



# Creative tension in a lean work environment: Implications for logistics firms and workers<sup>☆</sup>

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## ABSTRACT

In this paper we use the concept of “creative tension” from the lean production philosophy to reconcile the need for added value and cost control in logistics. Due to thin profit margins, a managerial orientation on logistics employees as a source of costs rather than a source of added value prevails. However, to foster employee well-being and organizational effectiveness, a fit is needed between the job characteristics influenced by the need for process control, and workers’ need for autonomy and creativity in their jobs. The fit hypothesis was tested across two logistics service providers. Results from both studies indicated that challenging and enabling workers to creatively use their talents and skills in daily work will most likely lead to positive results.

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## 1. Introduction

Logistics is a highly competitive industry and logistic service providers (LSPs) generally tend to get small margins on their activities. When market conditions do not allow for an increase in revenues, a strong focus on costs prevails (Johnson et al., 1999). Since the cost of labor is the major cost component of logistics, a managerial perspective has developed to see labor as a source of costs that needs to be disciplined and controlled, rather than a source of added value that needs to be nourished. As a consequence, work pressure is high, pay is relatively low, and the motivating potential of jobs may suffer. The lean production (LP) philosophy to “do more with less” has been embraced as a managerial panacea for cost control, and has accordingly been criticized in the scientific literature for its purported effects on workers’ well-being. In this paper we argue that the concept of “creative tension” (Womack et al., 1990, pp. 102) from the lean production philosophy may provide a way to reconcile the need for cost control and worker well-being and satisfaction in a lean production environment.

The purpose of this paper is to counterbalance the claim that lean jobs cannot be intrinsically motivating (de Treville and Antonakis, 2006) by investigating whether lean can actually

overcome the misfit between workers’ growth need expectations and job characteristics, thereby enhancing employees’ personal and organizational outcomes. Section 2 discusses the market perspective of LSPs and how this affects the work environment of logistics employees. In Section 3 we discuss the perspective on the effects of lean production on employees that has evolved in the literature. In addition, we offer a new lens to observe the effects of lean on personal and organizational outcomes. In Section 4, we present empirical data obtained from two Dutch LSPs, suggesting that lean practices can actually help to create a fit between job characteristics, worker demands, and company requirements.

## 2. Market requirements and worker needs in logistics

Logistics creates value by bridging gaps in time, place, and quantity. This is accomplished by means of storage, transport, and the handling of goods in inbound- and outbound processes. LSPs perform these activities on behalf of shipping firms (Stefansson, 2006), and they work within the framework of the shippers’ buyer–supplier relationships and the outsourcing contract, thereby facing the immediate consequences of the shipper’s last minute crises. LSPs also represent shippers in their contacts with customers, and any mistake made by the LSP is a mistake made by the shipper in the eye of the buyer. As a consequence, LSPs are required to maintain a high service level, while facing a number of uncertainties and constraints.

Although logistics is a core process, shippers are able to negotiate low prices. Hence, LSPs face small margins on their activities, as shown in Table 1. In essence this is because LSPs are

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**Table 1**  
Profit margins realized by European logistics firms (Source: Amadeus database).

%	2006 (N=119)	2007 (N=108)	2008 (N=41)
0	-29.53	-69.16	-21.53
10	-2.03	-2.54	-3.60
20	-.01	-.65	.23
30	.73	.80	1.51
40	1.43	1.62	1.84
50	2.08	2.65	2.43
60	2.95	3.40	2.97
70	4.04	4.29	4.20
80	5.96	7.03	6.49
90	10.62	14.07	12.68
100	46.08	51.73	48.23
Average	3.37	3.64	4.29
Std. dev.	8.14	12.59	10.83
Median	2.08	2.65	2.43

'captive suppliers' (Bensaou, 1999), as they have to invest substantially to adapt to their customer's needs. The shippers will and need not adapt, because mostly they can choose between multiple LSPs. In summary, LSPs carry out shippers' primary processes at a high service level, but at the lowest price possible.

