



Norwegian University of
Science and Technology

Progress Report-October

TPK4500- Specialization Project

Department of Production and Quality Engineering

“Application of Root-Cause Analysis as an Early Warning System”

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Introduction

Despite of development and improvement in today project management methods and tools, still large numbers of projects are experiencing failure or turbulent situations. According to Igor Ansoff There are some weak signals which can be identified at early stages of projects. These weak signals will get stronger as time passes. The signals, which were called early warning signs by Nikander, help management in anticipating problems and implementing actions in order to prevent them from happening later in projects. In another words, identifying early warning signs contribute in pro-active management of project. The issue is that the signals usually are not taken into account at the time and become stronger. Therefore the problem appears and leads to project failure, large amount of losses, rework, and so on. Addressing early warning signs early enough and implementing actions toward them before their full impact contributes in project success. Some tools and techniques are available for identifying early warning signs such as risk analysis, project assessment, decision support model of early warnings, performance measurement system and so on.

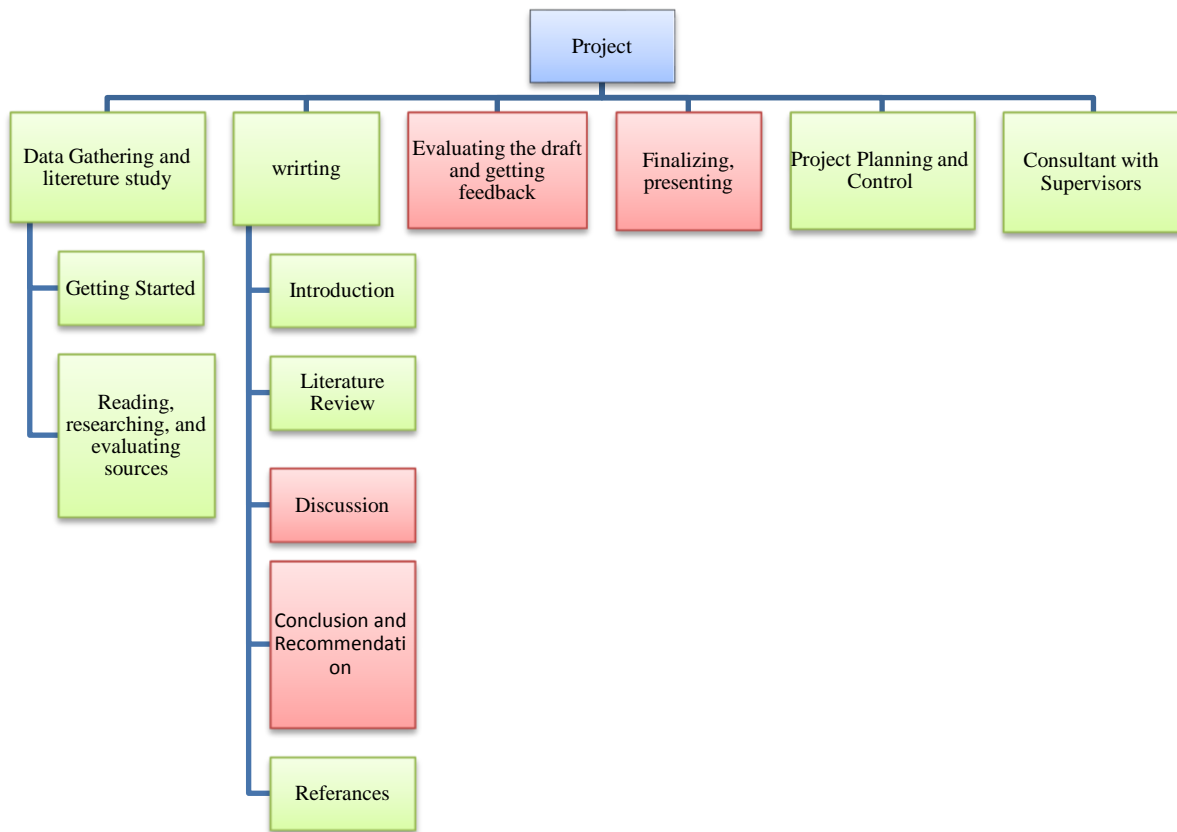
This project work investigates the application of a well-known tool, Root-Cause-Analysis, as an early warning sign detection system. No previous work has been identified which links these two terms together. So, this paper will look at both early warning signs and root-cause-analysis literatures. Then, the usability of the approach will be examined through evaluation of an unsuccessful project to see which information and actions could have been revealed if they had been noticed on time, and finally the usability of the approach will be concluded.

The goal of this project work is to examine the application of Root-Cause-Analysis approach as an early warning system in projects and evaluate its strengths and weaknesses as an early warning source.

The following research questions will be answered in this project work:

- Why traditional ways of project management are not suitable in project success?
- How to recognize early warning signs and why often they are not seen in projects?
- Discuss if Root-Cause analysis approach can be used as a suitable early warning system?

Work Breakdown Structure (WBS):



It should be mentioned that only main activities are shown in the above Structure, the deliverables are mentioned in the attached time schedule (plan).

What has been done so far?

- 1) The problem statement has been understood (100%)
- 2) Relevant sources of information (articles, books, journals, and case studies) has been collected (90%)
- 3) Collected sources has been studied and evaluated (90%)
- 4) First draft of the literature review is written (80%)

Detail of what is written in the literature review part so far:

First chapter of this project contains a short description of literature study about system theory and the issue of complexity. I found these topics related to my project work if consider a project as a system which has different tasks and relationships among them, also considering root cause analysis approach which is about a chain of problems and their causes. So, they are systems and considering the properties of systems when evaluating them would be beneficial.

The second chapter contains a comprehensive literature review of Root cause analysis approach. The definition of the theory and How to implement root cause analysis process is explained completely according to literature study. Fish bone diagram as one important tool in identification root of causes is pointed. In addition, some organizational and human factors which will cause failure in understanding root of causes are mentioned. And at the end some suggestions according to literature study is given to improve finding the root of causes. In this part I could not find many articles and papers through data bases, so more research is needed in this part.

Third chapter includes the literature study and evaluation of early warning signs theory. This part contains the definition of the weak signals, the importance of identification of the early warning signs in the front-end stage of project, the process of early warning signs identification, the chain of early warning signs/causes of problems/project problems/and responses, complexity and its effect on the identification of weak signals, human factors affecting on identification of weak signals(still needs more literature study), organizational characteristics which may affect project work(still needs more literature study), how to solve the problem of not recognizing early warning signs, implementing different kind of actions based on how much time is available and when the signals are detected.

Also, the relationship between root cause analysis and early warning signs approach has been identified through literature review.

Which tasks and deliverables are remained from the project work?

- 1) Improving literature review
- 2) Evaluating a case study of an unsuccessful project and the reasons of failure
- 3) Discussion and Conclusion
- 4) Finalizing the project work

Planned and Actual Progress:

Plan % Complete	43.8%
Actual % Complete	38.8%
%Delay	11%

S-Curve (Plan and Actual):

Attached in the appendix.

Update Time Schedule of project:

Attached in the appendix

Reason of Delays:

- Difficulties in finding relevant articles because of lack of previous work done on this project topic

Recommendations for overcoming the delay:

- Meeting with supervisors and ask for literatures resource suggestions, as soon as find the related sources the delay will be overcome.

APPENDIX