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A competitive advantage from the implementation timing of ISO management standards

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ABSTRACT

With the rise of globalization, firms increasingly implement management standards developed by the International Organization for Standardization (ISO) to assure they can meet their customers' expectations. ISO management standards reduce performance variability among suppliers and promote global trade. However, ISO standards also promote a certain degree of commonality or isomorphism between firms. If the very notion of 'standards' encourages a certain level of commonality between firms, then how can firms achieve a competitive advantage from implementing ISO standards? This research argues that the *timing* of when a firm implements an ISO standard relative to their rivals has strategic benefits. Drawing on the competitive dynamics literature we argue that firms can achieve an early mover advantage when implementing ISO 14001. However, an early mover advantage depends on the level of a firm's absorptive capacity (prior experience with ISO 9001) and the competitive intensity of their industry. This study uses longitudinal data from firms that implemented ISO 14001 at varying points in time to examine the benefits of an early mover advantage. More broadly, this research sheds light on *when* firms benefit the most from implementing new management standards. The results provide insights into implementing other emerging management standards.

1. Introduction

Increasingly firms implement ISO (International Organization for Standardization) management standards as a strategic initiative to remain competitive (King et al., 2005). For example, Ford set a strategic goal to have all its manufacturing plants ISO 14001 certified worldwide by 1998 (Wilson, 2001). IBM had set a similar strategic goal of worldwide ISO 14001 certification (Morrow and Rondinelli, 2002). Many organizations have dedicated corporate level resources to evaluate, monitor and implement new management standards across the organization. For example, 3M has their Strategic Quality Leadership Team take responsibility for administering various management standards like ISO 9001 and ISO 14001. This team "sets strategy, identifies common opportunities for improvement, and directs global synergy across all business units within 3M" (3M, 2012). As a result, firms not only make strategic decisions to implement management standards, but also look for synergies across standards.

Given the strategic nature of ISO standards implementation, the question becomes how does implementing a standard generate a competitive advantage? Strategy scholars argue that a competitive advantage comes from firm heterogeneity. For instance, the resource-based view (RBV) of the firm argues that developing unique, valuable, rare and non-replicable resources help firms gain a competitive advantage over rivals and generates rent profits (Barney, 1991). However, ISO standards promote a certain degree of commonality or isomorphism between firms. For example, customers may require their suppliers to get ISO 9001 certified to assure a certain level of quality performance. ISO 9001 certification reduces the heterogeneity between suppliers in terms of quality performance. If the very notion of 'standards' encourages a certain level of homogeneity between firms, how can firms achieve a competitive advantage from implementing ISO standards?

Research is inconclusive on the competitive benefits of implementing ISO standards. For example, some research has found a positive impact of ISO 9001 on performance (Corbett et al., 2005; Levine and Toffel, 2010; Naveh and Marcus, 2005), while other studies do not show a significant relationship (Martínez-Costa et al.,

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2009; Singh et al., 2011; Terziovski et al., 1997). Furthermore, Benner and Veloso (2008) showed that ISO 9001 implementation has performance benefits but these benefits diminish over time, which calls into question the long term benefits of implementing standards. Research on ISO 14001 has yielded similar results, some studies found that implementing ISO 14001 had performance benefits (de Jong et al., 2014) while others did not find support (Heras-Saizarbitoria et al., 2011; Link and Naveh, 2006). Collectively these mixed results call into question how can firms gain a competitive advantage through ISO standards? One may question if there is ultimately any competitive advantage at all from implementing ISO standards. In addition, despite the mixed evidence on the competitive benefits of ISO standards, firms continue to implement these standards. For example, research shows that ISO standards diffuse over time (Corbett, 2006; Corbett and Kirsch, 2001), and firms may implement ISO standards regardless of their performance benefits (Nair and Prajogo, 2009; Yeung et al., 2011). Consequently, the question managers' increasingly face is not if they should implement the new standard, but when they should implement it.

