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# Trust and control in changing production environments☆

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ABSTRACT

We examine the relationship between trust and control in four organizations implementing new production methods. Research on the trust-control relationship provides conflicting results. Some empirical studies show that the relationship between trust and control is substitutive, while some show that it is complementary (Kalkman and Waard, 2016).

We identify three moderators of the trust-control relationship that lead to either a substitutive or a complementary result. The variables are: control source, control incidence and control information type. Additionally we find that the concept of trust becomes a matter for reflection by both managers and workers as they navigate new production methods.

This result extends prior research by revealing connections that moderate the relationship between trust and control, and contribute to explaining the contradictory results in the literature.

## 1. Introduction

We examine the relationship between trust and control in a context of changing production methods. In doing so, we respond to calls for examination of factors influencing the trust-control relationship (i.e. Costa & Bijlsma-Frankema, 2007; Das & Teng, 1998; Das & Teng, 2001; Poppo & Zenger, 2002; Tomkins, 2001). Research directed at trust and control presents with two contradictory models. One model indicates that the relationship between trust and control is substitutive, and the other indicates that it is complementary (Bachmann, Knights, & Sydow, 2001; Kalkman & de Waard, 2016). In contrast, our results show that trust can be either a substitute or a complement depending on the moderating factors of source of control, incidence of control, and control information type.

The traditional approach to management control, which we refer to as document-based asset control (DBAC), focuses on asset efficiency, mainly through use of financial key performance indicators (KPIs), and other documents for control information. The assets can be machines, people or business units. Since control falls on the assets, the incidence of control is the asset[*s*]. Additionally, our examination indicates that it is an exclusive management function to determine both the nature of the control and the thing to be controlled. Thus, the source of control is the manager. Because of their deep historical roots, the incidence and source of control do not appear as research subjects, but rather, are the presumed condition in our dominant control form: DBAC.

Lean Production (LP) provides an interesting context to examine the trust-control relationship because the LP ideal description (i.e. Holweg, 2007; McCann, Hassard, Granter, & Hyde, 2015) asserts an alternate incidence and source for control. LP is usually said to focus on the task rather than the asset (Johnson & Bröms, 2000; Liker, 2004; Monden, 2012). Although the roots of LP are in western as well as Japanese practices, its most iconic example is the Toyota Production System (TPS) (Monden, 2012; Womack, Jones, & Roos, 1990). The TPS version of LP aims to enhance customer value and reduce waste (i.e. Dahlgaard, Pettersen, & Dahlgaard-Park, 2011; Liker, 2004) by using a number of practices, including two relevant for this paper: first, use of collective decision making for control, and second, an almost exclusive analytical focus on the work task, rather than the asset[*s*]. As well, they claim a heavy reliance on direct observation rather than documents or KPIs. Thus, in ideal forms of LP, both the source of control activities, incidence of control activities, and control information appear to be different from traditional models. This difference is noted across the spectrum of LP papers, academic as well as professional (e.g., Alpenberg & Scarbrough, 2016; Fullerton, Kennedy, & Widener, 2014;

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Monden, 2012).

This study explores factors that influence the relationship between trust and control in production environments transitioning from traditional to LP approaches.

## 2. Literature review

### 2.1. Interpersonal trust

The positive effects of trust are well-understood (Weibel et al., 2015), and we see increased interest in its antecedents. The antecedents include variables such as high-commitment HR practices (Hodson, 2004; Searle & Skinner, 2011; Whitener, 1997; Whitener, 2001), fairness (Cohen-Charash & Spector, 2001; Colquitt, Wesson, Porter, Conlon, & Ng, 2001), and supervisory support (Zhang, Tsui, Song, Li, & Jia, 2008).

Most sources examining interpersonal trust define it as a state of willingness to be vulnerable (Mayer, Davis, & Schoorman, 1995; Nooteboom, Berger, & Noorderhaven, 1997; Rousseau, Sitkin, Burt, & Camerer, 1998). Expectations of positive actions by others, and assessment of (inter)dependence and risk act to create this willingness to be vulnerable. Thus, trust is a decision to accept the risks of dependence because of the expectation that others will act beneficially (Boon & Holmes, 1991). One of the iconic definitions appears in Mayer et al. (1995:712) “the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party”.

Beusch (2014) re-conceptualizes trust as a ‘package’ (see also Baldvinsdottir, Hagberg, Johansson, Jonäll, & Marton, 2011), consisting of several different aspects of trust that are at work. In a system when interpersonal trust is present, people are believed to make efforts to perform because of the influences on one's self-esteem, sense of community and security, and because they accept the vulnerability of failure. In contrast, when control is strong, people may exercise pronounced restraint in their actions (e.g., Baldvinsdottir et al., 2011; Baldvinsdottir & Johansson, 2005; Tomkins, 2001).

