



# Could lean production job design be intrinsically motivating? Contextual, configurational, and levels-of-analysis issues

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## Abstract

Are lean production jobs intrinsically motivating? More than 20 years after the arrival of lean production, this question remains unresolved. Generally accepted models of job design such as the Job Characteristics Model (JCM, (Hackman, J.R., Oldham, G.R. 1976. Motivation through the design of work: test of a theory. *Organizational Behavior and Human Performance* 16, 250–279.)) cannot explain the occurrence of worker intrinsic motivation in the context of lean production. In this paper, we extend the JCM to the lean production context to explain the theoretical relationship between job characteristics and motivational outcomes in lean production. We suggest that a configuration of lean production practices is more important for worker intrinsic motivation than are independent main effects, and that motivation may be limited by excessive leanness. We conclude that lean production job design may engender worker intrinsic motivation; however, there are likely to be substantial differences in intrinsic motivation under differing lean production configurations.

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## 1. Introduction

Are jobs in lean production settings intrinsically motivating? More than 20 years after the arrival of lean production in the Western world, this question remains unresolved. It is also highly controversial. The extant literature concerning job design and motivation in lean production is fragmented, with conflicting claims emanating from operations management researchers, sociologists, and psychologists.

On one hand, lean production proponents suggest that workers in lean production settings appear to display what could be characterized as intrinsically motivated behavior, appearing to be internally driven and more productive than in traditional assembly line settings. This behavior has been linked to improved manufacturing outcomes and competitiveness (Adler, 1993a; Hayes et al., 1988; Hopp and Spearman, 1996; Monden, 1983; Schonberger, 1982; Suzaki, 1987; Womack et al., 1990).

On the other hand, opponents of lean production argue that it places workers in highly limiting and alienating conditions; “motivation” in the best case is

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external, with workers simply complying with, and often resisting, restrictive practices that create dependent and deskilled workers (e.g., Babson, 1993; Berggren, 1992; Fucini and Fucini, 1990; Graham, 1995; Kamata, 1982; Milkman, 1997; Post and Slaughter, 2000; Rinehart et al., 1997).

With few exceptions (e.g., Brown and Mitchell, 1991; Jackson and Mullarkey, 2000), evidence from both sides is largely anecdotal, and any conclusions that can be drawn are speculative. Two decades of discussion have yielded little progress. We attribute this impasse to the lack of theoretical job-design models suitable for explaining intrinsic motivation in the context of lean production. Three key areas need to be addressed if theory and empirical work are to advance in this area of motivation: (a) the role of contextual factors, (b) the configural or synergistic effects of work practices, and (c) levels of analysis (i.e., individual and organizational levels) implications at which effects are evident and their cross-level consequences. We briefly introduce the three areas below.

First, to explain possible antecedents of intrinsic worker motivation in lean production settings, it is necessary to root job design models in the context in which motivation occurs (Parker et al., 2001). General job design intrinsic motivation models traditionally have been context-free, assuming that intrinsic motivation can be predicted in any type of context (Blair and Hunt, 1986; Parker et al., 2001). The lean production context, however, demonstrates the limits of context-free models. For example, the Job Characteristics Model (JCM, Hackman and Oldham, 1975, 1976, 1980) – which we will use as a platform for developing a more complete model of work motivation – specifies that autonomy, defined as freedom concerning work procedures and timing,<sup>1</sup> is a sine qua non for the emergence of intrinsically motivating jobs. Lean production, though, is characterized by process standardization, with interdependencies resulting from lean production's focus on flow, teamwork, and short cycle times. Standardized processes reduce worker autonomy

almost completely. According to the JCM, lean production jobs simply cannot be intrinsically motivating. As we will argue in this paper, however, intrinsic motivation is theoretically possible in lean production settings, but the type of explicative model must be concordant with the contextual forces that act on the phenomenon observed, including the choice of job characteristics, outcomes, and moderators.

Second, many motivational models focus on the effects of individual practices on workers, ignoring the synergistic effect of various independent practices operating simultaneously. On the shop floor, however, workers do not perceive single practices independent of other practices; workers perceive joint effects, a whole that is not merely an addition of the component parts. For example, workers perceiving reduced levels of autonomy might still be motivated if that perception is accompanied by other job-design factors that compensate for, justify, and overcome this apparent lack of internal motivation. Thus, the impact of a configuration of practices on workers may be substantially different from the impact of the bivariate effects of these practices—the gestalt (whole) effect may account for more variance in the dependent measures than the summed (individual) effects of the parts (as demonstrated by Stajkovic and Luthans, 2003).

Third, current motivational theories are limited by a lack of multilevel theorizing and testing. Organizational practices are implemented at the organizational level of analysis, but the effects of these practices are hypothesized to impact workers (i.e., at the individual level). Furthermore, individual-level outcomes (e.g., worker performance) are assumed to have impacts at the organizational level of analysis (e.g., organizational performance). These cross-level effects are implicit in most motivation models; however, with very few exceptions, the theoretical and empirical consequences of these cross-level processes have been ignored in the motivation and job design fields over the last several decades (Klein et al., 1994; Pierce and Dunham, 1976; Roberts and Glick, 1981; Seibert et al., 2004).

We believe that questions concerning lean production job design and intrinsic motivation are timely and important to answer. There is a clear need to better understand the kinds of motivational effects that lean production practices bring about. Efforts to create

<sup>1</sup> As we will explain later, the definition of autonomy inherent in the JCM is very limited and restricting. Part of reconciling motivated behavior under lean production with job design theory requires re-incorporating other key aspects of autonomy such as responsibility and decision-making authority.

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