Exploring communication practices in lean production☆

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A R T I C L E   I N F O

A B S T R A C T

This study examines the daily work practices at an organization that successfully incorporates lean production practices into the organizational culture, and reveals a pattern of practices used by managers in their daily work. This pattern of communication practices is consistent across the organization's manufacturing sites. Subsequent examination of archival qualitative data confirms the existence of the identified pattern of practices. An essential part of lean production is that participants are all involved in improvement activities. The collaborative nature of these activities highlights the importance of communication practices as a lubricant between managers and workers. The communication practices identified in this study appear consistently in strong lean production environments, while the opposite practices appear in weak lean production and traditional US-style environments.

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1. Introduction

With intense competition as the new norm, productivity improvement activities are extremely important. Lean production (LP) is an example of a business system innovation intended to increase productivity. This study examines specific management communication practices that are present in LP, and conversely, specific practices that are absent from LP, but that are present in traditional non-LP contexts.

LP consists largely of improvement work and is dependent on a set of collective activities (e.g., Quality Circles, and Just-In-Time) to benefit the organization. Transferring new knowledge, such as LP, is a challenging task, and increased competition makes mastering that challenge important (Lindlöf, Söderberg, and Persson, 2013). According to Daniel, Myers, and Dixon (2012), adoption of innovations involves making them part of everyday routines. Mol and Birkinshaw (2009) argue for further research on adopting management innovations; while Liukkonen (1992) shows that high work productivity requires high engagement from workers and managers alike.

In the LP context, Worley and Doolen (2006) argue that management communication and support play an important role in LP implementation. Even though management communication practices are

part of the innovations, limited research focuses on the granular level of communication practices.

To address this lack of research, this study develops an understanding of management communication practices employed in the LP context.

2. Literature review

This section describes aspects of LP, reviews communication issues related to innovations such as LP, and proposes using the lens of practice theory.

2.1. Management innovation—lean production

One recent innovation is LP (Dahlgaard and Dahlgaard-Park, 2006; Fullerton, Kennedy, and Widener, 2014; Holweg, 2007; Tillema and van der Steen, 2015). LP began based on observations of the Toyota Production System (Womack, Jones, and Roos, 1990). LP differs from traditional notions of management by the degree to which lower-level employees are required to add value to the process (Liker, 2004). LP also contains a number of conflicting goals and practices that generate significant tension, such as "increase customer value" and "reduce waste." This conflict creates significant worker–manager interaction.

Despite examining LP as a technical system, many studies reveal that interpersonal variables and interactions affect the success of LP. In LP research dating back as early as Flynn, Sakakibara, & Schroeder (1995) and Flynn, Schroeder, & Sakakibara (1995), studies indicate that combinations of operations management and human resource management practices influence LP. Bateman (2005) notes that LP-driven improvements decrease without social enablers, while Bateman and

Rich (2003) and Buchanan et al. (2005) note that gains from LP diminish over time without significant efforts in the social processes. Worley and Doolen (2006) and Worley and Doolen (2015) find that management support and communication are crucial in LP adoption. Storch and Lim (1999) and Jenner (1998) argue that LP requires clear communication, especially between managers and employees. Jenner (1998) concludes that such clear communication requires management communication styles that enact openness and participation. Goodridge, Westhorp, Rotter, Dobson, and Bath (2015) argue that adoption of LP requires a new style of leadership and communication practice. Leaders of the organization must learn behaviors that were not valued in the past (Mann, 2005, 2009).

In research about innovations, the knowledge management (KM) literature examines the role of knowledge-oriented leadership to achieve innovation (Chen and Huang, 2009; Darroch and McNaughton, 2002; Donate and Sanchez de Pablo, 2015). In line with this strand of research, Mol and Birkinshaw (2009) find positive effects of the introduction of new management practices on firm performance, which is consistent with reports on LP by Fullerton et al. (2014); Holweg (2007), and Tillema and van der Steen (2015). Additionally, Donate and Sanchez de Pablo (2015) emphasize that enhanced communication leads to higher participation, increased efficiency in problem solving, better marketing practices, and improved success. Gomez and Ranft (2003) find that communication openness is important for information sharing.

Both the LP and KM literatures indicate that communication is important in change-oriented situations, but previous studies do not examine the content of management communication at a granular level.

