



RESEARCH PROPOSAL

IJSER

SARA SUNNY
BANNER ID : B00662289
DEPARTMENT OF M.SC.
PROJECT MANAGEMENT
THE UNIVERSITY OF THE WEST
OF SCOTLAND (UWS), PAISLEY
CAMPUS

TITLE: RISK
ASSESMENET OIN
FAST TRACK
CONSTRUCTION
PROJECTS

TABLE OF CONTENTS

ABSTRACT.....	2
TABLE OF CONTENTS.....	1
CHAPTER II: Introduction.....	2
CHAPTER III: Statement of the problem.....	2
CHAPTER IV: Reasearch Question	3
CHAPTER V: Aim.....	3
CHAPTER VI: Objectives.....	3
CHAPTER VII: Literature Review	3
7.1 Fast track construction project and considerable risks assessment.....	3
7.2 Identification of risk and ranking in fast-track construction projects.....	3
7.2 Risk management analysis in fast-track construction projects.....	3
CHAPTER VIII: RESEARCH METHODOLOGY	3
List of figures.....	3
CHAPTER IX: DATA COLLECTION.....	4
CHAPTER IV: RESULTS.....	4
CHAPTER V: CONCLUSION.....	4
REFERENCES	5

Mrs. Sara Sunny, Banner ID : B00642289

¹PG Student (M.Sc. Project Management- UWS) Email: sarasunnykv@gmail.com`

1.ABSTRACT - Risk assessment in fast-track projects is considered a major part of the construction industry process. The construction risks are related to three basic principles: time, cost and quality. According to Ackermann et al., (2014, p. 291), "Construction projects take an important role in the economy of the country where the projects can be recognized as the most possible uncertainty and risks". Despite the possibility of engineering complexity and issues in the construction project, continuous pressure can be obtained to manage the time duration of the project at the time when the meeting can be held with regulatory obligations and other emergency conditions. These risks and uncertainties may affect the work of the workers, the quality of the materials and details, the delay in the delivery of critical materials to the site, the project budget and the control of the project's costs or objectives. Owing to the complexity of the procurement process, this item focuses on the risks associated with the complexity of the procurement process for construction materials. In this paper, the fast-track construction project process has been considered by substituting the traditional process which may incur several losses and risks due to distinct levels of overlapping. This paper introduces the risks that arise during the fast-track project construction with the conceptual analysis and collection of relevant data sources.

Key Words: (*procurement risk factors , Delay and risk factors Relative Importance Index, Importance Index, Decision Making Tree, Degree of severity, Desk Study*)

2.INTRODUCTION:

The findings of a procurement strategy are the keys to a good project outcome since they help to identify and set up vital project objectives. These methods are used to identify risk issues and determine how the process will be controlled. Clients must encounter various types of risks during builds in order for the projects to be unique and exclusive. Project completion on time, i.e. delivering the project on schedule, transportation delays, and litigation delays are examples of these risks.; all of these factors cost more than the client's budget. All of these dangers have an impact on the client's business.

The construction project is to play a fundamental role in the world's economy (Ahmad et al., 2018, p. 107). In the faster-growing country, the aim is to develop the construction industry with more modernization where time does not matter to rigid the growth of the industry and the economy (Alchimie, 2004). Looking at the complexity due to delay in project handover with the construction teams and management with the clients arise the realization to adapt the fast-track construction process. Though this process has complexity related to engineering disputes and pressure from the client placed to manage the duration of the construction project during the emergency or market rigidity (Williams, 2017, p. 57). This research proposal emphasizes the focus to understand the risk assessment in case of adapting the fast-track construction project mode.

3.STATEMENT OF THE PROBLEM

The fast-tracking construction projects has been introduced in the year 1983 when Boyd and Baker (1983), measures the implementation of a fast-tracking process to use in the construction of nuclear power plant projects. As per this current research, the fast-tracking method consists of concurrent engineering, overlapping conditions by covering track predictability, optimization, schedule, and cost trade-off. This study emphasizes the focus on the optimization of the construction project with the use of a fast-track method where the risks like overlapping, time-cost trade-off, and some others can be observable. The issue related to this process where the target of using this is to reduce the time duration of completing the construction project but due to the condition of overlapping increasing time duration with increasing cost that can be obtained as the major risks and relevant problems (Alhomadi *et al.*, 2011, p. 1967).

