

Everyone's Smart University

Project (Spring 2021)

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Section

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Project Risk Management

Instructions:

- آخر موعد للتسليم هو يوم الخميس 2021-05-20 في تمام الساعة ٩ مساءً.
- الإجابة متاحة باللغة الإنجليزية أو اللغة العربية مع مراعاة أن تكون المصطلحات العلمية باللغة الإنجليزية.
- يتم تسليم المشروع في صيغة ملف . pdf مع الالتزام نموذج الجامعة ولن تقبل أي مستندات أخرى.
- يجب مراعاة أقسام البحث الرئيسية (مقدمة Introduction، دراسات علمية سابقة Literature Review، طريقة البحث Methodology، النتائج والمناقشة Results and Discussion، وأخيراً المراجع References . وان كان هناك ملحقات Appendices يتم إضافتها)
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Instructor's Name: Eng. Mosaab M. Hamed

Risk Identification and Analysis for the Renovation of the Laundry Facility in Botkyrka Bus depot in Sweden

1. Introduction

Risk management has become an important part of the management process for any project. Risk management constitutes identification, assessment and setting preference for risk mitigation. Risk can happen due to uncertainty in financial market, accidents, failures in the project, natural factors, legal issues, risk associated with credit etc.

This may include a synchronized and cost effective way of using the materials and resources in an order to minimize the hazards that may arise along with monitoring and controlling the unfortunate events that may occur.

Risk management requires top-level management support, acknowledgment that risks are realities, and a commitment to identify and manage them. One discriminator of a successful organization or project is the use of risk management to anticipate potential negative conditions, problems, and realities.

Botkyrka bus depot located in Stockholm city-Sweden and generally consists of a workshop of approximately 4,677 sq.m., a laundry hall of approximately 625 sq.m., offices of approximately 1466 sq.m., 109 bus parking spaces and approximately 110 staff car parks.

The laundry facility in Botkyrka bus depot will be rebuilt and expanded with a new laundry hall. The new laundry hall will be built next to the existing one. A new fan room will be placed on top of the new laundry room and will serve both the new and the old laundry hall. In connection with the construction of a new laundry hall, the existing laundry hall will also be renovated and the adjacent workshop will be rebuilt into technology spaces.

Daily ordinary operation take place on a full scale 24 hours a day, 7 days a week during the construction period.

The main objective of executing a risk analysis in the abovementioned project is to achieve the followings:

- Studying and identifying the nature of relationship between implementing effective risk management and the project execution and success.
- Identifying key risk factors that could stand in front of construction processes by reviewing all the surrounding circumstances.
- Assessing the severity and the allocation of each identified risk factor

- Investigating management awareness of risk management, and applying their knowledge while managing this project.
- Identifying the success criteria that were achieved in this project in coordination with the ongoing daily ordinary operation in the depot.

2. Literature Review

Zou, Zhang and Wang (2007) classified the risk according to their significance of the influences of typical project objective in terms time, quality, safety and environmental sustainability, and then to investigate from the stakeholders perspective.

Mudau; Pretorius (2009) have assessed the extent to which project control and risk management contribute to, and how it can be used effectively in ensuring project success and identify the factors that contribute to project success.

Elkingtin and Sallman (2002), studied that in case of structuring projects, isolating the project participants increases the risk of minimal attention to the project. Individual project participants become concerned with only their own project risks and either willingly or unwillingly tries to transfer these risks to other project participants.

Ward and Chapman (1995) observed that it is primarily necessary to identify each risk as a foremost step in risk management and perhaps the most difficult one. There may be two sources in a construction project from where various risks are deduced. They may be external or internal risks. External risks comprises of Environmental risks and Political risk.

Internal risks comprises of the uncertainties which exists within the project. Some specific definition of risk is as follows: Economic risk, Financial risk, Legal risk, Managerial risk and Technical risk.

3. Risk management in renovation projects with continuous operation 24/7 in the same site under construction phase.

Understanding the relationship between risk management and project phases for a renovation projects with the condition that the daily ordinary operation take place on a full scale 24 hours a day, 7 days a week during the construction period is difficult. Various participants control the several phases of a renovation project. In most of the cases, owner is responsible for project analysis, to manage and control design and engineering a third party is hired, and to construct the project a contractor is hired, who in turn shows the results to the

owner for production or operations. At the same time the operation in the depot is handled of another contractor. Individual project participants become concerned with only their own project risks and either willingly or unwillingly tries to transfer these risks to other project participants.

A high level of risk management needs to be implemented in a proper way, a good mitigation strategy will reduce adverse risk effects. There are four mitigation strategy categories which are used commonly in similar cases and they are:

Avoidance : When a number of lower risk choices are available from various alternatives.

