



Review Article

Planning the appropriate risk response strategies by exploring and prioritizing the risk categories in international projects

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ABSTRACT

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Industries are expanding their business into new foreign markets as a result of globalization. Companies need to understand the risks involved with international projects for sustained competitiveness and growth in the global market. The purpose of this paper is to present an overview of research on various risk categories associated with international projects and the barriers to effective risk management through a systematic literature survey. The findings derived from the evaluation of the publications analyzed have led to the identification of 17 different types of risk categories associated with international projects in various sectors of industries and 10 different barriers to effective risk management. The success of risk management in international projects will be based on the proper identification of risks, application of appropriate risk management methodology, and proactive leadership to overcome the barriers to effectively implement risk management. The risk categories were verified and ranked through the feedback from more than 25 Project professionals and the response strategies have been suggested.

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INTRODUCTION

Fan et al. (2008) defined project as a series of related activities with a well-defined set of desired results. Generally, projects are classified as domestic and international projects. Domestic projects are the ones in which the project is performed in its native country for a resident firm. International projects are those where the owner or the contractor of the project is from a different country than the one where the project is being executed (Walewski, 2003). The international projects are classified as overseas (executed in a foreign country for a native firm), foreign (executed in a foreign country for a foreign firm), or global (project team consisting of professionals from multiple countries) projects (Grey, Larson, & Desai, 2010). The surveys (The Standish Group CHAOS report, 2013; AON, 2017; World Economic Forum, 2019) shows that only 25% to 30 % of projects succeed in a successful completion. The success of an international project mainly depends upon understanding the risks associated with the specific project (Walewski, 2003) and the proactive response strategies initiated by the Project Manager (Blaskovics, 2016). As mentioned in PMBOK (2021), some risks remain constant throughout the project whereas some risks arise and diminish during the project. To improve project performance the risks which occur across the entire project life cycle must be recognized and they must be given due consideration (Han et al., 2008; Bhoola & Giangreco, 2018). A process of risk management in projects is a rational chain of practices taken by decision agents to keep the implementation of the project under certain conditions. (Rodrigues-Da-Silva & Crispim, 2014).

METHODS

The knowledge of various possible risks, their effects, and the barriers in risk management are essential for the successful completion of any international project. This paper aims to explore the different categories of risks involved in international projects, rank them based on industry expert feedback explore the barriers to effective risk management, and suggest the probable mitigation strategies for each category of risks. This work can be characterized as a theoretical concept, specifically for a review of the literature on project management and the various types of risks associated with international projects. The study is exploratory, which constitutes a secondary source. Extensive literature exists in the field of Risk Management and International Projects. Detailed information of literature search (See Table 1).

Table 1. Details of literature survey

Time period	Search engines	Primary keywords	Secondary keywords
Year 1996 to Year 2021	Science Direct	International projects	
	Emerald	Risk	failure
	Google Scholar	Project management	challenges
	Springer	Barriers	pitfalls

The literature review primarily focuses on Project Risk Management practices in International projects related to Construction Engineering, Piping Engineering, Power Generation Plants, Mining, Automotive Industries, Steel industries, and other heavy industries.

Risk categories in international projects

According to PMBOK (2021), Risk is often referred to as the presence of potential or actual threats or opportunities that has an influence on the objective of the project during construction, commissioning, or at the time of use. Risk is also defined as an uncertain event or condition that, if it occurs, has a positive or negative effect on a project objective. Sato and Hirao (2013) defined risk as the possibility of a critical situation where an activity cannot deliver mandatory outcomes required for the project objectives and no other immediate alternatives are available. Different researchers

have identified the various risks involved in international projects. Based on the studies by various researchers, the risks involved in international projects can be broadly categorized as follows.

Financial & Economic Risks- Financial and economy-related risks are considered one of the most important risks in international projects. The financial capability of the owner/ contractor is the backbone of any project. Because of the fluctuations in foreign exchange rates, the proper cost estimation of any activity in the international project becomes crucial. Factors like changes in government policies, and unstable legal procedures can also create financial & economic risks for the company. (Ahsan and Gunawan, 2010; Hartono et al., 2013, Hwang, Zhao and Gay, 2013; Lam et al., 2007; Dandage et al., 2017, Dandage et al., 2018a, Dandage et al., 2021). **2) Contractual & Legal Risks-** Every country has its legal procedures and regulations for overseas companies executing projects in that country. The unfamiliarity with the legal procedures and regulations can impose severe risks on the company. The contracting document also needs to be carefully prepared. Several clauses in the contract document if ignored can cause serious risks in the execution of the projects. (Charoenngam and Yeh, 1999; Hartono et al., 2013, Hwang, Zhao and Gay, 2013; Jamil, Mufti and Khan, 2008; Lam et al., 2007; Li Shuying, 2009; Dandage et al., 2017, Dandage et al., 2018b, Dandage et al., 2019).