Until the 1980s, most researchers viewed control and trust as separate constructs related to collective action (Baldvinsdottir et al., 2011; Reed, 2001). As maturity in understanding trust grew, the distinction between control and trust became less clear. Reed (2001) indicates that the original distinction is a false dichotomy, stating “structural conditioning [control dynamics] and creative social interaction [trust dynamics]” always interact with each other.

### 2.2. Control

Researchers attribute different functions to accounting (e.g. Burchell, Clubb, & Hopwood, 1985; Mellemvik, Monsen, & Olson, 1988; Simon, Guetzkow, & Tyndall, 1954). The emphasis, however, is use of accounting for performance evaluation of individuals, organizational units or organizations (Baldvinsdottir et al., 2011). The common term for this process is Control.

As noted above, we describe the traditional approach to control as document-based asset control (DBAC), due to its reliance on accounting documents prepared on a per-asset basis. Leifer and Mills (1996, p. 117) define control as “a regulatory process by which the elements of a system are made more predictable through the establishment of standards in the pursuit of some desired objective or state”. However, when extended to the more applied sense of Management Control, it often appears as follows: ‘Management control is the process by which managers influence other members of the organization to implement the organization's strategies.’ (Anthony & Govindarajan, 2001). This commonly repeated, and seemingly unremarkable, description contains an unexplained accretion of both a presumed control source (a manager) and control incidence (a worker). Nonetheless, this specification of source and incidence creates a strategically specific path for the profession and for research.

Embedded in the Anthony and Govindarajan (2001) description of the source and incidence of control is a traditional understanding of who, or what, to trust in addition to the presumption that the control source is the manager/owner and the control incidence is the worker. These presumptions follow from the path that research on control has taken, which is primarily an unspoken presumptive hypothesis of a Taylorist (Taylor, 1911) view of work and a Theory X (McGregor, 1960) view of motivation, which finds specificity in the common agency theory formulation of an output-focused contract (Eisenhardt, 1989). As a result, the idea of what is controlled, and by who, is not explicitly examined in current research, but rather presumed, or black-boxed.

Trust exists in all human systems. For the traditional DBAC formulation of control, the manager needs to trust that the worker will follow instructions, and the worker needs to trust that the manager will value and accept the following of instructions as legitimate. However, the manager does not need to trust that the worker will follow the manager's goals, but rather uses some form of KPI as a proxy for the goals. KPIs, by their nature are too crude to express complex goals such as “strengthen our manufacturing capability while providing an adequate return”, so the fragmentary set of KPIs stands in the place of the real goals.

### 2.3. Control and trust

There have been calls for more research on factors influencing the trust-control interaction (e.g. Beusch, 2014; Costa & Bijlsma-Frankema, 2007; Das & Teng, 2001; Poppo & Zenger, 2002). Currently, the main poles of opinion disagree about whether control and trust are substitutional or complementary. A substitutional relationship would mean that control that is more formal leads to less trust and, vice versa. Advocates of a complementary definition argue that control and trust can positively correlate such that more control leads to more trust.

Bachmann et al. (2001) observe that “while there are numerous examples in the literature where control chases out trust, there are equally as many examples of trust and control being complementary.”

Tomkins (2001) suggests that control is the basis for judgments regarding others´ trustworthiness, and that people use control if trust is not established, thus holding the view that they are substitutes. Merchant and Van der Steede (2007) stress that management control is essentially dealing with employee's behavior, and control is used as a “guard against the possibilities that people will do something the organization does not want them to do or fail to do something they should do. If all employees could always be relied on to do what is best for the organization, there would be no need for MCS” (p.8). In this quote ‘relied on’ denotes the underlying principle, namely that control is a substitute for ‘trust’ or the lack thereof (Beusch, 2014).

Poppo and Zenger (2002) suggest that governance using social processes complement formal contracts rather than being a substitute for them. Saxton (1997) supports this connection between social processes and formal contracts and finds that inter-organizational trust can increase through repeated interaction.

There are several empirical observations of the positive effect of control on interpersonal trust, including that control systems can: signal care (Bijlsma & van de Bunt, 2003); allow employees to do their work competently (Gittell, 2001) and reduce the risks of working interdependently (Langfred, 2004). Therefore, we see evidence that control systems can increase trust in other actors. This includes the observation by Gittell (2001), who found that companies with high rates of “hands-on” monitoring by managers had higher levels of trust by workers both for coworkers and for supervisors than in companies that mainly evaluated results through reports.

Findings in Kalkman and de Waard (2016) demonstrate that trust and control, in the Dutch disaster management context, are mutually constitutive and complementary factors, which reinforce each other to