Retention/Acceptance: To accept the cost/loss a conscious decision is made in case of an event.

Control/Reduction: Continuous monitoring of the plan and amending it accordingly depending on the status of the project. This leads to a better development of the plan and follow up of the plan. This is the most common approach in devising a mitigation strategy.

Transfer/Deflect: Risk is shared with others and different types of sharing include performance incentives, contractual shifting, warranties, bonds, insurance, etc.

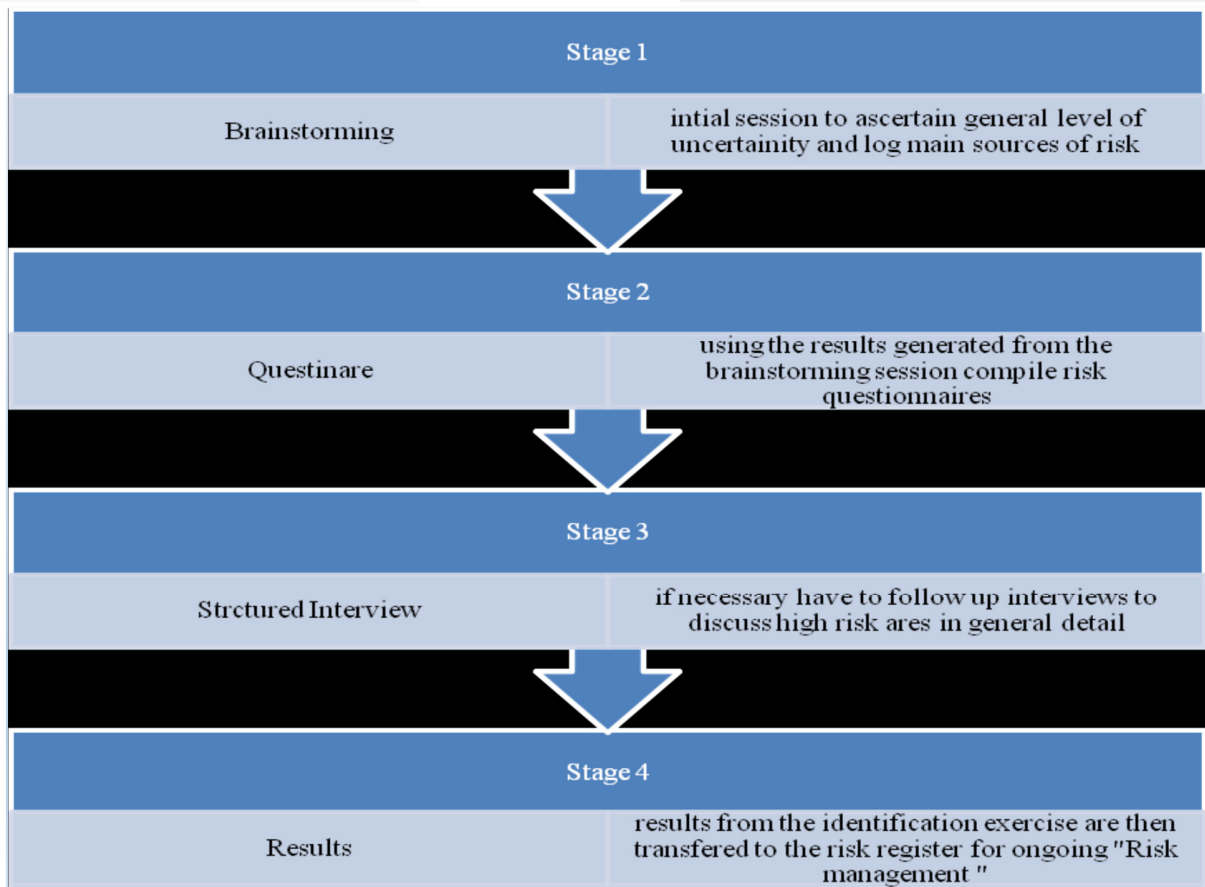
There are four main phases in a construction process: Initiating, planning, procurement and production. Predicting all the risks in the project is impossible in the initiating phase, the identified risk changes as the project is implemented.

4. Methodology and Research Project

Hence, joint and consistent risk management is required throughout the phases of the project. A methodology, which can determine the potential changes which can occur depending on the available information from all the participant/players in the project. A brainstorming within the project team, a questionnaire survey and direct meeting with the designers, contractors have been used in the risk analysis in each of the project phases. In the initiating phase the risk assessment was low, in the planning and production phases was higher.

