



Successful lean implementation: Organizational culture and soft lean practices



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ABSTRACT

Lean management (LM) is a managerial approach for improving processes based on a complex system of interrelated socio-technical practices. Recently, debate has centered on the role of organizational culture (OC) in LM. This paper aims to contribute to this debate by examining whether plants that successfully implement LM are characterized by a specific OC profile and extensively adopt soft LM practices. Data were analyzed from the High Performance Manufacturing (HPM) project dataset using a multi-group approach. The results revealed that a specific OC profile characterizes successful lean plants; in particular, when compared to unsuccessful lean plants, they show a higher institutional collectivism, future orientation, a humane orientation, and a lower level of assertiveness. While a high level of institutional collectivism, future orientation, and humane orientation are common features of high performers in general, a low level of assertiveness is typical only of successful lean plants. In addition, successful lean plants use soft LM practices more extensively than unsuccessful lean plants (i.e., lean practices concerning people and relations, such as small group problem solving, employees' training to perform multiple tasks, supplier partnerships, customer involvement, and continuous improvement), while they do not differ significantly in terms of hard LM practices (i.e., lean technical and analytical tools). For managers, the results indicate that, in order to implement LM successfully, it is fundamental to go beyond LM technicalities by adopting soft practices and nurturing the development of an appropriate OC profile.

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1. Introduction

Lean management (LM) is a powerful managerial approach widely recognized as improving the overall operational performance of a company (Shah and Ward, 2003; Liker, 2004). Driven by the success achieved by Toyota and several other lean organizations worldwide, a growing number of firms have adopted LM practices to satisfy market needs, reduce costs, and gain an edge over competitors. However, in spite of the LM projects, several companies failed to achieve a superior performance through LM. Operations management (OM) scholars discussed several causes of this lack of success, namely, the complexity of LM implementation (Lander and Liker, 2007), the existence of contingency factors limiting its positive impact (Bortolotti et al., 2013), the focus on Just-In-Time (JIT) practices without adequate consideration of other important OM dimensions (Matsui, 2007; Agarwal et al., 2013),

and the lack of attention paid to human resource management (HRM) (Bateman, 2005; Agarwal et al., 2013).

This work focuses on two critical success factors for lean implementation: the organizational culture (OC) and the adoption of soft practices. They represent an interesting area of research for several reasons. Some authors have pointed to OC as the cause of the poor effectiveness of LM (Liker, 2004; Sim and Rogers, 2009; Atkinson, 2010; Liker and Rother, 2011). Based on this assumption, the relation between OC and some bundles of LM practices was empirically studied, e.g., total quality management (Prajogo and McDermott, 2005; Naor et al., 2008; Baird et al., 2011), and JIT (Yasin et al., 2003). However, these contributions are fragmented and show significant limitations. The first limitation is linked to the narrow set of OC dimensions, LM practices, and performance considered. In-depth understanding of the role of OC in successfully implementing LM requires a comprehensive view of the phenomenon, which should be based on a holistic model comprising the various dimensions of OC, LM, and performance. In addition, most researchers studied OC as an antecedent of LM practices; however, other scholars (e.g., Narasimhan et al., 2012; Wincel and Kull, 2013) have advanced arguments for more complex relationships between OC and LM practices, thus making an investigation that uses a

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configurational approach more appropriate (Flynn et al., 2010). Moreover, previous contributions providing a more comprehensive analysis of the phenomenon (e.g., Spear, 1999; Liker, 2004; Rother, 2009) generally focused on the Toyota case history, without leveraging well-established OC models.

A further important issue in LM implementation is the adoption of soft practices. Lean management is generally considered as an interrelated system of soft and hard practices (Shah and Ward, 2007), and in line with this definition and several previous studies (e.g., Prajogo and McDermott, 2005; Rahman and Bullock, 2005; Fotopoulos and Psomas, 2009; Calvo-Mora et al., 2013), in this research LM practices are referred to as soft and hard. Soft practices concern people and relations, while hard practices refer to LM technical and analytical tools. Soft practices are crucial for achieving superior performance through LM (Samson and Terziowski, 1999; Matsui, 2007) and sustaining the performance in the long term (Hines et al., 2004), even though organizations sometimes do not give equal importance to soft and hard tools, by focusing their efforts on lean technical tools only (Liker and Rother, 2011).

