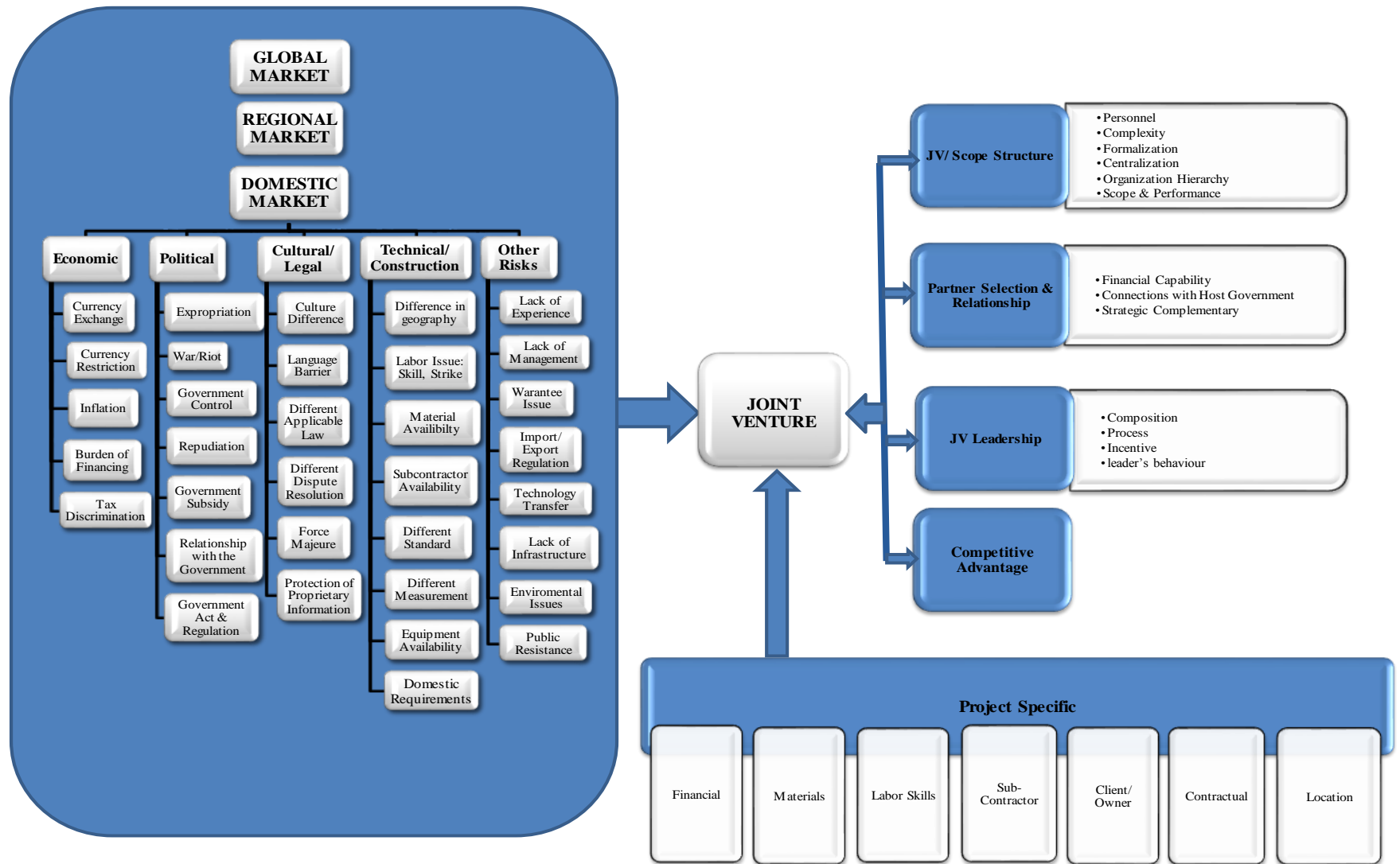


Figure 7.1 The theoretical model of risk factors of international construction joint ventures in Egypt

7.2 Country Risks

Han and Diekmann (2001) studied the country risks and classified them into five categories, which are shown in Figure 7.2. The following sections will discuss each of these risks.

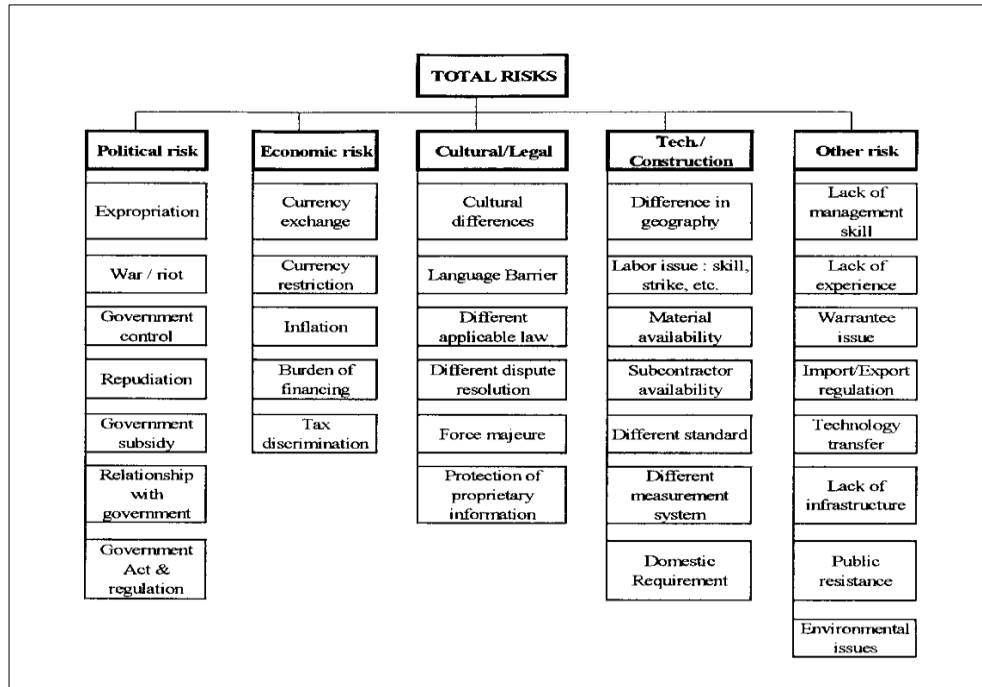


Figure 7.2 Breakdown Structure of Risks (BSR) (Source: Han and Diekmann, 2001)

7.2.1 Economic Risks

The Breakdown Structure of Risks (BSR) mentioned by Han and Diekmann (2001) were adopted for the country risk factors category. BSR is supported by authors such as Ashley and Bonner (1987), Demacopoulos (1989), Lee and Walters (1989), Messner (1994), and Kalayjian (2000). The first category of BSR is economic risks associated with international construction projects. This category includes the following factors: currency exchange; currency restriction; inflation; burden of financing; tax discrimination; and competitive position.

7.2.1.1 Currency Exchange

According to Han and Diekmann (2001), changes in exchange rates under floating economic conditions have drastic impacts on the success of projects. There are two basic devices according to Tanaka (1984) which manage this risk; first, diversifying received currencies, and second, diversifying financing.

The Central Bank of Egypt (CBE) continued the successful management of the foreign exchange through the dollar interbank market. The CBE managed to mobilize adequate resources to meet the increased capital outflows entailed by foreigners'

liquidation of their portfolios in the market, on the back of the global financial crisis. The weighted average exchange rate of the US dollar in the interbank market increased from LE 5.3331 on 30/6/2008 to LE 5.5964 on 30/6/2009; by a decline of 4.7 % in the LE (Egyptian Pound) value in the reporting year. However, this is considered one of the lowest rates of decline against the American Dollar during the reporting year compared to the level of some emerging economies (such as Indonesia, Brazil, Turkey, Mexico and Russia), where rates of depreciation ranged between 9.7 percent and 24.8 percent (CBE, 2009).

Macroeconomic conditions, which determine the overall performance of the construction industry, are critical to the performance of JV foreign exchange rates; the rank of exchange rate as a risk factor, according to Bing et al. (1999), and Bing and Tiong (1999) is 6th in order.

7.2.1.2 Currency Restriction

Currency restriction is also one of the economic risks according to Han and Diekmann (2001). Repatriation restrictions of currency are regulations governing the amount of funds that can be removed from the host country. Since the foreign contractor does not often establish long-term operations in the host country, he can have his profitability severely affected by even short-term restrictions (Ashley and Bonner, 1987).

7.2.1.3 Inflation

According to Han and Diekmann (2001) and Tah and Carr (2000_b), inflation is one of the factors which affects projects and its effect can be critical if inflation increases by more than the estimated amount. A high-inflation environment can also have the effect of instability on the business environment, as it removes some of the predictability that investors seek. Moreover, there are also negative effects on the real exchange rate (OECD, 2010).

7.2.1.4 Burden of Financing

Han and Diekmann (2001) argued that the burden of financing is a risk factor in joint ventures. In regard to the burden of financing, this will be explored in the Egyptian market, as there are many types of project financing. This financing is differentiated according to the ownership of the project; if the Government owns the project, accordingly the sources of finance are one of the following methods: government resources, grants, or both. In the case where the project is in private ownership, the sources of finance are as follows: private finance, and bank loans. These types of finance will be investigated for joint venture projects in Egypt to explore the risk, which are inherent with each of these types.

7.2.1.5 Tax Discrimination

Tax discrimination, tax policy, and administration are key issues for any contractor in the host country. Egypt started to reform the tax system in 2005. This new system reduces the tax on corporate profits from 40% to 20% and this amount applies to Egyptian and foreign companies. There is exemption from tax for some companies such as public authorities and strategic projects. Through this research, these tax systems and their effects on joint venture companies in Egypt will be investigated.

Ashley and Bonner (1987) stated that taxes are collected against the profits and wages, which are earned, by the international contractor and his employees while inside the host country. In addition, the international contractor pays additional taxation in his home country. The host country usually uses income from taxation as a direct means of funding social and development programmes and as an indirect means of stopping the income from foreign investments from leaving the country. The tax rate is not a problem but the potential changes in taxation pose risks for the contractor.

7.2.1.6 Competitive Position

Finally, the competitive position of joint venture companies will be investigated as this theoretical model of a JV is a new entity and it will therefore have a new position in the market, which needs to be studied. The joint venture that is a new construction company has a diversity of organizational levels, which accordingly have different competitive strategies. These competitive strategies, as stated by Porter (1980), have two groups; the first group is the internal factors, which are the company's strengths and weaknesses and the personal values of the key implementers. Second are the external factors, which are: the industry opportunities and threats, the economic and technical factors, and the expectations of society. These two factor groups give the company its advantage over competitors and elaborate the company's position within the market.

This thesis studies the Egyptian market prior to 25 January 2011 and the risk factors relating to that period. After that date, the uprising that caused President Mubarak to step down, and the continued unrest, has temporarily dampened Egypt's economic prospects. According to the Egyptian Ministry of Finance, the revolution has led to the lowest rate of economic growth in a decade, with only 1.9% of GDP expansion in the fiscal year (1 July to 30 June) 2010-2011. This was mostly due to sharp drops in investment expenditure in many sectors such as construction (-33%) (OECD, 2011b).

7.2.2 Political Risks

This group of risks is also very important and it is associated with international construction projects and the global market. This group of risks includes the following factors (Han and Diekmann, 2001):

- Expropriation
- War/riot
- Government control
- Repudiation
- Government subsidy
- Relations with the Government
- Government acts and regulations

Ashley and Bonner (1987) stated that expropriation is defined as a discriminatory action taken by the Government against a particular company or business activity belonging to an international entity and it is recognized as a legal right for the host Government and includes prompt and effective compensation to the international entity affected. Wang et al. (2000) stated that expropriation risk occurs when the Government expropriates the project without giving reasonable compensation to the project developer/investor. The expropriation can take the form of nationalization of the facility wholesale, which is something that rarely happens. Alternatively, expropriation can occur when the Government changes regulations, taxes, or tariffs after the project is complete in order to gradually take over the facility and its operating profits, which commonly happens.

This risk factor can lead to a major business loss, and the compensation is always an underestimate of the real applied work. In Egypt, there is an investment law, which preserves property from expropriation, at the same time; this will be investigated further in this research.

For war/ riot Ashley and Bonner (1987) stated that these factors include the rise of religious fervour in a region and armed or political conflicts between the host nation and other forces originating beyond its borders. International contractors are usually very sensitive to those risks, and they are usually very careful in evaluating the environment of neighbouring countries and the relationship existing between the nations and the host country.

Egypt was always considered as a politically stable country, but after the revolution of 25th January 2011, the investors and contractors started to be more sensitive about the riot risk factor. This research was conducted before the revolution so all the results will reflect the political situation at the time of the questionnaire.

For repudiation, or nationalist attitudes towards the firm, there are two kinds of attitudes that international companies can face; first, open armed friendship, and secondly, anti-foreign attitudes and rejection of the firm due to its national origins

(Ashley and Bonner, 1987). This factor will be investigated through this research, as it is one of the main risk factors, which will be considered by international contractors, relating to whether the company will be welcomed or refused by the host country.

Regarding Government subsidy, Miller and Lessard (2000) state that financing from the government need not take the form of direct provision of debit financing, but instead may be in the form of loan guarantees, guaranteed rates of return, or grants and subsidies.

Relations with the Government, according to Ashley and Bonner (1987), including establishing a strong relationship with people in positions of power, will protect the company's interests. It can be a great competitive advantage in the host's market. Severe problems could also occur for the company when the Government in the host country changes quickly. In this case, the company runs the risk of being restricted by the new administration. Also, close association with the host Government in essence intensifies the contractor's exposure to political instability. In some cases, the client is the Government; so maintaining distance and disassociation may in such situations be extremely difficult.

Establishing a good relationship with the host Government and other entities such as environmental authorities can help to mitigate an aggressive stance and to collect useful information for marketing. This good relationship must be maintained by the JV itself or with the help of the parent company (Bing et al., 1999; and Bing and Tiong, 1999). These good relations usually occur to most of the JV projects in Egypt. Most of the big scale projects are owned by the Government and this can be reflected in the JV company's relationship with the host Government.

Government acts and regulations such as permits and licenses should be a shared project risk; building permits are often the contractor's responsibility. A proper contractor license for jurisdiction is also a risk carried by the contractor. Changes in regulations, which may create additional project expenditures, are the owner's risk, which must be taken into the contractor's consideration (Smith and Bohn, 1999). This should be explored through the research to understand the Egyptian Government's regulations and the role of each partner of the JV against them.

Government control is, according to Han and Diekmann (2001), one of the risk factors for joint ventures, and this will be tested in the Egyptian environment through later chapters.

Egypt was politically stable until 25 January 2011, when a revolution started against the Mubarak regime and ended with him stepping down on 11th February 2011. Since then the country has been politically unstable and most of the political factors must be restudied in light of this new situation.

7.2.3 Cultural/Legal Risks

The theoretical model (in Figure 7.1) includes a group of risks, which are cultural/legal risks and are composed of many factors. These factors will be discussed below.

Research by Beamish (1993) indicates that the acquisition of information about local conditions and understanding them was the most important long-term need, and that employing local people is the best way to fill this need. The JV will appear to be local when complying with local cultures and traditions. This method of employing local personnel can help to overcome the cultural differences. This factor will be investigated in Egyptian culture through this research to explore if there are any cultural differences, which can affect joint venture companies in Egypt.

Bing et al. (1999) and Bing and Tiong (1999) define overcoming the language barrier as one of the effective measures to counter staff problems and to ensure a smooth daily operation by recruiting local staff with bilingual ability, which can offer better communication for the partners speaking in different languages. Moreover, the language barrier directly causes mistrust and miscommunication. Seemingly, minor behaviours such as body language, speech rhythms, and punctuality vary systematically by nationality, further causing interpersonal unease and mistrust.

Different applicable laws, according to Han and Diekmann (2001), were set as a legal risk factor and this factor will be tested through this study.

Regarding different dispute resolution, the impact of conflict resolution on the relationship can be productive or destructive. Renegotiation is one of the more reliable conflict resolution techniques. It belongs to the constructive resolution techniques (Bing et al., 1999; and Bing and Tiong, 1999). The other system, which is used, is arbitration, which is recognized in the construction industry in Egypt. This will be tested through this research study.

Force majeure relates to circumstances beyond the control of the project developer or the Government such as natural disasters or accidents (e.g. fires, floods, storms and earthquakes), wars, hostilities, embargoes and import/export restrictions (Wang et al., 2000). Smith and Bohn (1999) addressed the fact that contracts usually consider these risks and minimize their influence with the necessary insurance or clauses to provide equitable adjustments for delays. Hassanein and Afify (2007^{a, b}) addressed the fact that the contract remains binding even though no work is being performed in the event of a force majeure in Egypt. This will be explored through this research and the mitigation systems, which are used to cover this risk factor in Egypt.

Finally, the protection of proprietary information, according to Han and Diekmann (2001), is one of the legal risk factors, which must be taken into consideration especially when drafting the contracts to protect the project data especially relating to finance and know-how. Some joint venture contracts will be studied through this research to find the extent to which the project data is protected in JV contracts.

7.2.4 Technical/ Construction Risks

According to Han and Diekmann (2001), the difference in geography is one of the risk factors, which must be taken into consideration when studying a project. The strategic issue of location can be considered from different aspects including that of where generally to locate a hospitality operation and then the specific issue of selecting suitable sites (Hollensen, 2004).

The labour issue relates to skills and strikes and means the availability of skilled workers and labour cost/productivity (Hastak and Shaked, 2000).

Material availability includes loss or delay due to damaged or late materials (Smith and Bohn, 1999). In addition, taxation on imported goods is a protectionist policy enacted to discourage imports and encourage use of locally available material (Hastak and Shaked, 2000).

Subcontractor availability as argued by Bing et al. (1999) and Bing and Tiong (1999) refers to the fact that general contractors are subcontracting many project activities out. These risks are uncertainties related to subcontractors' or suppliers' technical qualifications, timelines, reliability, and financial stability. These risks can result in time loss and increased cost during construction.

Han and Diekmann (2001) include other factors such as: different standards including local laws, local design codes, local approval, and ISO standards. Hassanein and Afify (2007_{a, b}) addressed the fact that in Egyptian contracts the stipulation of specific codes and standards is requested, moreover, different measurement systems.

In addition, there are domestic requirements. In the Egyptian context, this refers to registering the international company with the local contractors' federation. Moreover, public ownership requests the international contractors to join Egyptian contractors and, in some projects, they specify the percentage of work between the joint venture partners.

7.2.5 Other Risks

Lack of management is one of the risks that face joint ventures, which results in the incompetence of the project management team (Shen et al., 2001).

According to Bing et al. (1999) and Bing and Tiong (1999) technology transfer is the least critical factor as this is usually carried out in limited areas, such as, training the

local staff during the design and construction phases. Usually the main target for companies is to complete the project with profit and on time and budget rather than to successfully transfer technology.

Environmental issues certainly have a critical influence on the JV. The environmental force majeure risk could cause the destruction of facilities, equipment, material, and death amongst the work force. Pollution also has an effect on the joint venture, but this is considered the least critical according to Bing et al. (1999) and Bing and Tiong (1999).

For warranty issue Flanagan and Norman (2000) stated that under the standard form of building contract there is provision for a nominated sub-contractor to sign an “employer-sub-contractor” agreement where there is provision that the sub-contractor has exercised and will exercise all responsible skill and care in the design of the sub-contract works in so far as they have been designed by him. The law relating to warranties in the construction industry is not clear. It is more complicated by the introduction of collateral warranties. Hassanein and Afify (2007_{a, b}) asserted that liability risks include non-exclusion of normal wear and tear from warranty provisions.

Han and Diekmann (2001) also include the following risk factors: public resistance, lack of experience, import/export regulations, and lack of infrastructure.

Each of these risks will be investigated through this research in the context of Egypt, in the following chapters, as most of these risks were considered as risk factors in other countries.

7.3 Joint Venture Risks

7.3.1 JV Scope/Structure

The main elements that shape the joint venture company are its scope and structure, and these elements must be clear while drafting the joint venture (JV) contract to define the responsibilities between the JV parties.

The main elements will be discussed based on Robbins (1972), Langford and Male (1991), Male and Stocks (1991) which are: personnel, complexity, formalization, centralization, organization hierarchy, scope and performance.

Personnel is one of the critical issues when the JV forms its team. Personnel issues may affect the JV’s performance because parent firms may send second-rate personnel to staff the operation or the policies instituted could run counter to the purpose of the venture (Bing and Tiong, 1999, and Bing et al., 1999). In addition, distrust among JV staff from different partners is also a critical risk factor in a JV. Both general managers and functional managers would be drawn from their parent company to balance the influences

from each parent company. Each manager is given a mandate to both manage the venture and look after the parent company's interests (Bing and Tiong, 1999 and Bing et al., 1999).

Robbins (1972) stated that the *complexity* of the organization is a structural concept relating to the extent to which the organization differentiates activities horizontally, vertically and spatially. This was discussed in section 3.1.3.1.

With regard to *formalization*, it is concerned with the extent to which codes of conduct or the norms of an organization are explicitly known amongst its members. This was discussed in detail in section 3.1.3.1 (Robbins, 1972).

Centralization was discussed in section 3.1.3.1, which refers to the degree to which power is centralised or concentrated within the hands of a few people, units, or departments within an organization (Male and Stocks, 1991). This will be explored in this research to understand decision making through the JV and accordingly the complexity will be recognized.

Organization Hierarchy is one of the risks that can be crucial for the project's organizational structure according to (Shen et. al, 2001). The company hierarchy is discussed in section 3.1.3.1. The importance of this factor is to create a uniform work team from both JV companies and to be sure that the work within the JV organization will go smoothly.

Scope and performance of the joint venture company as an organization, are both risk factors which relate to the organization's capabilities and they were discussed in section 3.2.2. These risk factors will be tested through this study.

7.3.2 Partner Selection and Relationship

Partner selection for the joint venture (JV) itself is a risk because it directly affects the outcome of the JV. The criteria, which can be used when choosing the partners, are as follows (Bing and Tiong, 1999 and Bing et al., 1999): financial capabilities of the partners, connections with the host Government and strategic compatibility between the partners.

Regarding the financial capabilities of the partners, which are the prospective partners who can provide sufficient financial resources to maintain the venture's effort, the cash should be deposited in a JV bank account with an agreement that the partners can draw on the interest until the funds are actually required. In addition, the JV agreement must contain provisions for raising additional capital (Bing and Tiong, 1999 and Bing et al., 1999).

Strong connections with the host Government are one of the bases for selecting a partner especially for the JV's success. These strong relations can give protection from security problems or winning a preferential margin in tendering the projects or in handling other government regulation changes (Bing and Tiong, 1999 and Bing et al., 1999)

Strategic compatibility is also an important factor for selecting the partners, which includes complementary skills and resources. Any mis-matching of these strategies can lead the JV to failure (Bing and Tiong, 1999 and Bing et al., 1999).

7.3.3 JV Leadership

Li et al. (1999) explored that there are many factors affecting the joint venture leadership. These factors are as follows: composition, process, incentive, and leaders' behaviours.

Composition of the management team has important implications for the joint venture's performance because these managers bring their individual experiences, biases, and their parent firms' perspectives to the joint venture (JV) management team. Furthermore, the joint venture leadership team usually includes some managers of differing nationalities and cultural backgrounds. Because of systemic differences in the social and economic institutions of their home countries, the managers may also differ widely on other demographic dimensions, such as age, education, functional background, and international experience (Li et al., 1999).

With regard to process, when the joint venture (JV) company designs a new entity the partners usually establish bridges between the multiple levels of organization (Walker and Johannes, 2003). Li et al. (1999) stated that the team processes refer to communication flows, information exchange, decision-making processes, interpersonal dynamics, and normative behaviours within the leadership team. Hassanein and Afify (2007^{a, b}) added that allowing the designated leader to commit and incur liabilities on behalf of all the partners is consortium risk.

Incentives and rewards for the joint venture (JV) leadership teams can have a strong impact on their success. There are three critical incentive issues for JV managers: compensation disparity among JV top managers, whether incentives are tied to the joint venture or parent firm performance and differences in career opportunities for JV managers. Dispersion in compensation among the JV leadership team is an important factor affecting the behaviours of leadership team members. The large pay differences between the expatriate managers and the local managers often lead to considerable dissatisfaction among local managers in the joint ventures (Li et al., 1999).

Li et al. (1999) stated that the leader's behaviour, which refers to the leader of the top management team, the general manager, can have a major impact on team

functioning. Moreover, he represents a critical variable to the effective functioning and performance of the JV. In addition, the general manager must also manage relationships with each of the parent organizations, which often have divergent or even opposing objectives and operating policies.

7.3.4 JV Competitive Advantage

Walker and Johannes (2003) stated that the joint venture (JV) partners need the expected features of expanded profits, market share, maintenance, and opportunities. In addition, they need to gain brand, reputation, corporate image, and credibility. The sources of competitive advantage were discussed in section 3.4.4, and through this research joint venture, competitive advantages will be investigated in the Egyptian context.

7.4 Project Specific

These factors will be studied at the joint venture project level, as each project has its own characteristics.

Tah and Carr (2000_{a, b}; 2001) divided the risk factors relating to a project into internal risks and external risks according to the management of the internal resources and the external environment. In this research both of these groups are combined in one group, which is project specific as they are all related to the joint venture (JV) project itself. These risk factors are as follows: financial (project), material, labour skills, sub-contractor, client/owner, contractual, location.

The financial (project) risk factor is for the project itself, and it includes disagreement on the accounting of profit and loss. Although the profit or loss distribution is defined in the contracts, and how much of the profits are to be repatriated, it may become a conflict within the parties (Bing and Tiong, 1999 and Bing et al., 1999). In addition, it includes adequacy of project financing, adequate cash flow, exchange rates, and inflation, underestimation of cost, contractor default, and cost overruns due to the schedule delays (Smith and Bohn, 1999 and Hastak and Shaked, 2000). Other financial risks were added by Hassanein and Afify (2007_{a, b}), for example, uncertainty regarding the assumed responsibility for payment of specific taxes including sales tax relating to contracting services. In fact, there is still dispute in the Egyptian courts regarding whether this tax is applicable. Other risks include the requirement to use specified banks to undertake certain financial transactions including opening letters of credit. There are also risks of non-payment which are linked to a lack of provisions allowing partial settlement i.e. payment is required in full on reaching one major milestone. Another risk is related to the situation where the owner retains his advance payment guarantee even though he has already received payment in full in respect of other financial commitments.

The material risk factor includes loss or delay due to damaged or late materials (Smith and Bohn, 1999). In addition, taxation on imported goods is a protectionist policy enacted to discourage imports and encourage use of locally available material (Hastak and Shaked, 2000).

The factor of labour skills will be investigated at project level, which means the availability of skilled workers and labour cost/productivity for a specific project (Hastak and Shaked, 2000). This factor relates to trained labour for specific work on the project. Moreover, Egyptian Labour Law no. 12 for 2003 permits the entry of foreign nationals provided they obtain a work permit. The number of foreign nationals employed in any company, regardless of how many branches it may have, cannot exceed 10% of the total workforce (OECD, 2010). Wahba (2009) mentioned that Egyptian labour law identified the number of foreign (non-Egyptian) employees in any company, which may not exceed 10% of the total work force for unskilled or semi-skilled workers. For skilled workers the limit of foreign labour is 25%. In addition, total compensation of foreign employees must not exceed 35% of the payroll of the company. There is flexibility in this condition depending on the nature of the work to be conducted (ICL, 2008). This restriction of foreign employees limits international companies in benefitting from their expertise in projects and it limits Egyptian employees from benefitting from their experience (UHY, 2010).

For subcontractors, as argued by Bing and Tiong, (1999) and Bing et al., (1999) many project activities have been sub-contracted out by the general contractors. This risk is uncertain in relation to subcontractors' or suppliers' technical qualifications, timelines, reliability, and financial stability. This risk can result in time loss and increased cost during construction.

The client/owner usually has some problems, such as the cash flow problem when the owner has insufficient funds to complete the project or does not have available funds for progress payments. Some studies have mentioned that JVs in developing countries face delayed payment and sometimes non-payment risks. In addition, the excessive demands and variations to the joint venture (JV) lie in the potential significant change of work allocation within the partners with disruption of work and associated claims (Bing and Tiong, 1999 and Bing et al., 1999).

These risks can put a strain on the contractors' cash flow and can increase the actual costs during construction. In addition, the experience with the client can be a risk factor for the success of the project (Akinci and Fischer, 1998). Hassanein and Afify (2007^{a, b}) added some further risks that contractors face in Egypt. These relate to owner obligations and include: the procurement of permits, approval of drawings and designs, settlement of invoices, allowance of design deliverables, opening of letters of credit, handing over of

the site, the sourcing of the owner's equipment and the handing over of utilities and other facilities related to the site, such as access roads and a lay down area.

