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RISK MANAGEMENT IN CONSTRUCTION INDUSTRY

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Abstract:

Construction industry is highly risk prone, with complex and dynamic project environments which create an atmosphere of high uncertainty and risk. The industry is vulnerable to various technical, socio-political and business risks. The track record to cope with these risks has not been very good in construction industry. Risk management is a concept which becomes very popular in a number of businesses. Many companies often establish a risk management procedure in their projects for improving the performance and increase the profits. Projects undertaken in the construction sector are widely complex and have often significant budgets, and thus reducing risks associated should be a priority for each project manager. Risk management is a process which consists of identification of risks, assessment with qualitatively and quantitatively, responses with a suitable method for handling risks, and then controls the risks by monitoring. All analyses are based on a theoretical background regarding risk, risk management process and project life cycle approach in the construction sector.

Key Words: Construction Industry, Risk Management & Risk Analysis

Introduction:

The development of infrastructure is one of the most important activities that can boost up the business of various industries, thereby increasing the gross domestic product (GDP) of the country. Construction projects are always unique and risks raises from a number of different sources. Risk is defined as any action or occurrence which will affect the achievement of project objectives. Risk management is a technique which is used in many other industries from, IT related to business, automobile, pharmaceutical industry, to the construction sector. Risks and uncertainties inherent in the construction industries are more than any other industries. Many industries have become more proactive about using risk management techniques in project. However, with respect to the construction industry, the same is not used commonly. Risks and uncertainties inherent in the construction industry are more than other industries.

The process of planning, executing and maintaining all project activities is complex and time-consuming. The whole process requires a myriad of people with diverse skill sets and the coordination of a vast amount of complex and interrelated activities. The situation is made complex by many external factors. As a result, a lot of suffering is inflicted to the clients and contractors of such projects and also to the general public. Risk in the construction industry is perceived to be a combination of activities, which adversely affect the project objectives of time, cost, scope and quality. Some risks in construction processes can be easily predicted or readily identified; still some can be totally unforeseen. Construction risks can be related to technical, management, logistical, or socio-political aspects or can be related to natural disasters.

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Types of Risk:

Risks can be associated to technical, operational or business aspects of projects. A technical risk is the inability to build a product that complies with the customer's requirement. An operational risk arises when the project team members are unable to work cohesively with the customer. Risks can be either acceptable or unacceptable. An unacceptable risk is one which has a negative impact on the critical path of a project. Risks

can either have short term or long term duration. In case of a short term risk, the impact is visible immediately, such as a requirement change in a deliverable. The impact of a long term risk is visible in the distant future, such as a product released without adequate testing. Risks associated with the construction industry can be broadly categorized into:

Technical Risks:

- ✓ Inadequate site investigation
- ✓ Incomplete design
- ✓ Appropriateness of specifications
- ✓ Uncertainty over the source and availability of materials

Logistical Risks:

- ✓ Availability of sufficient transportation facilities
- ✓ Availability of resources-particularly construction equipment spare parts, fuel and labour

Management Related Risks:

- ✓ Uncertain productivity of resources
- ✓ Industrial relations problems

Environmental Risks:

- ✓ Weather and seasonal implications
- ✓ Natural disasters

Financial Risks:

- ✓ Availability and fluctuation in foreign exchange
- ✓ Delays in Payment
- ✓ Inflation
- ✓ Local taxes
- ✓ Repatriation of funds

Socio-Political Risks:

- ✓ Constraints on the availability and employment of expatriate staff
- ✓ Customs and import restrictions and procedures
- ✓ Difficulties in disposing of plant and equipment
- ✓ Insistence on use of local firms and agents

Risk Analysis and Risk Management:

Risk Analysis is a process that helps you identify and manage potential problems that could undermine key business initiatives or projects. To carry out a Risk Analysis, you must first identify the possible threats that you face, and then estimate the likelihood that these threats will materialize. Risk Analysis can be complex, as you'll need to draw on detailed information such as project plans, financial data, security protocols, marketing forecasts, and other relevant information. However, it's an essential planning tool, and one that could save time, money, and reputations.

