CHAPTER I

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Construction projects are defined as complex systems (Bertelsen 2003). According to the page (2009), the complex system has many components that are suitable for each other, which means that all components are not fully integrated into the best project performance. In recent years, recent research (Gyadu-Asiedu 2014) covers many of the technical aspects necessary for Project Performance. Studies on the relationship between project-specific organizations (Radosavljevic and Bennett 2012) indicate that the impact of the project's performance is influenced by these specific social networks (Krackhardt and Hanson 1993; Zheng, 2016).

Because of this, management principles from other industries like production, have been brought into the construction industry to make the processes more efficient. First introduction was by Koskela (1992), where he applied the lean production principles to construction projects and wrote some research papers namely "Utilization of the new creation logic to development", and "An investigation towards a generation hypothesis and its application to development". He also brought in the Transformation-Flow-Value (TFV)-theory of production into construction, which forms the basis of lean construction. This resulted in lean construction being a better approach than a traditional management approach, since it had a better theoretical background (Koskela et al. 2002).

Ballard and Howell have confirmed in their research papers, stating that construction projects tend to perform poor because of the factors like uncertainty or variability in work-flow (Ballard & Howell 1998, 2003b). They have not only identified this problem with uncertainty in workflow that happens often in a traditional project management approach, but also have developed an antidote in the name of “Last Planner System (LPS)” to reduce those uncertainties in the workflow (Ballard 1994). During his early stages of research with LPS, Ballard was questioned about the importance of planning
in construction projects, for which he answered that, the current standards for scheduling and budgeting construction projects results in a tremendous amount of waste, which needs to be managed (Ballard 1993). To align interests of various stakeholders involved in a construction project into a coherent network of commitments, Macomber et al. (2005) suggested that LPS as a process can help in generating an uninterrupted workflow and the planning process will be a set of promises given by the workers to their higher management.

According to Mossman (2013), LPS intends to improve reliability and priority of the schemes used for construction activities in the construction phase through an integrated approach. Shipping and construction, heavy civil engineering construction, highway, infrastructure projects, shipbuilding and pipeline mining (Liu & Ballard 2008, Ballard 1993, Ballard & Howell 2003b, Alarcon et al. 2008) have been for more than 20 years in various countries. People these days are looking their projects towards a Lean construction perspective, which has resulted in the increased popularity and usage of lean management practices, such as Last Planner System (Priven & Sacks 2015). At present, construction industries are tired of using the traditional way of management and have started to move towards the lean management style. After implementing those principles, several organizations have seen significant changes in their project and the interests in implementing lean principles is increasing more in the construction sector (Thomassen et al. 2003, Alarcon et al. 2011).

1.2 PROBLEM STATEMENT

A major improvement project with direct practical consequences is adopted by the Lean Construction (LC). Since the beginning of the 1990s, LC has now grown as a new way to deal with more efficient and effective management. The different melanin techniques have been implemented effectively to improve waste management, improve product planning and efficiency, improve productivity, and improve project management by promoting maximum value addition.

The research intends to solve a problem that is practically important and has the potential for theoretical benefaction, that of incompetent production management methods in construction industry. The best-known lean advancement system is Last
Planner System (LPS), which has been manifest as an effective tool for the administration of the construction methods and regular supervision of planning performance. LPS has been proved in the field and refined during the most recent decade, with many advantages in different situations around the globe. This study gives a valuable contribution towards the continuous improvement strategy for construction industry environment, stakeholders, local community and global civic as well.

1.3 RESEARCH QUESTION

The advancement in the examination question includes a procedure of looking at an issue, in a zone of interest and which may represent an issue (Lipowski, 2008). Subsequently, an inquiry is defined around it to simplify the apparent issue. Subsequently, the examination question for this investigation is as per the following:

- Will lean development tool, the LPS, be effectively applied to enhance the development forms inside India?

1.4 RESEARCH AIM

The purpose of this research is to improve and enhance the awareness and understanding the relevance of Last Planner System (LPS) in the construction industry.

1.5 OBJECTIVES OF STUDY

To conclude the research inquiry and to accomplish the examination objective, the accompanying investigation aims are as following.

- Investigate and critically analyze the planning, scheduling, and execution of a construction project at the site.
- To investigate and find the gap between the traditional planning practice and lean construction practice.
- To optimize cost and identify the barriers of implementing the Last Planner System in four different constructions projects.
- To test and validate for the effective implementation of Last Planner System in the construction industry to mitigate the barriers to LPS identified.
1.6 RESEARCH SCOPE

Even though construction industry is very vast, the scope of this investigation is restricted in the subsequent ways:

- To local primitive construction organization managing medium and large-scale projects in India.
- To the construction phase of the project with continuous monitoring on planning, organizing, directing, controlling and administration forms of the project.
- To actualize the LPS in four distinctive construction projects.
- To the Last Planner System (LPS) which is only one of Lean Construction’s tools.
- LPS, one of the Lean Construction Tools.
- To build up a system based on the research literature and the recommendations from the four case studies.

1.7. ORGANIZATION OF THESIS

The Study comprises of ten chapters. The organization of study (and investigation) is demonstrated in Figure 1.1.

Chapter I provide an outline of the investigation. It starts through the base of the study and explains the problem statement, research questions, and purposes.

Chapter II presents a brief introduction to the advancement of managing thoughts of lean building and a general overview of the last planner system.

Chapter III Explains study of the literature of Lean Construction and Last Planner System and shows evaluations present in this study. It evaluates tools and techniques that might be used through the improvement process while concentrating on the LPS.

Chapter IV Presents the idea of research system & explains the utilization of Design Science Research (DSR) strategies. Activity examines round is explained, & information accumulation system depends on the longitudinal contextual analyses is
framed. The examination and assessment of the information are explained about to help both the usage of LPS and the improvement of an execution structure.

Chapter V explained the primary case investigation where the last organizer framework is executed inside a residential building project by utilizing an activity explore approach. Various strategies for information accumulation including direct and indirect perceptions, meetings and survey were utilized, and the discoveries are examined.

Chapter VI Studied the second case study stated in this thesis. The investigation actions within these sections comprised interviews, direct and indirect observations, interviews and questionnaires.

Chapter VII Presents a third case analysis where the LPS is executed inside an ongoing business building project announced in this study. The exploration exercises inside these sections included meetings, direct and indirect perceptions, meetings and questionnaires.

Chapter VIII presents the fourth case analysis where the LPS is executed inside a progressing duplex building project detailed in this study. The examination exercises inside these sections included meetings, direct and indirect perceptions, meetings and questionnaires.

Chapter IX evaluates the results of planning processes regarding the cost and duration of the four construction projects.

Chapter X; the last section, Explains the conclusion of the investigation. It finishes the thesis by provided the answers to the investigation inquiries. Consequently, the section has featured the bits of help studied existing information and practice in development project administration. It additionally follows the constraints of the exploration and furthermore proposes some conceivable suggestions for development industry professionals and a few proposals for future research.
Figure 1.1: Organization of the Thesis / Study Method