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## Improvisation for innovation: The contingent role of resource and structural factors in explaining innovation capability

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### ABSTRACT

This paper focuses on resource and structural factors to explore the relationship between organizational improvisation and innovation capability. Although the role of improvisation has attracted increasing academic attention in fast-changing environments, little is known about the conditions under which firms benefit from improvisation. This paper addresses this gap using an organizational learning perspective that explains the role of a firm's organizational structure and organizational resources for improvisation and innovation. A large-scale survey in China finds that firms vary in their levels of (I) centralization and formalization of decision making and (II) resource slack and investment irreversibility and that these factors moderate the relationship between improvisation and innovation capability in distinct ways. Consistent with our theorizing, improvisation enhances innovation capability when firms have a decentralized but formalized structure or pursue the dual goals of maximizing resource slack and minimizing investment irreversibility.

### 1. Introduction

In an accelerated competitive environment, firms constantly create new products and processes often in an improvised manner (Adomako et al., 2018; Leskovar-Spacapan and Bastic, 2007; Wang et al., 2008; Seo et al., 2017). Extemporaneous organizational action thus is inevitable, and has increasingly triggered scholarly interest due to its potential value in building innovative capability (Miner et al., 2001; Hadida et al., 2015). Understanding organizational improvisation, defined as the degree to which composition and execution converge in time (Moorman and Miner, 1998a: 698), has become a crucial element for research on dynamism, emergence, and innovation (Linstone, 2011; Hadida et al., 2015).

However, prior research has found mixed results regarding the effects of improvisation on innovation (Flach, 2014; Vera and Crossan, 2004, 2005; Vera et al., 2016; also see Hadida et al., 2015, for a review). Two views dominate the debate. According to the reactive view, organizational improvisation may occur within what Moorman and Miner (1998b): 5) called “the logic of responsiveness,” thus rendering prior plans irrelevant or incomplete when facing unexpected jolts. In their study, they find that improvisation can reduce new product effectiveness. In contrast, scholars propagating “the logic of activeness”

argue that organizational improvisation “enables managers to continuously and creatively adjust to change and to consistently move products and services out the door” (Brown and Eisenhardt, 1998: 33). For instance, Akgun et al. (2007) find that team improvisation positively affects new product success by utilizing/implementing new knowledge.

To resolve the tension in the theoretical approaches and empirical findings regarding the effects of improvisation, this paper argues that the logic of responsiveness and that of activeness pertain to different facets of organizational improvisation: the logic of responsiveness focuses on the outcomes of extemporaneous action, while the logic of activeness refers to the selective retention of such outcomes, so that they are intertwined in explaining the effect of organizational improvisation on innovation capability. Whereas the actions that emerge or are recognized during improvised activity vary in their degree of novelty, coherence, and speed (Moorman and Miner, 1998a), selective retention of the outcomes of these actions will create awareness that reduces inertia and stipulates learning from improvisation with consequences for a firm's innovation capability.

Following the logic of the two lenses and the associated learning mechanisms, this paper focuses on two factors. First, improvisation requires resources that are readily available. On the one hand, slack

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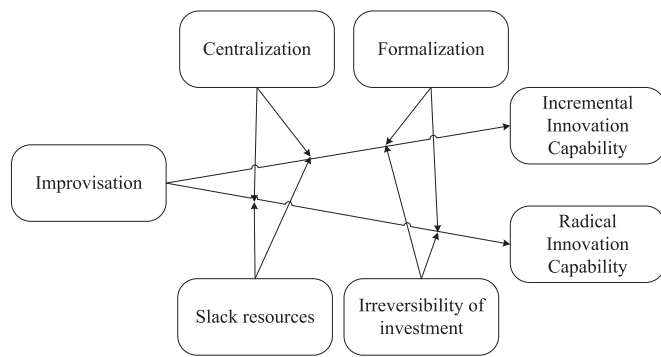


Fig. 1. Conceptual framework.

resources facilitate the use of improvisation, on the other hand, irreversible investments reduce the benefits of improvised actions. The greater the degree of resource slack, defined as the stock of excess resources available to a firm during a given planning cycle (Voss et al., 2008), the more extemporaneous action will result. Conversely, the more a firm's irreversible investment is divisible and fungible, the less improvisation action will occur. Second, selective retention of improvised action depends on structural factors. Namely, the decentralized decision-making supports the convergence of composition and execution of action together with clear rules how actions are taken and coordinated. The retention process translates better into an enhanced innovation capability when it occurs in an informative and coherent organizational context (Baker et al., 2003). This requires collective norms and good communication to facilitate the rapid sharing of novel ideas within the firm (Magni et al., 2013). Thus, the improvisation which interacts with a decentralized (e.g., supervisor-level approval) and formalized organizational structure (e.g., written rules and procedures) will be associated with greater innovation capability (Fig. 1).

