Research Article

A STUDY AND RISK ANALYSIS OF HIGH - RISE BUILDINGS IN NONTHABURI

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ABSTRACT

This research aims at identifying the risk factors in the construction of high-rise buildings in Nonthaburi, which affects significantly construction business. The results were analyzed to determine an approach to control the risk to reduce the risk and enhance the work efficiency. In this study, the experts from for 5 projects were interviewed. Most of the experts are project managers with more than 8-year experience and graduate level. Consequently, the interview results are considered reliable. The analysis of 85 events shows that there are 42 extremely high-risk events, 26 high-risk events, 12 medium risk events and 5 low-risk events. Following is the high-risk factors: architecture, building system, structure, documentary, preparation, and contract. Different levels of risk. Solutions for the risk management consists of 6 ways based on prevention, trace, treatment and recommendation concept. Following the 6 ways, the risk opportunity could be reduced. The proposed solution approach could reduce the risk opportunity and enhance the work quality and efficiency.

Keywords: construction, high-rise buildings, Nonthaburi

INTRODUCTION

The concept of risk management in projects is miscellaneous and extensive with some of the definitions having a focal point in the decision-making process. Risk management had their distinctive foundations in the insurance industry in the USA since the 1940s. As a result of facing a world of uncertainty, risk management has arisen to be a vital weapon in the manager's arsenal to face daily businesses in order to obtain a successful risk-taking approach, Hillson (1999). The three main risk management aspects that are integrated to the certain degree are illustrated in Figure 2.1; principles of risk management, frameworks, and processes. In the framework section, it is further subdivided into three key aspects; the components of the framework, different types of frameworks and the differences between the frameworks (Fig.1).

In the context of decision making, many researchers, besides those in the project management field, indicate the importance of risk management in the decision-making process. This prompted Kaplan (1997) to state that the use of the Bayesian probability to decode the probabilistic concepts throughout the decision analysis as part of the risk management, resulting in the "best decision option" instead of an acceptable risk level. The idea that only senior executives make the decision or that merely senior executives decision count, runs contrary to the successful decision-making process as delineated by Drucker (2004). He states that the decision-making process should involve all levels within the organization. An example of the breakdown in the decision-making process is analyzed by Kerzner (2006) in the NASA Challenger tragedy.

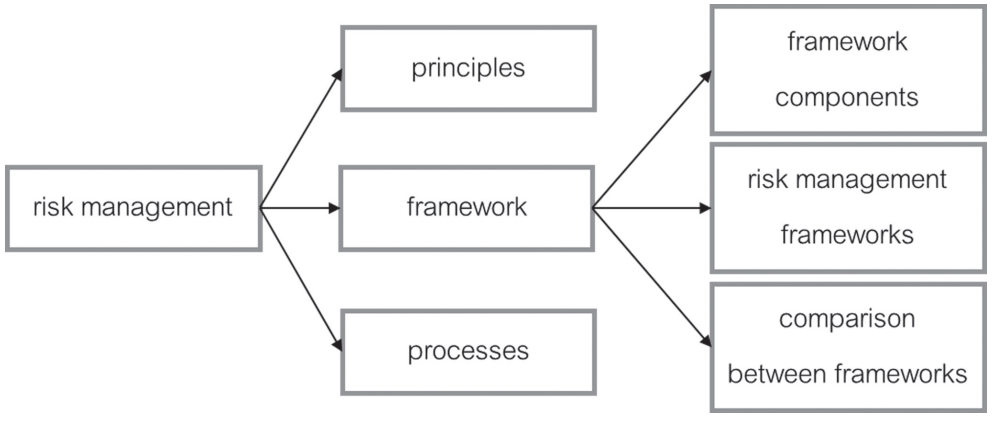


Fig.1 The hierarchical representation of risk management elements

The tragic event occurred due to multiple factors such as launch conditions, mechanical failure, faulty communication, and poor decision making. Initial warnings against the launch were issued by NASA engineers but were disregarded by the management team and the last minute decision to launch resulted in the loss of all seven crew members. Subsequent investigations into the accident found that NASA management concluded that the risk of launching was at an "acceptable" level, fully aware of the unfavorable conditions and warnings for doing so.

