NTNU
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Preliminary Report

TPK4905- Master Thesis

Department of Production and Quality Engineering

"Barriers of Identifying Early Warning Signs in projects"

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MSc. in Project Management

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Introduction

According to Ansoff (1975), considerable surprises will not appear suddenly, there are some "weak signals" and symptoms of issues which appear much earlier than those issues themselves. In 1975 Igor Ansoff mentioned the theory of weak signals for the first time (Nikander, 2002). He claims that weak and small signals in each project will become bigger and stronger if preventing actions are not conducted. This indicates the importance of forecasting future and anticipating weak signals early enough. Decision making and implementing preventive actions take time, it shows the importance of recognizing signals as soon as possible in order to have enough time for implementing preventive or corrective actions. According to Bernstein and Bernstein Peter (1996), by available tools such as risk identification and measuring their consequences, human no longer consider future as an act of god, as they can predict what may happen in future. Because projects' nature is uncertain they are prone to unexpected events (De Meyer, Loch, & Pich, 2002; Huchzermeier & Loch, 2001; Sun & Meng, 2009). Events that are not expected to happen but could have been predicted, if these events happen they may have considerable effect on project outcomes.

In Nikander (2002) literature of project management it is mentioned that some approaches which are recognized as the sources of early warnings are risk analysis, stakeholder analysis, and performance measurement and so on. These approaches are an aid for project management to identify weak signals and decide upon timely actions before the problems materialize, hence they enhance the likelihood of project success. Despite of those available approaches, it seems that still many early warnings are not identified in projects and still many projects are facing with failure.

The objective of this master thesis is identifying the reasons of not recognizing early warnings in projects even if there are some tools for identifying weak signals. As Ansoff (1975) claimed there should have been some weak signals which could be predicted, but it seems there had been some obstacles in the way of identifying them.

Despite of a few literatures available with direct focus on this topic, Williams et al. (2012), mentioned some reasons of not identifying early warning signs in project. In this thesis I will take some hints from the work of these authors and add some more ideas by brain storming in conducting the research. Following some reasons of not identifying warnings are mentioned briefly.

Front end stages of projects are the best time to look for early warnings but usually in this stage, because of the issue of uncertainty and lack of information, the warning signs are over looked or are easily missed. Implementation stage of projects consist of periodic reviews which help in identifying early warnings, but usually at this stage people are busy with many other tasks, or there would be some distracting activities in the way of identifying warning signs. In addition, the issue of tight schedule and pressure in conducting the task may be other reason for not spending enough time for identifying signals. Furthermore, just focus on hard methods such as project assessment may lead to not identifying early warning signs of soft issues such as lack of communication among team members. Soft issues are usually identified by gut feeling approaches.

The issue of complexity is other obstacle in identifying the signals. Causality is less clear in complex projects and by looking at some inputs (signs) identifying the out puts (problems) are not easy. Most of complex project are undertaken for the first time and there is lack of similar experience in the past. In such complex projects identifying early warning signs is complicated and many issues are interconnected.

In addition, projects are dynamic in nature, even the goal of a project may change during its life cycle. So, pre-defined early warnings may not be suitable anymore as time passes and those signals may distract project team members from the new signals on which they need to focus more.

Lack of a strong learning system in organizations is another obstacle in identifying early warning signs. In the similar past projects there might have been some early warning signs which could be kept in mind in the current project. But because they were not recorded or because of just being mentioned orally they were forgotten. Or the thought that the project at hand is a unique project and the issues viewed in the past may not happen in this new project is a reason for not recording and using early warning signs.

Considering the contingency approach, similar projects in two different times of implementation may have different early warning signs. So, just focus on those issues that have happened in the past projects and forgetting the probability of the new problems that may appear can be another reason for not identifying early warning signs.

Too senior people in governance discussions who do not have operational experience are other obstacles in identifying early warning signs. In addition group thinking, and because of being loyal to the team, the opportunity of thinking outside the box will not be given to team members.

Project work is completely affected by peoples' actions; even project environment which is usually affected by natural phenomena is selected by humans, so again the human action has effect on the causes of problems. It shows the importance of searching for causes of problems around the peoples who are in charge of the task. People always compare the results with their own expectations and find the deviations, it should not be ignored that humans are not accurate at all the time and they may make mistakes. There are three kind of early warning factors, people related, process related and product related. It has been shown that people related and process related factors are bolder than the other one. It has been claimed that behavioral related factors have an effect on the whole project and will have impact on the project success or failure. Some factors such as workplace culture may cause the people to not identify early warning signs or not express their fears and what they have seen as early warning signs. These missing early warnings or fears and anxieties of expressing can be measured by for example surveys or engaging stakeholders. As mentioned, in delivery stage usually the Early Warning Signs are missed because of focus on other issues rather that what should be focused. Or, when the Early Warning Signs are acknowledged sometimes it is too late to implement any action, so they will be ignored or be hidden intentionally. Analyzing some projects which ended up with failure has shown that there had been some Early Warning Signs which could be interpreted as a sign of failure (Terry Williams, Ole Jonny Klakegg, Derek H. T. Walker, Bjørn Andersen, & Magnussen, 2012).