Subcontractor-related risks- For many international projects, subcontractors are selected from the host country or they may be from across the world. The inefficiency of the subcontractor because of poor coordination or the inadequate number of staff or weak financial condition affects the performance of the projects (Lam et al., 2007; Dandage et al., 2018b, Dandage et al., 2021). **Operational risks-** These risks are defined as the risks which emerge during the actual execution of the project activities. The risks can occur on account of inadequate project staff, failure of machinery, shortage of raw material, shortage of finance, etc. The project manager has the responsibility to handle the operational risks. (Anderson, 2000; Eybpoosh, Dikmen, and Birgonul, 2011; Ghosh and Jintanapakanont, 2004; Ke et al., 2010; Dandage et al., 2019). **Safety & social risks-** In any project, the risks related to the safety of the project staff must be given due consideration. The improper working conditions, nonstandard procedures, ignorance of safety norms, lack of safety training, etc. can lead to the emergence of risks related to safety. The social risks which arise because of factors like language barrier, traditions, insecurity, crimes, etc. affect the project. (Anderson, 2000; Bing et al., 2005; Hwang, Zhao and Gay, 2013; Dandage et al., 2018b). **Design risks-** The Risks which occur due to problems in design are called design risks. The risks occur on account of unclear design specifications, unfamiliarity with the local standards and codes, unfamiliarity with the local working methods, etc. The design risks are considered as important as they can lead to operational or technical risks. (Hartono et al., 2013, Hwang, Zhao, and Gay, 2013; Dandage et al., 2019).

Physical risks- Physical risks are mainly observed because of the site conditions where the project is executing. The unforeseen site conditions and geological factors are the main causes of physical risks. The physical risks also have an impact on the operational as well as safety-related risks. (Doloi et al., 2012; Ghosh and Jintanapakanont, 2004; Lam et al., 2007; Dandage et al., 2021). **Delay risks-** These are the risks that arise due to the delay in various activities of the projects like government permissions, legal formalities, unavailability of resources, failure of equipment, etc. The delay risk gets affected by the operational risks and force majeure risks. (Hartono et al., 2013, Hwang, Zhao and Gay, 2013; Dandage et al., 2019; Rane et al., 2020). **Political-related risks-** This risk is ranked as the topmost risk among others by many researchers. The political risk is because of the instability in government, government policies of foreign investments, employee strikes influenced by political parties, relationship with the government, the influence of international politics, changes in taxation policies, and regional factors. This is considered the highest priority as it influences the other risks like economic risks, legal risks, social risks, fraudulent practices related risks, cultural risks, etc. (Charoenngam and Yeh, 1999; Hartono et al., 2013, Hwang, Zhao, and Gay, 2013; Jamil, Mufti, and Khan, 2008; Ke et al., 2010; Khattab et al., 2007; Lam et al., 2007; Li Shuying, 2009; Dandage et al., 2018b).

Internally generated risks- These types of risks are common, and important but yet poorly managed in the projects. These risks mainly arise because of human behavior. Human behavior is based upon various factors like mental models, beliefs, and values. As human behavior is unpredictable, the estimation of these risks is unreliable. To handle these risks, the Project Manager must be capable enough to deal with the varieties of human behavior. (Barber, 2005; Dandage et al., 2018b; Dandage et al., 2019). **Managerial Risks-** The managerial risks arise due to the reasons like low productivity, low quality, lack of safety consciousness, and Human resource-related issues. The occurrences of managerial risks lead to cost and schedule overrun. Retaining competent project staff is one of the key issues in handling managerial risks. The risks like internally generated risks, delay risks, safety, and social risks have their effect on managerial risks (Eybpoosh, Dikmen, & Birgonul, 2011; Jamil, Mufti, & Khan, 2008; Dandage et al., 2018a; Dandage et al., 2019). **Technical risks-** Issues like technological developments, variations in codes & standards, problems meeting the specifications, etc. cause the technical risks. These risks have an impact on other risks like operational and managerial risks. (Doloi et al., 2012; Dandage et al., 2018b; Dandage et al., 2019; Dandage et al., 2021). **Level of competition-related risks-** International projects involve many activities which need to be allotted to different contractors. To achieve the highest quality of work within a specific schedule at the lowest cost, contractors across the globe are expected to participate in the bidding process. Because of the severe competition, the contractors need to work under very tight profit margins. Hence this risk also affects other risks like financial risks. (Ahsan and Gunawan, 2010; Dandage et al., 2019).