This research argues that the *timing* decision of *when* firms implement ISO standard has strategic benefits, specifically an early-mover advantage can lead to performance benefits. The competitive dynamics literature (Barnett and McKendrick, 2004; D'Aveni et al., 2010; Lieberman and Montgomery, 1988; Young et al., 1996) provides a theoretical explanation of the strategic benefits for the implementation timing of new standards. This perspective argues that implementing new practices is similar to participating in a race with rival peers (Barnett and McKendrick, 2004). Only firms that outpace their rivals gain a competitive advantage. In other words, the potential performance benefits come from implementing practices earlier than rivals. Consequently, firms can gain a *temporary* competitive advantage from the *timing* of their implementation even though ISO standards tend to reduce firm heterogeneity (D'Aveni et al., 2010). We further argue that the performance benefits of the timing decision depends on level of industry competitiveness as well as the firm's absorptive capacity. Given the perspective that firms participate in an ongoing race with rivals, the level of competition should influence the effectiveness of implementation timing (D'Aveni, 1994). In addition, various ISO standards share many common features, which makes them structurally compatible with one another. This allows organizations to apply knowledge accumulated from one standard to another standard. Consequently, a firm's absorptive capacity (i.e. the accumulated stock of related knowledge from previous standards) (Zahra and George, 2002) should influence the performance benefits from the timing of ISO standard implementation. Further, with the growth of increasingly more management standards[1], the decision of when to implement the next standard will become increasingly important. Taking all these factors together, deciding when to implement the next ISO management standard is highly complex, yet strategically important.

This research empirically investigates the effect of the *timing* decision of when to implement an ISO standard on performance through an analysis of longitudinal data. The analysis uses ISO 9001/ISO 14001 certification data and business performance data. The organizations in the study come from five different industries with varying levels of competitive intensity. All firms in our study *implemented ISO 14001 at varying points in time*, which allows us to isolate the effect of the timing decision on performance from the implementation decision itself. The results show that the timing of when firms implement ISO 14001 relative to their rivals has performance implications. However, this performance relationship is moderated by the level of competitive intensity and the amount of absorptive capacity the firm has from a related standard (ISO 9001).

This study offers theoretical and practical insights on deciding *when* to implement new management standards, which potentially has broader implications for implementing other emerging standards like ISO 28001. Researchers will likely investigate the performance benefits of implementing these emerging standards, however, we believe that the competitive advantage, although temporary, comes from the timing of implementation since these practices tend to reduce firm heterogeneity. As a practical matter, managers need to assess the relative benefits of quickly implementing new management standards. In addition, they need to recognize the temporary nature of the performance benefits, and these benefits depends on the level of competitive intensity of their industry and their prior experience with implementing other related standards.

The rest of the paper has the following organization: Section 2 reviews the literature, Section 3 theoretically develops the hypotheses, Section 4 describes the research methodology, and Sections 5–7 present the empirical results. Finally, Section 8 discusses the findings and present broader implications.

2. Literature review

2.1. ISO management standards—ISO 9001 and ISO 14001

The ISO management standards consist of a set of requirements that organizations must meet in order to receive a certificate of compliance. Independent auditors from third parties determine if the standards have been met, and issue a certificate of compliance if a facility met the requirements. A given organization may have multiple facilities with ISO certifications. Facilities need to re-certify every three years to maintain their ISO certification. ISO management standards share common features, making them structurally compatible. "Compatibility means that common elements of the [ISO] standards can be implemented in a shared manner" (Smith, 2006), which allows knowledge accumulated from one standard to be applied to another standard. The International Organization for Standardization (ISO) has a goal of enhancing compatibility among the different standards. ISO 9001 and 14001 follow identical compliance procedures and are rooted in the same ideology (Boiral, 2011). They share the same requirements for document control, management policy, operations control, training, auditing, monitoring and evaluation (Corbett and Kirsch, 2001).

The ISO 9001 standard gives the requirements for a quality management system. This standard helps ensure that customers get consistent, good quality products and services[2]. Customers will be assured a base level of quality performance when they purchase from an ISO certified business. According to Corbett and Kirsch (2001), ISO 9001 certified facilities had been growing at a rate of 50,000 to 60,000 every year worldwide. As of 2011, more than 1.1 million ISO 9001 certifications have been issued worldwide (ISO, 2012), and it is one of the most widespread management standards developed by ISO (Corbett, 2006). This broad level of adoption has globally promoted more consistent quality performance across many different industries.

The ISO 14001 standard specifies the requirements for an environmental management system, which includes identifying

[1] Since the introduction of the ISO 9001 (quality management) standard in 1987, the Organization for International Standards (ISO) has developed several other standards such as ISO 14001 (environmental management), ISO 26001 (social responsibility), ISO 28001 (supply chain security and resilience), and ISO 13053 (Six Sigma).

[2] http://www.iso.org/iso/iso_9000.