The construction projects in all areas are often faced with risks. Management of construction projects for success. Risk management is required prior to construction. During construction and after construction. Successful risk management is planned. The risk is very high at the beginning of the project and gradually decreases as the project progresses. At the beginning of the project, there was not enough information. Make predictions. High chance of error.

Nonthaburi is one of the fastest growing economies in the country. The municipality of Nonthaburi is very fast. During the Great Flood in Bangkok and its vicinity in 2011, people migrated. To stay in a large quantity. Especially in Nonthaburi Municipality. Nonthaburi City Municipality There are many construction projects such as high-end condominiums, resorts, and air-condominiums. It is a place where real estate investors are interested in investing a lot.

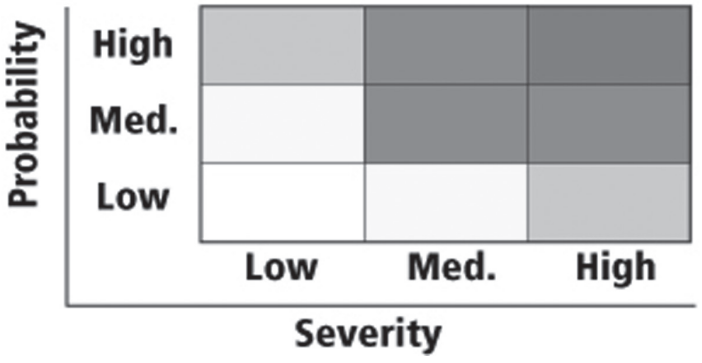
Ranking or prioritizing hazards is one way to help determine which risk is the most serious and thus which to control first. Priority is usually established by taking into account the employee exposure and the potential for the incident, injury or illness. By assigning a priority to the risks, you are creating a ranking or an action list.

There is no one simple or single way to determine the level of risk. Nor will a single technique apply in all situations. The organization has to determine which technique will work best for each situation. Ranking hazards require the knowledge of the workplace activities, the urgency of situations, and most importantly, objective judgment.

For simple or less complex situations, an assessment can literally be a discussion or brainstorming session based on knowledge and experience. In some cases, checklists or a probability matrix can be helpful. For more complex situations, a team of knowledgeable personnel who are familiar with the work is usually necessary.

As an example, consider this simple risk matrix. Table 1 shows the relationship between probability and severity.

Table 1 Risk Matrix



Source: Council of Engineers, the CSA Standard Z1002 (2017)

Severity ratings in this example represent:

High: major fracture, poisoning, significant loss of blood, serious head injury, or fatal disease.

Medium: sprain, strain, localized burn, dermatitis, asthma, injury requiring days off work.

Low: an injury that requires first aid only; short-term pain, irritation, or dizziness.

Probability ratings in this example represent:

High: likely to be experienced once or twice a year by an individual.

Medium: may be experienced once every five years by an individual.

Low: may occur once during a working lifetime.

The cells in Table 1 correspond to a risk level, as shown in Table 2.

Table 2 Risk ratings

Description	Colour Code
Immediately Dangerous	
High Risk	
Medium Risk	
Low Risk	
Very Low Risk	

Source: Council of Engineers, the CSA Standard Z1002 (2017)

These risk ratings correspond to recommended actions such as:

Immediately dangerous: stop the process and implement controls.

High risk: investigate the process and implement controls immediately.

Medium risk: keep the process going; however, a control plan must be developed and should be implemented as soon as possible.

Low risk: keep the process going, but monitor regularly. A control plan should also be investigated.

Very low risk: keep monitoring the process.

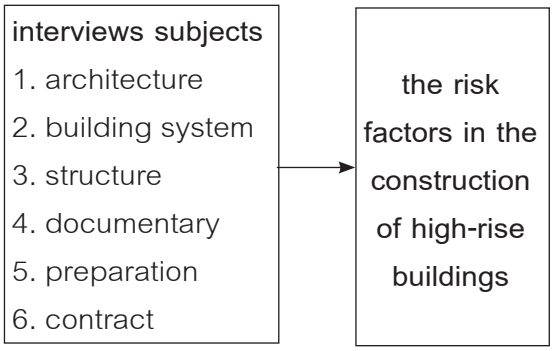
RESEARCH OBJECTIVE

1. To identify the risk of a building (from 8th floor up) in Nonthaburi Municipality.
2. To evaluate and analyze the risk of building construction in Nonthaburi Municipality as well as risk control methods.
3. To prioritize risk factors.