Problem statement

What is lacking within project management literature about early warning is that only few number of studies paid detailed attention toward why the early warnings are not identified despite of existing methods and tools. So, the purpose of this thesis work would be fulfilling this gap in literatures and researching about the major reasons of missing early warning signs whether the tools for identifying are available or not.

In this study, it would be tried to answer the following questions (Research questions):

(1) Despite of available tools for identifying early warning signs, still large number of the signals are missing, what are the possible reasons?

(2) What is the root of causes for missing early warning signs?

(3) What are the suggestions for solving the problem of missing early warnings?

Objectives and Scope of work:

This master thesis will be conducted through a literature review on related topics (Early warning signs, people related factors, complex nature of projects, etc.). The main sources of theoretical information are scientific papers, books, published case studies and the Project Management Body Of Knowledge (PMBOK©). An empirical study of a real project case is going to support the findings from the literature study. Therefore, the source of data required for this project will be collected from different papers and books besides the empirical study of the case.

The main objectives of this research work is going to cover the issues of not identifying early warning signs in projects.

Methodology

Research type and approach:

The purpose of this project is to conduct a research about fulfilling a gap among project management literatures and identifying why, despite of many available tools, early warning signs are not seen in projects. Fulfillment of this purpose requires evaluation of facts and information already available regarding relevant topics, in order to be able to find a link among those topics by analyzing the already done literatures. Once the relation has been established its causality comes into question. Causality can be found on the basis of theory (deductively) or empirical assessment (inductively). Note that for an inductive assessment either a qualitative research method could be used, or a quantitative study (Mol, 2003). Through this research both deductive and inductive approaches are going to be used in order to assess literatures qualitatively and find why early warning signs are not detected in projects. This research is perceived as qualitative as the gathered information on relevant topics will be analyzed qualitatively throughout this research.

Research method

At first, scientific databases will be searched in order to find relevant articles, books, journal papers and published case studies. Next, a comprehensive literature review about the relevant topics will be done. In the next step a qualitative empirical study will be conducted on a case of a project to identify why early warnings were not recognized in that case and how the issue led to other problems. Afterwards, an analysis of the findings of both literature and case study will be done and the research questions that are expected to be answered will be discussed. Finally, the research questions will be answered by a discussion among the findings of literature review and the case study. The whole paper will cover the research goals. This study does not focus on any specific industry.

Research Method

| Finding relevant literatures | Literature Review | Case study | Data Analysis | Achievement of research objectives |

Report Structure

This master thesis may consist of 9 chapters. A brief description of the content of each chapter has been given below.

Chapter 1 gives a short introduction of the project background, problem formulation, and the project objectives

Chapter 2 explains the research methodology including type of research, research approach, research design, method of research, limitations of research, references, research objectives and report structure.

Chapter 3 is dedicated to the literature review. The literature review includes the concept of early warning signs and relevant topics that may lead to not identifying early warning signs.

Chapter 4 introduces a project case, and the reasons of not identifying early warning signs before facing with the successor problems. Then the researcher would analyze the case project.

Chapter 5 discusses the findings of literature review, the case study and the analysis chapters and answers the research questions.

Chapter 6 concludes and sums up the findings and the results.

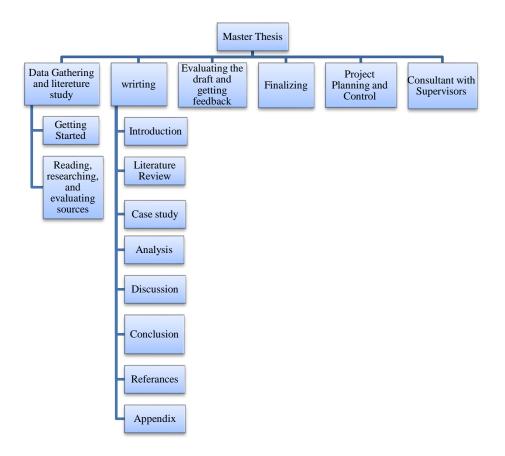**Chapter 7** includes the sources used to prepare the project

Chapter 8 contains a list of appendix

Work Breakdown Structure:

A work breakdown structure has been developed in order to fulfill the objective of this research. Besides, the activities that should be done with approximate estimated duration are shown in the attached plan. In addition, Project main milestones and deliverables have been identified in this plan.