The aim of this study is to investigate whether lean plants that successfully implement LM have a specific OC and adopt soft LM practices more extensively compared to lean plants that do not implement LM successfully. In this research, we identified lean plants based on the managers' perceptions of the overall level of lean application in the plant compared to competitors. We chose this approach, rather than classifying lean plants based on the lean techniques implemented, because it allows us to understand whether plants with a high level of lean adoption according to managers' perceptions really implement soft and hard practices or whether a distinction among plants, which managers judge to be lean, can be made. In fact, although authors agree that lean is a complex system of soft and hard practices (Shah and Ward, 2007), LM projects within companies and managers' perceptions of what implementing lean means can differ significantly. Although many managers understand the importance of implementing hard lean techniques, not all emphasize implementing soft practices (Liker, 2004; Liker and Rother, 2011). To assess LM success and thus distinguish between successful and unsuccessful lean plants (labeled high- and low-performance lean plants), we considered plants' operational performance in terms of cost, quality, delivery, and flexibility compared to their competitors. This choice is in line with the widespread view that lean improves different performance dimensions at the same time, as the trade-offs that usually characterize a plant's competitive capabilities can be overcome (Shah and Ward, 2003). However, high performance per se is not synonymous with LM success. Therefore, in this research we used several control variables to significantly reduce the risk of endogeneity (i.e., the risk that high performance was achieved without lean). We preferred to avoid using perceptual or quantitative measures of improvements obtained through LM as a proxy for LM success, because these measures can be difficult to compare across plants.

With this study, we intend to contribute in several ways to the debate on the importance of OC in implementing LM. First, compared to previous studies, the present work aims to develop a more comprehensive understanding of the phenomenon by considering various dimensions of OC, LM, and performance, rather than focusing on a specific set of variables, and by relying on a well-established OC model, the Global Leadership and Organizational Behavior Effectiveness (GLOBE) model (House et al., 2004). In addition, by investigating differences in OC dimensions between successful and unsuccessful lean plants, we can identify whether and which OC dimensions make a difference, instead of simply evaluating which OC dimensions act as enablers/antecedents of LM. Finally, by investigating differences in LM soft practices, we intend to further analyze the role of these practices in implementing LM successfully.

The paper is organized as follows. First, we review the existing literature on OC, LM, and the relationship between LM and performance and develop research hypotheses. Section 2 presents the data collection, research sample, variables and scales used, and analyses run. This is followed by the discussion of the results found, research limitations and opportunities, and the conclusion.

2. Literature review

2.1. Organizational culture

The advent of culture in organizational theory discipline is quite recent and generally ascribed to Pettigrew (1979)'s seminal article, published in the *Administrative Science Quarterly* (Hofstede et al., 1990). Although this study and other early theoretical contributors such as Baker (1980) and Hofstede et al. (1990) played a decisive role in drawing scholars' attention to OC, practitioners' interest focused mainly on Ouchi's (1981), Peters and Waterman's (1982), and Deal and Kennedy's (1982) books. As a whole, these contributions sparked a culture revolution that until today has resulted in numerous organizational studies on the role of culture within organizations.

Various conceptualizations of OC have been provided by scholars over the years (Detert et al., 2000; Jung et al., 2009). Although a widely accepted view is still lacking in the literature, several similarities can be found among the different definitions provided (Denison et al., 2012). In general, OC is defined as a "combination of artifacts (also called practices, expressive symbols, or forms), values and beliefs, and underlying assumptions that organizational members share about appropriate behavior" (Detert et al., 2000, page 851).

Based on an in-depth literature review of the instruments used for exploring and assessing OC, Jung et al. (2009) concluded that numerous tools have identified more than 100 dimensions associated with OC. The measurement models developed by Quinn and Rohrbaugh (1983), Schein (1984), Hofstede et al. (1990), O'Reilly et al. (1991), and House et al. (2004) are some of the most renowned and frequently used. In this study, we adopted the GLOBE model of OC (House et al., 2004). GLOBE is a research project developed by a group of about 150 social scientists and management scholars worldwide to define a culture measurement model and analyze the impact of culture on leadership, organizational processes, and performance (House et al., 2004). We chose this tool for several reasons. First, the GLOBE project represents a milestone in operationalizing the OC concept. Based on an extensive literature review, the GLOBE project proposes and empirically tests, through advanced modeling techniques, a comprehensive culture measurement model including several dimensions, each measured with a multi-item scale. Compared to other studies, a further relevant and recognized contribution of the GLOBE model is that it proves cultural dimensions are homologous across different levels of analysis (i.e., national and organizational levels), and thus are appropriate for studying national culture (NC) and OC. This might facilitate theory building on this issue, by making different studies more comparable. Second, we chose the GLOBE model because of the affinity between House's et al. (2004) objectives and the aims of the present study. According to Jung et al. (2009), this fundamental criterion should guide the choice of a measurement model. In fact, one of the main aims of the GLOBE conceptualization of OC was analyzing how culture affects organizational practices and their effectiveness (House et al., 2004). Finally, international collaboration in developing an OC instrument can facilitate its transferability across different settings (Jung et al., 2009). Given that our study uses data collected from plants in different contexts (Section 3.1), we think that using a transferable instrument, such as the GLOBE model, is especially relevant.

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