Risk analysis is useful in many situations:

- ✓ When you're planning projects, to help you anticipate and neutralize possible problems.
- ✓ When you're deciding whether or not to move forward with a project.
- ✓ When you're improving safety and managing potential risks in the workplace.
- ✓ When you're preparing for events such as equipment or technology failure, theft, staff sickness, or natural disasters.
- ✓ When you're planning for changes in your environment, such as new competitors coming into the market, or changes to government policy.

Risk Management Process:

Managing risks on projects is a process that includes risk assessment and a mitigation strategy for those risks. Risk assessment includes both the identification of potential risk and the evaluation of the potential impact of the risk. A risk mitigation plan is designed to eliminate or minimize the impact of the risk events-occurrences that have a negative impact on the project. Identifying risk is both a creative and a disciplined process. The creative process includes brainstorming sessions where the team is asked to create a list of everything that could go wrong.

Risk Identification:

A more disciplined process involves using checklists of potential risks and evaluating the likelihood that those events might happen on the project. Some companies and industries develop risk checklists based on experience from past projects. These checklists can be helpful to the project manager and project team in identifying both specific risks on the checklist and expanding the thinking of the team. The past experience of the project team, project experience within the company, and experts in the industry can be valuable resources for identifying potential risk on a project. Identifying the sources of risk by category is another method for exploring potential risk on a project. Some examples of categories for potential risks include the following:

- ✓ Technical
- ✓ Cost
- ✓ Schedule
- ✓ Client
- ✓ Contractual
- ✓ Weather
- ✓ Financial
- ✓ Political
- ✓ Environmental
- ✓ People

The people category can be subdivided into risks associated with the people. Examples of people risks include the risk of not finding the skills needed to execute the project or the sudden unavailability of key people on the project. David Hillson[1] uses the same framework as the work breakdown structure (WBS) for developing a risk breakdown structure (RBS).

Risk Evaluation:

After the potential risks have been identified, the project team then evaluates the risk based on the probability that the risk event will occur and the potential loss associated with the event. Not all risks are equal. Some risk events are more likely to happen than others, and the cost of a risk event can vary greatly. Evaluating the risk for probability of occurrence and the severity or the potential loss to the project is the next step in the risk management process. Risk evaluation often occurs in a workshop setting. Building on the identification of the risks, each risk event is analyzed to determine the likelihood of occurring and the potential cost if it did occur. The likelihood and impact are both rated as high, medium, or low. A risk mitigation plan addresses the items that have high ratings on both factors - likelihood and impact.

Risk Mitigation:

After the risk has been identified and evaluated, the project team develops a risk mitigation plan, which is a plan to reduce the impact of an unexpected event. The project team mitigates risks in the following ways:

- ✓ Risk Avoidance
- ✓ Risk Sharing
- ✓ Risk Reduction
- ✓ Risk Transfer

Each of these mitigation techniques can be an effective tool in reducing individual risks and the risk profile of the project. The risk mitigation plan captures the risk mitigation approach for each identified risk event and the actions the project management team will take to reduce or eliminate the risk.