2.2. Practice theory

When using practice theory, researchers focus on the routine and repeatable actions of daily life (see Reckwitz, 2002; Schatzki, 1996; Schatzki, Knorr-Cetina, and von Savigny, 2001; Warde, 2005). According to Schatzki et al. (2001), practices are the source and carrier of meaning. For example, practices at work include how to talk at different times, how to respond to others, how to walk, how to make gestures, etc. (compare with *habitus*, Bourdieu, 1977). Practices are the product of sophisticated and complex social interactions.

An example of an LP practice is the Quality Circle (QC), which is a core part of LP. This was one of the first business tools observed in Japan and imported to the US; however, the importation did not include its context. QCs appear in the management science literature as far back as the 1970s. In their idealized form, the leader coordinates, while the group, as a collective, conducts the analysis of the quality problem. For the most part, QCs have not been successful in the west.

The description of QCs in previous studies did not include the communications practices; perhaps this omission was due to language issues, but more likely, it was because the people describing QCs saw business methods as just business methods, that is, detached tools used instrumentally. Growing up in the Taylorist tradition of separating thinking from doing (Taylor, 1911) leads to the belief that "doing" is a non-reflective and non-social practice.

This study focusses on identifying the granular practices in LP to develop an understanding of the LP's unique practices.

3. Research method

This paper uses interviews to identify factors that operate in LP and then tests the findings against archival data using a deductive, theory-testing analysis.

Since the communications practices have yet to be articulated, qualitative data provides access to the unfiltered responses of participants. Interviews with 74 participants from six different Scania plants provide the initial data. The interviews ranged from 45 min to over 2 h. The interviewees described both what they do and the problems they encountered at work.

The concept of practices emerged from the empirical data as an important factor through a process of theory elaboration (Eisenhardt, 1989; Graebner, 2009; Van de Ven, 1989; Vaughan, 1992; Weick, 1989). This inductive process reveals a set of three pervasive management communications practices (which are described in the following section).

Qualitative methods are desired for deductive theory testing when "few or no quantitative measures exist" (Bitektine, 2009), or for phenomena that have not been well described (Yin, 2003). In deductive qualitative research, the analytical method is pattern-matching (Campbell, 1966; Hak and Dul, 2010a,b; Yin, 2003). When analyzing the archival data sets, the researcher must search for the set of communication practices described in the inductive results section.

The archival sources include five ethnographies and two academic books. The ethnographies are as follows:

- Ryoji Ihara (2003 Japanese/2007 English). A Toyota assembly factory in Japan;
- Darius Mehri (2005, 2006). A Toyota group (Hino) design organization in Japan;
- Satoshi Kamata (1973 Japanese, 1982 English). A Toyota plant in Japan;
- Laurie Graham (1995). A Subaru–Isuzu factory in the US;
- Solange De Santis (1999). A General Motors (GM) plant in Canada; and
- Ben Hamper (1991). Ford factories in the USA.

The academic books are as follows:

- Rinehart, Huxley, and Robertson (1997). The GM–Suzuki plant in Canada; and
- Fucini and Fucini (1990). The Mazda plant in the US.

Using this archival data greatly reduces many forms of bias in data gathering and interpretation, which increases the robustness of the findings. This type of qualitative archival data is more robust to threats to validity (Maxwell, 2004; cf. Campbell, 1966; Cook and Campbell, 1979). One lacuna is that the absence of a practice in the data is not evidence of absence, but may be an artifact of the data gathering and analysis method in the original study. Therefore, even though confirmation or disconfirmation is very strong for an identified practice, in the case of a non-observed practice, the archival data provides no insight. Although archival data does not speak to some aspects of evidence, the robustness of findings for matched patterns is very strong.

4. Data analysis and results

The analysis reports on the following three communications practices found at the case site: *blending*, *positive engagement*, and *soft words*. Although observations at Scania reveal only these positive practices, development of the opposite practices allows testing of a complete theoretical pattern of practices. The complete axes appear in Table 1.

Blending is a communication practice where the manager attempts to become part of the workers' work situation, rather than being an outside actor. The prevalence of communication that was neither directive nor used outside information or power indicates a pattern of blending at Scania. Evidence includes exclusive use of phrases containing the word "we," rather than "you" or "your work group." By extension, the

Table 1
Management communication practice axes observed and derived.

Original practice (observed)	Opposite practice (derived)
Blending	Separation
Positive engagement	Negative engagement
Soft words	Hard words