Risk management process, risk assessment, risk identification and risk response are interpreted using information and experience of participates.

Basically this research/analysis have been conducted in accordance to the methodology described hereunder:



Risks in this category need no action	Risks in this category should be addressed. Monitoring is necessary	Risks in this category are not acceptable and must be addressed
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5. Frequent	5	5	10	15	20	25
4. Occasional	4	4	8	12	16	20
3. Remote	3	3	6	9	12	15
2. Improbable	2	2	4	6	8	10
1. Extremely Improbable	1	1	2	3	4	5

	1	2	3	4	5	Konsekvens
	1. Negligible	2. Minor	3. Major	4. Hazardous	5. Disastrous	
	1000\$	5000\$	15000\$	35000\$	75000\$	Cost (% of total project budget)
	1 day	5 days	20 days	45 days	90 days	Time (For traffic start)

Note: Assume that the maximum consequence (5) is an event that makes the project more expensive / delayed by 15%. Then count backwards by dividing by 4 for each interval.

5. Results and Discussion

Risk List							
ID	Risk Description	Reason	Risk Impact Analysis	Probability (1-5)	Risk Impact (1-5)	Risks Rating	Resolution and Plan to action to Mitigate the risk
1	Key person becomes ill for a long time or quits	Varies	Time-lag and cost increase	2	3	6	Information to be registered in a correct way and shared between the teams members
2	Cost increase and potential delays	Unclear tender documents	Time-lag and cost increase	3	3	9	Clear requirements SOW and extensive feasibility study
3	The existing building parts be in worse condition than what is known during the investigation phase	Insufficient studies in the pre-study phase	Increased design cost and time	1	3	3	Extensive feasibility study and site investigation
4	Delayed decision from the Client	Varies	Time-lag and cost increase	2	3	6	Follow up in a weekly basis and expedite the process
5	Information from end-users that changes during the design phase.	Varies	Time-lag and cost increase	2	2	4	Follow up in a weekly basis and expedite the process
6	Building permits are not granted	Authorities give not the permit	Design change, time-lag and cost increase	2	1	2	Coordination continuously with the authorities
7	Fire class and sound class are higher than the available in the existing building	New requirements	Time-lag and cost increase	2	5	10	Implement the Fire safety requirement early in the design stage
8	Unclear / unreadable as built documents	Deficiencies in Client's drawing archive	Time-lag and cost increase	3	2	6	Extensive feasibility study and site investigation

9	New problems in the operating process	New wash machines are untested	Time-lag and cost increase	3	4	12	Coordination continuously with the Operator team
10	Heavy traffic beside the workplace	Contractor	Accessibility for both parties and accident risk	2	5	10	Set a clear traffic and logistic plan earlier and Implement them
11	Accessibility is limited due to excavation	Contractor	Bus traffic in the depot	3	5	15	Set a clear traffic and logistic plan earlier and Implement them
12	Problems with snow during the winter	Weather	Nowhere to put up snow due to lack of space	2	3	6	Set a clear logistic plan and Implement it
13	Environmental accident	Oil leakage during dismantling of tank equipment	The local environment	2	5	10	Set a clear H&S plan and coordinate continuously with the related authorities
14	Construction work affects operation in the existing laundry hall	Contractor	Stop in the laundry facility and operation in the depot	2	4	8	Coordination continuously with the Contractor and the Operator
15	Users use the facility incorrectly	Errors in documents or lack of training	Completion process is delayed	2	3	6	Ensure the right project documents and level of training
16	Problems with guarantees at the facility	Unsolved error reporting process	Unnecessarily long downtimes and work for the managers	5	2	10	Ensure the right project documents and level of training

6. Conclusion and Recommendation

Looking at the effects of risk management on the goals of a project in terms of cost and quality, all phases of the project should undergo an open and conscious process. Risk management is strongly linked with the production phase. Majority of the risk processes are executed during this phase and the most active group being the contractors and the operator, have great influence on the risk management process. If we don't have a proactive risk management process then problems that take place in a project could increase the delays and costs.

Risk and their impacts tends to vary over the project life cycle while some risks remain constant and others go up or come down with the progress in the project. It is important to

identify the risks occurring across the whole project life cycle and give due consideration which in turn could improve the performance of the project.

At the end we can summarize the followings:

- The risk is always borne by the client.
- Those who are best able to manage the risk should be handed over the management activity, and take over forms of contract that supports a risk management approach.
- All parties reap substantial benefits from collaborative, integrated working arrangement with suppliers.
- Renovating projects should be managed by highly experienced people. This minimizes confrontation and establishes trust and openness in working relationships.

7. References

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