For contractual agreement between the partners of the joint venture or between the joint venture (JV) and the owner, the engineering contract is the legal linkage between the owner and contractor who are bound together through the allocation of risk and profit in the contract. Contractual risks are usually caused by disagreements arising from flawed contract documents, inappropriate types of contracts, improper tendering procedures, or improper contractual clauses (Bing and Tiong, 1999 and Bing et al., 1999). When the contractor is usually working in an unfamiliar construction environment, these conditions are a source of risk; this is the case for many international contractors in Egypt (Hassanein and Afify, 2007_{a, b}). Hassanein and Afify (2007_{a, b}) studied the contracts of two power station projects in Egypt and prepared a risk checklist, which comprised twenty-one clauses, and they were grouped into seven categories, which are: owner obligation risks, risks related to interfaces with other contractors, liability risks, financial risks, risks related to changes, technical risks and consortium risks.

The location of the project is one of the factors, which contain risks, such as improper selection of the project location (Shen et al., 2001). Moreover, the availability of labour and material in the location of the project and the infrastructure such as roads and trains etc., which facilitate access to the project.

7.5 Summary

In this research, many authors agreed that in the international construction market, the study of risks must be at three levels: macro (country), market, and project (Flanagan and Norman, 2000; Hastak and Shaked, 2000). Hence, in order to study the risks in international construction joint ventures in Egypt, the risk process proposed by Flanagan and Norman (2000) was adopted in this thesis. The objective is to explore the risk factors for joint venture companies in the Egyptian construction industry. This risk process enables the researcher to investigate risk factors from country level to project level, and to consolidate these in a framework for the consideration of all joint venture parties, both international and Egyptian, when establishing a partnership. Thus, environmental risk includes political, legal, social, and economic systems, which were explored in Chapter 2 and which establish related risk factors for joint ventures. Market risks, which in this thesis refer to the construction industry, include the fragmented nature of the industry as discussed in Chapter 2. Such fragmentation involves labour issues such as skills, and the availability of raw materials. Company risks for a joint venture include risk factors such as scope, structure, partner selection, relationships, and leadership. Finally, project risks for a joint venture include risks related to finance, raw materials, labour skills, and location, each of which were discussed in section 5.2.4.

For the first level of risks (country) which classified using the Breakdown Structure of Risks (BSR) by Han and Diekmann (2001). The second level was the joint venture (JV) company as an organization. In addition, the final category relating to risks that are project specific.

The theoretical model (illustrated in Figure 7.1 and an extended version in Appendix H and the attached CD) is developed in this chapter for contractors to take account of these risks in international joint venture projects in Egypt in which 62 risk factor have been identified for joint ventures (JVs). The emergence of the three levels of risks, which have been grouped under the following headings:

Level 1: Country market risks, which contains the following: economic risks; political risks; cultural/ legal risks; technical/ construction risks; and other risks.

Level 2: Joint venture company risk groups, which contain the following: JV scope/ structure; partner selection and relationship; JV leadership; and JV competitive advantage

Level 3: Project specific risks, which include the following: financial (project); materials; labour skills; sub-contractor; client/owner; contractual; and location.

By applying the theoretical model to construction joint ventures in Egypt, risk factors for JVs in Egypt are identified. These theoretical risk factors are going to be tested in the Egyptian market. Data collected from the questionnaires and contracts could verify these risk factors and provide modifications if different findings emerge.

Chapter 8 The Empirical Findings

8.0 Introduction

This chapter presents the findings from the empirical research. These findings constitute the combined results of twenty-five questionnaires and six project contracts. The first section of the chapter provides a brief description of the sample, which is used in data collection, identify the key contributors from whom the data were collected, and discusses the analysis and presentation of the findings. This Chapter demonstrates that the gathered information is sufficient in quality and quantity to support the critical analysis and development of the model presented in Chapter 7. The data are presented in Appendix I (an extended version of which can be seen on the CD attached). Following this, the chapter discusses the findings in relation to the risk factors, and is presented in sub-sections. For the most part, the findings will be given under headings similar to the theoretical model introduced in Chapter 7. The findings of each of these subsections are reported individually for clarity and ease of reference. The final section of the chapter summarises the findings.

8.1 Sample Description and Analysis

The questionnaire was sent to 33 potential respondents from different private and public sector projects. The investigated companies were: owner, Egyptian, international, and joint ventures.

The questionnaire was sent to the potential respondents before 25 January 2011 when the Egyptian revolution began, deposing President Mubarak. Since then many changes have faced both Egyptian and international companies and have created both political and economic risks. The questionnaire was structured in six parts. All respondents were asked to answer the background information contained in Part 1 and the general information in Part 2; Part 3 was specifically designed for owners; Part 4 for the Egyptian companies; Part 5 for international companies; and Part 6 for joint venture companies. The owner respondent, was requested to reply to Part 1, Part 2, and Part 3 of the questionnaire, the Egyptian company respondent was requested to reply to Part 1, Part 2, and Part 4 of the questionnaire, for International Company, the respondent reply to Part 1, Part 2 and Part 5 of the questionnaire, and for the joint venture respondent to reply to Part 1, Part 2, and Part 6 of the questionnaire.

The questionnaire (please see Appendix F) was structured around the theoretical model of risk factor groups, which are as follows:

- Economic risks
- Political risks
- Cultural/Legal risks

- Technical/Construction risks
- Other risks
- Joint venture risks
- Project specific risks

8.1.1 Respondents

The total sampling consisted of a potential 33 respondents from different private and public sector projects. The respondents were owners, together with managers and professionals from Egyptian, international, and joint venture companies. The number of questionnaires returned was 25 giving a response rate of 76%. The sample size is discussed in Chapter 6 (see 6.2.1.1).

The respondents' experience is shown in Table 8.1. As can be seen, 32% of the respondents have more than 10 years' experience in the construction industry. All respondents have experience in international construction projects. In general, the percentages indicate that the respondents have significant experience in the construction industry. Furthermore, the respondents have experience in joint venture projects. Appendix D shows the relationship between company ownership and the number of respondents.

Table 8.1 Respondents' years of experience in the construction industry

No. of years of experience in construction industry	No. of respondents	
	Frequency	%
None	0	0
1-5 years	1	4%
5-10 years	5	20%
10-15 years	8	32%
15-20 years	5	20%
>20 years	6	24%
Total	25	100

Of the respondents, seven were from joint venture companies, five of which are a joint venture between an Egyptian company and a UK-UAE company, while two represent joint ventures between an Egyptian company and a French consortium. In addition, five Egyptian private companies were studied along with four international

companies from Turkey and the United Arab Emirates (UAE). Nine owners from seven private and two public sector companies also replied.

8.1.2 The Studied Projects

Six projects were analysed through this research, and Table 8.2 shows their details. The studied projects were joint ventures between an Egyptian company and international companies from different countries: France, Germany, Britain, Turkey, and the United Arab Emirates. Moreover, these represent major projects according to their cost.

Table 8.2 Details of the studied projects

	Project name	Joint venture nationalities	Project cost
1	The Metro Line	Egyptian and French	US\$939,000,000.00
2	The Water Treatment Plant	Egyptian and German	US\$2,841,960.83 DM4,729,506.00
3	The New City	Egyptian and British-United Arab Emirates	US\$342,166,667.00
4	The Airport Terminal Building	Egyptian and Turkish	US\$516,666,667.00
5	The Five Star Hotel	Egyptian and United Arab Emirates	US\$13,416,667.00
6	The Harbour	Egyptian and Korean	US\$16,848,000.00

8.1.3 The Analysis

Two analytical strategies were used, namely quantitative and qualitative (see Chapter 6). Quantitative analysis using an SPSS program was applied to Part 2 of the questionnaire responses. The other parts of the questionnaire were analysed with content analysis because the questionnaire was directed to different company types: owner, international, Egyptian, and joint venture. The number of responses was small for each group. A five-point Likert scale statistical analysis method was used in the questionnaire ranging from 1, meaning 'Never', to 5, meaning 'Always'. The results of the analysis of the SPSS program are presented in Table 8.3 (Elsayed, 2006).

Table 8.3 Average mean 'five-point Likert scale'

From 1 to <1.5	Never
From 1.5 to <2.5	Rarely
From 2.5 to <3.5	Sometimes
From 3.5 to <4.5	Very Often
From 4.5 to <5.0	Always

(Source: Elsayed, 2006)

The Kruskal-Wallis test was applied to find the differences between the groups (owner, international, Egyptian, and joint venture companies) and to establish if the groups have the same point of view in regard to risk (The Kruskal-Wallis test is discussed in Chapter 6 (see 6.4.1.1)). The test is the most appropriate measure of the differences between the means of the four groups. If the difference was more than 0.05, then this was interpreted as 'insignificant', which indicates that there is no difference between the studied groups in regard to their points of view about the studied risk factor. Content analysis was used to analyse the contract documents and the remaining parts of the questionnaire, which were not analysed by the SPSS software program.

The questionnaires and the content analysis for the documents gave greater validity to the SPSS analysis, and helped to achieve triangulation for data collection. Furthermore, the literature review is considered to support the validity of the information.

8.2 The Confirmed International Construction Joint Venture Risk Factors in Egypt

As explained earlier in Chapter 7, the theoretical model is illustrated in Figure 7.1 and is composed of three levels: The country, the joint venture company, and the project specific risk factors in construction joint venture in Egypt. In the following subsections, each of these risk factors, which affect international construction joint ventures companies in Egypt, will be explored. A questionnaire was sent to the respondents and they are requested to reply to it. In addition, the content analysis of the studied contracts took place, and the risk factor will be considered as risk according to the number of times it is cited in the different contracts, which give it its importance and significance. Appendix I contains the first analysis and classifications of risk factors in relation to the content analysis of the studied contracts. It also indicates the number of responses from each respondent to the questionnaire's question according to the risk level in country, joint venture company or project specific settings. This analysis is based on the modified grounded theory categorising and grouping, which is discussed in chapter 6.

Each level is composed of different risks, which need to be analysed, and the findings to be explored throughout this chapter. The statistics were performed on the data collected from the respondents of the questionnaire concerning the international construction joint venture risks to obtain the Means, Standard Deviation, and Kruskal-Wallis (test H) of each risk factor as shown in Table 8.4. Moreover, content analysis of the contract documents was undertaken. As a result, the ranking of 29 international construction joint venture risk factors were ranked in descending order according to their statistical Means (see Table 8.4). The ranking of the risk factors is one of the objectives of this research. It shows the importance of the risk factors in the Egyptian market, and at the same time the need for them to be considered while studying joint venture projects in Egypt. The analysis was done for (Part 2) general part of the questionnaire, this part was answered by all the companies' respondents, which are: Owner, Egyptian, International and Joint venture companies.

To consider the importance of risk factors in this research, the triangulation method will be used as such;

1. If the risk factor was included in the literature review, and by the statistical analysis, using the SPSS software the Mean concluded, hence this will be considered important risk factor.
2. If the risk factor was included in the literature review and the content analysis of the studied contracts, hence it will be considered important risk factor.

Table 8.4 The rankings of the important risks which identified by this research

Rank	Risk Factor	Mean	Standard Division	Kruskal-Wallis (test H)
1	Materials (project specific)	4.09	0.64	0.72
2	Financial capability (joint venture level)	4.04	0.73	0.49
3	Different applicable Law	3.86	1.13	0.19
4	Currency exchange	3.84	1.21	0.65
5	Location (project specific)	3.73	0.68	0.53
6	Sub- contractor capacity	3.67	0.90	0.51
7	Connections with host government (joint venture level)	3.59	0.91	0.12
8	Expropriation	3.54	1.04	0.53
9	Equipment availability	3.54	0.91	0.70
10	Strategic complementary	3.53	0.68	0.72
11	Relationships with government	3.50	1.22	0.18

Rank	Risk Factor	Mean	Standard Division	Kruskal-Wallis (test H)
12	Material availability (country level)	3.50	1.11	0.76
13	Government acts and regulations	3.45	1.24	0.98
14	Contractual	3.38	0.61	0.34
15	Different dispute solution	3.32	1.11	0.51
16	Competitive position	3.28	0.74	0.70
17	Protection of proprietary information" Confidentiality" New Name of this Item	3.05	1.09	0.43
18	Financial (project specific)	2.96	1.06	0.21
19	lack of management	2.92	1.03	0.77
20	Different Standards	2.88	1.27	0.60
21	Labour issue: skill, strike (country level)	2.84	0.99	0.70
22	Tax discrimination	2.82	1.11	0.54
23	Lack of infrastructure	2.81	0.68	0.72
24	Government control	2.60	1.58	0.62
25	Terrorism	2.42	0.76	0.36
26	Government subsidy	2.08	1.32	0.65
27	Inflation	1.67	0.62	0.57
28	Force Majeure	0.36	0.49	0.91
29	War/riot	0.08	0.28	0.29

Moreover, the ranking of the country risk factor groups of the International construction joint ventures in Egypt are as follows:

1. Technical/Construction
2. Other Risks
3. Cultural/ Legal
4. Political
5. Economic

This ranking could be attributed to the fact that most of the respondents in this research were mainly respondents from joint ventures, Egyptian or International who were more involved at the operational level of the companies; either as project managers or senior managers. They are mainly concerned with technical and construction risks than the other country risk factor groups.

In the following subsections, each of the risk factors, which affect international construction joint ventures in Egypt, will be explored in terms of three investigated levels: country, joint venture company, and project specific. According to the respondents' replies to the questionnaire, these factors will be considered in regard to whether they are a risk factors or not. In addition, with regard to the content analysis of the contracts, each factor will be considered a risk according to the number of times it is cited in the contracts. If it is mentioned in most of the contracts, it will be considered to be a risk factor, and will be related to the codes and categories, which are mentioned in Appendix, I in accordance with modified grounded theory (see Chapter 6).

The results imply that there is no difference of opinion between the four studied groups studied (owners, the Egyptian, the international, and the JV companies) about the the studied risk factors in all the country risk factor groups, which have been studied herein regarding Egypt and this is clear from the Kruskal-Wallis (test H) results which is greater than 0.05 for each risk factor. The reason that some important risks have a lower ranking than the others in this group is that most of the respondents are from the operational level even though they are project managers or senior managers.

8.2.1 Country Risk Factors

This level contains the following risk groups: Economic, political, cultural, and legal, technical and construction, and other risks. Each of these groups will be discussed in the next sections.

8.2.1.1 Economic Risks

The sets of questions in the questionnaire related to the respondents in the different groups were designed to explore economic risks such as currency exchange, inflation, the burden of financing, tax discrimination. These risks were important according to the analysis. One of the top ten risk factors in this risk group, which affects international construction joint venture companies in Egypt, is currency exchange (see Table 8.4).

The question about the risk factor of *currency exchange* was put to all the respondents, and it was ranked 4th among the risk factors of this research. It is viewed as one of the top ten risk factors in Egypt according to the respondents' replies because it affects owners, Egyptian, and International companies when they form a joint venture. This result confirms Han and Diekmann (2001) findings that this is a risk factor for international projects. This also confirms the findings of Bing and Tiong (1999), and Bing et al. (1999) except for the ranking as they ranked it 6th risk factor among the studied risks.

Questions related to the *tax discrimination* risk factor were put to all the respondents, and a further question applied to the Egyptian company respondents. This

risk factor was ranked 22nd among the studied risk factors in this research. The result implied that the respondents have different opinions according to the types of project and ownership of the company. Moreover, the content analysis of the contracts indicates that the public sector companies, or major projects which provide public services, can have tax exemptions, a matter which is usually mentioned in the contract clauses. These results imply that the companies, whether Egyptian or international, which come together in a joint venture must consider tax discrimination as a risk as it has an effect on the contract price when they are preparing the offer of prices to the owner. This empirical finding confirms Han and Diekmann (2001) findings that this a risk factor for international projects. The tax policy and tax administration reforms, which are implemented by the Egyptian government, were discussed in Section 2.4.4. The triangulation of both the literature review and the quantitative analysis confirms the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

The question about the risk factor of *burden of financing* was directed to the owners. The results imply that the owners' perspective is related to the ownership of a project. When the government owns a project, funding is obtained through government resources or Foreign Direct Investment (FDI). When a project is owned in the private sector, funding is derived through private capital or bank loans. Moreover, it implies the owner's financial ability to finance the projects, which is considered a risk for the owners, not the joint venture companies. This confirms Han and Diekmann (2001) model that this is a risk factor for international projects. This also agrees with Kapila and Hendrickson (2001) that the financing decisions of the project as the source of finance is a crucial element for the cost of the project. The triangulation of both the literature review and the content analysis of the contracts confirm the importance of this risk factor, therefore, it will be considered as a risk factor in Egypt

The question about the risk factor of *Inflation rate* was directed to all the respondents. It was ranked 27th among the risk factors of this research. This result implies that this risk factor has an effect on joint ventures according to the groups studied, and is due to the instability of the Egyptian economy. Fluctuations in inflation rate severely affect Egyptian and international contractors' bidding decisions and cost overruns. The increase in inflation is reflected in the prices of building materials as discussed in Section 2.4 of this research. Accordingly, some joint venture companies add a clause into their contracts, which allows price escalation to overcome this risk. This confirms Han and Diekmann (2001) findings that this is a risk factor for international projects. This also confirms the findings of Bing and Tiong (1999), and Bing et al. (1999) except that they ranked it the 9th risk factor, but it was nearly the same as the Shen et al. (2001) ranking. Akinci and Fischer (1998) indicated that the company should take into consideration the inflation risk factor especially in countries with an unstable economy. The triangulation

of both the literature review and the quantitative analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt even it has a less ranking.

The important risk factors of this group and the ranking according of the top ten if any available are as shown in Table 8.5.

Table 8.5 Important Economic Risks and Ranking

	Ranking
Currency Exchange	4

The reason that some risks have a lower ranking than the others, even though they are important risks in this group, is that most of the respondents are from the operation level of the companies whether they are project managers or senior managers. Most of them have no economic background.

8.2.1.2 Political Risks

There are many political risks, which are important in this group such as: relations with the government, government Acts and regulation, government control, and government subsidy. Egypt is a developing country and its governments face serious problems, which could jeopardise stability and continuity. Moreover, government influences the public sector by setting rules for developmental and contractual relationships. Such influence can be felt in the private sector through polices and legislation regarding building codes, company taxes, and rules on the importation of material and equipment.

The question about *relations with the government* was put to the different company respondents. It was ranked 11th among the risks which are studied in this research. The results imply that there are always good relations between the host government and the joint venture companies. Therefore, even though this risk factor has no effect on joint ventures, it can nonetheless be different from public to private sector according to the literature review. Therefore, it will be considered as a risk factor in Egypt. Moreover, it confirms the findings of the Han and Diekmann (2001) that this is a risk factor for international projects. This also follows Bing and Tiong's (1999), and Bing et al. (1999) findings, which ranked it the 5th risk factor and mentioned that for international companies the most important matter is to adapt to the local environment and become a good company citizen. This also agrees with Shen et al. (2001) that it is important to the company and maintain a good relationship with the government. The difference in rankings and levels of importance can be attributed to the fact that each market has its own set of circumstances, accordingly the ranking and the importance of the risk factor is different.

The question about *government Acts and regulations* risk factor was put to the different group respondents. It was ranked 13th among the risks which are studied in this research. The results imply that this risk factor can affect joint venture companies in Egypt, and that this was agreed among all the studied groups. However, it should be noted that the Egyptian government implemented reforms concerning government regulations, as illustrated in Section 2.4. Moreover, they confirm the findings of Han and Diekmann (2001) that this is a risk factor for international projects. The empirical findings also confirm Shen et al's (2001) findings even though they ranked it the 1st risk factor. It is one of the owner's risks and the owner must reimburse the joint venture company for it. The empirical findings also confirm Bing and Tiong (1999), and Bing et al. (1999), which ranked it as the 3rd risk factor. This confirms also the findings of Smith and Bohn (1999) which add a contingency amount to overcome this risk. The empirical findings confirmed through this research that international companies prefer to join public sector companies to overcome this risk. This confirms also the findings of Ashley and Bonner (1987) which stated that maintaining a strong relationship between the joint venture company and the host government could be effective against changes in regulations. Moreover, the government policy could be a particularly important barrier to market entry for international construction, which can be overcome in certain ways such as requesting the international company to join an Egyptian company for publicly owned projects. This confirms with Male and Stocks (1991) findings. The triangulation of both the literature review and the quantitative analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

The question about *government control* was put to the different group respondents. It was ranked 24rd among the risks which are studied in this research. This risk factor does not affect private companies because the government does not control them directly. This confirms the findings of Han and Diekmann (2001) that this a risk factor for international projects. Even though this risk was ranked the 24th risk factor in this research, it is still an important risk factor. The empirical findings imply that several Egyptian companies who joined international companies were public owned authorities especially those carrying out infrastructure projects. This kind of joint venture sometimes faces a bureaucratic system, which already exists in the public sector anyway. Moreover, the findings in this research agree with Ashley and Bonner (1987) that the involvement of public owned authorities in the project can add the benefits of using local suppliers and local sub-contractors, and it adds a company that truly understands the bureaucracy, business ethics, and national customs. The triangulation of both the literature review and the quantitative analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

The question about *government subsidy* was put to the different company respondents. It was ranked 26th among the risks which are studied in this research. The results depended on the different types of respondent because private company respondents do not receive any government subsidy, whereas public company respondents receive government subsidies. Accordingly, government subsidy will be considered a risk factor in this research. This confirms the findings of Han and Diekmann (2001) that this is a risk factor for international projects. The triangulation of both the literature review and the quantitative analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

In summary, the findings imply that the important risk factors affect the construction joint ventures in Egypt. Furthermore, they imply no significant risks found at the top ten risk factors in this group.

8.2.1.3 Cultural and Legal Risks

This set of questions in the questionnaire was designed to explore the cultural and legal risks of cultural differences, language barriers, different applicable laws, different dispute solutions, force majeure, and protection of proprietary information. Among this risk group is one of the top ten factors, which is different applicable laws, and which affects joint venture companies in Egypt.

The question about *different applicable laws* was put to the different companies respondents. It was ranked 3rd among the risks which are studied in this research. The results imply that according to respondents, the Egyptian law applied when the problems emerge between the joint venture parties. However, there were significant differences noticed among the respondents in general when describing the risk factor. These differences referred to the use of arbitration in the event of contract disputes between joint venture parties. From the content analysis, some projects used other laws according to the international company, such as the Metro project utilising French law. This was because the project was funded by French finance. Moreover, there was not enough data about the underground infrastructure in Egypt at the time that the project was executed. According to French law, all French companies must have insurance, (COFACE), if they work outside of France. The Egyptian Companies Law regulates in detail: joint stock companies, partnerships limited by shares, and limited liability companies (UHY, 2010). The triangulation of both the content analysis and the quantitative analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

The question about *different dispute solutions* was put to the different companies' respondents. Even though this risk was ranked the 15th risk factor in this research, it is still an important risk factor. This can be attributed to the fact that the Tenders' Law in Egypt makes no reference to dispute resolution, which therefore must be negotiated prior

to contract signing. The contracts drafted by parties of the joint ventures try to resolve disputes within project boundaries, and if they fail to do so, the parties resort to arbitration, which is usually conducted at the UNCITRAL 'Regional Centre of International Commercial Arbitration' in Cairo. This mechanism is used to avoid long court procedures. The findings confirm the mechanisms, which are used between the joint parties to solve disputes, which are: Through the supervisory board; through an independent adjudicator; or through the project manager.

If any of these mechanisms fail to solve the dispute, they are finally referred to arbitration. This mechanism is preferred to the court system, although enforcement of arbitral awards is not assured because the losing party can appeal against Egyptian or foreign arbitral decisions in the Egyptian courts. The details of arbitration mechanism were discussed in Section 2.3.2 in this research. The General Authority for Investment and Free Zones (GAFI) opened a centre for the settlement of disputes with investors; this centre may help speed up proceedings specifically related to investments. Moreover, the resolution of disputes undertaken by the economic courts, which was started in 2009, is another economic reform which encourages foreign investors (OECD, 2010_a). This confirms the findings of Han and Diekmann (2001) that this is a risk factor for international projects. The triangulation of both the content analysis and the quantitative analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

The question about *protection of proprietary information* was put to the different company respondents. Even though this risk was ranked the 17th risk factor in this research, it is still an important risk factor. In addition, the name of this risk factor will be changed to “confidentiality”. The reason for renaming this risk factor in this research is that confidentiality is a more common term in the construction sector. The findings confirm that a confidentiality clause in the contracts is intended to prevent the project data from being used in any way whatsoever, such as, publishing without prior approval of the owner. Moreover, many company respondents refused to provide any documents, especially contracts, because of the confidentiality clause in joint venture contracts in Egypt; this can be considered one of the main obstacles, which faced the researcher during this research. This confirms the findings of Han and Diekmann (2001) that this is a risk factor for international projects. The triangulation of both the content analysis and the quantitative analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

The question about *force majeure* was put to the different companies respondents. Even though this risk was ranked the 28th risk factor in this research, it is still an important risk factor. This confirms the findings of Han and Diekmann (2001) that this a risk factor

for international projects. This has confirmed the findings of Wang et al. (1999) who ranked it the 6th risk factor and who defined it as circumstances beyond the project developer's or government's control such as natural disasters or accidents (e.g. floods, storms or earthquakes), war, hostilities, embargo, import or export restrictions. The empirical findings also confirm Bing and Tiong (1999), and Bing et al. (1999) who ranked it the 8th risk factor. The reason for considering it as a risk factor is its impact, which could cause destruction of the project, equipment, or material and death of the workforce. The findings confirmed that insurance is the response plan, which is used to mitigate this risk factor in joint ventures in Egypt. The triangulation of both the literature review and the quantitative analysis and the content analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

The questions about *cultural differences* were put to the international and joint venture company respondents because they come together from different cultural backgrounds to take advantage of each other's competencies to compatible each other. This confirms the findings of Han and Diekmann (2001) that this is a risk factor for international projects. In addition, the empirical findings confirm Shen et al (2001), and Bing and Tiong's (1999), and Bing et al. (1999) findings. Additionally, Bing and Tiong's (1999), and Bing et al. (1999) researches showed that it is not a critical factor compared with other risk factors. The empirical findings in this research confirmed that the Egyptian companies considered it as a risk affecting their projects. In addition, the joint venture and international companies reported that culture compatibility through the design of the company always affects their joint venture projects and has influence on the performance of the joint venture in Egypt. The triangulation of both the literature review and the quantitative analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

The question about *language barriers* risk factor was put to the Egyptian respondents. The result implies that this risk factor is one of the risks of joint venture projects. This confirms Han and Diekmann (2001) findings that this is a risk factor for international projects. The empirical findings also confirm Bing and Tiong's (1999), and Bing et al. (1999) that the language barrier in construction causes misunderstandings relating to the verbal orders between the joint venture parties and consequently this causes extra cost and is time consuming. The Arabic language is the first language of the Middle East and Egypt. Moreover, some owners insist on drafting their contracts in the Arabic language. Therefore, several projects in Egypt overcome this problem by appointing bilingual personnel in joint venture projects who have experience of working in previous joint venture projects or with international companies. The triangulation of both the literature review and the content analysis of questionnaires confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

In summary, the empirical findings have confirmed that the cultural and legal risks in international construction joint ventures in Egypt are: cultural differences, the language barrier, different applicable laws, different dispute solutions, force majeure, and confidentiality. The cultural and legal risks in the country level by Han and Diekmann (2001) were confirmed by this research, and they were confirmed for the overall model of this research. The important cultural and legal risk factors affect the construction joint venture in Egypt, are shown in Table 8.6 and the ranking of the top ten risk factors if any in this group.

Table 8.6 Important Cultural and Legal Risks and Ranking

	Ranking
The different applicable law	3

In light of the results, the term ‘confidentiality’ will be used in place of ‘protection of proprietary information’ because this expression is the most frequently used term in construction contracts.

8.2.1.4 Technical and Construction Risks

A set of questions in the questionnaire was put to the respondents in the different groups to explore technical and construction risks. The questions covered labour issues such as: skills and strikes, availability of materials, sub-contractor availability, different standards, different measurement systems, and domestic requirements.

