Application of Risk Management Associated with Activities of Building Contractors in UAE

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The purpose of this article is to identify the risks associated with the building construction industry in the U.A.E. and to evaluate the application of Risk Management with a view to reduce or eliminate the consequences of risks - in particular, risk associated with the activities of building contractors.

Risk is a complex event which has physical, financial, cultural and social aspects. The consequences of risk go well beyond direct physical harm to financial or physical assets. Risk is not only formed by the extent of potential harm but the way in which we understand or sort out information about it.

There were continuous building collapses in the U.A.E during the year 2009. A building under construction collapsed in Dubai in August 2009, followed by the collapse of a nine-storey car park in October, in the emirate of Sharjah. 'All construction industry stakeholders working in the UAE warned that such accidents had wider implications than just workers on the immediate site.' (James Boley and McGrath, 2009).

The purpose of this article is to evaluate the application of Risk Management in the building construction industry in U.A.E. This article mainly identifies the risks associated with the activities of contractors in construction projects and how to analyze and respond to events to avoid or mitigate the impact of risks.

The 'ABC' project, situated in Jebal Ali, Dubai, which is near completion, was selected to study for this purpose. The project includes a hotel, a furnished apartment building and an office building, each consisting of eleven storeys, along with all services, facilities, landscape and infrastructure.

The Contract or Contract Document is the main device used to identify and distribute risk and opportunities on the project. The Contract is the legal document in which project members record their agreements regarding the distribution of risks and opportunities among them.

Bank security, such as Performance Bonds, Advance Bonds and Retention Bonds, is provided by the contractor to the employer or the sub-contractor to the main contractor as a guarantee that the terms of their contract will be fulfilled. According to the conditions of contract in this project, these bonds are irrevocable and unconditional.

During the construction boom in the UAE, time or the project duration was the main factor when delivering the project and funds were not as important as they flow into the project gradually. Therefore, it was crucial for the contractor to hand over the project on time. The 'ABC' project was delayed for months from the beginning of the contract, due to the late possessing of the site and extensive variations instructed during the progress of the work.

The addition of three floors to the Hotel and Office Building during the progress of the works caused major delay to project completion, as this required re-designing of structural elements and other building services. This caused additional cost and time, thus delaying the project handover to the end users. Further negative impact to the project was the unforeseen financial crisis. This badly hit the funding of the project, causing more delay to completion. If the employer's requirements were properly addressed or investigated to meet future demands during project briefing, this unfortunate risk event would not have happened.

The price fluctuation of major construction materials is a common risk in the construction industry. It is obvious

that the price of rebar, concrete and cement increased rapidly during the years 2008 and 2009. The price increase was unusual when compared to the last five to ten years, and even an experienced contractor could not have foreseen this, thus reducing the contractor's profit or even loss from the project. The shortage of material availability in the market is a negative consequence of material price increase, which also interrupts the progress of work.

Furthermore, poor performance of subcontractors, inclement weather, disputes and claims, poor site management are leading factors when delivering a project on time.

Moreover, the penalty or liquidated damages imposed in the contract could lead to unexpected hazards; of course, this clause is required to drive the contractor to complete the project on time. However, if the actual progress is behind schedule, he may take precautions to speed up the work to avoid penalty, which would lead to unexpected risks, which may have not been identified from the beginning of the project.

Apart from the above, insufficient labour force and lack of skilled labourers was the another major problem contractors faced in Middle East region. This always results in the delay of the construction progress. Further, using more unskilled labourers or utilizing the available labour force without giving them a sufficient rest increasing the possibility of causing an accident on a work site, leaving the site safety at high risk.

Also, poor communication, different cultures, personal attitudes and poor safety are other factors which may cause harmful hazards. The probability of occurrence of a hazard may decrease but consequences may be high.

Once a risk is identified, the next step is to analyze it. This is the process of evaluating identified risks to discover their extent and the way responses should be prioritized. Most risk analyses are carried out in two stages:

- Stage one – a qualitative analysis of risks and opportunities using qualitative/descriptive scales such as high, medium and low.
- Stage two – A quantitative analysis of risks and opportunities using numerical estimates.

(Martin Loosemore, John Raftery, Charlie Reilly, Dave Higgon, p.85).

