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**Preliminary Report**

**TPK4505- Specialization Project**

**Dept. of Production and Quality Engineering**

**“SHORTFALLS OF TRADITIONAL PROJECT MANAGEMENT METHODS FOR MANAGING COMPLEX PROJECTS”**

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# Background

Although interest in project management field for dealing with complexity in projects is growing considerably, still there ishigh rate of failure in complex environment. Williams (2002) suggests that in order to manage complex project in a successful way,we need to get a comprehensive understanding of what complexity is. There are various definitions for complexity in projects which have been introduced in scientific papers. Simon (1982) defined a complex system *“One made up of a large number of parts that interact in a non-simple way. In such systems the whole is more than the sum of the parts, not in an ultimate, metaphysical sense but in the important pragmatic sense that given the properties of the parts and the laws of interaction, it is not a trivial matter to infer the properties of the whole.”*Baccarini(1996) proposedthat complexity can be defined in terms of number of elements which are contributing in projects (differentiation) and the degree of inter-relatedness between these elements (interdependency).

Along with concept of complexity, many workstried to investigate the characteristics of complex projects. Several papers identified many elements such as form of contract, differentiation of tasks, number of stakeholders, cultural differences, variety of project management tools applied and so on as elements which are involved in making complexity. Some of the elements contributing in complex projects have been recently listed in a study by Bosch-Rekveldt M. et al. (2011) which gathered all these items from several literature sources in this field.

What is obvious is that the ultimate goal of each project is success and complex projects are not exception. They need to overcome complexity in order to get satisfactory results. Therefore, the next step after understanding the characteristics of complex projects is investigating project management approaches applied in these projects and see the extent to what they can handle complexity in order to achieve project goals. But this question arises that, is it really necessary to study complex project characteristics? To answer this question, Baccarini (1996) states the importance of identifying project characteristics as a basis in decision making process. In other words, it is expressed that projects characteristics are determining appropriate management style required for project success. Since complexity is one of the aspects of projects, a conventional method which has been developed for an ordinary project will be probably inadequate for complex one. There is an unavoidable fact that by arising complexity, projects are demanding a different level of management and traditional methods for managing these kinds of projects will be no longer applicable. (Morris and Hough, 1987)

# Problem statement

There are several papers under complexity topic discussed the definition of complexity and elements are contributing to make a project complex. Some of the authors believed that complexity is the same as uncertainty (?) while some emphasizing that complexity is a completely distinctive concept from two other project characteristic-size and uncertainty (Baccarini, 1996). Since most of the papers in this field are based on literature review, they are almost good enough to present what complexity means in theoretical words. However, in practice complexity can be defined differently depending on project manager’s perception of complexity. What is lack within project management literature about complexity is that only few number of studies paid detailed attention towardcomplexity concept from practical point of view (?). Therefore, doing an empirical research in order to get practical knowledge aboutwhat complexity is and how complexity is defined by project managers in real world is one of the matters of this research.

On the other hand,some authorshave discussedthat traditional project management methods are not adequate for dealing with complexity and new tools are needed (?). What most of them agreed upon is that the first step in developing new methods for managing complexity is identifying shortfalls of traditional methods and the reasons they are not appropriate for achieving complex project objectives (?)However, there is not comprehensiveinvestigation withinpublished case studies to prove inefficiency of traditional methods used in complex area. In other words, still whether traditional methods are inadequate to tackle complexity is an issuewhich needs to be studied more. In order to answer this question, finding the main reasons of failure in complex project and prioritize them could be a good starting point.

In this study, it will be tried to answer following questions:

1. How complexity is defined both by different scientific papers (Theoretically) and by project managers (Practically) based on their perception of complexity?
2. To what extent traditional project management methods cannot overcome complexity and whether they are (not) sufficient for these kinds of projects or there is a need for new managerial approaches?

# Objectives and Scope of work:

This paper will be conducted through a comprehensive literature review and a brief empirical research on the area of complex projects. The main sources of theoretical information are scientific papers, books, published case studies and the Project Management Body Of Knowledge (PMBOK©). In order to gather relevant empirical data a simple questionnaire will be prepared and used during the surveys and interviews. It should be mentioned that due to time limitation and difficulty of finding many companies in different industries in such a little time, in this paper the interview is limited to few number of project managers in singleindustry. Therefore, the source of practical data required for this paper will be collected from one of the biggest international companies (Asker Solution) in Norway. The study focuses on specific project types (Subsea projects) and no matter how big they are.

The main objectives of this research are covering following issues:

* Identifying characteristics of complex project
* Develop and analyze a list of elements contributing to project complexity
* Briefly discuss shortfalls of traditional style of project management for managing complex projects (if there is any)

# Research approach:

In This study an inductive research strategy was chosen to answer research questions. This paper aims to conduct a theoretical research as well as a practical research to get more detailed description of project complexity. To do so, both a comprehensive literature review and a brief empirical research will be done.

First, scientific databases will be greatly searched to find relevant articles, books, journal papers and published case studies in order to investigate the elements which have been introduced by literature as those contributing in project complexity. Next, a prepared questionnaire will be used to conduct the survey among few number of project managers within subsea industry in the case company. What project managers identified as characteristics of complex project through surveys and interviews will be listed. Then, the finding from literature research and case study will be used in order to develop existing works and make comparison.

**Project Master Plan:**

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

**Work Breakdown Structure (WBS):**

Pinto, J. K., & Prescott, J. E. (1988). Variations in critical success factors over the stages in the project life cycle. *Journal of Management, 14*(1), 5–18. doi: 10.1177/014920638801400102