The question about *material availability* was put to the different company respondents. Even though this risk was ranked the 12th risk factor in this research, it is still an important risk factor. This confirms the findings of Han and Diekmann (2001) that this is a risk factor for international projects. This also confirms Bing and Tiong (1999) who ranked it the 17th risk factor in their risk factors among the studied risks. The triangulation of both the content analysis and the quantitative analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

The question about *different standards* was put to the different companies respondents. Even though this risk was ranked the 20th risk factor in this research, it is still an important risk factor. This confirms the findings of Han and Diekmann (2001) that this is a risk factor for international projects. The contract analysis confirms that the technical specifications are used in Egypt for several projects is British Standards. Whereas, the results imply that the companies in joint venture projects use ISO standards. Moreover, the analysis confirms that most of the Egyptian companies have no good experience of the different standards. This can be attributed to the fact that one of the parties of the joint venture may not be aware of international standards, which are usually

applied to these types of projects. Moreover, international companies sometimes are not aware of the standards, which are used in the Egyptian construction market. The use of joint venture companies between the international and Egyptian companies can overcome this risk. The triangulation of both the literature review and the quantitative analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

The set of questions about *labour issues such as: Skills and Strikes* was put to all the respondent groups and specifically to the Egyptian company respondents. Even though this risk was ranked the 21th risk factor in this research, it is still an important risk factor. This confirms the findings of Han and Diekmann (2001) that this is a risk factor for international projects. The empirical findings also confirmed Shen et al. (2001) who ranked it the 48th risk factor in China. In addition, it agreed with Ashley and Bonner (1987) that strikes and labour shortages cause delays, which affect labour force productivity, and, as a result, more man-hours are required, and thus, more labour costs. In Egypt, the New Labour Law No. 12 for 2003 grants workers the right to carry out peaceful strikes according to controls and procedures. The empirical findings also confirm the African Development Bank (ADB) (2009) findings that companies in Egypt perceive a lack of sufficiently skilled workforce, and a high level of low-skilled unemployment. Moreover, it was confirmed that there are limited labour strikes in the construction market. The triangulation of both the content analysis and the quantitative analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

With regard to *subcontractor availability*, the findings imply that the availability of a technically qualified subcontractor is limited in Egypt. This confirms the findings of Han and Diekmann (2001) that this is a risk factor for international projects. The findings also agree with Bing and Tiong (1999) and Bing et al. (1999) that it is a critical factor for the success of construction projects. The content analysis of the project contracts implies that the relationship between the subcontractor and the main contractor is organized through the contracts. The main reason to consider this a risk factor is that the availability of qualified sub-contractors is limited; even though, according to the Egyptian Federation for Construction and Building Contractors (EFCBC), the number of 7th grade Egyptian contracting companies represent the majority of registered companies, nevertheless this group is small- scale and unsophisticated. The triangulation of both the literature review and the content analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

The question about *different measurement systems* was put to the different company respondents. This confirms the findings of Han and Diekmann (2001) that this is a risk

factor for international projects. The findings of the content analysis of project contracts showed that some projects follow the principle of measurement (international) for works of construction (1979). Moreover, the results imply the frequent use of re-measurement contracts in construction projects in Egypt. Re-measurement contracts tend to draw unbalanced tender prices. In addition, the importance of this risk factor is that it is the system for measuring the work, when it finished and how much money it cost; in a case where the project parties did not agree about which measurement system to use, it could lead to a loss of money for all the parties involved in the joint venture. The triangulation of both the literature review and the content analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

The empirical findings confirmed that the *domestic requirements* is a risk factor for international construction joint ventures in Egypt. This confirms the findings of Han and Diekmann (2001) that this is a risk factor for international projects. The content analysis confirmed some domestic requirements through this research such as:

- International companies are fully responsible for their registration in Egypt as a local company.
- The contractor is legally liable for the stability and safety of the works for a period of 10 years according to Article 651-654 of the Egyptian Civil code.
- International companies must have a company office in Egypt.
- The working hours must be according to Egyptian labour law.
- According to the Egyptian Federation for Construction and Building Contractors (EFCBC) Foundation Law no.104, 1992 and its executive regulations issued by ministerial decision no. 1, 1993 for approving the rules of the classification and grades of the EFCBC members, an international company cannot be less than first grade in its country and the EFCBC guarantees that the Egyptian contractor's share is not less than 51% of the contract value. Moreover, the project amount should not be less than L.E 40 million (US\$ 6,666,666.67) which is a small amount when compared to project costs these days and the size of the projects which use the joint venture company type.

The findings also confirm that the international joint venture between the companies could help the international company to comply with the domestic requirements and to improve its knowledge of the Egyptian construction market, which is vital to execute those kind of projects. The triangulation of both the literature review and the content analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

In summary, the empirical findings confirm that the technical and construction risks in international construction joint ventures in Egypt are as follows: material availability, different standards, and labour issues such as skills and strikes, subcontractor availability, different measurement systems and domestic requirements. The technical and construction risks in the country level according to Han and Diekmann (2001) are confirmed by this research and are also confirmed for the overall model of this research. Moreover, this group was ranked the first of the country level risk factors, but no significant risks were to be at the top ten risk factors in this group

8.2.1.5 Other Risks

A set of questions in the questionnaire, which was put to the different groups, relates to all the risks other than the aforementioned. The important risk factors for this group are: lack of experience, lack of management, warranty issues, import/export regulations, technology transfers, and lack of infrastructure.

The question about *lack of experience* was put to the owners to see if skills and resources criteria influence the choice of Egyptian company. This confirms the findings of Han and Diekmann (2001) that this is a risk factor for international projects. The findings agree with Bing and Tiong (1999), and Bing et al. (1999) that experienced staff must be selected carefully for joint venture projects to remove distrust between the staff. It was confirmed that the owners are involved in choosing the Egyptian companies according to their skills and recourse in the construction joint venture projects in Egypt. The result implies that the owners use such criteria when choosing an Egyptian company for a joint venture and it must be ensure that the Egyptian company is registered with the Egyptian Federation of Construction and Building Contractors (EFCBC) to guarantee the class of the company. The triangulation of both the literature review and the content analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

The question about *lack of management* was put to the respondents of all groups. It concerned the extent to which delays occur on their project due to a lack of senior/middle management resource availability. Even though this risk was ranked the 19th risk factor in this research, it is still an important risk factor, and it is one of the main reasons for the Egyptian companies to align with international companies in joint ventures. This confirms the findings of Han and Diekmann (2001) that this is a risk factor for international projects. This empirical finding also confirms Shen et al. (2001) who ranked it the 18th risk factor. Moreover, the empirical findings also confirm Bing and Tiong (1999), and Bing et al. (1999) who ranked this factor 15th among studied factors, and ranked it the 5th in the internal risk group, which represents the risks that are unique to the joint venture project itself and are treated as an important factor for the partner's

selection and which should be achieved. The findings confirmed that the international companies reported that the Egyptian companies have a shortage of management teams in their joint venture companies. This can be attributed to a deficiency of construction management training in Egypt, and because this training has been introduced in Egypt lately and has not spread across educational and training institutes; hence, there are not enough qualified managers and project team personnel. The triangulation of both the literature review and the quantitative analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

With regard to the *warranty issue* risk factor, this confirms the findings of Han and Diekmann (2001) that this is a risk factor for international projects. The content analysis findings confirm that all the contracts of the joint ventures contain clauses relating to the warranty of the works. These clauses assign the responsibility of the joint venture company for the works. At the same time, there are two warranties: the first has a minimum of one year against the work done, and the second is ten years liability “decennial liability” according to the Egyptian Civil Code, article 651 for the concrete structure. International companies should be aware of the decennial liability even if the proper law of the contract is not the Egyptian law where the site is situated. As a rule, the decennial liability overrules the choice of contract clauses; otherwise, it will be a risk for the joint venture. The triangulation of both the literature review and the content analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

With regard to the *import and export regulations*, this confirms the findings of Han and Diekmann (2001) that this is a risk factor for international projects. Moreover, the content analysis of the contracts in this research confirm that the contract prices include all the imported material/equipment costs. In this case, the owner is not responsible for any extra costs related to the imported items except for some projects, which have exemptions according to Investment Law No. 8 of 1997. For the exempting projects, the owners prefer to pay the material/equipment import fees to gain from the exemption. This exemption was found according to the Investment Scheme for Arab and Foreign Funds and Companies established under Law 159/1981, which allows for the payment of a single rate of 5% for all imports of machinery and equipment required to establish a company or project, including hotel tourist establishments, and urbanization projects (World Trade Organization (WTO), 2005). The triangulation of both the literature review and the content analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

With regard to *technology transfer* is a risk factor for international construction joint ventures in Egypt. This confirms the findings of Han and Diekmann (2001) that this is a

risk factor for international projects. The findings confirm that the technology transfer is usually in limited areas, normally by training staff during the design and construction phases. In addition, the companies exist mainly for commercial gain and their main objectives are more concerned with completing the project on time and budget rather than a successful technology transfer. The empirical findings confirm the different opinions between joint venture companies and international companies about the effects of culture differences and technology transfer. The reason for the importance of this risk factor is that there is new technology adopted in the projects and if the Egyptian companies did not get the training needed, it would lead to financial losses for all the parties; moreover, it is one of the motives behind forming an international joint venture as mentioned in Section 4.3.2. The triangulation of both the questionnaire analysis and the content analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

A set of questions about *lack of infrastructure* was put to all the respondents to explore information about the efficiency of the different types of infrastructure in Egypt. This confirms the findings of Han and Diekmann (2001) that this is a risk factor for international projects. The findings confirm that infrastructures such as the railways and roads were unsatisfactory for contracting companies in Egypt while telecommunications, the airports, and harbours were very satisfactory. Nonetheless, it is worth noting that these latter facilities can encourage companies to operate internationally, as stated by Pietroforte (1997). The findings confirm the World Bank's (2010) conclusions that the infrastructure in Egypt has experienced a remarkable improvement in recent decades. Despite this progress, in recent years there has been a slowdown or even a decline in some areas of the infrastructure, particularly in power generation and transportation. Hence, this encourages the Egyptian Government to invest more in these project types. The triangulation of both the questionnaire analysis and the content analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt. The findings imply the important risk factors, which affect the construction joint ventures in Egypt, and no significant risks to be at the top ten risk factors in this group.

The most important conclusion to be drawn is that there is a lack of management and lack of experience in Egyptian companies. There is also a lack of infrastructure, especially roads and railways. In addition, technology transfer, export and import regulations, and warranty issues are all risk factors to be considered for joint ventures in Egypt. There are good telecommunications and airport infrastructures.

According to the above, it can be seen that the risk factors at country level, which is Egypt, are in the following risk groups: economic, political, cultural, and legal, technical and construction, and other risks. While progressing through these groups more

detailed risks can be found, which are considered as important risk factors according to the criteria mentioned in chapter 9. The findings indicated the important risk factors at country level as discussed in chapter 7. Moreover, the findings confirm the literature, which was discussed in chapters 2, 3 and 4, and they confirm the findings of Han and Diekmann (2001) for risk factors at country level, which was adopted in Figure 7.1, and the findings of Bing and Tiong (1999), Bing et al. (1999), and Shen et al. (2001). Even though some of the rankings of confirmed risk factors are low, they are still important risk factors for joint ventures in Egypt; the reason for that is that most of the respondents are from the operation level and their awareness of the PELSTLE analysis is therefore less. The next section will present the findings of the next level down in the theoretical model, which is the joint venture company level.

8.2.2 Joint Venture Company Risk Factors

The set of questions in this section relates to joint venture companies and the results, which explain joint venture company risk factors. These risk factors are divided into groups: JV scope/structure, partner selection and relationship, and JV leadership. Each of these groups is divided into sub-groups. These groups and sub-groups will be explored in the following section. From the content analysis, the results imply that joint ventures between international and Egyptian companies are used according to the nature of the projects, on a project-by-project basis, and for financial reasons. These latter reasons were discussed previously in Section 4.3.2 in this research.

8.2.2.1 Joint Venture Scope and Structure

The empirical findings confirm the risk factors this group which was identified by Robbins (1972), Langford and Male (1991) and Male and Stocks (1991) and is divided into personnel, complexity, formalization, organizational hierarchy, and scope and performance. Each of these sub-groups relates to a question in the questionnaire in order to explore the risk factors for each of them.

The question about *personnel* risk factor was put to the joint venture and Egyptian company respondents. The empirical findings confirmed that the *personnel* is a risk factor for international construction joint ventures in Egypt. This confirms also the findings of Bing and Tiong (1999), and Bing et al. (1999), which state that the joint venture personnel would be drawn from the parent companies where each person is looking after his parent company's interests. This causes a strain as well as a complex and inefficient relationship. The empirical findings also confirm that the international and joint venture companies reported that choosing personnel affected their projects. The empirical findings confirm some of Bing and Tiong's (1999), and Bing et al. (1999) specific risk management measurements for personnel, which are through:

1. Employing local staff with bi-lingual ability.
2. Defining each member of staff's scope of work.
3. Employing unbiased and experienced staff.

In addition, the employment methods, which are used in Egypt for employment of the JV personnel, are:

- Exchanging personnel between partners
- Employing others from outside of the JV partners
- Sometimes both methods are used

Moreover, Labour Law no. 12 for 2003 has affected the performance of the joint venture, as it has put limitations on the international company personnel. Furthermore, foreign personnel must have all necessary work permits and must leave the country after finishing the project in accordance with the labour law and their contracts.

The question about *complexity* risk was put to the joint venture company respondents. The findings from the questionnaire and the contract analysis indicate that each party of a joint venture has a role and responsibility within the different levels of the company, and this defines the complexity of the organisation. Moreover, the complexity emerges from the decision making which is taken between the company levels. These are: the supervisory board, the leader company, and the project manager. Complexity was discussed in Section 3.1.3.1. The first level is through the supervisory board, which includes personnel from each company and takes the strategic decisions of the JV company. The second level is vertically through leader company and the third level is through management of the site. Complexity could arise through the decisions, which are taken through the joint venture levels.

The questions about *formalisation* of the joint venture company were put to the joint venture company respondents. The findings of the questionnaire and contract analysis confirm the literature review and imply that joint venture companies design their roles and responsibilities by balancing the power between JV partners. Moreover, this confirms that both the international companies and joint venture companies agreed all of the above-mentioned factors, except that the international companies assumed that allowing partners to do what they are best equipped to undertake rarely happened in their projects in Egypt. This can be a source of risk, as the Egyptian companies will not use qualified staff in the right positions, which can affect the performance of joint ventures in Egypt. The triangulation of both the questionnaire and content analysis confirm that formalisation as risk factor.

The question about *organisation hierarchy* was put to the joint venture company respondents. This confirms the findings which were identified by Langford and Male (1991) and were discussed in Section 3.1.3.1. Moreover, the findings of the questionnaire imply that there is disagreement between the partners for staff allocation and that the contract clauses state the positions for each party. Furthermore, from the contract analysis it was concluded that joint ventures hierarchy in joint ventures in Egypt are: the supervisory board; the leader company; the project manager. Some projects have an executive committee, which makes the primary decisions of the joint venture. Each of these levels has its roles but usually the problem is relates to personnel positions within the hierarchy. The triangulation of both the questionnaire and content analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

The question about *scope and performance* was put to the joint venture company respondents. The empirical findings agree with Male and Stocks (1991) who define *scope and performance* as one of the main factors, which affect the organization and in this research, this could be applied to joint venture companies. The empirical findings also agree with Ozorhon et al. (2007) who defined that the overall joint performance includes the performance of the project, the JV partner, the JV organization itself and the partners' perceived satisfaction with the JV. The findings of the questionnaire and the contract analysis imply that the scope of each party is identified through the contracts and that both companies, whether Egyptian or international, are responsible for their share of works because they are two separate identities, a situation which is more applicable to a consortium rather than a joint venture company. The interface between the partners could cause delays relating both to the work and the payments.

8.2.2.2 Partner Selection and Relationship

This set of questions explores the risk factors of this group. The questions seek to understand if these risk factors apply to Egyptian construction joint ventures. The confirmed risk factors through this research: are financial capability, connections with the host government, and strategic complementary. Meanwhile, these risk factors are from the top ten risk factors in this research.

The question about *financial capability* for a joint venture company was put to the respondents of all groups. It was ranked 2nd among the risks which are studied in this research. The empirical findings agree with Bing and Tiong (1999), and Bing et al. (1999) for the rank in general risks and, at the same time, it was ranked the 1st risk factor among the internal risk factors which relate to the project itself. The findings indicates that this risk is important to all partners and is one of the main factors when choosing partners, whether they are international or Egyptian companies. The triangulation of both the

literature review and the questionnaire confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

The question about *connections with the host government* was put to the respondents of all groups. It was ranked 7th among the risks which are studied in this research. The empirical findings of this research agreed with Bing and Tiong's (1999), and Bing et al. (1999) suggestion of choosing a partner with a strong relationship with the Government. The findings imply that a connection with the host government is critical to all the partners of a joint venture, whether Egyptian or international. Moreover, most of the international companies prefer to join the public sector companies as they have good relationships with the government, which eases many of the obstacles facing these companies.

The questions about the *strategic complementarities* were put to all respondents regarding joint venture companies in Egypt. It was ranked the 10th risk factor among the studied risks in the research more over it is one of the top ten risk factors. The findings also confirm Bing and Tiong's (1999), and Bing et al. (1999) findings that the partners usually search for partners who have compatible objectives and are experienced in JV projects and specialized in technical skills with suitable management styles. The findings imply that the companies make themselves attractive to their partners through complementary skills and resources. Moreover, through understanding of the strategic ambitions of the various partners, and a greater proportion of the joint venture partners, realised their expectations through working in the joint venture. The triangulation of both the questionnaire and the content analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

8.2.2.3 Joint Venture Leadership

A set of questions explores the risk factors of this group in joint ventures in Egypt. These are: composition, process, incentive, and leaders' behaviours (the latter was discussed in Section 7.3.3). A question was put to the owners in order to understand whether they insist upon the specific leadership of a joint venture. Most of the respondents implied that they include clauses in the contract relating to this. In addition, they usually assign the international company to the leadership role. This can be attributed to the deficiency of construction management training in Egypt. Thus, there are not qualified enough Egyptian managers and project teams to work in construction joint venture projects.

The questions about *composition* were put to the owners' respondents regarding any conditions in contracts, which the owners insist upon to ensure that an international party joins with an Egyptian party, and to establish if there any conditions of contracts, which owners insist upon concerning sharing jobs/tasks between an international party and an

Egyptian party. The findings of the questionnaire and the contract analysis imply that the owners have a role in choosing the leaders of joint ventures, and usually they choose international companies to be the leaders of their projects. In addition, the owners insist on adding contract clauses in order to share jobs and tasks between the international party and the Egyptian party to be sure of following the law of shares, which is 51% for the Egyptian company and 49% for the international company. They also request a copy of the joint venture contract between the international and Egyptian companies. This also confirms Li et al. (1999) that this factor has important implications on the JV performance.

The *processes of the leader* risk factor refers to information exchange and the decision-making process. From the studied contracts analysis, the results imply that the role of information exchange is taken between the owner and the joint venture parties, and that it must be accurate regarding project copies and records. Furthermore, the leader has full power to take decisions excepting those, which are attributable to the supervisory board. This agrees with Li et al. (1999) who state that this risk referred to the communication flow, information exchange, decision-making processes, interpersonal dynamics, and normative behaviours within the leadership team.

The question about *incentives* was put to the joint venture company respondents. It concerned the extent to which a joint venture company incentivises staff through bonuses. The questionnaire and document analysis show that joint venture companies usually receive a management profit bonus, which is a percentage of the profits in return for their lead roles in the joint venture. This confirms Li et al. (1999) findings as the leader company can be awarded by a lump sum after deducting the JV expenses as well as a bonus in the form of a percentage of the net profit.

A set of questions about *leadership behaviours* was put to the joint venture company respondents. The questions attempted to discover the leadership behaviour among joint venture companies. The questionnaire and the contract analysis findings imply that a minority party can influence leadership behaviours, especially if there is a financial implication. This agrees with the findings of Li et al. (1999) that the leader of the top management team can have a major impact on team functioning. The empirical findings also agree with Hassanein and Afify (2007) in that financial problems in joint venture projects in Egypt usually arise because the leader party can receive payments against the work done in behalf of the joint venture parties.

In summary, leadership is an important risk factor in the operation of a joint venture, and each factor affects the performance of the joint venture. In Egypt, it can be concluded from the above analysis that the composition of the leader company, its processes, and incentives are agreed and included in the contract clauses; furthermore, the owner has a

role in choosing the lead company, which is usually an international company. This situation can be attributed to the lack of management skills among Egyptian companies. Accordingly, the leadership joint venture risk factors is a risk factor except for centralisation, which will be discussed later in this chapter.

In sum the confirmed risk factors of the joint venture company level is set in Table 8.7 along with the ranking, if any, from the top ten.

Table 8.7 Joint Venture Company Risk Factors

Joint Venture Risk Factor Level	
Joint Venture Scope/Structure	Partner Selection and Relations
Personnel	Financial
Organizational hierarchy	Connection with host government
Formalization	Strategic complementary
Scope and performance	
Joint Venture Leadership	
Composition	
Process	
The incentives and rewards	
Leader's behaviour	

8.2.3 Project Specific Risk Factors

The previous sections of this chapter investigated the risk factors of joint ventures at the country level, referring to Egypt, and then at the joint venture level, as an organisation. The set of questions for this section relates to the project itself because each project is a unique entity. The risk factors for this level were identified by Tah and Carr (2000_{a, b}, 2001) and Tah et al. (1993) with some modification in this research. Some of the mentioned risks in the theoretical model were confirmed through this research. These risk factors relate to the following issues: financial, materials, labour skills, subcontractor, client/owner, contractual and location.

The question about *financial* risk was put to all the respondents and concerned the financial capability of a project. Even though this risk factor is ranked the 18th risk factor among the studied risks in this research, it is still an important risk factor. The findings of the quantitative and content analyses of the financial factor imply that each project has its financial conditions set out in the contracts. The most noticeable condition was that

the Egyptian and international companies must open a bank account with two signatories, one from each company. In addition, the expenses, which result from the letters of guarantee, or any other expense, must be divided among the partners according to their proportion of work. Moreover, unclear allocation of responsibility for payment of certain taxes such as sales tax on contracting services, the retention of advance payment guarantee even through advance payment has been fully credited to the owner to cover other obligations of the owner, and the lack of provisions which allow partial payment and link all the payments to one milestone which increase the risk of non-payment. The triangulation of both the questionnaire and the contract analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

With regard to the *materials* risk factor, it was ranked the 1st risk factor among the studied risks in this research. The findings of the contract analysis imply that the materials must be of the highest quality, and in the case of foreign imported parts, the risk emerges from the party who will pay and bear the cost of these customs and tax. The empirical findings confirm the findings of Tah and Carr (2000_{a, b}, 2001) and Tah et al. (1993) that this is a risk in international projects. Moreover, this agrees with Smith and Bohn (1999) who state that loss or delay due to damaged or material delivered after deadline is the responsibility of the company executing the project. Analysis of the contracts confirms the risk of material availability, which is related to cash availability, the availability of imported material, and the customs tax, which is due. The triangulation of both the literature review and the contract analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

The question about *labour* was put to the international and Egyptian companies respondents and concerned the extent to which the Egyptian partner in the joint venture experiences labour issues such as a skills shortage, which could cause problems for a project. The international companies are not concerned with the problems of the Egyptian labour skills shortage. However, the findings of the Egyptian companies imply that they are concerned more about the Egyptian labour skills shortage, and productivity risks for their joint venture projects. This concern could be attributed to a lack of training. The empirical findings confirm the findings of Hastak and Shaked (2000), Smith, and Bohan (1999) Kangari (1995) that labour productivity and cost are import risk factors.

The questions about *sub-contractors* were put to the joint venture company respondents regarding the criteria for choosing them according to experience, familiarity of suppliers and sub-contractors, local pollution control specialists, and through complementarity. The findings of the questionnaire and contract analysis imply that joint venture companies perceive sub-contracting as a risk, and most respondents agreed that sub-contractors are chosen according to experienced and familiar suppliers and sub-

contractors, and through employing logistic agents. The respondents varied in their replies about local security firms and local pollution control specialists. This could be attributed to the large number of small and unsophisticated sub-contractors working in Egypt, and the fact that joint venture companies have various options for the process of sub-contractor selection. The empirical findings also confirm the findings of Tah and Carr (2000_{a, b}) and Tah et al. (1993) that this risk is a global risk and it is specific to the project, not for a particular work package. The triangulation of both the questionnaire and the contract analysis confirm the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

The questions about *client/owners* were put to all the respondents. The questions concerned the types of delay, which occur on projects such as unanticipated site conditions, which result in design change; unanticipated design changes in general, other types of variation, and changes in instructions. Client/owner risk in Egypt is considered by most respondents as a definite risk factor, which usually has an effect on Egyptian and international companies. Some aspects of this risk, such as changes in design and instructions, can cause delays in payments and accordingly delays in work. Furthermore, client ownership affects a project whether such ownership is public or private. This can be if the ownership is in public sector, which means that the bureaucracy can be a risk factor facing the joint ventures. Moreover, previous experience with the same owner usually has significant effect on the joint venture risk identification. This confirms the findings of Tah and Carr (2000_{a, b}) that this is a risk factor in construction joint ventures. In addition, the findings confirm the findings of Bing and Tiong (1999), and Bing et al. (1999) that the client's problems fall within two main elements; cash flow problems, and excessive demands and variation during the project's execution. Furthermore, the findings confirm the findings of Ozorhon et al. (2007) that completeness of payments by the client is a risk factor and it influences the overall JV performance. The triangulation of both the questionnaire and the literature review confirms the importance of this factor, therefore it will be considered as a risk factor in Egypt.

The questions about *contractual* issues were put to the different types of company respondents. They were about the types of contract used in Egypt, and the types of delay, which occur on their projects such as fire, accident, design, and regulatory approvals. Contractual issues were ranked 14th among the studied risks in this research. The findings of the questionnaire and the document analysis imply that the contracts include most of the clauses, which determine the relationships among the parties, whether among the joint venture companies or the owner with the joint venture companies. The International Federation of Consulting Engineers (FIDIC) provides the most frequently used type of contract in joint ventures in Egypt. Some respondents' advised that the standards for fire systems and other safety issues (NFPA) be added to the clauses of the contracts. The

triangulation of both the questionnaire and contract analysis confirms the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

The question about *location* was put to all the company respondents and concerned the location of a project and whether this affects joint venture projects in Egypt regarding local issues such as laws, design codes, and approval, and specific earthquake building codes. It was ranked the 5th among the studied risks in this research. The results imply that the respondents' perception of the project location risk is that location very often affects their work. This empirical finding differ from the findings of Tah and Carr (2000_a, _b) and Tah et al. (1993) which considered that location relates to the location of the head office and the project location. This research studied location according to the law and codes, which apply to project location. The reason is that some areas have special laws and design codes such as the new building areas and the Red Sea area specifically. Here, foreigners cannot own land and Laws differ.

Table 8.8 shows the project specific risk factors and the ranking of the top ten risk factors if any in this group.

Table 8.8 Important Project Specific Risk Factors and Ranking

	Ranking
Materials	1
Location	5
Subcontractor	6

Having discussed above the confirmed risk factors of the theoretical model as illustrated in Figure 7.1 for the international joint venture in Egypt according to the qualitative and quantitative analysis of the questionnaires and the studied contracts. Some new risk factors were added to this model and some were deleted. In the following section, these factors will be discussed.

8.3 Changes to the Theoretical Model

From the above discussions, it is clear that the theoretical model presented in Figure 7.1, needs to be updating. Changes to the model are due to the differences between the Egyptian environment and the other countries from which the model was adopted. These differences could be due to the differences in political, economic, social, and legal systems. Furthermore, these changes to the theoretical model mainly added and deleted risk factors at all the levels, namely, the country, the joint venture company and the project specific levels. The risk factors were adopted in the theoretical model (as shown in Figure 7.1) from literature and documentanalysis until finally, after all the changes, the

overall model of risk factors for international construction joint ventures in Egypt was adopted.

8.3.1 Risk Factors to be added to the Theoretical Model

The rules for adding a risk factor to the theoretical model are that it is mentioned in: (1) the literature but not by the same authors from which the theoretical model was adopted, or (2) this research in any of the analysed documents, or (3) the questionnaires by several respondents. If this happens, then this will be considered a risk factor and it will be added due to its effect on the joint venture company.

The first risk factor to be added is the *equipment availability*. This risk factor is to be added to the technical and construction group at the country level. The question about *equipment availability* was put to the different company respondents. It was ranked 9th among the risks studied in this research. The findings imply that contractors working in Egypt should consider the availability of equipment as a risk affecting their projects. This risk must be taken into consideration when a joint venture is arranged. Furthermore, from the point of view of international companies, the joint venture reduces costs, and from the Egyptian companies' point of view, if a project needs special equipment, then the international company provides it. This also confirms the findings of Tah and Carr (2001). It is one of the main reasons for engaging in international joint ventures for pooling resources (as discussed in Section 4.3.2). The equipment availability risk includes the availability of the equipment, the hire rates, and its productivity. The empirical findings also confirmed the ownership of the equipment and the party who will bear the expenses during the project. Moreover, from the contract analysis of some of the projects, there is special equipment needed to execute the projects such as in the Metro and Harbour projects. With each of these projects, the Egyptian company did not own the special equipment needed to execute the project, and through the joint venture, they obtained it via the international company.

The second risk factor to be added is the JV competitive advantage group; this risk factor group was added at the joint venture company level. The sources of this competitive advantage are also investigated in this research. A set of questions was used to discover joint venture competitive advantages. The questionnaire analysis results from the international and joint venture company respondents and implies that quality and reliability, service and support, and product/service innovation are important competitive advantages to joint ventures in Egypt. The respondents also regarded managerial capability as very important for joint ventures, and technological capability, low prices, and financial capability as moderately important. In addition, competitive advantages, which are gained through joint ventures between Egyptian and international companies, are differentiated in their importance among joint venture companies. Finally, joint

venture and international companies reported that efforts to improve each other's competitive position have the lowest importance from their perspectives. The triangulation of both the questionnaire and the literature review confirms the importance of this factor, therefore, it will be considered as a risk factor in Egypt.