Fraudulent practices-related risks- These risks arise mainly because of corrupt practices in the host country. The political environment of the nation has a great impact on this type of risk. The existence of a stable and clean government can significantly prevent these kinds of risks (Hwang, Zhao, & Gay, 2013; Dandage et al., 2021). **Cultural-related risks-** International projects essentially involve cultural risks since it is about the operations between two different countries. Culture is that complex whole that includes knowledge, belief, art, morals, law, customs, and any other capabilities and habits acquired by man as a member of society. Some countries like India have a great attachment to their own culture. The role of trust is very important in cultural risks. Building trust among all the participants of the project can minimize the cultural risks. For successful projects, the project manager must be with good knowledge of the local language & culture, good negotiator, be social, and be able to judge personalities (Camprieu, 2007; Sennara & Hartman, 2002; Dandage et al., 2019). **Health-related risks-** The risks related to health are those like low life expectancy age and low infant mortality rate. According to the World Bank report (2004) in a country like India, the life expectancy is 63 years old. (Anderson, 2000; Ling and Hoi, 2006; Dandage et al., 2018a). **Force majeure risks-** These risks are mainly because of natural disasters like floods, volcanoes, earthquakes, and storms or because of human-made situations like war. These risks are also called acts of God. A well-in-place disaster management system can reduce the effect of these risks. (Hwang, Zhao, & Gay, 2013; Ke et al., 2010; Dandage et al., 2018b).

Barriers to effective risk management

Failure to identify and effectively mitigate risk management implementation barriers that lead to the failure of the project. It also raises questions related to the effectiveness of risk management methods. Those organizations which can successfully overcome the barriers can effectively manage the risks and the project becomes a success story. Implementing risk management in any project is not a simple task. Following is the general list of barriers to effective risk management in any project. **Inertia (Resistance to change):** Resistance to change is observed at all levels of hierarchy including Senior Manager, Middle Manager, and shop floor personnel in any organization. The primary reasons for resistance are often a lack of clarity and uncertainty about the change, pressure, interference with interests, and the challenge to learn something new. Resistance to process change initiatives may also be the result of various reasons including the threat of losing the job, individual objectives, arrogance and pride, insufficient regulation in the industry, and inadequate will and initiative at the executive level. (Tummala et.al 1997; Hillari 2011; Dandage et al., 2019; Dandage et al., 2021). **Avoidance of talking about risk:** In some organizations, people have a misbelief that the

top management will consider the person as over pessimist if he identifies many risks related to the project. Hence people prefer only to represent the positive aspects of the project and hide the identified risks due to fear of top management. In case of severe competition for getting funds for a certain project, the Project team may prefer to only focus on the positive things and avoid the gray areas. (Hillari, 2011; Dandage et al., 2019; Dandage et al., 2021). High cost of Risk Management: The high cost associated with risk management implementation is also an obstacle to risk management. Even after knowing the importance of risk management, many companies hesitate to invest in that. While carrying out the financial budgeting of the project, the cost of risk management must be included. (Hillari, 2011; Dandage et al., 2019; Dandage et al., 2021). Lack of top management focused leadership: The top Management must have focused leadership to set the vision, goals, strategy, and direction to keep risk management on right track. Lack of committed leadership as well as lack of strategic direction towards implementation of risk management is a common pitfall in effective risk management for many projects. Lack of commitment from top management can also lead to issues like a shortage of resources, communication gaps, and very slow decision-making. (Tummala et.al 1997; Hillari, 2011; Dandage et al., 2019; Dandage et al., 2021).