The project will contain some progress reports including the status of actual work in comparison with what has been planned and deviation reports.

Work Breakdown Structure (WBS):

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                              ┌──────────────┐
                              │ Master Thesis│
                              └──────────────┘
   ┌──────────┬──────────┬──────────┬──────────┬──────────┬──────────┐
┌────────┐ ┌──────┐ ┌──────────┐ ┌──────────┐ ┌──────────┐ ┌──────────┐
│Data    │ │wrir- │ │Evaluating│ │Finalizing│ │Project   │ │Consultant│
│Gathering│ │ting  │ │the draft │ │          │ │Planning  │ │with      │
│and      │ │      │ │and getting│ │         │ │and Control│ │Supervisors│
│litereture│ │     │ │feedback  │ │          │ │          │ │          │
│study    │ │      │ │          │ │          │ │          │ │          │
└────────┘ └──────┘ └──────────┘ └──────────┘ └──────────┘ └──────────┘
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Data Gathering and litereture study:
- Getting Started
- Reading, researching, and evaluating sources

wrirting:
- Introduction
- Literature Review
- Case study
- Analysis
- Discussion
- Conclusion
- Referances
- Appendix

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

References:

1. Ansoff, H. I. (1975). Managing Strategic Surprise by Response to Weak Signals. *California management review*, *18*(2).

2. Bernstein, P. L., & Bernstein Peter, L. (1996). Against the gods: The remarkable story of risk. New York: Wiley.

3. De Meyer, A., Loch, C. H., & Pich, M. T. (2002). Managing project uncertainty: from variation to chaos. Engineering Management Review, IEEE, 30(3), 91-91.

4. Huchzermeier, A., & Loch, C. H. (2001). Project Management Under Risk: Using the Real Options Approach to Evaluate Flexibility in R… D. Management Science, 47(1), 85-101.

5. Mol, M. J. (2003). Purchasing's strategic relevance. Journal of Purchasing and Supply Management, 9(1), 43-50. doi: http://dx.doi.org/10.1016/S0969-7012(02)00033-3

6. Nikander, I. O. (2002). Early warnings: a phenomenon in project management. Helsinki University of Technology.

7. Sun, M., & Meng, X. (2009). Taxonomy for change causes and effects in construction projects. International Journal of Project Management, 27(6), 560-572. doi: http://dx.doi.org/10.1016/j.ijproman.2008.10.005

8. Williams, T., Jonny Klakegg, O., Walker, D. H., Andersen, B., & Morten Magnussen. (2012). Identifying and acting on early warning signs in complex projects. Project Management Journal, 37-53.

APPENDIX

Thesis schedule
"Barriers of identifying early warning signs"