The third risk factor to be added is *communication between JV partners*, which is added to the project specific risk factors group in Egypt. Preece et al. (1998) stated that there are several levels or areas of internal communications to address within the construction industry. One of them is operational, which the empirical findings confirmed and this related to the organizational communication that is required to keep the company operating cohesively and with shared objectives and cultural aims. To meet all these objectives a wide variety of communication tools are used. The most effective tool of communication used in the construction industry is personal contact and word of mouth, which need to be managed. E-mail and the Internet are two of the most effectively growing methods of communication. These are useful in practice for the transmission of large documents or volumes of information. The empirical findings from the content analysis of the contracts studied reflected the important influence of communication management as it is crucial to know which communication tool will be accepted, especially when there are disputes and the time factor becomes critical. This research confirmed the communications between the partners and the owners. In particular, there were concerns about communications between the JV parties themselves, and between the JV and the owner. This factor was one of the main reasons for time and cost overrun in the case of one of the contracts studied, as the owner's orders and instructions were made by word of mouth, and when the joint venture submitted the final statement, not all of these orders were reflected in the final payment as there was no written documentation to support them. In addition, the findings confirmed that even if any tool of communication is used during project execution, whether by fax, e-mail, or telephone, for giving instructions to any of the contractual parties, a signed letter to confirm the instructions must follow.

8.3.2 Risk Factors to be deleted from the Theoretical Model

Compared to the theoretical model illustrated in Figure 7.1, the findings of the analysis of questionnaires, and the content analysis of the contracts, it was found that some risk factors (which were suggested earlier in chapter 7) are less important in international construction joint ventures in Egypt. These factors are at three levels, namely, the country, the joint venture company, and project specific levels.

Expropriation is ranked 8th among the risks which are studied in this research which is one of the top ten risk factors. This result is surprising because the literature review and the document analysis implies that there is no expropriation of properties in Egypt, and

that the law protects these properties. However, Article 34 of Chapter II of the Egyptian Constitution “Economic Constituents” states: “Private ownership shall be safeguarded and may not be put under sequestration except in the cases specified in the law and with a judicial decision. It may not be expropriated except for the general good and against a fair compensation in accordance with the law. The right of inheritance is guaranteed in it.” Furthermore, Article 8 of the Investment Incentives Law (8/1997) states, “The law provides guarantees against the seizure, requisitioning, and freezing of assets, and against placing them under custody or sequestration. It also offers guarantees against full or partial expropriation of real estate and investment project property. The latter provision emphasises the role of the judiciary in limiting the powers of the Government to expropriate (OECD, 2010). Hence, expropriation will not be considered as a risk factor as all the guarantees are offered by the Egyptian Constitution and the law. This finding can be attributed to the fact that most of the respondents, even if they are project managers or senior managers, are at operational, site level, and are not concerned with laws and regulations.

The question about the *currency restriction* risk factor was put to the international companies. The results imply that there are no legal currency restrictions in Egypt. Moreover, according to the content analysis of the contracts, in case any currency restriction happens, the owner compensates the joint venture company. It is worth noting that Egypt fully subscribes to the International Monetary Fund's (IMF's) Articles of Agreement, which prevent monetary authorities from imposing any restrictions on payments and transfers of international companies. Therefore, it will not be considered as a risk factor in Egypt. These findings differ from the results of Bing et al (1999), and Bing and Tiong (1999) who ranked it the 12th risk factor among the studied factors. This result was in reference to the Far East, which has different political conditions than the Egyptian.

The question about the *competitive position* risk factor was put to the international companies. It was ranked 16th among the studied risks. From the questionnaire analysis, the results imply that the majority of international companies' respondents agree that the number of available projects in Egypt is the main reason for entering the market. Fewer respondents admit that political stability and geographic position in the Middle East have an effect on entering the Egyptian construction market. This risk factor is considered as part of the competitive advantage as discussed in Chapter 2. Therefore, it will not be considered a risk factor as it is part of the competitive advantage of the joint venture company in Egypt.

The question about the *repudiation* risk factor was put to the international company respondents. The results imply that the international company respondents agree that

there is no repudiation of them in Egypt, and that this could be attributed to the historical composition of the country. Moreover, this is clear from the increasing number of international companies, which are working in Egypt. Although the literature review confirms the importance of this factor, the questionnaire confirms that there is no repudiation of the international companies in Egypt, and therefore, it will not be considered as a risk factor in Egypt.

The question about *war/riot* was put to the respondents. This risk was ranked 29th among the studied risks. Moreover, the results imply that according to the respondents, there was no need for insurance against this risk. Moreover, the triangulation of both the literature review and the quantitative analysis confirm that this risk is not important, therefore, it will not be considered as a risk factor in Egypt. As discussed earlier in this chapter, the questionnaires were conducted prior to the revolution of 25 January 2011 and the results of the analysis have indicated that the Egyptian political system was stable. After this date, many changes took place in the economic and political systems. Hence, the *war/riot* risk factor should be considered as an important risk factor for construction joint venture projects in Egypt.

The question about *environmental issues* was put to the respondents from all groups. The question concerned the extent to which environmental issues affect the contractual requirements of the respondents' projects in Egypt. These issues include pollution, waste treatment, ecological damage, and inclement weather. The findings imply different rates of satisfaction among respondents. Waste treatment has the highest rate of satisfaction, followed by inclement weather, pollution, and ecological damage. Furthermore, the findings imply that environmental issues are not critical to joint venture projects in Egypt except for certain cases, which deal with water, and sea works, although these cases of the inclement weather risk is manageable through the contract clauses. The findings agree with Smith and Bohn (1999) that this is one of the newest risks for construction projects.

Ashley and Bonner (1987) defined *public resistance* as the extent to which a firm can be accepted from the entities within the host country. Attitudes confronted by the firm can range from open-armed friendship, to anti-foreign sentiment, to rejection of the firm due to the national origins. In addition, problems can arise for the firm when it maintains operations in rival nations or has unwelcome employees in the host country due to their ethnic origins or religion. The question about *public resistance* was put to the international company respondents. It asked if they find local people generally welcoming to international contractors who work in Egypt. The findings imply that local people usually welcome international companies and, furthermore, that there is no public resistance for any company working in the Egyptian construction market. This situation can be attributed to the historical composition of Egypt as discussed in Chapter 2. The

empirical findings confirmed different ratings for this factor, which ranged from 'sometimes' to 'always' for the international companies being welcomed in Egypt. Moreover, the findings confirm that joint ventures usually overcome the negative effect of this risk factor by employing local staff.

The questions about *centralisation* were put to the joint venture company respondents. The results of the questionnaire and contract analyses imply that decision-making can be divided into three stages: the supervisory board of the joint venture, the leader company, and the site management team. Each one has its role and responsibilities, which are always interpreted in the contracts between the parties. This centralisation indicates the level of trust of the individuals who will take the decisions in the company. Centralisation of decisions in joint venture companies was discussed in Section 3.1.3.1. Moreover, the empirical findings confirm the theories of McCabe (2010) that in construction, which is project based, there is less centralisation as projects need responsiveness and local services. For those reasons, centralization will not be considered as a risk factor in construction joint ventures in Egypt.

In summary, this research confirmed some risk factors in the theoretical model of construction joint ventures in Egypt, illustrated in Figure 7.1, while on the other hand, some risk factors were added and others were deleted. Therefore, an overall model for risk factors in international construction joint ventures in Egypt was achieved. The overall model is shown (in Figure 8.1, an extended version can be seen in Appendix J and the attached CD). This overall model is the new method, which was discussed in the objectives of this research. Moreover, this is the first comprehensive model of risk factors for international construction joint venture projects in Egypt, which contains three levels; the country level, the joint venture company level and the project specific level risk factors.

The risk factors for international construction joint ventures in Egypt were discussed in the previous sections. Moreover, the importance of each risk factor in affecting the joint venture company was highlighted. The next section uses Figure 7.1 and the changes to the theoretical model in Section 8.3 to update it, and to show the overall model of the risk factors in international construction joint ventures throughout the studied levels, as it is one of the objectives of this research. Table 8.9 shows the confirmed and the new added risk factors in the international construction joint ventures at all the levels, which are the country, the joint venture company, and the project specific levels.

Table 8.9 The confirmed and new risk factors in international construction JVs in Egypt

Country Risk Factor Level	
Economic Risks	Political Risks
Currency exchange	Relations with the Government
Inflation	Government acts and regulations
Burden of financing	Government control
Tax discrimination	Government subsidies
Cultural and Legal Risks	Technical and Construction Risks
Cultural differences	Material availability
Language barriers	Different standards
The different applicable laws	Labour issues: skills and strikes
The different dispute solutions	Sub-contractor availability
Force majeure	Different measurement systems
Confidentiality	Equipment availability (New Risk)
	Domestic requirements
Other Risks	
Lack of experience	
Lack of management	
Warrantee issues	
Import/export regulations	
Technology transfer	
Lack of infrastructure	
Joint Venture Risk Factor Level	
Joint Venture Scope/Structure	Partner Selection and Relations

Personnel	Financial
Complexity	Connection with host government
Organisational hierarchy	Strategic complementary
Formalisation	
Scope and performance	
Joint Venture Leadership	Competitive Advantage (New risk group)
Composition	Managerial capability
Process	Sizes and types of projects
The incentives and rewards	Financial capability of the JV partners
Leader's behaviour	Quality and reliability
	Service and support
	Product/service innovation
Project Specific Risk Factor Level	
Financial	
Materials	
Labour	
Sub-contractor	
Client/owner	
Contractual	
Location	
Communication between JV partners (New Risk)	

The next section discusses the update to the theoretical model that shows the overall model, which shows all the studied levels.

8.4 The Overall Model

Egypt is a developing country where the evolution of many projects such as infrastructure, residential buildings, etc. is still under way. This includes projects such as airports, metro lines, power stations and roads. This significant volume of construction attracts international companies to work in the Egyptian construction market.

Furthermore, Egyptian companies possessing experience with Egyptian projects, but with limited management ability, are also interested in undertaking major projects. Accordingly, the two companies align in a joint venture and these joint ventures are usually surrounded by risks. These risk factors were studied in this research and there are some risk factors that should be featured within the risk factor model. These factors were the findings of this research. Moreover, they support and confirm the empirical findings. Figure 8.1 shows the overall model, which contains the global market and the regional market (the Middle East). These two levels were explored in Chapter 2 and no further discussion through the research was undertaken. Following this, the overall model is broken down into another three levels which were studied in detail through this research: the country, the joint venture company, and the project specific. These levels can be broken down as follows:

The economic risks group contains: currency exchange, inflation, burden of financing, and tax-discrimination.

The political risk factors group consists of government control, relationships with the Government, government acts and regulations, and government subsidy. All of these factors were confirmed through this research except *Expropriation* which is one of the top ten risk factors and the war/ riot risk factor. These risk factors were deleted as they are not risk factors found in Egypt as mentioned in Section 8.3.2 of this chapter.

The cultural/legal risks group is composed of cultural differences, language barriers, different applicable laws, different dispute resolutions, force majeure and confidentiality. This group was confirmed through this research as shown in Figure 8.1, except the protection of proprietary information factor, which was renamed as 'confidentiality'. The reason for that was that most of the construction contracts use this expression rather than the other term.

The technical/construction risk factors group consists of labour issues: skills, strikes, material availability, sub-contractor availability, different standards and different measurement systems and domestic requirements. The findings of this group confirmed most of the risk factors for this group which were stated by Han and Diekmann (2001). The research extended this group to include equipment availability.

The final group at the country level is other risks which are composed of a lack of experience, lack of management, warrantee issue, import/export regulations, technology transfer, and lack of infrastructure. Most of this group was confirmed through this research.

The joint venture company level consists of JV scope/structure, partner selection and relationships, JV leadership and competitive advantage. Each of these groups

contains risks, and some of these risks were deleted as mentioned in Section 8.3.2 such as: centralisation.

The project specific level consists of the financial aspects of the project: materials, labour, skills, sub-contractor, client/owner, contractual, location, and the new added risk factor, communication between the JV parties, which was added as mentioned in Section 8.3.1 to this level.

In summary, Figure 8.1 provides an overall model of the risk factors for international construction joint ventures in Egypt. It illustrates the different levels, which were studied, namely, the country, the joint venture company, and the project level.

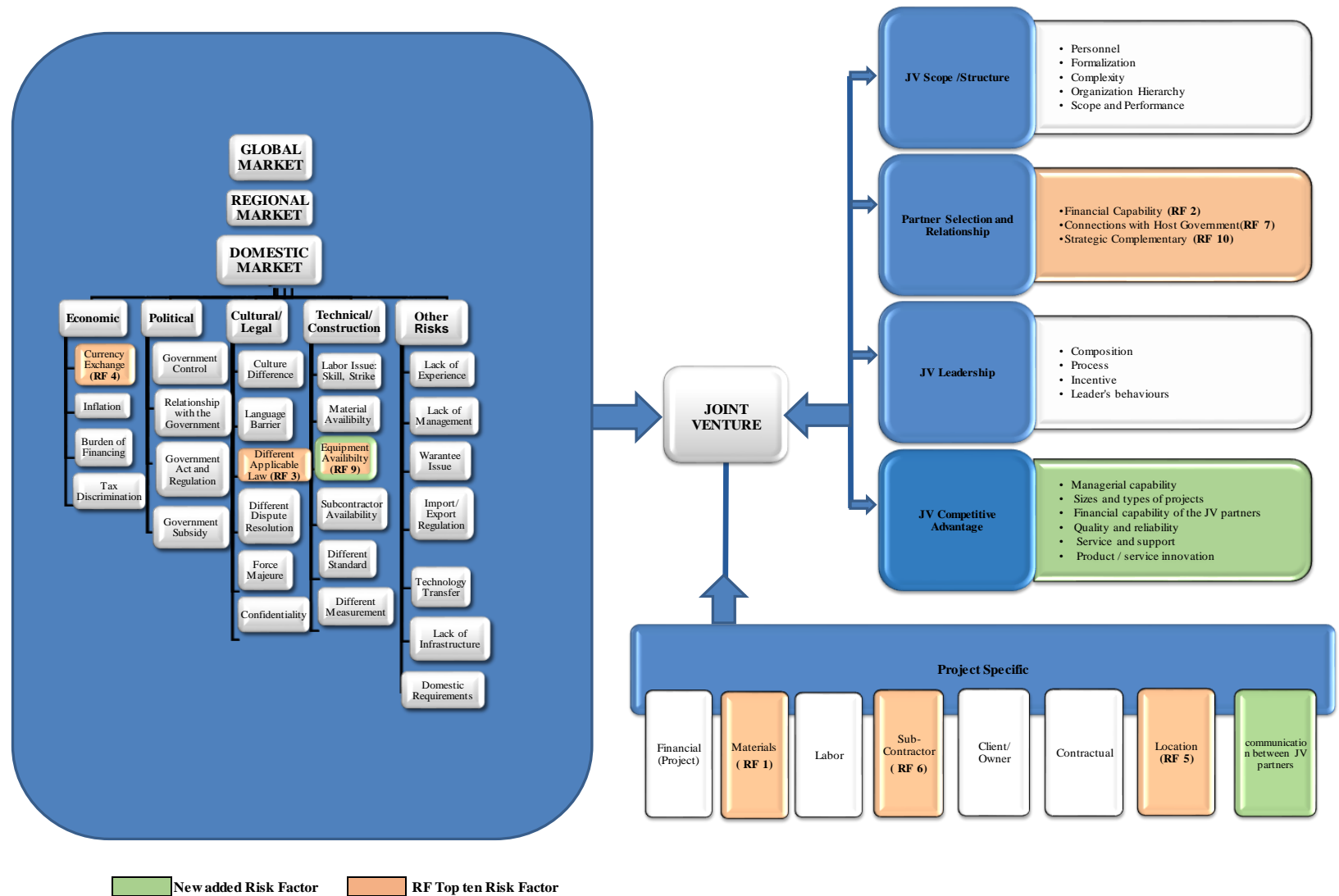


Figure 8.1 The overall model of risk factors for international joint ventures in Egypt including the ranking of the risks

8.5 The Verification and Validation of the Model

In a valid study, the research methods should solve the research problem. In this research, a modified grounded theory approach was adopted due to the lack of solid theoretical frameworks/models for probing the research problem. The design of the pilot interview questions was built upon a deep understanding of risk factors in many countries and a substantial contextual analysis of Egypt PESTLE analysis, the risk management, and the joint venture companies. The contextual analysis allows the pilot interview questions to be practical and well connected to the studied subject.

During the initial stage of the pilot interviews, the researcher reviewed the collected data and evaluated the interviewees' suitability to answer the research questions. The evaluation was based on the researcher's knowledge about the existing theories. The collected data was linked to existing theories about risk management and risk factors. It was identified that the pilot interview data does reflect some risk factors within theories. As a result, it appears valid to say that the designed pilot interview questions were appropriate to the research problem. This process is just for checking the sufficiency of the pilot interview questions. Following this, a final questionnaire was prepared as discussed in section 6.3.6 and each respondent answered the part that related to their company with the exception of the first and second parts, which are general and apply to all the respondents.

A valid study also requires that respondents are appropriate and they can provide the best knowledge of the research topic. The respondents selected for this research were project managers and senior managers who have been working in the targeted joint ventures in Egypt for more than ten years. They know a great deal about the construction activities of joint ventures in the Egyptian market. Meanwhile, each respondent provided valuable information about construction risk factors from different angles. Moreover, documentation data provided triangulation and supplementation to the primary data collected from the questionnaire.

The researcher sent an email to verify major important information that emerged during the analysis. This procedure ensured that data was understood in the manner that the respondent intended.

The coding process of documents for this research used a method of interplay of data collection and data analysis. The data collected was immediately analysed. Categories and concepts were developed. Meanwhile, responses to the same issues could provide validation. Moreover, the interplay of data collection and data analysis also allowed the researcher to think theoretically. It enabled the research to move with deliberation between a micro perspective of data and a macro conceptual understanding.

The logic and consistency of the research process was constantly checked especially when the research was moving from one stage to the next, such as flowing from theoretical concepts to pilot interview questions, transferring from one interview to the next and shifting from pilot interviews to documentation and questionnaires.

Supporters of qualitative methodologies have developed techniques, which safeguard against the possibility of error in excessive subjectivism and delusion whilst ensuring trustworthiness, credibility, transferability, dependability, and conformability as discussed in Section 6.5 in this research. Therefore, it can be concluded that these procedures achieved validity for this research. Consequently, the approach resulting from this research should be valid according to the following:

The research approach and its models were developed incrementally in line with Male et al.'s (1998) incremental validation approach. This has been done through two stages as follows:

1. The research approach has been conceptualised from the literature as argued in Chapters 2, 3, 4 and 5. These were used as a datum to be continually updated throughout the research. According to Yin (2003), such a theoretical model also becomes the main vehicle for generalising the research findings, achieving external validity.
2. The empirical findings were discussed and compared with the literature review to update and develop the research model through analysing and improving the theoretical model. According to Patanakul and Milosevic (2009), this also ensures external validity for the model.

Moreover, there were limited questionnaires conducted for verification and validation in this research because of the time limit. This verification was conducted after the revolution of 25 January 2011 and can reflect the different importance of the risk factors in Egypt to the risks concluded in this research.

A report was generated to present the results and sent to three previous interviewees for verification. The three respondents are experts, having a lot of experience in the construction industry; the first is a project manager working as an owner representative for one of the huge projects, the second is working in an international company as a project manager and the last one has a doctoral degree in construction management and is working as a project manager and acting as an owner representative. These experts have substantive and diversified knowledge of the construction industry because of their vast experience in this field, especially in joint venture projects.

These interviewees were asked to give evaluations of these results. A covering letter to the previous interviewees was produced to introduce the purposes of sending this

report. A questionnaire listing all identified and confirmed risk factors in construction joint ventures in Egypt in this research was included. A Likert Scaling with 1 to 5 points was given to evaluate the importance of the listed items. A 'comment sheet' was also attached to collect feedback. The experts did not add any comments about the research findings in the verified stage; but they add only, corruption as risk factor, and considered war/riot as risk factor too, hence, the findings were verified.

The external validity is concerned with the generalization of the findings of this research amongst other JVs in Egypt. Validation of the research model was developed and presented in this chapter and it was achieved by sending a questionnaire to one of the project managers who has good experience with joint ventures in Egypt. A report was generated to present the grounded findings and sent to the respondent for validation. This respondent was asked to give evaluations on these findings. A covering letter was produced to introduce the purposes for sending this report. A questionnaire listed all identified risk factors, which were confirmed through this research. A Likert scaling with 1 to 5 points was given to evaluate the importance of the listed items of risk factors in construction joint ventures in Egypt. A 'comment sheet' was also attached to collect feedback.

The expert in the validation stage gave his feedback about the risk factors, which were explored in this research. The expert's comments regarding economic risk factors were that *Tax Law* for international construction companies should be reviewed and added corruption, war/riot risk, and terrorism factors. In addition, the expert considered that the *political risks* exist everywhere in the Middle East. Moreover, the *cultural/legal* risks that the international companies could face in Egypt are that they experience no significant problems in regard to cultural differences because they work in countries where cultural differences have a quantifiable negative impact when compared to the Egyptian environment.

For *joint venture scope/structure*, the expert identified that the large Egyptian companies are clear about their scope of work, contrary to small companies, which do not understand their scope or limits. For *partner selection and relations*, the expert noticed that there is no available data about the Egyptian companies, which sometimes makes partner selection difficult for international companies. For *the JV leadership* of the joint venture projects in Egypt the respondent confirmed the findings of this research that the international company is usually the leader and they hire staff who have Arabic roots. Because of the time limit, no further validations were done for this research.

8.6 Summary

The findings confirm some of the risk factors of international joint ventures in Egypt adopted by the theoretical model in Figure 7.1. In addition, the findings of the

questionnaire are presented to demonstrate that the research sample meets the research objectives. Furthermore, the findings show the analyses that were conducted for the twenty-five questionnaires and six project contracts.

The first part of the chapter established general information regarding the sample, the respondents, and their categories. The rest of the chapter discussed the findings of the analysis. These results were organised according to the theoretical model's levels and are the country, the joint venture company, and the project specific levels (illustrated in Figure 7.1). In addition, they include country risks, joint venture company risks, and project specific risks. The confirmed risk factors for the international joint ventures in Egypt were addressed in Table 8.9 and the overall model was established in Figure 8.1. In the following chapter, the most important risk factors presented here will be discussed in detail.

Chapter 9 Discussion

9.0 Introduction

The empirical findings presented in Chapter 8 identified the risk factors of international construction joint ventures in Egypt. Moreover, the overall model, which is developed in Figure 8.1, determined the risk factors in international joint ventures in Egypt. The overall model consists of three levels: the country, the joint venture company, and the project specific levels, which solves the research problem. The following sections will identify the risk factors, which are important in each level. The importance of these risks is that they affect the operation of the joint ventures in the Egyptian market. Accordingly, they should be considered when entering the Egyptian construction market for both the Egyptian and the international companies.

9.1 The Most Important Risk Factors in Egypt

The most important risk factors in each level will be set according to their ranking in the top ten as highlighted in Figure 8.1. If there is any support from the content analysis, then this will be considered to strengthen the risk factor. The next section will discuss each of the important risks according to their level.

9.1.1 Risk Factors For Country Level

The country risk factors are those risks, which are beyond any company control. The research classifies these risks into five groups, which are: Economic, political, cultural/legal, technical/construction and other risks which do not belong to any of the aforementioned groups. After the analysis and ranking, the most important risk factors in the country level are shown in Table 9.1 including the ranking in the top ten risk factors.

Table 9.1 The most important risk factors at country level

Rank	Risk factor
3	Applicable law (Differences)
4	Currency Exchange
9	Equipment Availability

Different applicable law was ranked 3rd among the risks which are studied in this research. The Egyptian law applied when the problems emerge between the joint venture parties. However, there were significant differences noticed among the respondents in general when describing the risk factor. These differences referred to the use of arbitration in the event of contract disputes between joint venture parties. In some projects, other laws were used according to the international company, such as the Metro project utilising French law. This was because the project was funded by French finance. Moreover, there

was not enough data about the underground infrastructure in Egypt at the time that the project was executed. According to French law, all French companies must have insurance, (COFACE), if they work outside of France. The amount they pay for this insurance is 1.5% of the total amount of the project. The Companies Law regulates in detail: joint stock companies, partnerships limited by shares, and limited liability companies UHY, 2010).

The Egyptian court system can incur lengthy delays because of the heavy case backlog, which adversely affects the efficiency of the court system and judiciary as a whole. Accordingly, most of the companies preferred to solve the disputes by using arbitration.

Currency exchange was ranked 4th out the risk factors studied and is considered to be one of the top ten risk factors in this research. Egypt has a relatively liberal foreign exchange regime and an unstable economy; these two factors affect the exchange rate and cause fluctuations in the Egyptian market. All companies, whether they are Egyptian or international, should consider this risk factor because it affects the price of the imported materials and equipment, which usually need foreign currency. The fluctuation of currency rate during the lifespan of the project could affect the tender prices, especially in regard to the fixed price contract.

Equipment availability was ranked 9th among the risks studied in this research. The lack of equipment availability is one of the main reasons for engaging in international joint ventures and for pooling resources (as discussed in Section 4.3.2). The equipment availability risk includes the availability of the equipment, the hire rates, and its productivity, the ownership of the equipment and the party who will bear the expenses during the project. Moreover, from the contract analysis of some of the projects, there is special equipment needed to execute the projects such as in the Metro and Harbour projects. With each of these projects, the Egyptian company did not own the special equipment and therefore, needed to execute the project, which they obtained throughout the joint venture from the international company. The availability of the Equipment can have a positive impact on the Egyptian partner. At the same time it can also incur the burden of providing the required equipment upon the international company.

The mentioned risks could affect the forming of joint ventures, as the currency exchange fluctuation could affect the tender prices. Moreover, in the case of disputes, the Egyptian court system suffers from lengthy trials and decisions making processes, which cause losses in both of money and time. Moreover, as regards the Egyptian company one of their main objectives is to obtain technology and equipment especially for the mega projects.

9.1.2 Risk Factors For Joint Venture Company Level

The most important risk factors in the country level are shown in Table 9.2 including the ranking in the top ten risk factors.

Table 9.2 The most important risk factors at JV company level

Rank	Risk factor
2	Financial capability
7	Connections with the host government
10	Strategic complementary

Financial capability is as one of the most important factors in choosing the Egyptian partner and was ranked as the 2nd risk factor among the studied risks in this research. Financial capability is a creditworthy and effective measure for mitigating risk during the operation of the projects. International companies usually join Egyptian publicly owned companies to construct infrastructure projects, which are usually owned by the government. The reasons for that are; firstly, the financial capability of these public companies is usually achieved through government subsidies or grants; secondly, because the Egyptian companies have good connections with the government in this sector; and thirdly, because these Egyptian companies are familiar with the regulations of, as well as having access to, most of governmental departments. The division of money obtained from the owner usually causes problems between the joint venture partners especially in the final statement where all the deductions and penalties are applied. Following this, problems can occur between the partners as each of them insists that the other is the faulty party causing these deductions. Furthermore, the financial risks of the partners can include adequate cash flow and cost overruns due to schedule delays, which can lead to the failure of the joint venture.

Connections with the host government was ranked 7th among the risks which are studied in this research. The connection with the Egyptian government is critical to all the partners of a joint venture, whether Egyptian or international. Moreover, most of the international companies prefer to join public sector companies, as they are known to have good relationships with the government. This feature limits the likelihood of many of the obstacles, which face these companies from occurring. Furthermore, it can also offer these companies the opportunity of winning a preferential margin in tendering the projects or handling changes in government regulations.

Strategic complementarities was ranked as the 10th risk factor among the studied risks in the research. Normally the joint venture partners in Egypt search for partners to complement their skills and resources to be able to execute the JV project. Moreover, the

partners usually understand each other's strategic ambitions and so they search for the partners with whom they can realise their expectations through working in the joint venture. Otherwise, the joint venture fails. One of these complementary skills is the management skills of the staff, which Egyptian companies align with international companies in joint ventures. The Egyptian companies have a shortage of management teams in their joint venture companies. This can be attributed to a deficiency of construction management training in Egypt and because this training has been introduced in Egypt lately and has not yet spread to educational and training institutes. Hence, there are not enough qualified managers and project team personnel. Moreover, efficient management is one of the joint venture competitive advantages.

The risks discussed in this level could affect the joint ventures performance; financial capability of the partners can cause the failure of the joint venture. Moreover, the relationship with the host government could ease obstacles and give an early alert of changes in regulations, which in turn can affect the joint venture companies, especially in regard to tax and customs regulations. Additionally, choosing the right partner could help in complementing the partner's resources and could enhance the management quality of the company to enhance its competitive advantage against the other companies in the market.

9.1.3 Risk Factors For project Specific Level

The most important risk factors in the project specific level are shown in Table 9.3 including the ranking in the top ten risk factors.

Table 9.3 The most important risk factors at the project specific level

Rank	Risk factor
1	Materials
5	Location
6	Sub-contractor capacity

With regard to the *materials price and availability* risk factors, specifically in relation to the case of imported parts, the risk emerges from the party paying and bearing the cost of the these customs and taxes. Usually it is stated in the contracts between the owner and the joint venture the party who will pay the customs and taxes for the imported materials, which can cause losses for the owner or the joint venture if it is not drafted clearly in the contracts. Moreover, the rate of inflation has an influence on the price of materials as Egypt considered as high inflation country. Additionally, the exchange rate fluctuation can also influence the materials prices. These factors could affect the equipment prices too.

