

# The Impact of Organizational Culture on Process Innovation

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## ABSTRACT

*Process innovation is vital, but paradoxical, requiring flexibility and empowerment, as well as control and efficiency. Increasingly, literatures stress organizational culture as a key to process innovation. Yet culture remains an intricate, amorphous phenomenon. In this article, we explore how organizational supportive culture – impact a particular process innovation, the implementation of advanced manufacturing technology. The study first examines how flexibility and control value profiles influence plant performance. We then discuss the role of value congruence, whether managers and operators perceive similar organizational values, and the impact of value-practice interactions.*

## 1. INTRODUCTION

In this article, we begin by briefly reviewing innovation-supportive culture and the role of organizational values. This review highlights three dimensions of values, developing then testing a series of related hypotheses. First, *value profiles* denote clusters of interwoven values representing two orientations: flexibility and control (Quinn & Rohrbaugh, 1983). Second, *value congruence* signifies shared perceptions of organizational values within the firm. Third, *value-practice interactions* address consistency between organizational values and practices.

To enable focus, we explore the context of advanced manufacturing technology, a particular process innovation. AMT represents a range of programmable machinery that execute, monitor and connect the production process, including computer-aided manufacturing, flexible manufacturing systems, and computer numerically controlled machines (Lewis & Boyer, 2002).

## 2. A FRAMEWORK AND HYPOTHESES

Although conceptualizations vary, organizational culture is defined broadly as a collection of values, beliefs and norms shared by its members and reflected in organizational practices and goals (Hofstede, Neuijen, Ohayv, & Sangers, 1990). Applying this definition, Jassawalla and Sashittal (2002) further describe innovation-supportive cultures as fostering expectations and guidelines for member creativity, experimentation and risk taking.

Research suggests that three dimensions of values may influence innovation success. First, *value profiles* denote sets of organizational values signifying flexibility and control orientations (Quinn & Rohrbaugh, 1983). *Value congruence* denotes the degree to which managers and employees perceive similar value profiles for the organization. Third, *value-practice interactions* address the consistency between value profiles and organizational practices. This section details each dimension, developing related hypotheses focused on the AMT context.

### 2.1. Value Profiles

Quinn and Rohrbaugh (1983) examine the impact of different value profiles. They define value profiles as cohesive sets of values that orient organizations, guiding expectations, decisions and practices. For example, while a flexibility value profile encourages empowerment, change and creativity, a control value profile stresses efficiency, productivity and stability. Given their paradoxical demands, however, successful firms rarely hold a single profile. Indeed, competing flexibility and control values may enable organizational adaptation (Quinn & Kimberly, 1984).

In sum, we propose that paradoxical value profiles support innovation: the higher the flexibility *and* control values, the greater the improvement in plant performance following AMT implementation. Although related survey studies are scarce, McDermott and Stock (1999) examine the impact of the value profiles perceived by plant managers. Managers are those most likely to promote the espoused (i.e., formal or overt) values of the organization (Argyris & Schön, 1974; Kotter & Heskett 1992). Hence, a managerial focus is a useful starting point.

**Hypothesis 1a:** *Flexibility values (value profile perceived by managers) will be positively related to plant performance.*

**Hypothesis 1b:** *Control values (value profile perceived by managers) will be positively related to plant performance.*

### 2.2 Value Congruence

Since managers and operators' have interdependent roles, value congruence may be critical to support a common vision of AMT and its potential to improve plant performance (e.g., greater efficiency and responsiveness). Therefore, we propose that attaining such benefits requires value congruence. We also predict that the positive effects of congruence will be greater when managers and operators share higher levels of flexibility and control values.

**Hypothesis 2:** *Plant performance (a) will be positively related to the congruence between flexibility values as perceived by managers and by operators; and (b) will be positively related to the level of flexibility values perceived by managers and operators.*

**Hypothesis 3:** *Plant performance (a) will be positively related to the congruence between control values perceived by managers and by operators; and (b) will be positively related to the level of control values as perceived by managers and operators.*

### **2.3 Value-Practice Interactions**

In an innovation-supportive culture, organizational practices complement values (Frohman 1998; Higgins & McAllaster 2002). Practices moderate the impact of values by reinforcing or contradicting their message. As Deter et al. (2000) explain, practices interact with values, ideally forging a consistent understanding of “what matters most” in daily life. In contrast, when practices contradict values, mixed messages arise. According to Argyris and Schön (1984), mixed messages denote conflicts between espoused values (i.e., as perceived by managers) and values in practice (i.e., as applied by employees). They offer the common example of managers claiming to value empowerment, while employees feel closely monitored and act accordingly. The result is a sense of growing distrust among the groups.

Similarly, AMT objectives may complement control values. Successful implementation requires that managers – AMT decision makers and planners – clearly communicate the purpose of this process innovation and its strategic role (Zhao & Co 1997). In addition, Small and Yasin (1997) claim that well-defined, long-term objectives signal management’s commitment to AMT and their expectations for improved plant performance.

**Hypothesis 4a:** *Operator discretion (as perceived by operators) will moderate the relationship between flexibility values (as perceived by managers) and plant performance. Specifically, the positive impact of higher flexibility values on plant performance will be greater when operator discretion is high.*

**Hypothesis 4b:** *AMT objectives (as perceived by operators) will moderate the relationship between control values (as perceived by managers) and plant performance. Specifically, the positive impact of higher control values on plant performance will be greater when AMT objectives are more explicit.*

## **3. FUTURE RESEARCH DIRECTIONS AND LIMITATIONS**

This study explores innovation-supportive culture by examining the basic building block of values. Results offer insights and pose further research questions. For example, flexibility values may mediate the impact of control values. Control values potentially set boundaries that enable managerial trust and operator improvisation. Empirical work could elaborate the paradoxical interplay between flexibility and control values, investigating whether this relationship varies during the innovation process or in the presence of different contextual factors (e.g., organizational structure, environmental uncertainty).

Limitations of our study also suggest research needs and opportunities. For instance, we only examined innovation within the context of AMT. Focusing on a particular process innovation reduces the effect of confounding variables, but raises concerns over generalizability. Subsequent work may attempt to replicate these findings in different settings of process or product innovation. Likewise, our research design raises the threat of common method variance. Gathering responses from both managers and operators increases confidence in responses, but cannot eliminate concerns. Future studies could benefit from using different respondents to examine complementary practices and plant performance, and from supplementing subjective measures with more objective data.

In addition, the proliferation of innovation research poses tremendous potential. As qualitative and quantitative studies accumulate, triangulating results may deepen understandings (Lewis, 1998). Weaving together studies of innovation and culture may identify supportive configurations of values and practices. As Jassawalla and Sashittal (2002) explain, “the challenge of developing significantly higher levels of collaboration, creativity, and innovation appears to relate to the way in which the fuzzy, amorphous nature of culture is integrated with the hard, cold analysis of technology, customers, markets, and competitors.”

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