This paper will empirically test these relationships with a sample of manufacturing firms in Zhejiang Province in China. By doing so, this paper aims at making at least two contributions. First, two opposing perspectives that have been dominant in the improvisation literature are integrated through embedding the logic of responsiveness and activeness in an organizational learning perspective. This conceptualization enables researchers to explain the divergent findings in these two literature streams. Second, a learning perspective advocating the role of resources and structural factors that play a role in understanding the relationship between improvisation and innovative capability has been developed. The paper conceptualizes the most important resource and structural factors and tests the model with a suitable sample, thus extending the discussion on the *organizing* of improvisation by propagating a contingency based view for the improvisation-innovation relationship.

## 2. Theory and hypotheses

### 2.1. Organizational improvisation and innovation capability

Research in the field of improvisation expands into various fields such as product innovation (Kamoche and Cunha, 2001; Vera and Crossan, 2005), organizational learning (Miner et al., 2001), and knowledge management (Kamoche et al., 2003). Broadly, organizational improvisation is defined as the degree to which composition and execution converge in time (Moorman and Miner, 1998a). However, the effect of improvised activity on innovation is often inconsistent (Flach, 2014; Vera and Crossan, 2004). One stream of scholars emphasize the logic of responsiveness, arguing that improvised action may destroy the value of existing competencies in fast-changing environments (Moorman and Miner, 1998a, 1998b). The other stream follows the logic of activeness, asserting that through the emergence of

organizational improvisation, firms develop instant responsiveness to external changes, reallocate resources and roles, and acquire new knowledge through learning (Crossan et al., 2005). Therefore, some scholars argue that if there is high external turbulence (i.e., environmental dynamism), improvisation will play a dominant role in promoting the firm's innovation (Pavlou and El Sawy, 2010). In fact, organizational improvisation is not inherently good or bad, as its effects on innovation depend on the nature of the firm (Vera and Crossan, 2004). Vera and Crossan (2004, 2005) state that the heterogeneity of firms in experimental culture, real-time information, and communication or organizational memory influences the effectiveness of improvisation. Konsynski and Tiwana (2004) show that the modularity and knowledge redundancy of a firm's organizational structure in the decision-making process determine the efficiency of improvisation. While improvisation has attracted some attention, its role in the innovation and adaptation process is not yet entirely clear.

This paper suggests to take on an organizational learning perspective to complement existing research on improvisation and to explore its role in innovation. Daft and Weick (1984, 286) define organizational learning as "the process by which knowledge about action outcome relationships between the organization and the environment is developed". Unlike previous studies on improvisation, this research argues that firms are more likely to enhance their innovation capability through improvised activities if they learn from them. Organizational learning during improvisation takes place via two mechanisms, the recognition of action outcomes and the selective retention of such outcomes. The interaction of these two factors with improvisation would then have a moderating effect on subsequent innovation outcomes.

First, organizational learning involves the identification and retention of stored knowledge. Improvised actions vary in their degree of novelty, coherence, and speed (Moorman and Miner, 1998a). If improvised actions are identifiable and can be associated or directly linked to their outcomes, we expect to find an association with enhanced innovation capability. In contrast, poorly structured, communicated and coordinated improvised action may be difficult to identify for the organization and may not yield any benefits for the organization. Thus, the identification of action may lead to incremental changes.

The process described above resembles the idea of trial-and-error learning (Moorman and Miner, 1998b). In the process of improvisation, constant improvements are undertaken and new ways of executing actions are tried to address changing environments. These small improvements replace the old and incremental improvements are made. The same process occurs in routines that constantly evolve through accidental and purposeful actions (Feldman and Pentland, 2003). Hence, depending on how the firm implements improvisation and the environmental conditions, improvisation may yield positive or harmful organizational outcomes.

Second, the retention of action outcomes involves using organizational memory to select actions that link to these events so that a coherent whole is achieved, both within the action itself and within the context (Moorman and Miner, 1998a). Such retention is a form of deep learning that depends on the organizational context and members to step beyond existing frames, gain insight, and create a more comprehensive solution to the problem at hand (Moorman and Miner, 1998a).

As previously defined, the recognition of action outcomes turns action during improvisation into a routine aspect of organizational practice, but organizational rigidity locks firms into existing habitual routines (Levinthal and March, 1993). Action outcome retention here creates an awareness that reduces such inertia and learns from the improvisation, which is conducive for improving innovation capability. It serves as a mechanism to avoid getting stuck in the habitual. As the literature suggests, this retention process translates better into enhanced innovation capability when it occurs in an informative and coherent organizational context (Baker et al., 2003), as it requires collective norms and good communication to facilitate the rapid

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