Location of the project was ranked as the 5th risk factor among the studied risks. The location of a project in Egypt could be affected by:

1. The local law of the area/ city where the project will be executed.
2. Local design codes.
3. Local approvals.
4. Egyptian building codes.
5. Specific earthquake building codes.

Moreover, all foreign investment in areas such as the Sinai region is subject to regulatory approval. The Egyptian government has historically prohibited foreigners from investing directly in Sinai for security reasons. Even for local investors, land ownership in Sinai has been tightly controlled to prevent foreigners from surreptitiously acquiring land in the strategic border region. In 2012, the government allowed foreign investors to hold a maximum 45 % stake in any Sinai-based venture. This could be considered as a risk factor for joint ventures when the project is in this area.

Sub-contractor risk factor was ranked as the 6th risk factor among the studied risks in this research. The joint venture companies perceive sub-contracting as a risk, and the way of chosen them. They can be chosen according to experienced and familiar suppliers, which the companies used to work with, and through employing logistic agents. The selection could depend on the sub-contractor financial capability and the qualification of the sub-contractors. Moreover, the partners of the joint venture can act as joint sub-contractors. The risk stems from the large number of small and unsophisticated sub-contractors which working in Egypt, and the fact that joint venture companies have various options for the process of sub-contractor selection. Furthermore, the interface between the various sub-contractors can cause delays to the main joint venture company and therefore, cause losses and time delays.

The risks discussed could affect the project performance, the unavailability of the materials/ equipment according to currency exchange fluctuation and the high inflation rate could affect the tender prices. Moreover, the joint venture project can be affected by the area proposed in which it will be executed and which needs administrative approvals or special laws. Finally, the large number of unsophisticated sub-contractors can cause a risk for the joint venture through delays and losses.

9.2 The Relationship between the Risk Factors of the Three Levels: Country, Joint Venture Company, and Project-Specific

This section confirms the findings of the hierarchy of the three risk factor levels associated with international construction joint ventures in Egypt (as shown in Figure 8.1). The section also clarifies the links among the three levels of the overall model.

First, the theoretical model (shown in Figure 7.1) was established. This illustrates the three risk factor levels associated with international construction joint ventures in Egypt that were studied in this paper: country, joint venture company, and project-specific. Based on the empirical findings of this research, new risks were added to the theoretical model such as equipment availability at the country level in the technical/construction group. In addition, JV competitive advantage was added to the joint venture company level, and communication between JV partners added to the project-specific level. Other risks were also deleted from the theoretical model because they have no confirmed impact on the Egyptian market. The overall model of the risk factors of international construction joint ventures in Egypt (shown in Figure 8.1) was then established. The overall model could be used as a guideline for Egyptian and international companies, but more so by the latter, in determining whether or not to enter the Egyptian construction market after evaluating the first level risk factors (country risks). If international companies decide to enter the Egyptian market, then potential joint venture companies could evaluate the risk factors of the second level, the joint venture company level, and accordingly decide to terminate the JV proposal or continue with it. Finally, if the joint company continues, the risk factors of the third level (the project-specific level) can then be evaluated. Integration among the hierarchy levels is shown in Figure 9.1, which presents the process model of the overall model through the practical use of the three levels.

The first level is the country level. At this level, the international company decides whether or not to enter the Egyptian construction market. The decision is taken based on the evaluation of each risk factor in the different groups, namely the political, economic, cultural/legal, technical/construction, and other risk groups. At this level, the research has confirmed the risks in each group, and the most important risk factors are discussed in Section 9.1.1. These factors are as follows: different applicable laws, currency exchange, and equipment availability. The risk factors should be considered carefully because they are in the top ten risk factors of the Egyptian construction market. In addition, Egyptian and international companies need to consider the other risk factors at this level such as the types of tax to be paid and by whom they are paid; the different dispute solutions which can be achieved through either the courts or arbitration; labour skills and availability; the domestic requirements of the international companies (e.g. registration

by the Egyptian Federation for Construction and Building Contractors (EFCBC) and meeting the EFCBC's requirements (as discussed in Chapter 2 and Appendix A)); import/export regulations, which provide for all imported machines, equipment, and instruments necessary for projects to be subject to a customs tax of 5% in accordance with the Investment Law; and the quality of the Egyptian infrastructure. The latter factor is identified in this research because the roads need greater improvement in contrast to communications and airports, both of which are more developed.

If an international company chooses to enter the Egyptian construction market, then it needs to consider its entry method. Usually, the company would establish an international/Egyptian joint venture, which would move the involved companies to the second level (the joint venture company level). At this level are three of the top ten risk factors, which are: the financial capability of each company, connections with the host government, and strategic complementarity. These risk factors are the second level's components of the partner selection and relationship group. The factors affect Egyptian and international companies alike because both sides want partner companies with strong financial capability as this guarantees good performance and the ability to finish the project on time and to the required quality. By establishing international/Egyptian JV companies, international companies could quickly overcome entry barriers, obtain access to local resources, and reduce political risks such as regulation and policy changes. One of the legal barriers of Egyptian law stipulates that the share of work between Egyptian and international companies should be 51% and 49% respectively, a situation which could potentially limit the competitive advantage of the joint venture company. Consequently, this must be taken into account. However, through the joint venture, the companies could execute projects which one company cannot execute by itself. It was noted through the research that international companies prefer to join a public sector company and therefore enjoy the advantage of good relations with the government.

Moreover, at the joint venture company level, the other risk groups requiring consideration are JV scope and structure, JV leadership, and joint venture competitive advantage. Regarding JV scope and structure, the issue of personnel is one of this group's risk factors which was identified in the research as a difficulty for both parent companies. In most Egyptian projects, local staff must be used at the owner's request. There are also limitations placed upon international staff by Egyptian Labour Law no. 12, 2003, which stipulates that international staff must not exceed 10% of the workforce (OECD, 2010_b). The formalisation, complexity, organisational hierarchy, and scope and performance of the venture are also important risk factors which affect the performance of the joint venture company. However, it is identified herein that the contracts between JV partners usually refer to the top management positions, which are generally divided between the parent companies. With regard to the complexity of decision-making, such complexity

could arise through the decisions, which are taken at the joint venture management levels. It was concluded in the research that joint ventures in Egypt have a supervisory board which makes strategic decisions and includes personnel from each company. The leader company leads the joint venture companies and is usually the international company. The project management team operates the joint venture project.

The leadership risk group of the joint venture has inherent risks of composition, process, intensity, and leaders' behaviour. It is concluded in this research that the owner usually undertakes the choice of leader company (usually the international company). It was also concluded that the JV leader company in Egypt usually has full power to make decisions except those which are appropriate to the supervisory board. Moreover, the joint venture leader company usually receives a management profit bonus, which is a percentage of the profits in return for its lead role in the joint venture.

Further, it was concluded that the joint venture company has a competitive advantage in the Egyptian market. The research identified competitive advantages such as managerial capability, which the joint venture company achieves through foreign expertise; the financial capability of the JV partners because they pool their resources; the quality and reliability of the technology which is obtained from the international company; and the labour and equipment provided by the Egyptian and international companies. A further competitive advantage is the capability of the joint venture companies to execute different types of project and site. After the joint venture company has considered all the risk factors at the JV company level, the partners can decide to terminate the JV or to continue to execute the joint venture project.

The companies then move to the third level (the project-specific level). The important risk factors at this level, which are in the top ten risk factors, are as follows: materials, sub-contractor capacity, and project location. With regard to materials, the research identified that the parties should consider who will pay the customs duties and taxes for imported materials. Moreover, the rate of inflation should be given consideration because Egypt is considered to be a country with high inflation. Additionally, the fluctuating exchange rate should be considered because it can also influence the price of materials and equipment. With regard to subcontractors, the joint venture parties should decide the way in which they choose them. It was identified that in Egypt there is a large number of small and unsophisticated subcontractors, and selection could depend on the subcontractor's financial capability and qualifications. Moreover, the joint venture partners can act as subcontractors in order to execute the project. Finally, with regard to project location, it was identified that the joint venture partners should consider the following.

1. The local law of the area/city where the project will be executed. There are restrictions on foreign investments for security reasons in some areas such as Sinai, which affect the sharing of work between JV parties.
2. The local design codes.
3. The need to obtain the approval of local people.
4. The need to consider Egyptian building codes.
5. The need to consider specific earthquake building codes in the area where the project will be executed.

The other risks at this level, which should also be considered, are the availability of skilled labour for the project type and the qualifications of the labourers. These issues were identified in this research as obstacles which face Egyptian companies (see Chapter 2). However, the research has also identified that the combined recourses of the joint venture parties can overcome these obstacles. With regard to the client/owner risk factor, the research concludes that the joint venture company should consider its relationship with the client/owner because this can affect project performance. In general terms, the joint venture company should consider this risk factor when drafting the contract and should take into consideration changes and variations in the work and any delay in payments. The joint venture company should take considerable precautions because any of these risk factors could affect the joint venture's performance and in some projects could lead to failure.

In terms of the financing of the project, it was identified in the research that Egyptian and international companies should open a bank account with two signatories, one from each company. In addition, the expenses, which result from the letters of guarantee, or any other expenses, must be divided among the partners according to their proportion of the work. Further, the allocation of responsibility for payment of certain taxes such as sales tax on contracting services must be clarified, as must the retention of an advance payment guarantee even though the advance payment has been fully credited to the owner to cover other obligations. These issues, combined with the lack of provisions which allow partial payment and which link all the payments to one milestone, increase the risk of non-payment.

In addition, the research identifies contractual risks. Usually, contracts include most clauses which determine the relationships among the parties, whether between the joint venture company partners or between the owner and the joint venture company. It was concluded in this research that the contract recommended by the International Federation of Consulting Engineers (FIDIC) is the most frequently used type of contract in joint ventures in Egypt.

Finally, communication between JV partners is one of the new risk factors identified in this research. This is added to the project-specific level in Egypt. The research found that the most effective tool of communication used in the construction industry is personal contact and word of mouth, both of which need to be managed. In addition, email and the Internet are two of the most effective and growing methods of communication. If any communication tool is used during the execution of the JV project such as fax, email, or telephone for giving instructions to any of the contractual parties, then it should be followed by a signed letter to confirm the instructions.

After considering the joint venture project risk factors at the project level, the partners can decide whether or not they wish to accept these risk factors and whether to continue to execute the project or not.

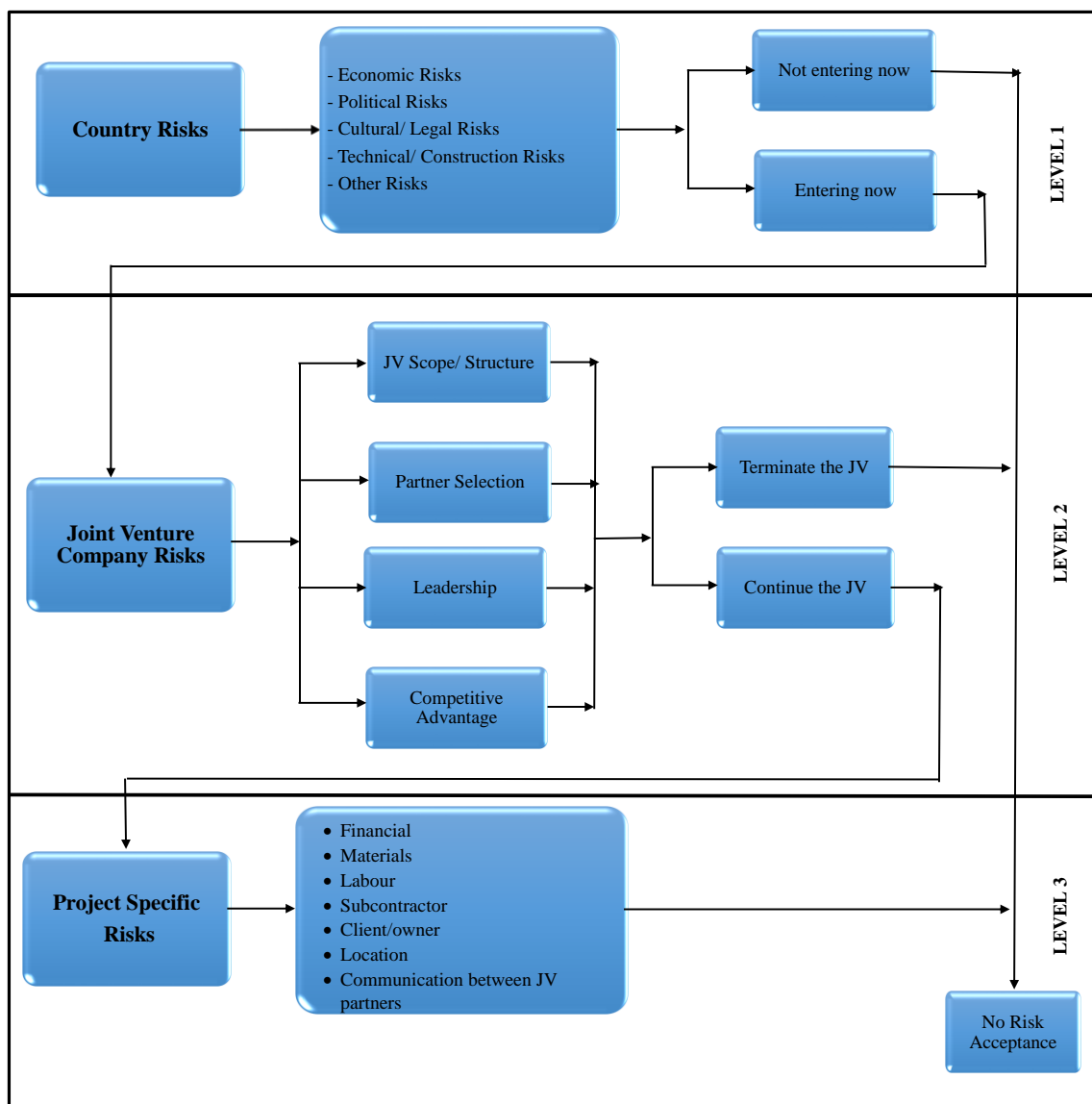


Figure 9.1 The three levels hierarchical practical approach

To clarify the three levels of the practical process approach (shown in Figure 9.1), the currency exchange risk factor, which is one of the economic risk factors at the country level and is ranked fourth in the top ten risk factors, can be used as an example. As mentioned in this research, the Egyptian economy is unstable. Accordingly, it is necessary to review this risk factor at its level and consider its effect on the other two levels (joint venture company and project-specific). At the country level, the currency exchange risk affects the availability of materials and equipment as well as their prices. The impact of this risk factor extends to the joint venture company level where it could affect the companies' financial capability to provide the requested cash flow for the project. In turn, the effect could continue to the project-specific level in terms of the ability to pay subcontractors and to pay for materials and equipment. This risk needs to be drafted into the JV contract by adding a clause relating to the currency exchange rate in order to reduce the effect of this risk on the joint venture project.

Finally, the practical process approach is a guideline summary for international and Egyptian companies which use joint ventures to execute their projects in Egypt. It provides information about the Egyptian construction market and the barriers, risks, and benefits regarding the use of international joint ventures. By using this model, international joint venture companies could make appropriate decisions in the Egyptian construction market.

9.3 Summary

This chapter identifies and discusses the risk factors, which affect joint ventures in the Egyptian construction industry. As such, the factors have been ranked according to their statistical means; therefore, the chapter presents a ranking of the factors in the order in which they should be considered by both Egyptian and international companies. The main contribution of this research is the identification of the risk factors at three levels: country, joint venture company, and project-specific. The top risks of the country level are different applicable laws, currency exchange, and equipment availability. For the joint venture level, the main risks are financial capability, connections with the host government, and strategic complementarity between the joint venture partners. For the project-specific level, these risks are materials, project location, and subcontractor capacity and availability. The research argues that considering these risks is vital to mitigating their impact on potential international joint ventures in Egypt.

Finally, the practical process approach is developed to illustrate the risk factors of joint ventures in the studied three levels (country, joint venture company, and project-specific). The approach provides guidance for construction companies, whether Egyptian or international, and highlights the importance of appropriate decision-making in order to achieve success in the Egyptian construction industry.

Chapter 10 Conclusions and Recommendations

10.0 Introduction

This chapter addresses a number of issues in order to conclude the thesis. It highlights how each of the objectives set out in Chapter 1 was achieved and consequently how the research aim was accomplished; it emphasises the original contribution made by the research; it discusses the research limitations; and offers recommendations for future research in areas, which require further investigation.

This research took place before 25 January 2011. The Egyptian political system and its administrative function were stable before this date. Such stability encouraged international companies to work in Egypt, although frequent regulation and policy changes confused these companies. After 25 January 2011, many changes to the political system occurred, and with them came an increase in instability. Moreover, economic changes took place. Such changes could affect international companies, which work in Egypt and could raise concerns about new risk factors and their effects.

10.1 Objectives

This section reviews the research objectives and the success of the study in meeting these. It also considers how such success contributed to the achievement of the research aim.

10.1.1 Objective 1: To explore the existing political, economic, social, and legal systems in the Egyptian environment

This objective is addressed in Chapters 2 and 7.

The objective's main purpose is to explore the sources of risk in the Egyptian market. In this regard, a PESTLE system was adopted. According to the literature, Egypt has a stable political system and administrative function, both of which ease the operation of all other systems in the country. However, policies and regulations frequently change, a situation which confuses those companies which operate in the Egyptian market.

The legal system was explored in order to understand what happens in the event of disputes and how the system works. It was concluded from the literature that commercial matters are covered by civil law and that judicial procedures in Egypt tend to be costly and subject to long delays. Hence, to settle disputes between contractors, an arbitration clause is added to most construction contracts. The clause was approved by Law 27, 1994 (Arbitration Law). In addition, new economic courts were established mainly to solve investors' disputes and to do so quickly.

Egyptian and international companies are requested to register by the Egyptian Federation for Construction and Building Contractors (EFCBC). International contractors must be registered by the EFCBC and must follow EFCBC requirements, one of which one is to be among the leading companies in their own countries. In addition, for joint ventures between Egyptian and international companies, the share of the work must be 51% for the former and 49% for the latter according to Law 104, 1992 and its executive regulations issued by ministerial decision no. 1, 1993.

With regard to the economy, a review of the existing investments, balance of payments, and foreign trade in Egypt demonstrated the size of the Egyptian market in the public and private sectors. It was concluded that Egypt's government started economic reforms and increased the level of liberalisation in order to cope with the growing globalisation of international capital markets. Moreover, foreign investments were encouraged in all sectors, and entry barriers, customs' procedures, and the tax system were eased. Restrictions on payments and money transfers were also removed. In addition, Egypt fully subscribed to Article VIII, sections 2, 3, and 4, of the IMF's Articles of Agreement. This Article obliges monetary authorities to refrain from imposing any restrictions on payments and transfers for current account transactions, or from engaging in discriminatory currency arrangements or multiple currency practices without the IMF's approval. Accordingly, international companies were allowed to repatriate profits and dividends without restrictions. In addition, taxes were reduced from 40% to a flat rate of 20% for companies outside the energy sector, while the maximum income tax rate was fixed at 20%. Further, according to the literature, Egypt agreed treaties for the prevention of double taxation with a number of countries. The Investment Law still provides for all imported machines, equipment, and instruments, which are necessary for projects to be subject to a customs tax of 5%, although this is less than before.

It was noticed that most companies, which registered with the EFCBC, engage in small-scale, unsophisticated activities, which constitute 54.8% of the total activities of registered contractors. Moreover, the number of international companies registered with the EFCBC is small when compared to the number of Egyptian companies, indicating that most international companies prefer to join Egyptian ones in order to tender for projects in Egypt. Most international construction companies seek to work with well-known Egyptian contracting/construction companies in order to penetrate the Egyptian market as effectively as possible.

Moreover, from the literature it was concluded that within the Egyptian construction industry, the procurement options and the mechanism for choosing subcontractors through the tendering stage are as follows.

1. By negotiation when only one contractor is involved.

2. By competition, including some subsets as follows.
 - Open competition.
 - Selective: based on a pre-qualification process.
 - Two-stage tendering: combining selective competition in the first stage and negotiation in the second stage.

According to the literature, construction workers represent around 10% of the working population in Egypt. Most of the workers are unskilled and the wages, which they receive, are relatively low. It was concluded that the workers need more training through institutions or working with international companies in order to become more qualified and to reach international standards.

By achieving the first research objective, this study contributes to knowledge by providing an understanding of the Egyptian PESTLE environment in which joint ventures work, thereby increasing the understanding of those international companies involved in joint ventures. In the existing literature, most research has explored these systems in general and has not specifically considered joint ventures. The understanding and clarification provided here offers a basis for the development of a new method, which represents the risk factors in construction joint ventures in Egypt (as shown in Figure 7.1).

10.1.2 Objective 2: To explore the literature on strategic management in construction and to identify the structure of joint venture agreements/projects, including their formation and operation in general, but specifically in Egypt

This objective is addressed in Chapters 3, 4, 7, and 8.

Chapter 3 mainly discussed companies from different strategic perspectives. The literature indicated that there is limited available data about the definition of organisation or the types of organisational structure in the Egyptian construction market. Therefore, the literature regarding organisational types was reviewed in this study in order to identify those, which apply in the international market, and to understand which of these are used in international joint ventures in Egypt.

It was concluded that there are many company structures and primary components. It was evident from qualitative analysis that Mintzberg's (1979) company structure was the one most commonly used. Hence, the main levels of an organisation are the strategic apex, the middle line, the operational core, the techno-structure, and the support staff. Accordingly, joint venture companies in Egypt usually have a strategic apex for the new allied company (the joint venture or 'JV') which relates to the parent companies. This strategic apex is concerned with the long-term decisions of the new company such as selecting partners, the type of company, and the type of projects for which the company

will offer tenders. With regard to middle line management, the JV company is the link between the parent companies and the project. Finally, the operating core of the organisation is the project team.

In addition, the formulation of company strategy was reviewed to determine the purpose of company composition. It was evident from the literature review of construction joint venture companies in Egypt that there is no data about these joint ventures, although many projects use this type of alliance. It was concluded that works and joint venture contracts set the mission, the objectives, and the policies of joint ventures composed of international and Egyptian companies. Further, it was clarified that joint ventures in Egypt are used to overcome entry barriers for international companies, and used to enable Egyptian companies to obtain advanced technology, enhanced managerial and labour skills, and the financial capability to execute major projects which one company alone cannot do.

Country-specific factors can be found in the Egyptian construction market. This market is demanding and ranked thirty-sixth among global construction markets. Accordingly, the Egyptian domestic construction market needs a larger average size of contractors and greater opportunities to acquire expertise and experience from international contractors, as mentioned by Seymour (1987). Moreover, managerial and operational teams' experience in Egypt is limited, a circumstance which affects the quality of management and labour. In addition, privatisation and financial sector reforms have increased foreign investment and encouraged international companies to enter the Egyptian market. It was concluded that the combined effect of extra resources and technology transfer, both of which are gained through collaboration between international and Egyptian companies, could be advantageous for the construction industry with regard to large-scale projects in Egypt. Further, it was concluded that the competitive risk factors of joint ventures in Egypt are managerial capability, sizes and types of project, financial capability of the JV partners, quality and reliability, service and support, and product/service innovation (as shown in Figure 8.1).

Chapter 4 mainly discussed companies from different contractual perspectives. It was concluded from the qualitative analysis of joint venture contracts in Egypt that joint venture companies are structured as consortia. Such a structure is usually mentioned in a legal agreement, which the joint venture parties sign in the context of joint and several liability with the project owner. Moreover, each party is responsible for its work according to its share in the agreement. Thus, joint venture agreements create risks such as the interface between the joint venture partners, payment against the work done, and financial requirements such as the letter of guarantee and retention. Further, it was

concluded that the lead company for most joint venture projects is the international company at the request of the project owner.

The research provides the foundations for building the level of joint venture company risk factors in the theoretical model (shown in Figure 7.1) in order to identify the risk factors of international joint ventures in Egypt. This level is divided into groups as follows: JV scope/structure, partner selection and relationship, JV leadership, and JV competitive advantage.

Further, this research extends the scope of studies about construction companies in Egypt by studying different joint ventures between international construction companies from different countries and public or private Egyptian companies. The limitation of the research is that it investigated construction joint ventures in general; there was no differentiation made between international companies joining either private sector or public sector Egyptian companies.

By achieving the second research objective, this study contributes to knowledge by providing clarification of joint venture types and structures, particularly in the construction sector. This clarification has provided the basis for understanding joint venture companies in the Egyptian context, and for understanding the competitive advantages of construction joint venture companies.

10.1.3 Objective 3: To review the risk management literature to understand approaches, processes, and frameworks in construction and specifically joint ventures

This objective is addressed in Chapters 5 and 7.

It was found from the risk management literature that the most effective processes in construction projects are to manage uncertain components, control negative effects, discover and create potential opportunity, and avoid project overruns, delays, and unsatisfactory quality. Moreover, the risk management process was used in this research to identify the risk factors in international construction joint ventures in Egypt. It was evident from the literature and the qualitative and quantitative analyses that limited research has considered the risk factors in the construction industry in Egypt and that none has studied the risk factors for international construction joint ventures (as shown in Appendix B). It is also worth noting that most contractors in the Egyptian market insure against events in order to transfer risk. They do this because of an inability to identify risks in the first instance.

Joint venture risk factors in other countries were studied in the literature and adopted for this research. These risk factors were classified and categorised in hierarchical order. Flanagan and Norman (2000) and Hastak and Shaked (2000) agreed

that in the international construction market, the study of risks could take place at three levels: macro (country), market, and project. Such an approach was adopted in this research. The breakdown structure of risks (BSR), as mentioned by Han and Diekmann (2001), was adopted for the country level risks and combined with Tah and Carr's (2000_a, _b, 2001) and Tah et. al.'s (1993) risk factors for project level risks in order to build the theoretical model (as shown in Figure 7.1). Moreover, joint venture risk factors were investigated in Chapters 3 and 4 and adopted for building the theoretical model.

It was concluded from the qualitative analysis that a joint venture company is formed before the award of a project contract with the objective of securing the contract. Alternatively, a joint venture could be created as a condition for the award of a contract as required by the project owner. This approach is often used to secure a particular preference when evaluating tenders.

By achieving the third objective, the research contributes to knowledge by providing an understanding of the risk management process in Egypt. In addition, the research integrates the risk factors of international joint ventures at three levels, namely country, joint venture company, and project-specific. These levels were integrated in the theoretical model (as shown in Figure 7.1) to assess the important risk factors in the Egyptian construction market.

10.1.4 Objective 4: To consider existing risk factors in other countries in order to illustrate the risk factors for international construction joint ventures in Egypt

This objective is addressed in Chapters 7 and 8.

The literature in Chapters 2 to 5 introduced the risk factors. Consequently, a theoretical model of risk factors in international joint ventures in Egypt was created (as shown in Figure 7.1). These risk factors are developed from countries other than Egypt. In these countries, there are different economic, legal, and political regulations and policies as well as cultural differences. Thus, the business market where these risks emerged is different from that of Egypt.

The risk factors in the theoretical model were classified into three levels: country, joint venture company, and project-specific. A paper-based model (theoretical model) was established in Chapter 7 to identify the risk factors for construction joint ventures in Egypt for Egyptian and international companies. These factors were gathered from many sources (as detailed in Chapter 7). The risk factors were grouped as follows.

Country market risks, which contain the following: economic, political, cultural/legal, technical/construction and other risks.

Joint venture company risk groups which contain the following: JV scope/structure; partner selection and relationship; JV leadership; and JV competitive advantage.

Project specific risks which include the following: financial (project); materials; labour skills; subcontractor; client/owner; contractual; and location.

Qualitative and quantitative analysis findings were discussed in Chapter 8 and combined with the literature in Chapters 2 to 5 in order to develop the overall model (shown in figure 8.1). In addition, after comparing the empirical findings with the existing risk factors in other countries, some factors were confirmed and others were considered less important to the Egyptian market. In order to consider the importance of risk factors in this research, the triangulation method was used as follows.

1. If the risk factor was included in the literature, and by statistical analysis, using SPSS software the mean was established, this risk factor was considered important.
2. If the risk factor was included in the literature and the content analysis of the studied contracts, it was considered important.

In accordance with the quantitative analysis, 29 international construction joint venture risk factors were ranked in descending order according to their statistical means (see Table 8.4). In addition, through this research, some new risks were identified in the three studied levels such as equipment availability at country level; competitive advantage at joint venture company level; and communication between joint venture partners at project-specific level. Moreover, the risk factors were verified and validated through experts; accordingly, the overall model (shown in Figure 8.1) was validated.

By achieving the fourth research objective, the research contributes to knowledge by providing an overall model in three levels, namely country, joint venture company, and project-specific. This overall model is useful to Egyptian and international companies because it improves their knowledge of the risk factors in international construction joint venture projects in Egypt and provides a ranking of these risk factors, which they can consider when they prepare tenders.

10.1.5 Objective 5: To explore the hierarchy of risk factors in Egypt and to develop a practical approach

This objective is addressed in Chapter 9.

The empirical findings presented in Chapter 8 identified the risk factors of international construction joint ventures in Egypt. Moreover, the overall model, which was developed in Figure 8.1, determined the risk factors in international joint ventures in

Egypt. The most important risk factors in each level were established according to their ranking in the top ten as highlighted in Table 8.4.