Lack of formal training for employees: Lack of formal training for employees in the area of concepts and principles of project risk management can become a stumbling block in the implementation of risk management methodologies. The training needs at different levels can be determined by the Human resource department. Lack of awareness about risk management is also a hindrance which is the result of inadequate formal training. (Tummala et.al 1997; Hillari, 2011; Dandage et al., 2019; Dandage et al., 2021). **Cultural Difference:** The cultural difference can become a serious cause of concern for effective risk management, especially in International projects. The cultural difference brings the mismatch in strategic thinking which becomes a roadblock to the effective implementation of risk management. The failure to create a risk management culture is a significant obstacle to the success of the project. The cultural and language barriers cause the implementation of risk management ineffective. (Hillari, 2011; Harner 2010; Dandage et al., 2019; Dandage et al., 2021). **Lack of cooperation between employees and top management:** Strong cooperation and mutual trust between employees and management is a prerequisite to creating an atmosphere for effective implementation of risk management. The top management must delegate the authorities, increase the decision-making culture amongst the employees and listen to the suggestions which will effect in building mutual trust in the organization. (Hillari, 2011; Dandage et al., 2019; Dandage et al., 2021). **Cross-functional conflicts:** Any Project consists of a huge number of functions and hence the employees are divided into many functional departments. As most of the categories of risk that are commonly observed in any project are not limited to any single functional department, risk management can adversely get hampered due to the existence of cross-functional conflicts. To overcome this barrier, the formation of a cross-functional team (CFT) for the implementation of risk management can be the ideal solution which may convert the conflicts into improvements. (Jamil Misbah, Mufti, and Khan 2008; Hillari, 2011; Dandage et al., 2019; Dandage et al., 2021). **Lack of resources for risk management implementation:** For successful implementation of any initiative, adequate resources are very essential. The lack of resources like funds, people, and technology can be a barrier to the successful implementation of risk management in any project. (Tummala et.al 1997; Hillari, 2011; Hwang, Zhao and Toh, 2014; Dandage et al., 2019; Dandage et al., 2021). **Failure to clearly define the risk:** Accurate identification of the risk is one the important key success factor in effective risk management. If the risk management team fails to clearly define the risk and uses common risk terminology across the organization, then risk management can divert from its track. The risk definition affects the approach toward the risk and the resource allocation for the mitigation of the risk. (Hillari, 2011; Dandage et al., 2019; Dandage et al., 2021).

Risk Categories ranking and mitigation strategy

The risk response phase includes the selection of the proper risk mitigation strategy which will decrease the probability of occurrence or the potential impact of project risk. The four risk mitigation strategies Avoid, Reduce, Transfer and Accept are commonly used. (PMBOK, 2021). Table II summarizes the various risk categories, their relative ranking, key causes, and mitigation

strategy. More than 25 project professionals were consulted to verify the risk categories explored through the literature review. Based on their experiences in international projects, the risk categories have been ranked and appropriate mitigation strategies have been suggested.

Table 2. Risk category ranking and mitigation strategies

Sr. No.	Risk category	Rank	Key risk causes	Mitigation plans
1	Financial & economical	4	i) Exchange rate fluctuation ii) Shortage of funds	Reduce
2	Contractual & legal	5	i) Unawareness of legal procedures ii) Complex contract conditions	Transfer
3	Subcontractor	10	Failure of contractor	Transfer
4	Operational	1	Low labour & equipment productivity	Reduce
5	Safety & social	13	i) Lack of safety training ii) Nonstandard working conditions	Reduce
6	Design	11	i) Unclear specifications ii) Unfamiliarity with standards & codes	Reduce
7	Physical	14	Unforeseen site conditions	Reduce
8	Delay	3	i) Legal procedures ii) Inadequate resources	Reduce
9	Political	2	i) Political instability ii) Relations with government	Reduce
10	Internally generated	9	i) Human behaviour ii) Failure of project manager	Reduce
11	Cultural	6	i) Language barrier ii) Differences in cultures	Reduce
12	Technical	7	i) Variation in codes & standards ii) Failure of equipment	Reduce
13	Level of competition	12	i) No. of competitors ii) Tight profit margins	Reduce
14	Fraudulent practices	15	Corruption	Avoid
15	Managerial	8	i) Strikes ii) Retention of competent staff	Reduce
16	Health related	17	Low life expectancy age	Reduce
17	Force majeure	16	Natural disasters	Accept

CONCLUSION

The paper gives an insight into the general scenario of the various risks an international project may have to face. The risk ranking based on industry experts' feedback shows that operational, delay, political, financial, contractual, and cultural risks are high-priority risks in international projects. The paper also represents the barriers to the effective implementation of risk management. The risks and barriers to its effective management if identified initially can be of great help to the company to plan

for its response strategy. For the successful implementation of any international project; the company must thoroughly study the different country-specific aspects of the project and proactively address the risks consistently throughout the project. The risks must be identified at the initial stage, assessed for their probability/impact, and then responded to properly. The project manager must develop strategies to minimize the effect of barriers for effective implementation of risk management.

LIMITATIONS AND FUTURE DIRECTION

This paper primarily focused on risk management in international projects in various sectors like Construction Engineering, Piping Engineering, Power Generation Plants, Mining, Automotive Industries, Steel industries, and other heavy industries. According to the type of project and the country-specific conditions, the prioritization of the risks, as well as barriers, may be varying. Accordingly, the project risk management methodology may need to be modified. Once the various possible risks associated with international projects are identified, the methodology of effective risk management can be developed in general as well as in any country and project specific. The interaction among the risk categories and the barriers can be analyzed using modeling techniques such as Analytical Network Process (ANP), and Interpretive Structural Modeling (ISM) and can be validated using Structural Equation Modeling (SEM).

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