ID	WBS	Task Name	Duration	Start	Finish
0	**0**	**Master Thesis**	**203 days**	**Tue 1/14/14**	**Tue 6/10/14**
1	**1**	**Start**	**0 days**	**Tue 1/14/14**	**Tue 1/14/14**
2	**2**	**Data Gathering and literature study**	**145 days**	**Tue 1/14/14**	**Tue 4/29/14**
3	**2.1**	**Getting started**	**38 days**	**Tue 1/14/14**	**Mon 2/10/14**
4	2.1.1	Understand the assignment and requirements	7 days	Tue 1/14/14	Sun 1/19/14
5	2.1.2	narrow the given topic	7 days	Sun 1/19/14	Fri 1/24/14
6	2.1.3	Determine the preliminary types of sources to use	7 days	Fri 1/24/14	Wed 1/29/14
7	2.1.4	Do preliminary research to discover the important issues	10 days	Wed 1/29/14	Wed 2/5/14
8	2.1.5	Prepare a pre-study report	7 days	Wed 2/5/14	Mon 2/10/14
9	2.1.6	submit the prestudy report	0 days	Mon 2/10/14	Mon 2/10/14
10	**2.2**	**Reading, researching, and evaluating sources**	**107 days**	**Mon 2/10/14**	**Tue 4/29/14**
11	2.2.1	Find print and online sources	3 days	Mon 2/10/14	Wed 2/12/14
12	2.2.2	Annotate and evaluate the sources	1 day	Wed 2/12/14	Thu 2/13/14
13	2.2.3	Write summaries and paraphrases and make notes	3 days	Thu 2/13/14	Sat 2/15/14
14	2.2.4	Set up a working bibliography	1 day	Sat 2/15/14	Sun 2/16/14
15	2.2.5	Reading sources	100 days	Sat 2/15/14	Tue 4/29/14
16	**3**	**Writing**	**116 days**	**Sun 2/16/14**	**Sun 5/11/14**
17	3.1	Introduction	7 days	Sun 2/16/14	Fri 2/21/14
18	3.2	Literature Review	50 days	Fri 2/21/14	Sat 3/29/14
19	3.3	Case study	20 days	Sat 3/29/14	Sun 4/13/14
20	3.4	Analysis	14 days	Sun 4/13/14	Wed 4/23/14
21	3.5	Discussion	14 days	Wed 4/23/14	Sat 5/3/14
22	3.6	Conclusion & Recommendation	10 days	Sat 5/3/14	Sun 5/11/14
23	3.7	References	1 day	Sun 5/11/14	Sun 5/11/14
24	**4**	**Evaluating the draft and getting feedback**	**24 days**	**Sun 5/11/14**	**Thu 5/29/14**
25	4.1	Review the draft and Edit if necessary	10 days	Sun 5/11/14	Mon 5/19/14
26	4.2	Plan more research as necessary to fill any gaps	7 days	Mon 5/19/14	Sat 5/24/14
27	4.3	Get feedback from supervisor	7 days	Sat 5/24/14	Thu 5/29/14
28	**5**	**Finalizing, presenting**	**17 days**	**Thu 5/29/14**	**Tue 6/10/14**
29	5.1	Review and Quality check	7 days	Thu 5/29/14	Tue 6/3/14
30	5.2	Design the format of the paper	7 days	Tue 6/3/14	Sun 6/8/14
31	5.3	finalizing	3 days	Sun 6/8/14	Tue 6/10/14
32	5.4	Submitt the final draft	0 days	Tue 6/10/14	Tue 6/10/14
33	**6**	**Meeting with supervisors**	**181 days**	**Tue 1/14/14**	**Sun 5/25/14**

Project: Master Thesis
Date: Tue 5/6/14

| Task | Summary | Progress |
| Milestone | Project Summary | |

Page 1

ID	WBS	Task Name	Duration	Start	Finish
34	6.1	Meeting1	0 days	Tue 1/14/14	Tue 1/14/14
35	6.2	Meeting2	0 days	Mon 1/20/14	Mon 1/20/14
36	6.3	Meeting3	0 days	Mon 1/27/14	Mon 1/27/14
37	6.4	Meeting4	0 days	Sun 2/2/14	Sun 2/2/14
38	6.5	Meeting5	0 days	Sat 2/8/14	Sat 2/8/14
39	6.6	Meeting6	0 days	Fri 2/14/14	Fri 2/14/14
40	6.7	Meeting7	0 days	Fri 2/21/14	Fri 2/21/14
41	6.8	Meeting8	0 days	Thu 2/27/14	Thu 2/27/14
42	6.9	Meeting9	0 days	Wed 3/5/14	Wed 3/5/14
43	6.10	Meeting10	0 days	Tue 3/11/14	Tue 3/11/14
44	6.11	Meeting11	0 days	Tue 3/18/14	Tue 3/18/14
45	6.12	Meeting12	0 days	Mon 3/24/14	Mon 3/24/14
46	6.13	Meeting13	0 days	Sun 3/30/14	Sun 3/30/14
47	6.14	Meeting14	0 days	Sun 4/6/14	Sun 4/6/14
48	6.15	Meeting15	0 days	Fri 4/11/14	Fri 4/11/14
49	6.16	Meeting16	0 days	Fri 4/18/14	Fri 4/18/14
50	6.17	Meeting17	0 days	Thu 4/24/14	Thu 4/24/14
51	6.18	Meeting18	0 days	Wed 4/30/14	Wed 4/30/14
52	6.19	Meeting19	0 days	Wed 5/7/14	Wed 5/7/14
53	6.20	Meeting 20	0 days	Tue 5/13/14	Tue 5/13/14
54	6.21	Meeting 21	0 days	Mon 5/19/14	Mon 5/19/14
55	6.22	Meeting 22	0 days	Sun 5/25/14	Sun 5/25/14
56	7	**Finish**	**0 days**	**Tue 6/10/14**	**Tue 6/10/14**

Project: Master Thesis
Date: Tue 5/6/14

Task		Summary
Milestone	◆	Project Summary

Progress