These risk factors were introduced in a hierarchy of three levels, which are as follows: the country, the joint venture, and the project specific levels. It was concluded that at the **country level**, the risk factors are those risks, which are beyond company control. These risks were classified into five groups: economic, political, cultural/legal, technical/construction, and other. The most important risk factors at this level are different applicable laws, currency exchange, and equipment availability.

It was found from the analysis of the different applicable laws, which was ranked as the third risk factor, that the Egyptian court system can involve lengthy delays because of the significant case backlog. This adversely affects the efficiency of the court system and the judiciary as a whole. With regard to the currency exchange risk factor, which was ranked fourth, it was found that the fluctuation of a currency rate during a project's lifespan could affect tender prices, a circumstance which is especially relevant in the context of a fixed price contract. Finally, with regard to the equipment availability risk factor, which was ranked ninth, the availability of equipment can have a positive impact on an Egyptian partner. At the same time, it can also place the burden of providing the required equipment on the international company.

It was also concluded that at the **joint venture company level**, the most important risk factors are the financial capability of the JV partners, the connection with the host government, and strategic complementarity.

It was found from the analysis of the financial capability of the JV partners, which was ranked as the second risk factor, that international companies usually join Egyptian publicly owned companies in order to construct infrastructure projects, which are usually owned by the government. It was concluded that the reasons for this are as follows. First, the financial capability of these public companies is usually brought about through government subsidies or grants; second, Egyptian companies have good connections with the government in this sector; and third, Egyptian companies are familiar with the regulations of most government departments and have access to such departments. However, the financial risks of partners could include cash flow problems and cost overruns because of schedule delays. These risks can lead to the failure of a joint venture.

It was also found from the analysis that the connection with the host government was ranked as the seventh risk factor among the studied risks. Most international companies prefer to join public sector companies because the latter are known to have good relationships with the government. Further, such relationships can offer these companies the opportunity to gain a preferential margin when tendering for projects or handling changes in government regulations.

It was found from the analysis that the strategic complementarity risk factor was ranked tenth among the studied risks. It was concluded that one of the complementary skills is the management of staff, the need for which encourages Egyptian companies to align with international companies. As mentioned in Chapters 3 and 5, Egyptian companies are short of management teams in their joint venture companies, a circumstance which was attributed to a deficiency of construction management training in Egypt. Further, although this training has now been introduced in Egypt, it has not yet spread to educational and training institutes. Hence, there are not enough qualified managers and project team personnel.

Finally, it was also concluded that at the **project specific level**, the most important risk factors that were identified are materials, location, and subcontractors' availability and capacity.

It was found from the analysis that material price and availability was ranked as the first risk factor in Egypt. This risk factor is affected by the rate of inflation, which influences the price of materials because Egypt is considered a high inflation country. Moreover, exchange rate fluctuation can influence material prices. Apart from affecting material prices, these factors could influence availability, especially for imported materials.

It was also found from the analysis that project location was ranked as the fifth risk factor and is affected by: the local laws of the area/city where the project will be executed; local design codes; local approvals; Egyptian building codes; and specific earthquake building codes. Moreover, it was concluded that all foreign investment in areas such as the Sinai region is subject to regulatory approval for security reasons. Even for local investors, land ownership in Sinai has been tightly controlled to prevent foreigners from surreptitiously acquiring land in the strategic border region. In 2012, the government allowed foreign investors to hold a maximum 45 % stake in any Sinai-based venture.

It was also found from the analysis that subcontractors' availability and capacity was ranked as the sixth risk factor. The risk stems from the large number of small and unsophisticated subcontractors, which work in Egypt and the fact that joint venture companies have various options for the process of subcontractor selection. Further, it was concluded that the interface between the various subcontractors could cause delays for the main joint venture company and therefore cause losses.

These risk factors could affect a joint venture project and cause financial loss or time delays. Accordingly, the risk factors should be mitigated through a response plan by retaining the risks or transferring them to the project owner, the joint venture company, or a third party such as an insurance company.

The relation among the three levels of the overall model was discussed in Section 9.2. This discussion clarified the model's use by Egyptian and international companies. The three levels of the practical process approach (as shown in Figure 9.1) help the companies with decisions about whether to enter the Egyptian market or not at the country level. In addition, this approach helps the instigators of a joint venture between an Egyptian and international company to decide whether to cancel the joint venture or proceed to apply for a project.

By achieving the fifth research objective, the research contributes to knowledge by providing an approach (as shown in Figure 9.1) which can be used in a practical manner to identify the effect of any risk factor through the three levels of a joint venture. Until now, there has been no such comprehensive approach to address these three levels together. This research is the first to attempt to do this.

10.2 Limitations on the Scope of the Research

The research and its main findings are limited in the following ways.

First, the scope for application of the developed research model (illustrated in Figure 8.1) is limited because it focuses on joint venture construction projects in Egypt.

Second, the study focuses on the construction industry and the data were collected with this in mind. Therefore, this study does not consider other industries such as IT and manufacturing because construction is evidently a more important industry in Egypt compared to others.

Third, the sample size was small and the access to people and documents, especially contracts, proved problematic because of commercial confidentiality. Consequently, validation was not extended to many respondents because of access difficulties within the study period.

Fourth, the studied projects were major projects, which used joint venture collaboration.

Fifth, this research has explored the risk factors in joint ventures before the changes that occurred in Egypt following the revolution of 25 January 2011. This event has changed the ranking of the risk factors in this research.

10.3 Recommendations for Further Research

Because of the limitations in the scope of this research, several issues emerged which are also not adequately covered in the existing literature and could therefore benefit from additional investigation. Thus, the following recommendations are made.

First, because the sample was small, further research is needed to test the overall model (shown in Figure 8.1) within a wider scope. For example, risk factors perceived by a larger number of companies could be considered.

Second, this research investigated construction joint ventures in general and made no differentiation between international companies joining either Egyptian private sector companies or Egyptian public sector companies. There is a need to investigate such differences in-depth because the two types of Egyptian company have different behaviours and organisational structures. Further, the risk factors need to be studied from the perspective of an Egyptian company in a joint venture and an international company in a joint venture.

Third, there is a need to investigate more risk factors in joint ventures in the Egyptian market because others have emerged due to the recent economic and political upheavals. For example, a new risk factor, which must be considered for further investigation, is corruption. The reason is that after the revolution of 25 January 2011, many cases have emerged in the press relating to corruption. Therefore, the impact of corruption charges on projects under construction and the losses incurred thereof for the companies involved require further study. Other new risk factors for joint ventures which have emerged because of the political and economic changes in Egypt and which should be considered are rioting and terrorism.

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APPENDICES

Appendix A The Procedures of Registration of International and Egyptian Companies at The Egyptian Federation For Construction and Building Contractors (EFCBC)

For the international company:

The company must submit the following documents according to the Bureau Board, which decided the following (EFCBC, 2010):

A certificate issued by the contractor's federation or the body in charge of the federation works in his own country comprising his classified specialisations and his grade in each of them.

The company commercial register.

The latest budget.

A statement of the equipment possessed by the company.

A statement of the number of engineers, technicians, and clerks working for the company.

A statement of previous works within the latest five years; this document must be attested by the Egyptian Consulate in charge in his own country.

The application and the enclosed document to be submitted to the concerned committee's EFCBC for examination and ensuring its conformity with all the articles of the foundation law or its executive regulations or its executive decisions.

Submitting the decision concerning the registration, classification, and grades of the EFCBC members to the bureau in its final decision on the matter.

After the preliminary approval, the contractor has to submit the letter inviting him to present his bid in the tender, or a statement from the assigning agency approving his participation in the aforementioned tender.

The contractor has to pay the amount of LE11,000 (US\$1,833) to the EFCBC. This can be divided as an amount of LE1000 (US\$167) as registration fees and LE10,000 (US\$1,667) as annual subscription fees covering the period starting from submitting his document up to 31 December of the same year.

A letter of approval or refusal for his bid in the tender must be delivered to the contractor. The letter must state clearly that the project must not be less than LE40 million (US\$6,666,670) and that the Egyptian working member must have a share of not less than 51% of the bid value.

In the event of acceptance of this bid, the contractor must submit the following document to the EFCBC:

A certificate issued by the possessing body stating that the project to be carried out by the contractor is not less than LE40million, and that the contractor's specialisation and grades are not less than what is required to execute the project.

An attested copy of the partnership contract showing at least 51% with an Egyptian contractor or contractors (classified and graded as required to execute the projects) or enclosing a subcontracting contract with an Egyptian contractor with the same amount. Afterwards, the contractor will have the EFCBC membership card as a correspondent contractor according to the specialisation and grades approved by the EFCBC.

In the event of extending the execution period for the project to be carried out by the contractor (the company) till after 31 December in the same year of getting the membership card, the contractor must submit to the EFCBC a letter issued by the assigning agency stating the extension till 31 December. This enables him to renew the membership card by paying the annual subscription.

In case the works entrusted to the foreign contractor end, his membership will be suspended keeping the membership number without paying any new subscriptions till he gets a letter approving his bidding in any tender according to the provisions applied for the corresponding members.

In addition to the abovementioned, the company/the contractor must consider the following:

The company/the contractor is not allowed to renounce the contracting contract, even a part of it, unless he is registered at the EFCBC and of the same specialisation and grade of the original contractor or of a category directly less than his. This applies in the event of renouncing part of the contract, considering the percentage renounced.

For the Egyptian company:

It is registered and categorised according to its specialist skills as follows:

Building works

Foundation works

Steel works

Complementary or supplementary works

Roads, bridges, railways, and airport works

Tunnel works

Sanitary and gas networks

General works, thermal, and water stations

Sea and river works

Land reclamation

Deep digging works

Electromechanical, electronic, and networks.

Each contractor, after being categorised according to specialisation, must address the next steps related to:

The company's capital

Experience

The technical staff

The financial staff

The administrative and legal staff

The max. capacity of work, in Egyptian pounds, in the last five years

The best executed work within the last five years

The financial ability (bank documents and the last balance sheet)

The equipment owned by the company.

Appendix B Literature of Risk Management and Joint Venture Journals

Author	Year	Title of Article	Journal	Key Theme
Gale,A. and Luo. J.	2004	Factors affecting construction joint ventures in China.	International Journal of Project Management.	Key factors affecting success of JV.
Ward, S. and Chapman, C.	2003	Transforming project risk management into project uncertainty.	International Journal of Project Management.	Reasons for transforming risk management to uncertainty management.
Walker, D. H. and Johanness, T. D. S.	2003	Construction industry joint venture behaviour in Hong Kong designed for collaborative results.	International Journal of Project Management.	Nature of JV relationship in Hong Kong.
Rahman, M. M. and Kumaraswamy, M. M.	2002	Risk management trends in the construction industry: moving towards joint risk management.	Engineering Construction and Architectural Management.	Joint risk management risk allocation
Asheley, D. B. and Bonner, J. J.	1986	Political risks in international construction	Journal of Construction Engineering and Management.	Identifying the political risk factors, which affect the cash flow of the international contractors.

Author	Year	Title of Article	Journal	Key Theme
Akinci, B. and Fischer, M.	1998	Factors affecting contractors' risk of cost overburden	Journal of Management in Engineering.	Describing the risk sources which affect contractor's risk cost overrun.
Tah, J. H. M., Thorpe, A. and McCaffe, R.	1993	Contractor project risks contingency allocation using linguistic approximation	Computing Systems in Engineering	Identifying the project risks; a hierarchical risk breakdown structure for contractor risk assessment and a model for contractor contingency allocation were developed.
Dawood, N.	1998	Estimating project and activity duration: a risk management approach using network analysis	Construction Management and Economics	Developing a methodology, which can accurately model activity dependence and realistically predict project duration using a risk management approach.

Author	Year	Title of Article	Journal	Key Theme
Bajaj, D., J. Oluwoye and D. Lenard	1997	An analysis of contractors' approaches to risk identification in New South Wales, Australia	Construction Management and Economics	Investigating and evaluating the process of risk identification at the tendering and estimating stage for construction contractors in New South Wales.
Kangari, R. and Boyer, L. T.	1981	Project selection under risk.	Journal of Construction Division, proceedings of the American Society of Civil Engineering	The selection analysis of the construction projects which maximise the value of the firm to its owners.
Kumaraswamy, M. M.	1997	Appropriate appraisal and apportionment of megaproject risks.	Journal of Professional Issues in Engineering Education and Practice	Developing strategies for appraising the synergistic potential and risk carrying capacities of prospective project participants.

Author	Year	Title of Article	Journal	Key Theme
Luo, J.	2001	Assessing management and performance of Sino-foreign construction joint ventures	Construction Management and Economics	Investigating the management and operating performance of Sino-foreign construction joint ventures and the relationships between the ownership, management control and JV performance.
Tah, J. H. M. and Carr, V.	2000	A proposal for construction project risk assessment using fuzzy logic	Construction Management and Economics	A hierarchical risk breakdown structure representation is used to develop a formal model for qualitative risk assessment by using fuzzy logic.
Rahman, M. M. and Kumaraswamy, M. M.	2002	Joint risk management through transitionally efficient relational contracting	Construction Management and Economics	A basic model is conceptualised for improved project delivery via joint risk management.

Author	Year	Title of Article	Journal	Key Theme
Kapila, P. and Hendrickson, C.	2001	Exchange rate risk management in international construction ventures	Journal of Management in Engineering.	Financial risk factors of JV.
Tah, J. H. M. and Carr, V.	2001	Knowledge-based approach to construction project risk management	Journal of Computing in Civil Engineering.	A methodology for construction project risk management including a process model.
Griffis, F. H. B. and Christodoulou, S.	2000	Construction risk analysis tool for determining liquidated damages insurance premiums: case study	Journal of Construction Engineering and Management	Determining liquidated damages insurance premiums.
Wang, S. Q., Tiong, R. L. K., Ting, S. K. and Ashley, D.	2000	Evaluation and management of political risks in China's BOT projects	Journal of Construction Engineering and Management	The political and force majeure risk of BOT in China and the measures of mitigation.

Author	Year	Title of Article	Journal	Key Theme
Ye, S. and Tiong, R. L. K.	2000	NPV at-risk method in infrastructure project investment evaluation	Journal of Construction Engineering and Management	Using Net Present Value method to provide decision risk evaluation for privately financed infrastructure projects.
Javid, M. and Seneviratne, P. N.	2000	Investment risk analysis in airport parking facility development	Journal of Construction Engineering and Management	Sources of investment risk at airport parking and cost overruns.
Mak, S. and Picken, D.	2000	Using risk analysis to determine construction project contingencies	Journal of Construction Engineering and Management	Using estimating risk analysis methodology to substantiate project contingencies.
Hastak, M., and Shaked, A.	2000	ICRAM-1: Model for international construction risk assessment	Journal of Management in Engineering.	Providing a model for assessment of international construction risks.

Author	Year	Title of Article	Journal	Key Theme
Tah, J. H. M. and Carr, V.	2000	Information modelling for construction project risk management system	Engineering Construction and Architectural Management	Presenting a methodology for project risk management including a generic process model and remedial actions.
Shen, L. Y., Wu, G. W. C. and Ng, C. S. N. K.	2001	Risk assessment for construction joint ventures in China	Journal of Construction Engineering and Management	Risk management of JV, and risk factors modelling.
Bing, L. and Tiong, R. L. K.	1999	Risk management model for international construction joint ventures	Journal of Construction Engineering and Management	Risk management of JV, and risk factors modelling.
Bing, L., Tiong, R. L. K., Fan, W. W. and Chew, D. A. S.	1999	Risk management in international construction joint ventures	Journal of Construction Engineering and Management	Risk management of JV, and risk factors modelling.
Wang, S. Q., Tiong, R. L. K., Ting, S. K. and Ashley, D.	1999	Political risks: analysis of key contract clauses in China's BOT project	Journal of Construction Engineering and Management	Political risk analysis of BOT contracts in China.
Smith, G. R. and Bohn, C. M.	1999	Small to medium contractor contingency and assumption of risk	Journal of Construction Engineering and Management	Using contingency with small to medium contractors.

Author	Year	Title of Article	Journal	Key Theme
Mulholland, B. and Christian, J.	1999	Risk assessment in construction schedules	Journal of Construction Engineering and Management	A mathematical model to estimate the amount of risk in construction schedules at the initiation of a project.
Minato, T. and Ashley, D. B.	1998	Data-driven analysis of “corporate risk” using historical cost-control data	Journal of Construction Engineering and Management	A theoretical framework of risk analysis methodology to analyse a project’s risks from the company’s point of view.
Hartman, F., Snelgrove, P. and Ashrafi, R.	1997	Effective wording to improve risk allocation in lump sum contracts	Journal of Construction Engineering and Management	Improvement of the wording in terms of what the potential signatory to, or administrator of, a contract understood.

Author	Year	Title of Article	Journal	Key Theme
Abdou, O. A.	1996	Managing construction risks	Journal of Architectural Engineering	The risks among the functional entities of a project and the analysis and management of construction risks.
Kangari, R.	1995	Risk management perceptions and trends of U.S. construction	Journal of Construction Engineering and Management	The attitude of US construction firms towards risk and contractors' use of risk management.
Neufville, R. and King, D.	1991	Risk and need for work premiums in contractor bidding	Journal of Construction Engineering and Management	An empirical study of the effect of need for work and project risk on contractor mark-ups, and a revised model of bidding.
Al-Bahar, J. F. and Carandall, K. C.	1990	Systematic risk management approach for construction projects	Journal of Construction Engineering and Management	Model-based risk management system to identify project risks and manage them.

Author	Year	Title of Article	Journal	Key Theme
Jaafari, A. and Schub, A.	1990	Surviving failures: lessons from field study	Journal of Construction Engineering and Management	Technical and technological risks.
Ahuja, H. N. and Arunachalam, V.	1984	Risk evaluation in resource allocation	Journal of Construction Engineering and Management	Risk evaluation model for resources.
Ibbs, C. W. and Crandall, K. C.	1982	Construction Risk: Multi-attribute approach		Risk management of JV, and risk factors modelling.
British Standard – BS ISO 31000	2009	Risk management - principles and guidelines	British Standard	

Appendix C Risk Associated With Sino-Foreign Construction Joint Ventures

(1) Financial risk

Bankruptcy of project partner

Difficult convertibility of RMB

Loss due to fluctuation of inflation rate

Loss due to fluctuation of interest rate

Loss due to fluctuation of RMB (the Renminbi is the official currency of China)

Low credibility of shareholders and lenders

(2) Legal risk

Breach of contract by other participants

Breach of contract by project partner

Lack of enforcement of legal judgment

Loss due to insufficient law for joint ventures

Uncertainty and unfairness of court justice

(3) Management risk

Change of organization within local partner

Improper project feasibility study

Improper project planning and budgeting

Improper selection of project location

Improper selection of project type

Inadequate choice of project partner

Inadequate project organizational structure

Incompetence of project management team

Incomplete contract terms with partner

Increase in project management overheads

Poor relationship and disputes with partner

Poor relationship with government departments

Problems associated with cultural differences

Project delay

(4) Market risk

Competition from other similar projects

Failure to achieve expected income from project

Increase of accessory facilities' prices

Increase of labour costs

Increase of cost of materials

Increase of resettlement costs

Inadequate forecast about market demand

Local protectionism

Unfairness in tendering

(5) Policy and political risk

Cost increase due to changes in policy

Loss incurred due to corruption and bribery

Loss incurred due to political changes

Loss due to bureaucracy for late approvals

(6) Technical risk

Accidents on site

Design changes

Equipment failure

Errors in design drawings

Hazards of environmental regulations

Incompetence of transportation facilities

Increase in site overheads

Industrial disputes

Local firm's incompetence and low credibility

Materials shortage

Obsolescence of building equipment

Poor quality of procured accessory facilities

Poor quality of procured materials

Problems due to partners different practices

Shortage of accessory facilities

Shortage of skilled workers

Shortage of supply of water, gas, and electricity

Subcontractor's low credibility

Unknown physical conditions of site

Unusual weather and force majeure

Appendix D The Relation Between Company Ownership and the Number of Respondents

No.	Project Name	Type of Ownership of the Project	Total no. of Questionnaires Distributed	Total no. of Received Questionnaires	No. of Questionnaires distributed to Owners	No. of Questionnaires distributed to Egyptian Companies	No. of Questionnaires distributed to Foreign Companies	No. of Questionnaires distributed to JV Companies	Documentation
1	Five star hotel	Private	11	9	6	3	2		All documents I have access to it
2	New city	Private	10	10	2			8	Owner/JV contract
3	The harbour	Public	5	2				2	Tender Documents, Book 2, JV agreement, The Port Authority & the JV, Structured Interview
4	Barrage and Hydropower Plant Project	Public	1	1	1				Tender Documents, Volume 1, and Replied Questionnaire
5	Airport building	Public	2	1			2		Joint venture Agreement
6	Metro project	Public							Joint venture Agreement
8	The Museum	Public	1	1	1				Replied Questionnaire
9	Variety of JV projects as Egyptian company	Private	2			2			Replied Questionnaire
10	Variety of JV projects as Egyptian company	Private	1	1		1			Replied Questionnaire
11	Potable Water Treatment Plant	Public							Joint venture Agreement
	Total		33	25	10	6	4	10	

Appendix E Summary of Targeted Projects

The Construction of a Metro Line in Cairo

This is a wholly new metro line. It extends to 19 km and 18 stations. The line provides interchanges with the old stations, Egyptian Railways and other stations. The line includes 6 km of at-grade and viaduct section with six at-grade stations, 1.8 km of cut and cover tunnels, 9.5 km of bored tunnel, and 10 new underground stations besides the development of two interchange stations. The line was supposed to be completed on October 2000. In 2005 an extension occurred 2.6 km to the south. This included the construction of two new at-grade stations. The total cost of the project is US\$936,000,000.00.

The Water Treatment Plant

The National Organisation for Potable Water and Sanitary Drainage (NOPWASD) accepted a joint venture to build water treatment plants in a city at Monofyeya governorate, which is 70 km from Cairo. The capacity is 400/800 L/Sec. The total cost of this plant was LE17,051,765 ≈ US\$2,841,960.83 and DM4,729,506. The execution period of the project is twenty-four months from the commencement date.

The New City

The city is a three million square metre development by UAE, a key division of UAE group, a privately owned Dubai-based conglomerate and one of the region's most progressive businesses with more than 80 years' experience.

The city is a visionary mixed use urban community, strategically located just 15 minutes from Cairo International Airport on the Ring Road and near the districts of Maadi to the south and Heliopolis, Nasr City, Mokattam to the west.

The city is being designed by the internationally renowned firms of Big Brands in DESIGN. The city features a premier indoor-outdoor retail and entertainment resort combined with spectacular luxury residential communities (villas and apartments), prime office spaces, internationally renowned hotels, and an automotive park all set within a beautifully landscaped environment.

Encompassing the finest shopping, dining, entertainment, homes, schools, offices, and leisure, the city is connected by an internal road network and a necklace of parks interlaced throughout the city. Upon completion, the city will be home to over 13,000 residents in villas and apartments and a place to work for 50,000 office staff. The total cost of the project is LE2,053,000,000.00 ≈ US\$342,166,667.00.

The Airport Terminal Building

The airport project comprises a main building with two symmetrical concourses, and totals 211,000 m² in floor area with ancillary services. The new terminal's design will help the airlines reduce transfer time between flights to just 45 minutes, regardless of whether the transfers are domestic, international, or a mix of the two and with different alliance partners.

The airport project is equipped with the latest state-of-the-art technology including self-service kiosks (CUSS) in the check-in hall, biometric immigration, and a fully automated baggage-handling system with integrated online screening. This is in addition to information kiosks, strategically placed throughout the building. Thus, the new IT system will ensure an efficient and cost-effective operation.

The airport project has the most revolutionary duty-free shopping in Egypt. With close to 4,000 m² of retail space, the shops offer passengers both popular international brands and introduce exclusive brands new to the Egyptian. The airport project will also include food and beverage areas with local and international brands.

It's expected that a total of 1,000 new employees will be hired to staff the airport project. Intensive training programmes have been designed and tailored to train the new staff in their own job functions and customer service methods, as well as to familiarise them with general knowledge of the airport's operations, processes, organisations, strategy, and mission. The total cost of the project is LE3.1 billion

≈US\$516,666,667.00.

The Five Star Hotel

The complex, which contains this hotel in Cairo, is considered the most prestigious, largest, luxurious, and commercial tourist project in the Middle East. It is ranked as the second biggest such project in the world. The project is owned by an Egyptian company, S.A.E., which is a joint stock company incorporated under the laws of the Arab Republic of Egypt. The project consists of two phases and includes five and four star hotels. An integrated commercial centre and eight residential and commercial apartment towers vary from 11 to 18 floors. The hotel consists of 312 rooms and suites, including a swimming pool, gym, restaurants, four basement levels, and 11 floors at a total cost of LE80,500,000 ≈US\$13,416,667.00.

The Harbour

The harbour is about 8.5 km to the west of one of the branches of the Nile River in the Mediterranean Sea. It is at a distance of 70 km to the west of Port Said (the northern entrance of the Suez Canal). The harbour is an "A" First Class Trans-Shipments Port. The

project was a joint venture between an Egyptian company and a Korean company. The project involved constructing a berth extension to the north of the grain berth to a length of 550 m and depth of 14.5 m. The total cost of the project was LE106,848,000.00 ≈US\$16,808,000.00.

Appendix F The Final Questionnaire

Risk Management in International Construction Joint Ventures in Egypt Questionnaire for Data Collection

The purpose of this questionnaire is to develop a paper-based model for contractors to take account of the risk factors in Egyptian-international construction joint venture projects in Egypt.

This questionnaire is divided into six parts. All respondents should answer background information contained in Part (1) and Part (2) – General Information. Owners should answer Part (3); Egyptian companies should answer Part (4); international companies working in the Egyptian construction market should answer Part (5); and representatives of a JV Company should answer Part (6).

YOUR ANSWERS WILL BE TREATED AS CONFIDENTIAL FOR A PERIOD OF THREE YEARS.

PART (1) BACKGROUND OF THE RESPONDENT

Name of your organisation

Name of the respondent:

Position:

Years of experience in your current role:
.....

Years of experience in the construction industry:
.....

The organisation is 1. Public 2. Private

Contact address:

Tel./Mobile No: Fax No:

Email address:.....

