An Investigation of the Development of Shared Leadership on the Six Sigma Project Life Cycle

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ABSTRACT
The purpose of this study is to map out the relationship between shared leadership (SL) and Six Sigma (6S) project lifecycle. More specifically, the impact of SL and team members’ perceived challenges in each of the five phases of the DMAIC (define, measure, analyze, improve, and control) 6S methodology is studied. Furthermore, general organizational issues that affect both SL development and the 6S model are identified. The results demonstrate that several factors, namely, change management, communication, phase deliverables, coaching style, and decision-making methods, affect usage performance of SL throughout the phases. This study helps managers to look at the 6S projects from an SL perspective and shows how to manage the 6S project lifecycle more efficiently.

KEYWORDS
Continuous Improvement, Project Management, Shared Leadership, Six Sigma, Social Network Analysis

INTRODUCTION
In today’s markets, organizations require project completion in team environments because it enables the organization to quickly adapt to various requirements and demands of an industry. For a team to work effectively, it is crucial to identify a leadership model that enables members to make rational, timely, and effective decisions. SL, a leadership style that broadly distributes leadership responsibility across team members, received significant attention recently because the traditional “top-down” leadership approach, is not as effective as it used to be (Mayo, Meidl, & Pastor, 2012; Zhu et al., 2018). In recent years, SL has been researched in academic and industrial circles. This model provides team members and organizations with numerous benefits, including increased efficiency and effectiveness, the ability to complete projects on time, and the ability to make effective and logical decisions (Carson, Tesluk, & Marrone, 2007).

Today’s projects are more complex and uncertain than ever. Traditional management techniques are often inadequate, so many organizations turned to 6S to adapt to change and to develop innovative solutions and skills in knowledge workers and project managers (Mayo et al., 2012; Galli et al.,

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2017). Indeed, 6S help organizations to distribute responsibility to teams, which aids teams in being proactive with changing demands (Mayo et al., 2012).

The relationship between SL and 6S methodologies is not explored in literature, especially in terms of the impact that internal and external team conditions have on SL in 6S environments (Sin et al., 2015). Moreover, research does not map the development of SL during each phase of the 6S “define, measure, analyze, improve, and control” (DMAIC) methodology (Koschzec, 2009).

This work performed a longitudinal concurrent mixed-methods study with social network theory/analysis to map SL during each DMAIC phase in the healthcare context. More precisely, this study tries to evaluate if, in the context of healthcare 6S teams, there exists a relationship between SL and each DMAIC phase.

Healthcare has been selected as the context of analysis because healthcare systems often consist of numerous professional groups, departments, and specialties with numerous interactions, goals, and constraints between them. Such systems have been proved not to respond well to the traditional authoritarian leadership (Chen & Silverthorne, 2005; Garman et al., 2010). Conversely, SL is a preferable model within the healthcare setting, as it encourages shared governance, continuous workplace learning, and the development of effective working relationships (Henry & Gilkey, 1999).

The key metrics used in this study to measure SL in each step of the DMAIC process included:

- level of centralization of interactions among team members
- the perceived level of influence that each member has on each other

There is an underwhelming amount of literature on using these variables, their concepts, and models in project management and operations management. However, the current literature does not study the relationships between 6S, SL, and project management through the lifecycle of a project. The lack of information on this subject has left a gap in research, so this could be confusing and risky for researchers studying these variables. As a result, the study will clarify any confusion with this subject. The goal of this study is, therefore, to further develop literature about the efficiency of these variables, their concepts, and models. Identifying the influences and relationships of SL development in 6S environments better equips the healthcare system to evaluate a team’s degree of SL at any phase. If the team SL is not at the proper level, this study supports methods that healthcare can utilize to alleviate the situation. Thus, this study enables management to more effectively guide a team, thereby ensuring optimal SL that drives efficiency. As a result, this study significantly contributes to the profession, as well. There are many benefits, as seen in the findings, by utilizing these variables, their concepts, and models. The Industrial Engineering (IE) area, in particular, gains contributions because this study accelerates the work process and helps to organize and maintain the system with the latest technology. In addition, engineers will save time, materials, money, hours of labor, energy, machine time, and other resources that would delay productivity. Overall, there are many new ideas for organizations and practitioners to benefit in many ways.

The paper is organized into 6 sections. Section 2 performs an existing research review. Section 3 outlines the methodology developed to execute the study, while section 4 details research findings relating to the methodology. Section 5 discusses the results and analyzes the findings as they relate to the paper’s objective. Lastly, section 6 presents conclusions, contributions, research limitations, and suggestions for future research. Appendix A outlines the leadership networks developed for each team explored in this study.

**LITERATURE REVIEW**

Leadership is defined as “a process whereby an individual influences a group of individuals to achieve a common goal.” Leadership requires “influence; leadership is a process; leadership involves goal
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[www.igi-global.com/article/project-commitment-context-information-security/55792?camid=4v1a](www.igi-global.com/article/project-commitment-context-information-security/55792?camid=4v1a)

G-Profile: A Hybrid Solution for Extended Identity Management in the Field of Personalized Service Provision
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