To make risk assessments more efficient, a number of checklists have been produced and maintained from the beginning of the project. This would allow the formal Risk Assessment meeting to focus on key issues that might affect a project. In order to evaluate the risks arising from the hazard, the following has to be considered:

1. Likelihood or Probability that a hazard will cause an accident.
2. Severity of the consequence, if the hazard did cause an accident.

Risk Assessments carried out for all tasks in this project follow a High, Medium and Low concept with the matrix set out as below.

The key steps followed are: identify hazards arising from activities, rate the probability (P) of the hazard occurring, rate the severity (S) using the index and multiply the severity (S) and probability (P) ratings to give a rating for the level of Risk(R) i.e. S * P = R

Assessments were carried out in accordance with the risk rating matrix described below.

	Severity (S)				
Probability (P)	1	2	3	4	5
1	1	2	3	4	5
2	2	4	6	8	10
3	3	6	9	12	15
4	4	8	12	16	20
5	5	10	15	20	25
	Level of Risk (R)				

HIGH - Major groups numbers 16 - 25
MEDIUM - Intermediate group numbers 9 - 15
LOW - Minor groups numbers 1 - 8
(Extracted from risk management procedure, ABC.. project).

According to the above rating matrix, Bank security and economic crises can be categorized as Low Probability and High Impact risk events, while failure to meet program and liquidated damages for delay can be categorized as Medium Probability and High Impact risk event. Delay in delivery of materials and accidents and injuries can be categorized as High Probability and Medium Impact risk events whereas increase of material costs and insufficiency of labour force can be categorized as High Probability and High Impact risk events.

The final stage of the risk management process is the decision on how to respond to risks and opportunities, having identified and analyzed them. In essence, the decision is simple – to do something or to do nothing (Martin Loosemore p.155). The following paragraphs describe the ways in which one may respond to risks.

Firstly, risk pre-control is the most desirable way to eliminate risk, thus preventing the risk from occurring. Carefully studying tender documents such as soil investigation reports, specifications, drawings and physically visiting the actual site before tender could avoid most risks associated in the project.

Secondly, reducing probability of occurrence could reduce the hazard of the risk, similar to how conducting safety induction procedures could reduce the risk of accidents or injuries. Placing construction materials on time and following up the delivery of materials could reduce the probability of delay delivery. It is also important that managers have reactive strategies in place to deal with crises if and when they arise. This was obvious during the global financial crisis which affected businesses in recent years.

Thirdly, some risks in the construction industry can be transferred or shared between project members. The main benefit of passing on a risk to another party or sharing with members is that the chances of the risk increasing are reduced. Most risks which have been identified so far on this project are transferred to another party and few of them are shared between them. Nevertheless, in transferring risks, there is a cost, which is a premium or additional cost charged by the party that absorbs the risk. Insurance is the most common type of risk transfer to a third party. The risks passed on to insurance companies are typically of very low likelihood and very high impact.

Finally, where risks cannot be eliminated, transferred or avoided, they must be absorbed if the project is to proceed. This requires sufficient margin or risk contingency in the project's finances to cover the risk should it occur.

Once the decision has been made about the way to respond to a risk, regular review and, where necessary, revision of risk assessments must be undertaken. Risk assessment should also be reviewed following an accident, incident or dangerous occurrence to ensure that control measures are revised to prevent reoccurrence. Managers, Supervisors and off-site Managers shall continually monitor the effectiveness of risk assessments.

In conclusion, there are many potential risks in the construction industry. Through investigating the contract document in the tender stage, most of the risk associated with the construction project can be identified. The price fluctuation of major construction materials, penalty or liquidated damages and the conditions on bank securities imposed in the contract are a few of them. In addition, unrealistic programme, poor performance of subcontractors and site management as well as insufficient skilled labourers may negatively impact the programme which may lead to unexpected hazards. Poor communication, different cultures, personal attitudes and poor safety are other factors which may cause harmful hazards.

The method of qualitative analysis of risk has been used in this project to analyze and evaluate the identified risks and then prioritize them. Based on this method, price fluctuation of major construction materials and insufficiency of labour forces are identified as high probability and high impact risk events. Risk pre-control, reducing probability of occurrence, transferring or sharing the risk between projects members are the ways to respond to identified risks. If not, the risk should be absorbed if the project is to proceed.

Reference

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