PART (2) GENERAL INFORMATION

2.1 Do you have any insurance for:

	No		Yes
a. War/riot	<input type="checkbox"/>		<input type="checkbox"/>
b. Force majeure	<input type="checkbox"/>		<input type="checkbox"/>
c. Loss due to fire or accident	<input type="checkbox"/>		<input type="checkbox"/>
d. Third party liability	<input type="checkbox"/>		<input type="checkbox"/>
e. Direct liability	<input type="checkbox"/>		<input type="checkbox"/>

2.2 Relationship with host government:

	1 Never	2	3	4	5 Always
a. To what extent do you receive government subsidies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. To what extent does the government have a controlling interest in the company	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. To what extent do you have good relations with the government	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.3. To what extent are projects affected by:

	1 Never	2	3	4	5 Always
a. Currency exchange rate fluctuations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Tax benefits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Tax dis-benefits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Government acts	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Changes in regulations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.4 To what extent do you see:

	1 Not Stable	2	3	4	5 Very Stable
a. The Egyptian economy as stable in terms of					
Inflation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Growth	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
No. of projects which are available in the market (capacity)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Labour	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. There is a lack of infrastructure in Egypt such as					
i Railways	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii Roads	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iii Ports and harbours	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iv Telecommunications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
v Airports	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
vi Research institutions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.5 Which of the following has the biggest impact on your projects:

	1 Low Impact	2	3	4	5 Very High Impact
a. Availability of equipment and plant, e.g. types of plant, hiring charges	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Material availability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Cost of material	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Interest rates	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.6 Which of the following is more important for your project:

	1 Low Impact	2	3	4	5 Very High Impact
a. Subcontractor competency	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Subcontractor capacity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Quality as set out in project specification	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. New or innovative technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.7 Please indicate which of the following payment systems apply on your project:

	1 Low Use	2	3	4	5 Very High Use
a. Lump sum	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Cost plus	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Re-measurement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Target cost	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Turnkey	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. BOOT	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Design-Build	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.8 To what extent are your projects in particular locations in Egypt impacted with:

	1 Low Use	2	3	4	5 Very High Use
a. Local laws	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Local design codes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Local approval	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. ISO standards	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Egyptian building codes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Specific earthquake building codes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please state any other local requirements not covered above:

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2.9 To what extent do environmental issues impact contractual requirements for your projects in Egypt? For example:

	1 Low Impact	2	3	4	5 Very High Impact
a. Pollution	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Environmental force majeure, e.g. earthquakes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Waste treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Ecological damage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Inclement weather	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.10 If there are any contractual disputes on your projects, which laws will be applied during the process of the project:

	1 Never	2	3	4	5 Highly Likely
a. Egyptian law	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Arbitration	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.11 To what extent do you consider the following are adequately protected in Egypt:

	1 Low Protection	2	3	4	5 Very High Protection
a. The security of the site, project and its immediate surrounding area	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Intellectual property rights	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. The threat of terrorism	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.12 To what extent do the following types of delay occur on your projects:

	1 Never	2	3	4	5 Always
a. Fire or accident	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Unanticipated site conditions resulting in design change	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Unanticipated design changes in general	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Damaged or late materials	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Lack of senior/middle managerial resource availability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Lack of site staff resource availability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Inadequate problem-solving skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. Varied and changed orders	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Terrorism, outbreak of war or community unrest at site location	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Design and regulatory approvals	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.13 To what extent do the following benefits occur to each party in a JV:

	1 Never	2	3	4	5 Always
a. Improved brand	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Improved reputation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Improved corporate image	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Improved credibility	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

e. Improved risk sharing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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2.14 In setting up and building a JV, to what extent do you make yourself attractive to partners using the following:

	1 Never	2	3	4	5 Always
a. Complementary skills and resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Financial capability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Strong connections with the government	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.15 To what extent do you:

	1 Never	2	3	4	5 Always
a. Understand the strategic ambitions of the various partners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Understand the respective competitive positions of the partners' other core business activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Use the above to help you to manage risk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2.16 What does each partner seek to gain through forming a JV:

	1 Never	2	3	4	5 Always
a. Customer access	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Reputation and brand image	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Access to new country	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Access to large market share	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Adoption of new technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PART (3) TO BE COMPLETED BY PROJECT OWNERS ONLY

3.1 Does your project/company have any exemptions for tax?

No

Yes

3.2 In choosing to adopt a JV style of contract for a project, please indicate which of the following apply:

	1 Never	2	3	4	5 Always
a. The nature and characteristics of the project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. The funding authority	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.3 As the owner, in JVs with foreign contractors, do you influence the choice of local contractor using any of the following criteria:

	1 Never	2	3	4	5 Always
a. Skills and resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Relative size of the project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Financial capability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3.4 Is the funding for your current project through:

a. Foreign direct investment to the government

No Yes

b. Public funds from the Egyptian government

No Yes

3.5 Are there any conditions of contract that you insist on from your perspective:

	1 Never	2	3	4	5 Always
a. Ensuring the foreign party joins with an Egyptian party	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Deciding who will be providing leadership	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Sharing of jobs/tasks between foreign party and Egyptian party	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Nationality of the staff who will work within the JV	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please state any other contract conditions not covered above:

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PART (4) TO BE COMPLETED BY EGYPTIAN COMPANIES ONLY

4.1 To what extent do the following labour issues pose a problem in dealing with projects:

	1 Never	2	3	4	5 Always
a. Lack of appropriate /adequate skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Strikes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Unequal salaries between the foreign contractor and Egyptian contractor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.2 To what extent do you think your organisation faces a skills gap in the following areas:

	1 Never	2	3	4	5 Always
a. Managerial skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Operative skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Technical skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.3 To what extent do you receive any form of technology transfer from foreign companies for:

	1 Never	2	3	4	5 Always
a. Training staff	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. New or innovative technologies or techniques	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Other methods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PART (5) TO BE COMPLETED BY FOREIGN COMPANIES ONLY

5.1 Please indicate the company's nationality:

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5.2 What is the international geographical spread of your operations?

- 1. Europe
- 2. Gulf
- 3. Middle East
- 4. Asia
- 5. America

5.3 Can you explain your reasons for being interested in the Middle East?

- a. Number of projects available
- b. Economic stability
- c. Political stability
- d. Geographical position in the global economy

5.4 What encouraged you to work in the Egyptian market in particular?

- a. Number of projects
- b. Economic stability
- c. Political stability
- d. Geographical position in the Middle East

5.5 How long have you been in the Egyptian Market?

- a. 1-5 years
- b. 6-10 years
- c. 11-15 years
- d. More than 15 years

5.6 What categories of project are your firm interested in:

	1 Never	2	3	4	5 Always
a. Building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Waste water treatment plants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Power plants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Transportation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Hospitals and medical research centres	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

f. Geotechnical engineering	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Petrochemical plants	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5.7 Under what method of procurement do you usually work:

	1 Never	2	3	4	5 Always
a. Alliance; that is, long-term projects with the same companies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. JV on a project by project basis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. BOT - public infrastructure projects which employ a particular form of private sector structured financing	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5.8 What are your criteria for choosing which tender to bid on:

	1 Never	2	3	4	5 Always
a. Improve your company reputation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Increase turnover	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Increase profits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Enter a particular project type	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Enter the Egyptian market and build a presence/increase market share	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Project type/characteristics and degree of fit with capabilities and competencies of your firm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. As a 'loss leader', i.e. to secure a project even at a loss to build market share or establish a presence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
h. To follow a good client or at a client's request	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
i. Capability to meet the owner's requirement	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
j. Provide added-value which other competitors cannot provide	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
k. Available budget capability for bidding	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1. To make use of manpower and equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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5.9 What are your criteria for choosing which tender to bid on:

	1 Unlikely	2	3	4	5 Likely	Rank
Economic	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Political	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Cultural	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Legal	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Adequate labour skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Adequate management skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Other risks (please specify)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

5.10 Is there any repatriation of funds or profits to your home country?

- No
- Yes (please specify)

5.11 Do you experience any problems with securing finance for projects in Egypt?

- No
- Yes (please specify)

5.12 If you answered 'yes' to Q. 5.10, is this similar to other projects in the Middle East?

- No
- Yes (please specify)

5.13 To what extent do:

	1 Never	2	3	4	5 Absolutely
a. Cultural differences impact your projects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Different local management styles impact your projects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5.14 Cultural issues:

	1 Never	2	3	4	5 Absolutely
a. Do you find that the local people generally welcome foreign contractors working in Egypt	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5.15 To what extent are the following major influences on projects in Egypt:

	1 Low	2	3	4	5 Very High
a. Geography	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Climate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Ground conditions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5.16 To what extent does your Egyptian partner in the JV have labour issues, which make problems for your projects:

	1 Low	2	3	4	5 Very High
a. Skills shortages – labour	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Skills shortages – management	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Salaries	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Strikes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Language barrier	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5.17 To what extent are the following dispute resolution mechanisms used for your projects in Egypt:

	1 Low	2	3	4	5 Very High
a. Negotiation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Unilateral decision-making by one party	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Adversarial/confrontational discussions	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Weekly coordination meeting	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PART (6) TO BE COMPLETED BY REPRESENTATIVES OF THE JOINT VENTURE

6.1 What areas do you see as important for gaining a competitive edge through the JV:

	1 Not Important	2	3	4	5 Very Important
Size of projects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Types of project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ease of entry to country	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Business expansion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reputation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sharing resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sharing risk	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Higher profits	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.2 Does the JV expect to leverage joint resources between partners to exploit new opportunities?

No

Yes (please specify)

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6.3 As a JV, what are your unique competencies:

	1 Not Important	2	3	4	5 Very High
a. Customer access	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Reputation and brand image	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Providing unique qualities/services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Offering highly skilled labour	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Using advanced technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.4 To what extent do cultural differences impact the JV:

	1 No Impact	2	3	4	5 High Impact
a. Lack of trust between partners and employees	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Disagreement about staff allocation and positions in the project team hierarchy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. The extent of technology transfer	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.5 To what extent do partners seek to use the JV to improve their status in the industry?

	1 Never	2	3	4	5 Always
a. Through improved reputation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Through improved skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Through improved financial capability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Through using new/innovative technology	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Through access to clients	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Through sharing risks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.6 What is your competitive advantage:

	1 Low	2	3	4	5 Very High
a. Quality and reliability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Service and support	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Product/service innovation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Managerial capability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. Technological capability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
f. Financial capability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
g. Low prices	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.7 To what extent do you design the JV roles and responsibilities?

	1 Never	2	3	4	5 Always
a. By using a dispute resolution system which provides equality of power and influence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. By balancing power between JV partners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. By allowing partners to do what they are best equipped to undertake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. By bridging the JV organisation at multiple levels	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e. By contributing operational expertise which fulfils niche needs for the project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.8 JV employment:

	1 Never	2	3	4	5 Always
a. Do you always appoint JV managers who have had experience working in different kinds of cultures, with different nationalities, and with different organisations?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.9 How do you monitor the decisions of the JV:

	1 Never	2	3	4	5 Always
a. Centralised at the JV board level	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Decentralised to the best people who are able to do them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Using a combination of both mechanisms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.10 To what extent are successful relationships between the JV partners influenced by:

	1 Never	2	3	4	5 Always
a. Trust	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Comparable expertise	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Access to key personnel in the client organisation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Commitment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.11 Does the JV Management Board set the operational scope of the JV as well as its governance structure in order to minimise any difficulties between partners?

- No
- Yes (please specify)

--

6.12 The JV works most effectively by:

	1 Never	2	3	4	5 Always
a. Exchanging personnel between partners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Employing others from the JV partnership	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Using both methods	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.13 How do you choose your partners? Please also rank according to the importance level in the final column, where 1 = highest and 6 = lowest importance.

	1 Low	2	3	4	5 Very High	Rank
a. Financial capability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b. Resources available	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c. Technical and management competence	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d. Connections with Egyptian host government	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
e. Enhanced capability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
f. Strategic complementarity	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

6.14 To what extent is the choice of using a JV influenced by:

	1 Low	2	3	4	5 Always
a. A step towards other projects	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. A temporary cooperative agreement for one project only	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.15 Does your dependence on a JV partner concern your company?

- No
- Yes (please specify)

--

6.16 What mechanisms do you use to manage risks:

	1 Never	2	3	4	5 Always
a. Allocate risk to the party best able to manage it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Share risk between both parties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Use the contingency fund in the contract	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d. Use insurance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.17 Competitive position:

	1 Never	2	3	4	5 Always
To what extent are you prepared to help your JV partners improve their competitive position by sacrificing your own competitive position to them?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.18 JV expectations:

	1 Not realised	2	3	4	5 Realised
To what extent were your expectations realised having worked with your JV partner	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.19 To what extent do you involve those people from the negotiation stage:

	1 Never	2	3	4	5 Always
a. In the design stage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. In the construction stage	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.20 If you do involve people from the negotiation stage (see Q. 6.19), please state how you benefit from this?

--

6.21 Organisational and cultural compatibility:

	1 Never	2	3	4	5 Always
To what extent do you recognise the importance of organisational and cultural compatibility in the design of your JV	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.22 JV experiences:

	1 Never	2	3	4	5 Always
To what extent do you share past JV experiences with your partners	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.23 Are you able to influence the leaders of the JV in their decision-making process?

- No
- Yes (please specify)

--

6.24 If you were perceived as a minority partner, would you allow the stronger JV partner to set the pace without too much interference?

- No
- Yes (please specify)

--

	1 Never	2	3	4	5 Always
6.25 To what extent do you incentivise staff through bonuses	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	1 Never	2	3	4	5 Always
6.26 Do you have sharing mechanisms on savings and cost overruns?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.27 To what extent in the bidding stage is the mark up value of the tender decided by:

	1 Never	2	3	4	5 Always
a. International company	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Egyptian company	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Both parties	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.28 To what extent are the following methods used for tendering:

	Yes	No
a. Competitive method	<input type="checkbox"/>	<input type="checkbox"/>
b. Negotiation method	<input type="checkbox"/>	<input type="checkbox"/>

6.29 Are there any specific project-related issues, which hinder the project? For example:

	1 Never	2	3	4	5 Always
a. Access to site	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b. Terrorism	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c. Weather	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6.30 Are there any financial penalties if a project is late or over budget?

- No
- Yes (please specify)

--

6.31 How do you choose your partners? Please also rank according to importance level in the final column, where 1 = highest and 5 = lowest importance?

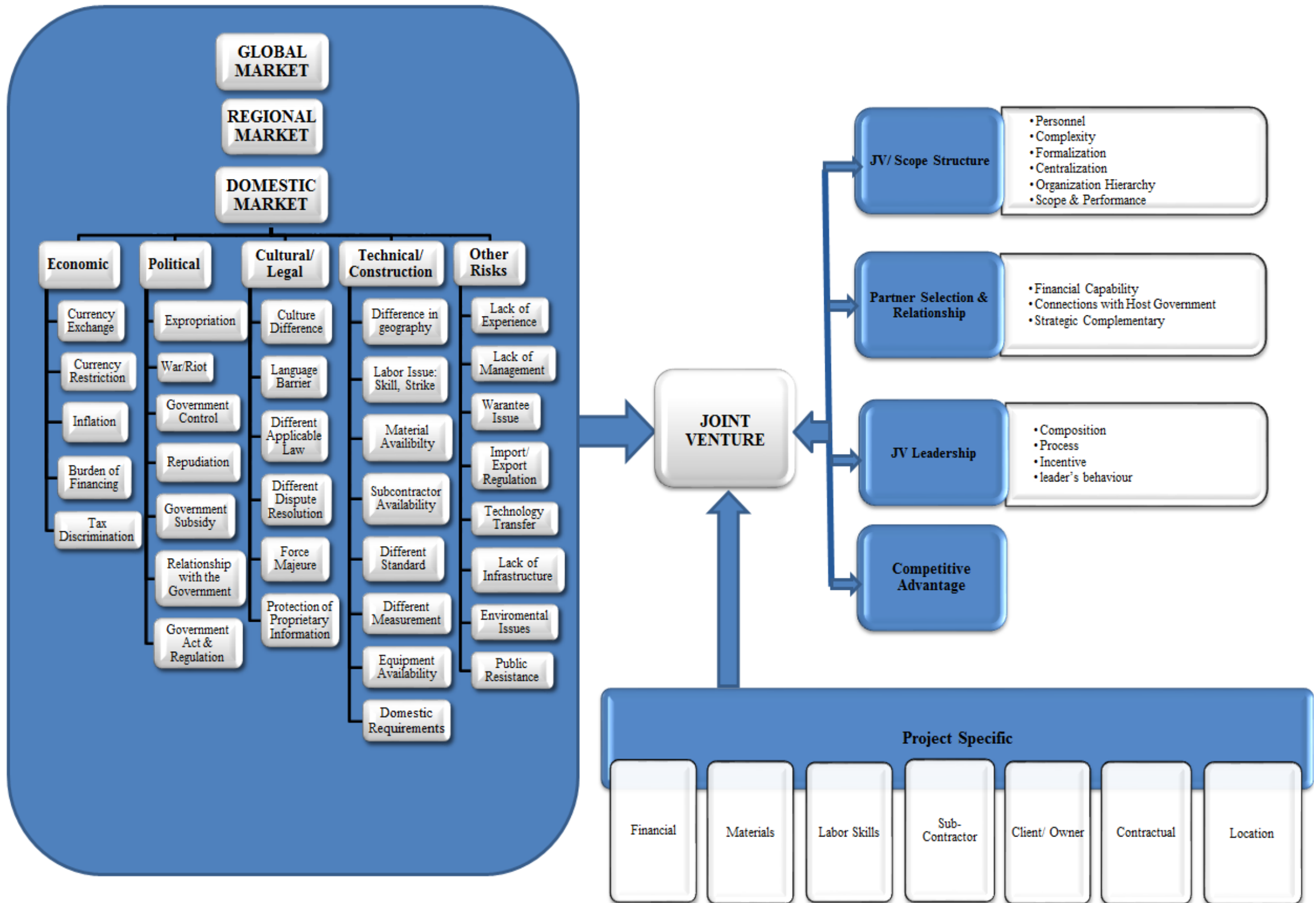
	1 Never	2	3	4	5 Always	Rank
a. Use experienced and familiar suppliers and subcontractors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
b. Employ logistics agents	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
c. Engage local security firms for the project	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
d. Subcontract local pollution control specialists	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
e. Choose subcontractors which complement the partners' shortcomings	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Appendix G List of documentation data

Titles of the documents:

1. The JV contract of the metro project
2. The JV contract of the harbour project
3. The owner-JV contract of the harbour project
4. Tender document – book 2 - conditions of particular application
5. The JV contract of the water plant project
6. The owner-JV contract of the water plant project
7. The owner-JV contract of the new city project
8. The owner-JV contract of the five star hotel project
9. The JV contract of the airport terminal project.

Appendix H The theoretical model of risk factors of international construction joint ventures in Egypt



Appendix I The Analysis of the Documents and the Questionnaires

Questionnaire Question no.	No. of Responses																				Contract Name																	
	Owner					Egyptian Company					International Company					JV Company																						
Total no. of Questionnaires	9					5					4					7																						
	1	2	3	4	5	Y	N	1	2	3	4	5	Y	N	1	2	3	4	5	Y	N	1	2	3	4	5	Y	N										
Contract Name																					The Metro Line	Water treatment Plant	A New City	Airport Terminal Building	Five Stars Hotel	The Harbour												
Parties of the JV																					Egyptian Company and 7 French companies	Egyptian Company and German Company, and both parties signed the contract with the owner.	UAE company" International"- Egyptian JV	Turkish Company and Public Sector Company "Egyptian"	UAE Company and Egyptian Company	Egyptian Company and Korean Company												
ECONOMIC	2.4 a i	3	4	2	0	0	0	4	0	0	0	0	0	2	2	0	3	1	0	0	0							4	3	0	0	0						
	ii	1	3	4	0	0	0	0	2	2	0	0	0	2	2	0	0	2	2	0	0							2	3	1	1	0						
	iii	1	4	3	0	1	1	1	3	0	0	0	2	1	0	0	0	2	1	0	0							0	1	5	1	0						
	iv	1	1	5	1	1	1	0	3	0	0	1	1	1	1	0	1	1	1	1	0							0	2	4	1	0						
	v	2	2	3	2	0	2	0	0	2	0	2	0	2	0	0	2	0	2	0	0							0	1	3	3	0						
	vi	0	2	6	1	0	0	0	2	2	0	2	0	2	0	0	2	0	2	0	0							0	4	2	1	0						
Currency Exchange	2.3 a	0	1	2	2	4	0	3	0	3	0	0	0	0	1	3												1	1	0	3	2						
Currency Restriction	country law																						JV 7.1-The International company will provide the owner with an account of German Bank due to regulation of the German financing agency.			JV- Clause 71.1-If, after the date 28 days prior to the latest date for submission of tenders for the Restrictions Contract, the Government or authorised agency of the Government of the country in which the Works are being or are to be executed imposes currency restrictions and/or transfer of currency restrictions in relation to the currency or currencies in which the Contract Price is to be paid, the Employer shall reimburse any loss or damage to the Contractor arising therefore, without prejudice to the right of the Contractor to exercise any other rights or remedies to which he is entitled in such event.												
Inflation	2.4a i	3	4	2	0	0	0	4	0	0	0	3	1	0	0	0												4	3	0	0	0						
Burden of Financing	3.4a						3	5																														
	3.4b	0	0	0	0	0	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0							0	0	0	0	0						
Tax Discrimination	2.3 b	2	2	1	0	0	1	3	0	1	0	0	0	2	0	2	0	0	2	0	2							4	0	3	0	0						
	2.3 c	2	3	1	1	2	1	2	0	2	0	0	0	2	1	0	0	0	2	1	0							1	0	2	0	4						
	3.1	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0							0	0	0	0	0						
																						JV article 13.2.4- If JV or Gerant, acting within the scope of its duties, herein has to pay any taxes or duties, in France or in Egypt, as a result of the works performed, it is agreed that such taxes and duties will be considered as costs to the JV." No sales tax will be paid according to Fatwa	JV 14.1- each party responsible for his own taxes in his country and the country of origin of the effected part of its scope of work and his subcontractors. JV 14.2- Stamp tax and duties and public notary's fees payable in connection with the signature of the contract shall be borne by the members in accordance with their proportionate shares. JV 14.3- Each member shall be liable for payment of Taxes and other dues owed by its employees and the employees of its subcontractors, if any. JV 14.4- Any advice or Taxation legal proceedings relating to taxation or similar matters in Egypt shall be borne by the Members in accordance with their proportionate shares.	The contract price excludes Construction sales tax, Social Insurance these will be paid by the contractor and the Employer will reimburse the amount. JV-Article 75.2-The contractor shall pay all Government and Municipal taxes, with the exception of construction Sales Tax sole responsibility for the payment which shall lay with the Employer) which are in force at the date 28 days prior to the date upon which both parties have signed this contract and which may be levied on the contractor or his employees at any time by the Government or Municipality. The Employer will reimburse the contractor all the sums paid by contractor in respect of construction Sales Tax included within each payment Certificate and the final certificate.		JV-4.6- The Egyptian company shall endeavour to obtain necessary exemption from the deduction Taxes and social insurance by the client for its relative scope of work as being a public sector company. All rights, interests, liabilities, obligations and risks and all profits or losses arising out of the actual execution of the project from each party's scope.												

	Questionnaire Question no.	No. of Responses																				Contract Name															
		Owner					Egyptian Company					International Company					JV Company					The Metro Line	Water treatment Plant	A New City	Airport Terminal Building	Five Stars Hotel	The Harbour										
Total no. of Questionnaires	25	9					5					4					7																				
		1	2	3	4	5	Y	N	1	2	3	4	5	Y	N	1	2	3	4	5	Y	N	Answer	1	2	3	4	5	Y	N							
Contract Name																																					
Competitive Position	5.4a 5.4b 5.4c 5.4d																						4 1 1														
POLITICAL																																					
Expropriation	2.11 a	0	1	3	2	2			0	0	0	5	0			1	0	0	3	0				0	2	3	0	2									
War/riot	2.1 a	0	0	0	0	0	7	0	0	0	0	0	0	4	0	0	0	0	0	0	2	1		0	0	0	0	0	4		No insurance against them. Article 20.4- this risk the owner will pay against according to the Engineer Estimate.		JV- Clause 20.4- Employer's risk JV- Clause 65.3- The contractor is entitled to payment in accordance with the contract for any work executed and for any material or plant so destroyed.				
Terrorism	2.11 c 2.12 i 6.29 b	1	1	1	3	2			0	0	0	4	1			0	0	0	3	1				3	0	2	0	2			Article 20.4.b- this risk the owner will pay against according to the Engineer Estimate.						
Government Control	2.2 b	3	0	0	3	3			3	0	1	1	0			3	0	1	0	0				2	0	4	0	1			Government ownership" the Egyptian company"	Government ownership" the Egyptian company"		Government ownership" the Egyptian company"	Private company	Government ownership" the Egyptian company"	
Repudiation	5.10	0	0	0	0	0			0	0	0	0	0			0	0	0	0	0	1	3		0	0	0	0	0									
Government subsidy	2.2 a	2	2	2	0	3			4	1	0	0	0			2	1	1	0	0				3	3	1	0	0									
Relation with the government	2.2 c	0	1	1	1	5			0	1	1	3	0			0	1	1	2	0				0	2	3	0	1			Government ownership" the Egyptian company"	Government ownership" the Egyptian company"		Government ownership" the Egyptian company"	Private company	Government ownership" the Egyptian company"	
Government Act & regulation	2.3 d 2.3 e	2	1	2	1	2			1	0	1	3	0			0	0	2	0	2				1	0	2	0	3			Owner-JV agreement- item 15"Any cost related to change of law shall incurred by the Employer"- law no.89 of 1998		Article 21.1.3- With the regulations currently in force in Egypt the Employer shall procure that the Engineer of Record shall procure and maintain decennial liability Insurance for the Project under which the contractor shall be an Insured party. Article 34.10- The contractor shall comply with all applicable labour laws and shall not claim any Exemption from them.				
CULTURAL / LEGAL																																					
Cultural difference	5.13 a 6.21	0	0	0	0	0			0	0	0	0	0			0	1	2	1	0				0	0	0	0	0									
Language barrier	5.16 e	0	0	0	0	0			0	0	0	0	0			0	1	1	1	1				0	0	0	0	0			Clause 15.2-The contractor's authorised representative shall be fluent in English language in both spoken and written form. Article 16.1-the contractors Employees the same as Article 15.2		Jv-Clause 5.1-English language to be used	JV- Article 18- English Language Owner-JV- Arabic and English, and the Arabic shall prevail in case of conflict. Owner-JV-Article 10.2- The Project Manager appointed by the contractor shall be master the Arabic language, and if not, he shall appoint a translator to be on site at all times to secure the conveyance of the instructions and information properly.			

	Questionnaire Question no.	No. of Responses																				Contract Name																				
		Owner					Egyptian Company					International Company					JV Company																									
Total no. of Questionnaires	25	9					5					4					7																									
		1	2	3	4	5	Y	N	1	2	3	4	5	Y	N	1	2	3	4	5	Y	N	1	2	3	4	5	Y	N													
Contract Name																						The Metro Line	Water treatment Plant	A New City	Airport Terminal Building	Five Stars Hotel	The Harbour															
Different applicable Law	2.10 a	0	0	3	0	5			1	2	0	1	0			0	0	2	1	1			0	0	0	4	3	JV Article 3.2- The JV agreement creates an undisclosed "Société en Participation" (Joint Venture) as defined under the French Law. JV-Article 29- This Agreement shall in all respects be construed interpreted and applied in accordance with the French Law.						JV 21.2- Egyptian Law	Laws of Egypt	JV-10- Egyptian law	JV- Clause 5.1- Egyptian law	JV- Article- 20.1- Egyptian Law Owner-JV-Article 12- The governing Law is the Egyptian law and the provisions of law no.89/98 concerning bids and tenders and its Executive regulations shall be supplementary provisions to the terms and conditions of the contract for the items have not been covered by the special text.				
Different dispute solution	5.17a 5.17b 5.17c 5.17d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	0	0	0	0	0	0	0	0	2	JV- Article 30 -Any dispute or difference arising between the parties in respect of the agreement shall be referred to the Supervisory Board of the JV. Should the supervisory Board Fail to resolve such dispute or differences within a month then the matter may be referred to Arbitration under the rules of Conciliation and arbitration of International Chamber of Commerce by one or more Arbitrators appointed in accordance with the said Rules. The arbitration award shall be final and binding. Arbitration will take place in Geneva, Switzerland.						JV 21.1-at supervisory board if not solved Arbitration at Cairo	The parties have agreed that they will appoint an independent adjudicator "Chartered Institute of Arbitrator-UK" to act as additional alternative dispute resolution stage prior to Arbitration proceedings following the issue of the Engineer's decision. Appendix 4 to Part II- 11- Arbitration- It will be under "The Cairo Regional Centre for International Commercial Arbitration by one Arbitrator. The proceedings will be in Cairo with English language. All the Arbitration costs will be shared equally between parties otherwise the arbitration tribunal think other way.	JV-11- Between parties with 15 days, if not solved the dispute will be referred to binding Arbitration in Cairo- the Cairo regional centre for international commercial arbitration.	JV- Clause 67.3 -Arbitration, If the Employer or the contractor not satisfied by the Project manager decision, so they shall settled the dispute under and in accordance with the rules of Arbitration of Cairo regional centre for international commercial arbitration. The number of arbitrators shall be three, each shall presiding one. if any of them didn't assign one, they can request the Cairo Regional to assign one. The place of arbitration shall be Cairo.	Jv- Article 6.5- The supervisory board if failed to take an unanimity decision, they make another meeting with 48 hours, if failed the parties immediately refer to the chairman, the chairman meet within 4 days from notice, if failed so within 48 hours , a resumed meeting, if it failed again, the chairman shall decide and all parties accept. But all parties can still go for Arbitration. JV- Article 20.1-All disputes to be settled under the rules of the UNCITRAL " Regional Centre of International Commercial Arbitration" at Cairo, by one or more arbitrators. Owner-JV-Article 13- Settlement of Disputes will be settled of Jurisdiction of the courts of Egyptian State's council.
Force Majeure	2.1 b	0	0	0	0	0	3	4	0	0	0	0	0	0	0	0	1	4	0	0	0	0	0	0	0	0	3	1	JV 4.1-Each member shall prepare the part of the tender relating to its scope of work. All members shall jointly prepare and agree the common aspects of the tender. The tender shall be in the name of the joint venture on behalf of the members, each of whom shall sign the tender. Each member shall have the sole discretion to establish its price for its respective scope of work. The tender and any contract resulting therefore shall in particular include terms and conditions regarding scope and limit of liabilities. Execution of indirect/ consequential damages, exclusion of extra – contractual rights and remedies. Force majeure, acceptable to all members.													