Consequently, they cannot make a trade-off between low cost and flexible service, but have to pursue both simultaneously to satisfy and retain their clients. In the cost structure labor costs are dominant. In the Netherlands, hourly wages for people employed by LSPs are lower than in comparable jobs. These differences in labor costs enable LSPs to outperform internal logistics departments even if they would be less efficient. However, it is argued that an LSP's excessive emphasis on cutting labor costs to the bare minimum may have repercussions for the shipper, because it may cause labor problems that can result in operational risks, such as poor quality, low productivity, unfilled or incomplete orders, and high turnover, that may eventually threaten the global supply chain's performance. Finally, reputational risks for the shipper may occur (Jiang et al., 2009). Thus, due to an excessive emphasis on cost cutting, both the shipper and the LSP may find themselves caught up in a vicious circle.

Given these developments in market conditions and human resource management, it should not come as a surprise that turnover rates for LSPs are very high, not only for truckers but also for warehouse workers. This problem has been recognized by researchers in the area of logistics, who have taken up the challenge to investigate the relationship between logistics workers and their employing organizations. Autry and Daugherty (2003) report that at least 20% and in some cases as much as 75% of warehouse workers will leave their job within one year after they were hired, while the costs of replacing lost employees are "excessively high" (pp. 184). Using a sample of employees from seven different warehouses and distribution centers, they studied the relationship between person-organization fit, satisfaction, and ways to cope with unpleasant feelings in the work environment. Results indicated that employees who have realistic expectations about their company and about supervisor characteristics are more likely to be satisfied with their employment. More satisfied employees exhibit behavior that benefits themselves and the company, whereas dissatisfied employees attempt to escape the situation by leaving the company or, worse, by behaving counterproductively. In short, person-organization fit is positive for both the employee and the company. In a study aimed at identifying factors that account for warehouse employee turnover, Min (2007) found that job security was one of the most important factors for retaining employees, whereas monetary incentives hardly influenced turnover. He also found that the larger the

company, the higher the turnover was because of lack of personal attention.

### 3. Lean management and worker outcomes

In the previous section we have described a managerial dilemma faced by many firms in logistics. On the one hand, margins under high pressure invite managers to develop a myopic obsession with cost cutting, to improve or at least maintain company results. On the other hand, empirical studies indicate that these practices may have a negative impact on the work experience and work attitude of the labor force and that this may be one of the reasons why turnover in logistics is excessively high. Thus, excessive cost cutting drives good people away and replacing them is very expensive, which has a negative impact on company results. This invites another round of cost cutting, exacerbating the problem even further. A classical example of a vicious circle.

In the present study we argue that for logistic service providers, a way to maintain or even improve their service level through strict process control in an attractive work environment is to adopt an image of workers as a source of added value, rather than of costs. This requires a managerial reorientation on human resources as a decisive factor in a customer-orientated enterprise (Bullinger et al., 1995). It also reminds one of a shift from McGregor's theory X, saying that the average worker has an inherent dislike of work, prefers to avoid responsibility, and needs to be directed and controlled, to theory Y saying that the ordinary worker does not inherently dislike work, will exercise self-direction and self-control, and learns to not only accept but also seek responsibility (McGregor, 1960). This shift will help logistics firms break the vicious circle and we claim that the lean production (LP) philosophy (in short "lean") helps to accomplish just that. It would also be in line with the concept of organizational learning, assigning a key role in the learning process to employee development in a supportive organizational culture (Antonacopoulou, 1999; Pool, 2000).

#### 3.1. The lean concept

In the literature various definitions of lean are given. Our point of departure is the observation made by Niepce and Molleman (1998) that on the one hand the lack of an agreed-upon definition implies that we do not know exactly what LP is in a theoretical sense, while on the other hand the discussion also appears to have an ideological flavor. Advocates of lean production claim positive results while opponents denounce LP as a regime of standardized work performed in short cycles that gives the system a Taylorist image (Niepce and Molleman, 1998, pp. 272). In the present article we merely assume that workers are generally inclined to make positive contributions to improvements and to the removal of impediments for a job well done (Hodson and Roscigno, 2004).

The term "lean" was first coined by Krafcik (1988), who juxtaposed lean and buffered production systems (pp. 44–45). Buffered systems were characterized by high inventory levels buffering against unexpected quality problems, assembly lines with built-in buffers to keep production moving in case equipment broke down, utility workers to buffer unexpected periods of high absenteeism, huge repair areas to buffer against poor assembly line quality, and so on. On the other hand, lean systems were characterized by the absence of these buffers. However, although lean is associated with zero inventory to increase the visibility of product flows and optimize the utilization of capacity, de Haan and Yamamoto (1999) and de Haan et al. (2001) have shown that in everyday practice this principle cannot be fully effectuated.

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