In the comparison of the traditional approach with the modern approach, some aspects of fast-tracking can be considered with the maximum beneficiary but the major impact with the additional risks and gap is related to the fast track can also be considered to find out the way or strategy to deal with it

4. RESEARCH QUESTION

- What does the Fast-track construction project mean?
- What are the most significant distinctions between fast-track and traditional building projects??
- What are the possibilities of risk assessment in implementing fast-track construction projects?
- What are the chances of meeting the fast-track project deadline with the unique risk scenario?
- What are the most observable risks and activities that affect the risk assessment?

5. AIM

The main aim of this research proposal is to discuss the risk assessment related to fast-track construction projects.

6. OBJECTIVES

- To analyze the meaning and context of fast-track construction project
- To find the differences in fast-track construction with the traditional construction project process
- To measure the possibilities of the risk assessments with the implementation of fast-track construction project procedure
- To find the probability of fast-track project duration with the distinctive risk scenario
- To find the risks and the activities related to the project

7. LITERATURE REVIEW

7.1 Fast track construction project and considerable risks assessment

According to Bogus *et al.*, (2011), a fast-track construction project can be defined with the time constraints faced by an owner who aims to utilize the structure because of standard designs and the

construction project process. Timeliness is considered to be compressed for meeting the owner's schedule to use in the construction structure. This can also be defined as the project delivery strategy which can be used to start the construction project before the completion and finalization of the design (Bogus, 2004). Considering the fast-track projects there is a possibility to face higher levels of uncertainty in the design with the including risks and schedule pressure that also intensify the impact of risk factors eventually on the project (Cho *et al.*, 2009, p. 21). These uncertainties can also be the result of the overlapping activities that make the project more complex and unstable and also creates non-value-added iterations. The downstream activities in the fast-track projects can also be started with the non-completing information from the upstream activities that also holds the huge risk of redoing the project again at the condition of incomplete adjacent (Cho, and Hastak, 2013, p. 97). As the construction project design, specific scopes, and others are developed with the project submission, Due to legal complications, it's thought to be a difficult aspect to estimate the cost and time accurately (Austin *et al.*, 2017).

7.2 Identification of risk and ranking in fast-track construction project

Several studies have been made in the form of articles, peer reviews, journals, and books about the risk factors related to the fast-track construction project where the successful delivery in the project leads to various risk assessments which impact the project. Here considering this context of risk Identification research publication published between 2010 and 2107 that was analysed in conjunction with the risk analysis of the fast-track project. There are in total nearly more than 30 risk factors that can be observed in the fast-track construction project work. Environmental risk, financial and economic risk, managerial risk, social risk, and technical risks are some risk categories that can be considered to be the risk impact on the project delivery and other areas (Eurostat. 2016). This risk assessment in the

conventional fast track project can be proved to be common with significance based on the probability of risk occurrence and effect on certain areas in construction. This risk is overlapping but less prevalent incurred in traditional construction. Content analysis which shows the requirements of redoing the task is known to be the most critical risk

where the design errors are placed in the second critical position (Fazio *et al.*, 1988,195). Inaccurate and Unrealistic schedule goals with uncertain change orders can also be proved as the major risk factors where damages due to delay and low-quality materials and inappropriate methods of construction also lead to the critical risk observed in applying fast track construction projects.

7.3 Risk management analysis in fast-track project

Risk management is defined as the process of identifying and assessing risk factors, as well as the use of procedures and strategies to reduce them to an unacceptable level. (Cattano *et al.*, 2010, p. 179). The procedure is considered to go stepwise that also begins with risk recognition and impactful assessment before moving forward to the control, mitigation, and result (Cavallo, Ireland, 2014, p. 183). Fast track projects are also considered to be dynamic and that can be beneficial from risk management. In the construction industry development of countries approach risk management with the use of practices that are generally limited and inefficient management success (Chan *et al.*, 2002, p. 129). Fast track projects carry complexities with the requirement of systematic upgrades in the risk management process (Gerk, and Qassim, 2008, p. 593). In complex systems, this approach fails to reflect the actual risk situation where obvious requirements are made to utilize the systematic tool and scientific techniques for assessing and analyzing the risk as interconnected systems

8. RESEARCH METHODOLOGY (QUALITATIVE AND SECONDARY DATA)

This research paper laid focus on the conduction of semi-quantitative analysis of risk assessment

observed in fast-track project work with the use of systems thinking methods.

Desk study

Desk study is the area of discussing the research methodology where the relevant literature study is carried out for developing the statement of issues with the advised research objectives of the study. This is based on the objectives to measure the risk

assessment in fast track construction work and the required management process to comply with those. The identification of those risks can be ranked according to their importance and impact on the analysis where the methods can be obtained in two different score analyses one is qualitative and another his quantitative score.