	Questionnaire Question no.	No. of Responses																				Contract Name													
		Owner					Egyptian Company					International Company					JV Company					The Metro Line		Water treatment Plant	A New City	Airport Terminal Building	Five Stars Hotel	The Harbour							
Total no. of Questionnaires	25	9					5					4					7																		
		1	2	3	4	5	Y	N	1	2	3	4	5	Y	N	1	2	3	4	5	Y	N	1	2	3	4	5	Y	N						
Contract Name																						The Metro Line		Water treatment Plant	A New City	Airport Terminal Building	Five Stars Hotel	The Harbour							
Protection of proprietary information	2.11 b	1	3	1	2	1			0	1	1	3	0			1	0	0	3	0			1	0	5	1	0	<p>Jv- Article 32- Publicity, No publicity will be undertaken by any of the Parties without the prior consent of the Executive Committee.</p> <p>JV-Clause 13-Each party hereto (hereinafter referred to as the "Receiving Party") covenants the following as regards with all information that it acquired from the other party (hereinafter referred to as the "Disclosing Party") during the performance of or in connection with this agreement and all know-how, trade secrets and proprietary information acquired from the disclosing party (all such information shall be referred to as "confidential Information" for the purposes of this clauses herein). The receiving party shall,</p> <p>a. Use any and all confidential information for the purpose contemplated under this agreement only and shall not directly and/or indirectly uses the confidential information in whole or in part for any other purpose than purpose contemplated under this agreement.</p> <p>b. Not disclose the confidential information to any third person without the prior written consent of the disclosing party.</p> <p>c. At all times, both during the continuance and after termination of this agreement, keep in strict confidence the confidential information, and insure that such information shall be made to know on a need to know basis only to those officers, directors, and employees bound by responsible provisions Incorporating the non- disclosure and secrecy obligation set out in this clause herein.</p> <p>d. Deliver all information, documents and material under its possession custody and control as regards with confidential information including any and all copies thereof to the disclosing party and shall delete all the files containing or bearing reference to confidential information in its computer.</p> <p>13.2 further, the parties acknowledge that any plan, project developed during the performance of this agreement or in connection therewith or any know-how or proprietary information involved therein shall be deemed as confidential information which shall not disclosed to third parties and shall not be used for any other purpose than the purpose contemplated under this agreement.</p> <p>Owner-JV-Article 11- This contract, drawing ,reports, programs and all the other documents shall be treated as sole property of the first party, confidential and may not be disclosed or dealt in except with approval of the first party. The contractor must handover all the executive drawings and reports, including the reports gradually to the first party. Tender Documents-Book2- Conditions of Particular Application-Clause 73- The contractor shall treat the details of the contract as private and confidential, save in so far as may be necessary for the purposes thereof, and shall not publish or disclose the same or any particulars thereof in any trade or technical paper or elsewhere without the previous consent in writing of the Employer or the Engineer.</p>							

	Questionnaire Question no.	No. of Responses																				Contract Name																					
		Owner					Egyptian Company					International Company					JV Company					The Metro Line	Water treatment Plant	A New City	Airport Terminal Building	Five Stars Hotel	The Harbour																
Total no. of Questionnaires	25	9					5					4					7																										
		1	2	3	4	5	Y	N	1	2	3	4	5	Y	N	1	2	3	4	5	Y	N	1	2	3	4	5	Y	N	Answer	1	2	3	4	5	Y	N						
Contract Name																																						The Metro Line	Water treatment Plant	A New City	Airport Terminal Building	Five Stars Hotel	The Harbour
Tech / Construction																																											
Difference in geography	5.15 a	0	0	0	0	0			0	0	0	0	0			2	0	1	0	1			0	0	0	0	0				Cairo	The project is 70 Km from cairo	Cairo	Cairo	Cairo	The city 200 Km from Cairo Sea side"							
Labour issue: Skill, Strike	2.12 f	0	2	4	3	0			1	2	2	1	0			1	0	1	2	0			1	1	4	1	0																
	4.1 a	0	0	0	0	0			0	0	1	2	2			0	0	0	0	0			0	0	0	0	0																
	4.1 b	0	0	0	0	0			0	2	3	0	0			0	0	0	0	0			0	0	0	0	0																
	5.16 d	0	0	0	0	0			0	0	0	0	0			1	2	1	0	0			0	0	0	0	0																
Material availability	2.5 b	1	1	4	1	1			0	0	2	0	3			0	0	1	2	1			0	2	2	0	2																
Equipment availability	2.5 a	0	1	4	4	0			1	0	1	1	2			0	0	1	3	0			0	0	2	4	1			JV-Article 16- The Equipment and installations necessary to execute the works will be bought by and in the name of the JV from third parties, or from the parties.						JV-Article 10.1- All plant, equipment, tools, spare parties shall be purchased or rented by JV, also the JV shall bear all expenses of transport charges. JV 10.2- The equipment which sold to the parties a reasonable second hand price taking its condition shall be agreed upon.							
Subcontractor availability																													JV- Article 6.5- Arab Contractors shall be entitled to a first refusal right on works or services contracts to be carried out in Egypt up to 15% of the contract civil works price.					JV-20- A nomination fee @8% for any nominated subcontractor. JV- Clause 59.6- The contractor shall provide general attendance on works to be executed by directly employment subcontractor, local authorities and statutory undertakers in order to ensure the proper execution of the works. For providing this attendance the contractor shall be entitled to a sum being percentage rate of the actual price paid or due to be paid.	JV-4.3- The parties have the first priority in case the party gives reasonable terms of proposal.								
Different standard	2.8 d	2	2	4	0	1			0	1	3	1	0			1	1	0	0	2			1	1	2	1	1					British Standards		British Standards									
Different measurement system																															The principle of Measurement International 1979 edition will be used		The principles of Measurement(International)for works of construction, June 1979, and the Preambles set out the contract. If there is a divergence between the Principles and the Preambles, the Preambles shall take precedence.										

	Questionnaire Question no.	No. of Responses																				Contract Name														
		Owner					Egyptian Company					International Company					JV Company																			
Total no. of Questionnaires	25	9					5					4					7																			
		1	2	3	4	5	Y	N	1	2	3	4	5	Y	N	1	2	3	4	5	Y	N	Answer	1	2	3	4	5	Y	N						
Contract Name																								The Metro Line		Water treatment Plant		A New City		Airport Terminal Building		Five Stars Hotel		The Harbour		
Domestic Requirement																								JV 5.5 - the International company fully responsible for its registration in Egypt as a local company		The contractor shall be legally liable for the stability safety other works for the period of 10 Years accordance with the articles 651-654 of the Egyptian Civil code.		The International company will have its corporate offices in Egypt after awarding the project		JV-Clause 45.1- The working hours will be in accordance with the Egyptian Labour Law.		JV- Article 17- Should individual clauses of this agreement be null and void on grounds of the laws applicable in each case, and the other clauses remain applicable. Owner-JV -Article 9- The works awarded to the local contractor shall undertake work not to be less than 51% according to Law and the contractor shall undertake to submit a copy of these agreements to first party. Owner-JV-Article 14- This contract is the subject to the review by the Egyptian State's Council and the Two parties shall be abided by any remarks made by them. Owner-JV-Article 15.11- The contractor and his employees are not allowed to possess, trade in any kind of weapons or ammunitions or drugs trafficking according to the Egyptian Law. Owner-JV-Article 15.2- The International to be Registered by the Egyptian Constructors and builders Federation according to the Executive Regulations of Law no. 104/92 in Terms of establishment of the Egyptian Constructors and Builders Federation.				
OTHER RISKS																																				
Lack of experience	3.3 a	0	0	1	1	6			0	0	0	0	0			0	0	0	0	0				0	0	0	0	0								
Lack of management	5.16 b 2.12 e	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1				0	0	0	0	0	2	1	1	2	1				
Warrantee issue																								JV- Article 23- Parties owning licences or patents concerning know-how or technical processes required to execute the works covered by the present agreement undertake not to sell them during the lifetime of the JV without the agreement of the other Parties. They guarantee the validity of these patents or licences and they will be personally responsible fro any clams that might be put forward by third parties concerning these industrial ownership rights.								Owner-JV-Article 6-Guarantee: It is one year without prejudice with the decimal liability set forth in the Egyptian Civil Law, Article 651.				

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Contract Name																								The Metro Line	Water treatment Plant	A New City	Airport Terminal Building	Five Stars Hotel	The Harbour							
Import/Export regulation																										Article 54.3-The Employer will be responsible for duties Exceeding 5%		JV-54.4- The contractor shall obtain his own information with regard to the granting of import and export licenses, stamp duties, etc. The contractor shall insure that applications for import and export licences are submitted in sufficient time to enable clearance of all formalities. JV-Clause 54.4- a) the contractor's rates and prices includes for payment of harbour and port dues, all duties, wharfage,landing and any other charges or dues on the plant, temporary works and materials entering Egypt for the purpose of this contract. Employer under any circumstances shall not bear any additional charges on account.								
Technology transfer	6.4 c 4.3 a 4.3 b 4.3 c																2	2							3	4		Training the owner personnel								
Lack of Infrastructure	2.4 b i ii iii iv v vi	3	2	1	2	1	0	2	2	0	0	1	1	0	2	0	1	2	1	0	0					3	2	0	2	0						
Environmental Issues	2.9a 2.9c 2.9d 2.9e	4	2	2	1	1	3	1	1	1	2	1	1	2			4	1	1	1									The contractor, during the execution of the contract, shall take all the measures required for the protection of the maritime environment and particular during the dredging works and shall be responsible for effecting compensation of the damages attributed to his action							
Public resistance	5.14 a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	1					0	0	0	0	0						
JOINT VENTURE	3.2 a 3.2 b 5.7 b 6.14 b	0	1	0	4	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0					0	0	0	0	0						

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Contract Name																						The Metro Line	Water treatment Plant	A New City	Airport Terminal Building	Five Stars Hotel	The Harbour									
JV/ Scope Structure																																				
Personnel	6.4 a	0	0	0	0	0	0	0	0	0	0	0	0	2	2	0	0	0	1	6	0	JV- Article 17.7- In principle, each party will supply managerial staff for the works-site, roughly in proportion to his share in the JV, However, special importance will be given to criteria of competence, to the ability to work in team on a JV and to Experience of working abroad. The Egyptian will be entitled to propose personnel to site manager for jobs requiring local employees.	JV 5.6- The JV project Manager shall be appointed by the German Company, the Deputy Project manager for civil works shall be appointed by the Egyptian Company. The Financial Accountant will be appointed by the Egyptian Company.	Article 34.9 the International company staff and Labour- the contractor may import such staff, artisans, and laborers as are required in order to execute the works. The contractor must ensure that all such staff and labor are provided with required visas and work permits. The contractor shall be responsible for the return to the place where they were recruited or to their domicile of all persons whom the contractor recruited and employed for the purposes of or in the connection with the contract.	Jv-Clause 15.2- the contractor must employ adequate qualified personnel. JV- Clause 16.2- the project manager shall be at liberty to object to and require the contractor to remove forth with from the works any person provided by him who, in opinion of the PM, misconducts himself, or is incompetent.	JV- Article 11.1- The senior staff and technical personnel necessary for the due performance of the works shall provided by the parties according to project organization chart. If not otherwise agreed in individual cases the personnel shall be in the employ of the JV, beginning with the date of departure and during the execution of the works and until the date of the expiry of the individual contract. All the other local personnel for the JV shall be employed and dismissed by the JV locally.										
	6.8	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1	1	4	1															
	6.12a	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	1	1	4	1	0															
	6.12 b	0	0	0	0	0	0	0	0	0	0	0	3	0	1	0	0	2	0	4	0															
	6.12 c	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	1	4	1	0															
	6.19 a	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	1	2	4	0															
	6.19 b	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	1	0	4	1															
	4.2 a	0	0	0	0	0	0	0	1	2	2	0	0	0	0	0	0	0	0	0	0															
	4.2 b	0	0	0	0	0	0	2	3	0	0	0	0	0	0	0	0	0	0	0	0															
	4.2 c	0	0	0	0	0	0	1	2	1	1	0	0	0	0	0	0	0	0	0	0															

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Contract Name																					The Metro Line	Water treatment Plant	A New City	Airport Terminal Building	Five Stars Hotel	The Harbour												
Complexity	6.7 d	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	0	0	1	1	5	0	0	0			Article 73.2- The Engineer shall be responsible for collection of the permit documentation from the municipality and shall pay all the necessary fees for this collection within 2 working days from the Employer and shall thereafter immediately pass to the contractor a copy of such permit. Article 73.3 a Municipality completion certificate, the contractor shall be responsible for completing the works in accordance with the Engineer's design and specifications and to the satisfaction of the municipality. b- It shall be the responsibility of the Engineer for arranging inspection by the Municipality and for obtaining the Municipality's certificate of completion and other approvals necessary for the connection of services in order to ensure completion of the contract.				
Formalization	6.7 b	0	0	0	0	0	0	0	0	0	0	0	0	0	3	1	0	0	0	3	4	0	0	0	0	3	4	0	0	0	0	JV- Article 7-The Supervisory Board, each party shall appoint by written notice to a Gerant one representative to act in its behalf, they in total Seven Representatives. JV Article 9-The Executive Committee, each party shall appoint by a written notice to the Gerant, one representative in his behalf, and they are made up of Seven Representatives. JV- Article 10- The project manager which is responsible for the liaison between the Executive Committee, the site, and the RUEIL CELL. JV-10.2- The Site Manager acting under the supervision of the project Manager and is responsible for the technical management of the whole works at site, as well as administrative and financial management of the latter.	JV 5.5- The members will establish a Supervisory Board composed of two representative of each Member.				The JV have Executive Bodies which is: 1-The supervisory board: JV-Article 6- Two persons from theInternational Company and two persons from the Egyptian Company One is Chairman "the International Company", and One is Vice Chairman "the Egyptian Company" 2-The Leading company 3-The site management JV-Article 8.3- The site Management team: Project manager"the International Company", Construction Manager"the Egyptian Company", Financial and Administrative Manager"The Egyptian Company", Planning Manager"the Egyptian Company" Owner-JV -Supervisory Committee: The employee's Engineers and The consultant Engineer.	
	6.7 c	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2	0	2	2	1	2	0	0	2	2	1	2	0	0	0							
	6.7 e	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	2	1	3	1	0	0	2	1	3	1	0	0	0							

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Contract Name																								The Metro Line			Water treatment Plant			A New City			Airport Terminal Building			Five Stars Hotel			The Harbour		
Centralization	6.9 a	0	0	0	0	0			0	0	0	0	0			0	0	1	2	1				0	1	2	4	0			JV article 8.1-The supervisory Board which shall the highest decision making body of the JV. JV- Article 9.1- The executive committee is the primary decision making body of the JV. JV- Article 10.1- The project Manager shall be responsible for liaison between the Executive Committee, the site, and RUEIL CELL.										
	6.9 b	0	0	0	0	0			0	0	0	0	0			0	2	2	0	0				0	2	2	2	1													
	6.9 c	0	0	0	0	0			0	0	0	0	0			0	1	2	0	0				0	2	1	3	1													
Organization hierarchy	6.4 b	0	0	0	0	0			0	0	0	0	0			0	0	3	1	0				0	0	2	3	2			JV article 7- The JV shall be managed by the following organization: a- The Supervisory Board. B- The Executive Committee c- The Project Manager and the Site Manager d- The Gerance										
Scope & Performance	6.11	0	0	0	0	0			0	0	0	0	0			0	0	0	0	0	2	1		0	0	0	0	4	1		JV Article 6.2 - The financial interests of the Parties in the JV: The Egyptian contractor 15%, company A 8.75%, Company B 23.7%, Company C 8.45%, Company D 10.45%, Company E 10.45%, Company F 8.45%, Company G 14.75%. JV- Article 26- This Agreement is entered into solely for the purpose of performing the contract Civil works together with any changes or additions thereto validly ordered in accordance with the contract and no Party shall represent itself as the JV of the others beyond the scope of this agreement. JV 3.2 Each party liable for carrying its scope as each party signed a separate contract with the owner. JV 4.6 Each party shall provide in time complete and correct documents and information concerning its own scope of work to the other members to the extent that it is aware that the same would be reasonably required by the other members for the preparation of the tender and the performance of all obligations concerning their scope of work under this agreement an /or the contract. Each member shall be held liable for the consequences of any information he submits to the other member. Each member shall carry out its scope of work in time and accordance with the time schedule so as to enable the other members to properly execute their scope of work in accordance with the time schedule. JV 4.7 In the event that during the erection, commissioning, trial operation or warranty period deficiencies occur or damages are caused the member or members to whose scope of work such deficiencies or damages are related, shall immediately take all the necessary measures in order to avoid or mitigate claims arising therefore. In the event that such member or members do not take prompt remedial action the sponsor shall give such member a 15 day written notice to remedy or such shorter period as is reasonable having regard to all the circumstances. In case of failure to comply, the sponsor shall cause all members to undertake whatever action is necessary to remedy such deficiencies or damages. The contract was signed by both JV parties with the owner. The parties are Jointly and severally liable to the client. JV Amendment 3- The International Company will compensate with 5% fee from the Public sector company invoices for the change of the scope. JV -Clause 5-Each party is responsible for its scope of work and shall bear all the technical and Financial risks. Both parties shall be responsible to complete the work jointly and severally. Both contractors have signed the contract with the owner. JV-5-The contractor shall remain responsible to execute work in accordance with the statutory clearances and obtain any and all required clearances including the local defence authority(CDA) and any such other statutory authorities as may be required. Any expenses may be incurred to the contractor to obtain the mentioned clearance shall be obtained to him. The parties of the joint venture are jointly and severally liable to the Employer according to Employer request. The joint venture proportions: TheInternational Company 60% and the Egyptian Company 40% which actual work are the International Company 39.1% and the Egyptian Company 60.9% as mentioned at The formation of Tenderer at Tender document. JV- 4.4- Each party shall be fully responsible for actual execution of the project within its own work scope that is actually being done by each parties. Owner -JV contract signed by the Hourbour Authority and the Joint Venture Contractors which signed by theInternational Company representative as a leader. Owner-JV-Article 1- The JV is pursuant to the Egyptian Law, they are combined together by final contract agreements as required by the Employer and shall be referred to as one entity with joint liability with one encumbrances.										

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Contract Name																						The Metro Line	Water treatment Plant	A New City	Airport Terminal Building	Five Stars Hotel	The Harbour									
PARTNER SELECTION & RELATIONSHIP																																				
Financial capability	2.14 b	0	0	3	4	1			0	0	1	2	2			0	0	1	0	3			0	0	2	5	0									
Connections with host government	2.14 c	0	1	3	3	1			0	0	2	2	1			0	1	1	2	0			0	1	1	3	2			Government ownership" the Egyptian company"	Government ownership" the Egyptian company"		Government ownership" the Egyptian company"		Government ownership" the Egyptian company"	
Strategic complementary	2.14 a	0	0	4	3	1			0	0	0	3	2			0	0	0	4	0			0	0	5	2	0									
	6.18	0	0	0	0	0			0	0	0	0	0			1	1	2	0	0			0	1	3	3	0									
	2.13 a	1	2	3	1	2			0	1	2	1	0			0	1	2	1	0			0	2	4	1	0									
	2.13 b	1	0	3	3	2			0	0	1	4	0			0	1	2	1	0			0	1	2	3	1									
	2.13 c	1	0	3	3	2			0	0	0	4	1			0	2	1	0	1			0	0	5	2	0									
	2.13 d	1	1	3	1	3			0	1	0	3	1			0	1	2	0	1			0	0	3	2	2									
2.13 e	1	1	2	1	4			0	0	0	4	1			0	0	1	3	0			0	0	1	4	2										
2.15 a	0	2	4	1	2			0	0	4	2			0	0	2	2	0			0	1	4	2	0											
JV Leadership	3.5 b	0	0	1	1	6			0	0	0	0	0			0	0	0	0	0			0	0	0	0	0									
Composition	3.5 a	1	1	1	0	5	0	0	0	0	0	0	0			0	0	0	0	0			0	0	0	0	0			JV Article 11- The parties appoint one of the French company to fulfill the functions of the Gerant of the JV and the Egyptian Contractor,Two french companies to fulfill the functions of co-Gerants of the JV to assist the Gerant and the Project Manager in the carrying out of their tasks. The Gerant is the Leader of the Civil works sub -Group in the consortium.	5.1-The foreign company is the leader.		The foreign company is the leader.	The foreign company is the leader as the request of the owner.		
	3.5 c	0	1	3	0	4	0	0	0	0	0	0	0			0	0	0	0	0			0	0	0	0	0									
Process																						JV Article 11.2.1 - The Gerant through the project and site managers, is responsible for all operations concerning the present agreement and consequently enjoys full powers to that effect, except for those attributed to the supervisory Board and the Executive Committee.	JV 5.1-The German Company shall act as the Sponsor and shall perform the duties: i) He shall represent the interests of the JV vis-à-vis the client, the authorities and other third party. Ii)Carry out technical, commercial and general co-ordination during the tendering phase as well as during the performance of the contract.iii) carry the necessary correspondence of General interest with the client JV 5.2- The sponsor shall maintain complete, accurate and current copies of the records pertaining to the project which are specified hereinafter, namely the time schedule, drawing lists, periodic progress reports, correspondence with the client and third parties, minutes of the Supervisory Board meetings and shall make them available at the JV meetings. JV5.3- The other members shall to the best of their abilities assist the Sponsor in the performance of its duties.													

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Contract Name																																The Metro Line	Water treatment Plant	A New City	Airport Terminal Building	Five Stars Hotel	The Harbour	
Incentive	6.25	0	0	0	0	0			0	0	0	0	0			0	1	1	2	0				0	0	3	4	0			<p>JV-Article 11.3- The Gerant and co-Gerants will receive a Sum, net for them, in consideration of their management by percentage for each one from the payment received from the Employer and after deduction of the consortium Common Expenses.</p> <p>JV- Article 11.4- The Gerance shall be entitled to receive a bonus for profitable management of 5% on the balance of profit after deduction of the estimated net profit at the time of the tender from the Total net profit.</p>							
Leader's behaviours	6.23 6.24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1		0	0	0	0	0	0	5	<p>JV- Article 4.3- The Gerant as the leader of the Civil Works Sub-Group, shall request the convocation of steering Committees of consortia on any substantial matter relating to the performance of the works.</p> <p>JV- Article 4.4- Any party may request that the consortium Common Expenses be audited by the Gerant. The Gerant will request the assistance of the party so requesting to carry out the audit.</p>						Leading company shall represent the JV with the owner or third party.
JV competitive advantage	6.1 a 6.1 b 6.1 c 6.1 d 6.1 e 6.1 f 6.1 g 6.1 h 6.3 a 6.3 b 6.3 c 6.3 d 6.3 e 6.6 a 6.6 b 6.6 c 6.6 d 6.6 e 6.6 f 6.6 g 6.17	0	0	0	0	0			0	0	0	0	0			0	1	0	1	2				0	0	0	1	6										

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Contract Name																						The Metro Line	Water treatment Plant	A New City	Airport Terminal Building	Five Stars Hotel	The Harbour											
PROJECT SPECIFIC																																						
Financial	2.5 d		2	4	1	1																							JV Article 6.2 - The financial interests of the Parties in the JV: The Egyptian Company 15%, French Company A 8.75%, French Company B 23.7% ,French Company C 8.45%,French Company D 10.45%,French Company E 10.45%, French Company F 8.45%,French Company G 14.75% and all rights, interests, liabilities, obligations and risks and all net profits or net losses arising out of the contract shall be shared or borne by the parties in proportion to the financial interests. JV Article 12- On behalf of the JV the Gerant shall keep in France and on the site proper books of Account relating to the performance of the Contract and the JV in accordance with the applicable laws and regulations. JV Article 12.4- All books account and other financial documents shall be audited once a year by two firms of Chartered or otherwise qualified accountants one which shall be Egyptian. JVArticle 14- Current accounts shall be opened in the name of each of the parties. These current accounts shall record all the debit and credit operations linked with the execution of this agreement, or decided on by the Executive Committee.	JV 7- JV account for the local portion, and the members mandate the bank by instructions for the US current account. Any instruction must be by 2 signatories one the Egyptian Company & the other German Cmpany. NO Fax or telephone or other oral mean instruction accepted, Owner-JV" Extension of time due Employer delay"	Article 75.10-Contractor's design items annual renewable professional indemnity through the JV of 100,000,000 EGP.	JV- Clause 7- Bid Bond& any bond or guarantee to be issued bythe Turkish Company"Leader" letter of guarantee for advance payment to be procured by each party proportionally.	JV- Clause 70.1- Increase or Decrease of cost- the contract price shall not be subject to any adjustment.	JV-4.6 -Indirect cost for JV operation such as site indirect cost, taxes and etc. shall be borne by each party according to their proportion in the work scope. JV-Article 6.7- The costs for travelling and accommodation for the member of the board shall be borne by JV. JV- Article 8.5- JV bank account shall be operated with the supervisory board. All the operators of the bank by two signatories one of each party. JV-Article 9.1- Project Manager on behalf of JV shall open and operate bank accounts in Cairo or the project city, Egypt. JV-Artical-9.3- If one party didn't pay its part of cash, and the other party pays so the non-comply party, it shall be entitled to receive interest at the prevailing JV bank interest per annum plus 1 percent % from the non-comply party, Interest shall be calculated and charged on a monthly basis. JV 14.3- All books of accounts and other financial documents shall be audited once a year by two chartered or otherwise qualified auditors and each party shall appoint one of them. Any dispute regarding the accounts shall be settled by the said auditors. Owner-JV-Article 15.8- The second party shall provide 3 Cars and well equipped micro-bus to the first party, and shall be responsible for the expenses of their operation and maintenance throughout the execution period of the operation and shall transfer the ownership of them to the Employer as such Three vehicles are considered as an integral part of the tender.				
	3.4 a							3	5																													
	3.4 b							6	2													0	0															
	5.11							0	0													0	3															
	6.26		0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	1	3	0	0	0		0	2	1	4	0	0	0	JV Article 20- The commissions debited by the banks issuing the Guarantees required by the Employer are debited to the JV. For constituting these Guarantees, the parties undertake to give or to arrange to have given whenever necessary counter Guarantees to the Bank according to modalities negotiated with the Banks and approved by the Executive Committee in proportion to their interests, either with or without partial liability. Expenses incurred in supplying these counter ones will be borne directly by each of the Parties.						
	6.30							0	0													2	1															

	Questionnaire Question no.	No. of Responses																				Contract Name															
		Owner					Egyptian Company					International Company					JV Company																				
Total no. of Questionnaires	25	9					5					4					7																				
		1	2	3	4	5	Y	N	1	2	3	4	5	Y	N	1	2	3	4	5	Y	N	Answer	1	2	3	4	5	Y	N							
Contract Name																						The Metro Line	Water treatment Plant	A New City	Airport Terminal Building	Five Stars Hotel	The Harbour										
Materials																							The contract price dose not include customs and taxes for the foreign part.	Owner- JV 2.1- contract that for materials "In cases where project standards do not exist for any material, the materials used shall in all respects comply with any relevant and current British standards for that material. In cases where neither project specification nor appropriate British Standards exist, the materials used shall be of the highest standard available and shall be to the Employer and shall be to the Employer and/or the Engineer satisfaction".													
Labour skills	5.16 a 4.1 a	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	1	0	0	0	0	0		0	0	0	0	0					
Sub-contractor	6.31 a 6.31 b 6.31 c 6.31 d 6.31 e	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	3	0	0	0	0	0	0	1	1	2	3						
Client/ Owner	2.12 h	0	2	1	3	3	0	0	0	3	2	0	0	1	1	2	0	0	2	1	4		0	0	2	1	4		Public authority	Public authority	Private project	Public authority	Private project	Public authority			
Contractual	2.12 a 2.12 b 2.12 c 2.12 j 3.5 b 3.5 c 3.5 d	4	2	3	0	0	1	2	1	1	0	0	3	1	0	0	0	3	1	0	0	1	5	0	0	1	JV agreement	JV agreement-Owner JV " Items not covered FIDIC for Design Built and Turn key first edition 1995 will be applied.	Fidic 4th edition -1987 reprinted in 1988 and reprinted 1992.	JV Agreement	Fidic 4th edition -1987 reprinted in 1988 and reprinted 1992.	Fidic 4th edition -1987 reprinted in 1988 and reprinted 1992.					
Location	2.8 a 2.8 b 2.8 c 2.8 e 2.8 f	0	1	1	5	2	0	2	0	2	1	0	0	1	1	2	0	0	1	1	2	1	0	0	2	4	Cairo	Monofeya Governorate-70Km from Cairo	New Cairo which is the Eastern part of Great Cairo" New urbanization Area"	Cairo	Cairo	Sea Side- 200KM north of Cairo.					
Communication between JV parties																						JV article 8.5- In cases where it is necessary to settle a problem urgently within a period incompatible with time required to convene the Supervisory Board, the Gerent may ask the parties to agree to a decision by telex, telephone or Fax, and this kind of Decisions must be confirmed in writing without delay. The same JV- Article 9.5 for The Executive Committee. JV Article 31.1- All communications or notices provided for herein shall be delivered, mailed or faxed to any Party at the address of Said party. JV Article 31.2-Uch communications or notices shall be deemed to have been duly given when so delivered or if mailed, when received.	Owner-JV agreement- item 19 " any registered mail or delivered by hand or fax " confirmed then by mail are approved.	Article 68.1 and 68.2-The approved methods for notice by the Contractor to the Employer and the Engineer are: post,cable,telex or facsimile or left at the Contractor's, Engineer's, Employer's principle place of business or such other address shall nominated.	It is permitted telegraphic,telex,faxmail and electronic transmission.	JV- Clause 68.1- The contractor shall maintain an office in Cairo for entire duration of the contract. All notices etc. which are left against signature at or sent by registered post to the said offices shall be deemed to be validly served upon the contractor. JV- Clause 68.2- Notice to the Employer and the project manager, the same as Clause 68.1.	JV- Article 6.6- Decisions shall made in writing "TeleFax- E-mail", or verbally(whether or not by telephone) or by facsimile can be considered as agreed, provided that they shall followed by written confirmation within one week. JV- Article 21- Notices and correspondence by adequately & properly sent by registered mail or delivered by hand or by fax" confirmed then by E-mail) Owner-JV-Article 16- Registered mail or delivered by hand or by Fax.										

Appendix J The overall model of risk factors of international construction joint ventures in Egypt