RESEARCH SCOPE

1. Collect data for 5 projects that are under construction.
2. Prepare documents for interviews
3. Conduct expert interviews
4. Analyze results from interviews
5. Summary of research results

CONCEPTUAL FRAMEWORK



METHODOLOGY

The main purpose of this study to identify the risk of high-rise buildings in Nonthaburi Municipality.

The researcher will gather various risk factors from the designer, contractor, project manager. And project operations. Both projects are underway and completed. The project has been completed and the risk assessment and risk control methods for the construction of high buildings in Nonthaburi Municipality are due to many factors such as coastal areas. Foreign Investors Season is different from other areas. This research focuses on the identification of risk factors, the importance of risk in the area.

Prepare Risk Structure.

The WBS structure is structured by identifying the risk factors that are collected and what is happening in the construction of high-rise buildings.

Data were collected and collected using interview.

Use of the interview is a low cost. The data are collected and collected in two parts.

The first section will ask for general information such as experience, high-rise buildings, qualifications, positions in the company, affiliated companies.

The second part is the risk experience within the project and the solution to the problem. The researcher will have a section and a section for the project manager to fill out the interview.

RESEARCH RESULTS AND DISCUSSION

RESEARCH RESULTS

This study is a study of the risk factors affecting the construction of high buildings in Nonthaburi Municipality. Five projects were investigated and interviewed by experts, including project owners, project managers, project managers and project managers. The results are summarized as follows.

1. The main factors affecting the construction of high-rise buildings in Nonthaburi municipality are divided into 16 groups: general requirements, site, concrete, plastering, reinforcement, woodwork, Window, Finishing, Specialized, Machine, Interior, Special Construction, Mechanical, Building, and power.

2. The 15 main categories (85 sub-categories) show that each category has high risks for different types of work, including structural, architectural, interior and building systems. The results also show that the preparation section also contributed to the delayed construction projects. High-risk rankings are as follows: architecture, building systems, building structures, preparatory works, interior works, and documentation.

3. The maximum risk for each group is as follows.

3.1 General requirements: Unfair jobs with a contractor.

3.2 Workplace: Workers contractor shortage, heavy rain, rising material prices, frequent malfunctioning machinery.

3.3 Concrete Work: Shortage of Material Not enough concrete with low labor productivity contractors.

3.4 Plastering: lack of attention to quality work.

3.5 Steel reinforcement: Cannot select the subcontractor to suit the job.

3.6 Woodwork: There are frequent changes.

3.7 Moisture and heat protection: lack of specialized technical skills.

3.8 Doors and windows: waiting to be left at the factory.

3.9 Texture: Substandard material quality, such as tile deflection.

3.10 Specific work: Material is damaged during storage.

3.11 Interior Decoration: Absence of detail that makes the price estimate wrong.

3.12 Special Construction: Modern Technology Needs.

3.13 Elevator system: Slow data from the designer.

3.14 Mechanical work: have to buy machinery from abroad.

3.15 Electrical work: Design that lacks sufficient and unclear information.

DISCUSSION

Nonthaburi municipality area is highly competitive. Both contractors in Bangkok. and local contractors. In addition to the investment in real estate, there are many buildings. Both domestic and foreign investors. The data collected in the research is rather difficult, with the fear that the results of the interview will affect the competition. The study did not consider it. Law, soil and digging It will play a role in the construction of Nonthaburi municipality area in the near future.

SUGGESTIONS AND RECOMMENDATIONS

A risk is a problem in every construction project. Whether small or large. The study of various risk factors helps to know the pattern and the solution to the problem, but the solution really depends on the personal experience of the individual. Risk factors should be carefully researched with sufficient timeframes to obtain the right information.

REFERENCES

Drucker, P. F. (2004). The effective executive. Australia: Wadsworth.

Hillson, D. A. (1999). Business uncertainty: threat or opportunity. ETHOS magazine. 13(6), 14-17.

Kaplan, S. (1997). The words of risk analysis. risk analysis. 17(14), 407-417.

Kerzner, H. (2006). Project management logic puzzles. NY: John Wiley & Sons. Council of Engineers, the CSA Standard Z1002 (2017)