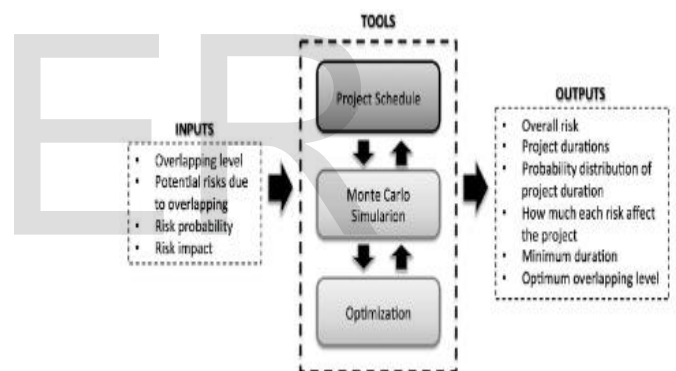


Figure 1: conceptual research methodology and framework

Source: (Boateng *et al.*, 2015, p. 1795)

The above table shows three methodology areas, the Risk parameters table, project schedule, and Risk occurrence table where analysis of risk assessment can be made with the tools like project scheduling, Monte Carlo simulation, and optimization. As inputs of analysis, overlapping level, potential risk, risk impact, and probability have to be observed to get access of overall risks, duration, distribution, and other effects and minimum duration with the optimized overlapping level consideration.

This research proposal can conduct the qualitative research analysis by following the considerable steps like the significance of the set of data related to the construction project procedures, sufficiency in the data coverage measurement, considerable format

and structure related to the risks obtained, and analysis the way to handle the risk to meet the

perfection requirements made by the potential client. Similarly, the quantitative analysis can be made by identifying the research problem where in this paper research problem is to analyze the risk assessment involved in fast-track construction and finding the way out from the risks to make the construction dispute less. The research questions and efficient plan need to be followed to make the analysis clear and constructive. A product of qualitative score with the quantitative analysis along with that assign with the level of frequency in risk factors wherein the following table the risk factors can be pointed out.

Risk categories	Developing economy				Developed economy			
	Rii				Rii			
	Probability	Impact	Rate	Rank	Probability	Impact	Rate	Rank
Financial	0.684	0.788	0.539	1	0.665	0.706	0.469	2
Legal	0.602	0.663	0.399	4	0.612	0.679	0.416	4
Technical	0.636	0.694	0.441	3	0.644	0.682	0.440	3
Managerial	0.672	0.716	0.481	2	0.674	0.700	0.471	1
Environmental	0.569	0.660	0.375	5	0.603	0.626	0.378	5
Social	0.581	0.646	0.375	6	0.494	0.550	0.272	6

Figure 2: Risk factors in the different economies with their rate, impact, probability, and rank Source: (Chien *et al.*, 2014, p. 9) As per the above-added table financial risk in developing countries ranked at the very first place followed by managerial risk and technical risks. In the case of developed economies, the managerial risk is the most observable risk in fast-track construction projects as followed by financial gaps and technical disputes.

9. DATA COLLECTION

This research study is based on secondary data collection where several articles, journals and reviews, and research papers are used to collect the sources of information and required data. For attaining the descent and most reliable data to analyze primary data and surveys are required to take place. A survey can be conducted where some

questions related to the experience of risk and relevant impact with Fast track construction project. In this survey 50 people considerably related with the various

construction project in the country states including the construction team, manager, client and others. This survey helps in contrasting the risk categories which need to be examined thoroughly to get the way to manage and minimize those for a better result in construction work.

10. DATA ANALYSIS

Data analysis is considered as the most important area of research which helps to make the summarization of the collected data from the secondary research or primary research with the conduction of an effective survey process. This also

involves the data interpretation after gathering all the data sources and using those in logical and analytical determination trends and relationships.

11. RESULTS AND DISCUSSION

Results of this research can be considered which indicates the financial risk and risk incurred in managerial and other areas when the construction-focused to apply fast track method to avoid the delay in construction completion. Though this fast-tracks method can result in completing the construction way faster than the traditional method this also leads to unnecessary hazards and risks which creates overlapping and schedule pressure and time-cost trade-offs.

12. CONCLUSION AND RECOMMENDATIONS

At the end of the paper, the conclusion can be made where the analysis of this research makes a reflection of the system of construction and involved risk factors that laid impact on the performance of the project. Construction, redo and rework with time cost overrun, issues in resources allocation, and issues in productivity can be observed which not only impact the qualitative project completion but also impact the construction project for the long run.