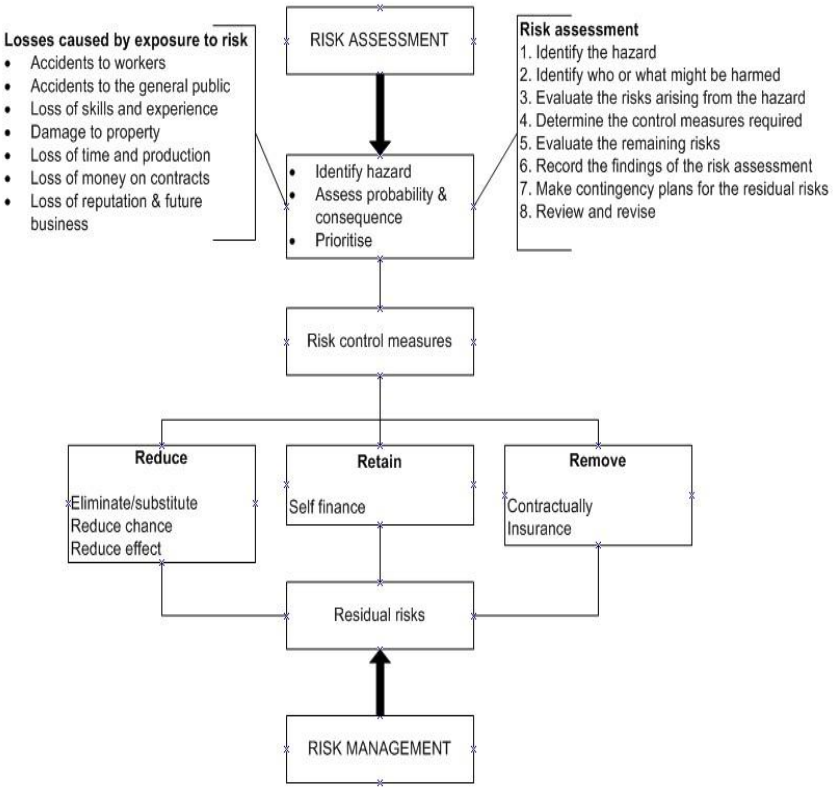
Risk Avoidance usually involves developing an alternative strategy that has a higher probability of success but usually at a higher cost associated with accomplishing a project task. A common risk avoidance technique is to use proven and existing technologies rather than adopt new techniques, even though the new techniques may show promise of better performance or lower costs. A project team may choose a vendor with a proven track record over a new vendor that is providing significant price incentives to avoid the risk of working with a new vendor. The project team that requires drug testing for team members is practicing risk avoidance by avoiding damage done by someone under the influence of drugs.

Risk Sharing involves partnering with others to share responsibility for the risk activities. Many organizations that work on international projects will reduce political, legal, labour, and others risk types associated with international projects by developing a joint venture with a company located in that country. Partnering with another company to share the risk associated with a portion of the project is advantageous when the other company has expertise and experience the project team does not have. If the risk event does occur, then the partnering company absorbs some or all of the negative impact of the event. The company will also derive some of the profit or benefit gained by a successful project.

Risk Reduction is an investment of funds to reduce the risk on a project. On international projects, companies will often purchase the guarantee of a currency rate to reduce the risk associated with fluctuations in the currency exchange rate. A project manager may hire an expert to review the technical plans or the cost estimate on a project to increase the confidence in that plan and reduce the project risk. Assigning highly skilled project personnel to manage the high-risk activities is another risk reduction method. Experts managing a high-risk activity can often predict problems and find solutions that prevent the activities from having a negative impact on the project. Some companies reduce risk by forbidding key executives or technology experts to ride on the same airplane.

Risk Transfer is a risk reduction method that shifts the risk from the project to another party. The purchase of insurance on certain items is a risk transfer method. The risk is transferred from the project to the insurance company. A construction project in the Caribbean may purchase hurricane insurance that would cover the cost of a hurricane damaging the construction site. The purchase of insurance is usually in areas outside the

control of the project team. Weather, political unrest, and labour strikes are examples of events that can significantly impact the project and that are outside the control of the project team.



Risk Review:

It is the final step of the process. After we have implemented response actions, we must track and record their effectiveness and any changes to the project risk profile. Did the response actions have a positive or negative Effect on achieving project objectives? Responses taken in risks should also be documented for future reference and project plans.

Conclusion:

Risk is perceived as a negative term, even though in theory It can have two dimensions. Professionals in the construction industries are using techniques described in the literature concerning RM, but are not aware of it. Risks are being managed every day in the industry, but not in such a structured way as the literature describes. Risk management is a technique that should be applied within an industry to achieve the goals of the industry. Hence, it is necessary to spread awareness and create interest amongst people to use risk management techniques in the industries. Further researches in this area are welcome and can be done to develop a generic risk management model for construction industry at both global and national level. Such model can help contractors in the correct identification and classification of risk as either controllable or uncontrollable. It can also help them in the correct measurement of impacts of risks and probabilities of risk occurrence.

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