The effective preliminary survey, efficient engineering tools application, less pressure with time scheduling, and cost are some of the important recommendations which can be made to minimize the risk factors of the fast-track construction project.

14. REFERENCES

- Ackermann F, Howick S, Quigley J, Walls L, Houghton T. 2014. Systemic risk elicitation: Using causal maps to engage stakeholders and build a comprehensive view of risks. *Eur J Oper Res.* 238(1):290–299.
- Ahmad Z, Thaheem MJ, Maqsoom A. 2018. Building information modeling as a risk transformer: an evolutionary insight into the project uncertainty. *Autom Constr.* 92: 103–119.
- Alchimie P. 2004. Target outturn cost: demonstrating and ensuring value for money. Australia (MEL): Alchimie Pty Ltd.
- Alhomadi AA, Dehghan R, Ruwanpura JY. 2011. The predictability of fast-track projects. *Procedia Eng.* 14: 1966–1972.
- Austin RB, Pishdad-Bozorgi P, de la Garza JM. 2016. Identifying and prioritizing best practices to achieve flash track projects. *J Constr Eng Manag.* 142(2) Ballesteros-Perez P. 2017. Modelling the boundaries of project fast-tracking. *Autom Constr.* 84(Suppl. C):231–241.
- Baker, A.C. and Boyd, K.J. 1983. “Fast-Tracking for Nuclear Power Plant Construction.” *International Journal of Project Management*, 1(3): 148–54.
- Boateng P, Chen Z, Ogunlana SO. 2015. An Analytical Network Process model for risks prioritisation in mega- projects. *Int J Project Manag.* 33(8):1795–1811.
- Bogus, S., Diekmann, J., Molenaar, K., Harper, C., Patil, S. and Lee, J. 2011. “Simulation of Overlapping Design Activities in Concurrent Engineering.” *Journal of Construction Engineering and Management*, 137(11): 950–57.
- Bogus, S.M. 2004. “Concurrent Engineering Strategies for Reducing Design Delivery Time.” Ph.D., University of Colorado.
- Cattano C, Nikou T, Klotz L. 2010. Teaching systems thinking and biomimicry to civil engineering students. *J Prof Issues Eng Educ Pract.* 137(4):176–182.
- Cavallo A, Ireland V. 2014. Preparing for complex inter- dependent risks: a system of systems approach to building disaster resilience. *Int J Disaster Risk Reduct.* 9:181–193.
- Chan APC, Darko A, Olanipekun AO, Ameyaw EE. 2018. Critical barriers to green building technologies adoption in developing countries: the case of Ghana. *J Clean Prod.* 172:1067–1079.
- Chan APC, Scott D, Lam EWM. 2002. Framework of success criteria for design/build projects. *J Manage Eng.* 18(3):120–128.
- Chien K-F, Wu Z-H, Huang S-C. 2014. Identifying and assessing critical risk factors for BIM projects: empirical study. *Autom Constr.* 45(Suppl. C):1–15.
- Cho, K. and Hastak, M. 2013. “Time and Cost-Optimized Decision Support Model for Fast-Track Projects.” *Journal of Construction Engineering & Management*, 139(1): 90–101
- Cho, K., Hyun, C., Koo, K. and Hong, T. 2009. “Partnering Process Model for Public-Sector Fast-Track Design-Build Projects in Korea.” *Journal of Management in Engineering*, 26(1): 19–29.
- Eurostat. 2016. “European Union - Construction Production (Volume) Index Overview.” Eurostat : Statistics Explained. February. [http://ec.europa.eu/eurostat/statistics-explained/index.php/Construction_production_\(volume\)_index_overview](http://ec.europa.eu/eurostat/statistics-explained/index.php/Construction_production_(volume)_index_overview).
- Edmundas Kazimieras Zavadskas1 , Zenonas Turskis2 , jolanta tamošaitienė . 2010. risk assessment of construction projects *Journal of civil engineering and management.*
- Fazio, P., Moselhi, O., Théberge, P. and Revay, S. 1988. “Design Impact of Construction Fast-Track.” *Construction Management & Economics*, 6(3): 195.
- Gerk, J.E.V. and Qassim, R.Y. 2008. “Project Acceleration via Activity Crashing, Overlapping, and Substitution.” *IEEE Transactions on Engineering Management*, 55(4): 590–601
- Williams T. 2017. The nature of risk in complex project. *Project Manag J.* 48(4):55–66.