
[note: currently revising for 3rd review at MIS Quarterly]

Summary

Innovation has been documented as an engine for growth and obtaining competitive advantage. In most countries, about 30 to 50 percent of firms introduce a product or process innovation in a three-year period and on average, more than one-third of a firm’s revenue comes from products or processes that did not exist five years earlier. Indeed, according to the Organization for Economic Co-operation and Development (OECD) reported in 2010, innovation is defined as the introduction of a new or significantly improved product, process, or method and innovation is holding the key to boosting productivity in a highly competitive and connected global economy.

The importance of innovation has attracted researchers from various disciplines to study its antecedents and consequences. Particularly in the field of information systems, scholars have investigated how information technology (IT), such as IT stock and investment in IT asset portfolio, affects innovation. Although previous research has provided valuable insights into the role of IT on innovation, a few shortcomings emerge from the literature review.

First, a closer examination of previous studies on IT-enabled innovation shows that IT capability has been operationalized and measured in various ways such as investment in IT asset portfolio, IT stock and digital IT systems, among others. Despite the significant contribution made by these earlier studies, recent published research shows that firms with higher IT investment did not result in more superior firm performance. One possible reason of the contradictory results is that such operationalization of IT capability only captures a firm’s
investment in physical infrastructure and resources, and therefore does not fully reflect a firm’s ability to assemble, integrate, and use IT-based resources to perform business functions (Rai et al. 1997).

Second, some IS research uses innovation, specifically, new product development (NPD), as a context to explore the role of IT. For example, Pavlou and El Sawy (2006) examine the link of IT leverage competence, NPD dynamic capabilities, NPD functional competencies, and competitive advantage in a setting of NPD. More lately, Pavlou and El Sawy (2010) demonstrate how IT leveraging capabilities influence improvisation capabilities in the context of NPD. However, these previous IS studies treat innovation as a context rather than a theoretical construct in itself. Indeed, innovation capabilities are shown to be an important organizational capability influencing firm performance (Slater et al. 2014). Innovation capabilities encompass product and process innovation capabilities, and empirical evidence that demonstrates how IT capabilities influence each form of innovation capabilities remains to be seen.

Third, the contingency view indicated that environmental forces influence the efficacy of organizational capabilities on firm performance. Scholars demonstrate that demand uncertainty, competitive intensity, and technological turbulence moderate the link between IT capabilities and firm performance. However, with the rising challenge of dysfunctional competition that results from voids in a given institutional environment, we draw on institutional based view of strategy and argue that the extent of dysfunctional competition may be an underexplored environmental contingency in shaping the impacts of IT capabilities on innovation capabilities. Dysfunctional competition reflects the extent of opportunistic, unfair, or unlawful competitive behavior in an industry. Similar to other environmental contingencies shown in previous research, the presence
of dysfunctional competition is likely to affect the efficacy of IT capabilities albeit in different ways.

Drawing on the IT-enabling organizational perspective, our research attempts to make multiple contributions. First, earlier studies do not explain which types of IT capabilities are directly or indirectly associated with which types of innovation capabilities; thus, it presents a significant gap in the literature. We propose that the enabling roles of IT capabilities are divergent, depending upon their foci (internal vs. market). Accordingly, we distinguish internal-focused IT capability from market-focused IT capability. We further divide innovation capabilities into two forms, i.e., process innovation capability and product innovation capability, on the basis of the literature. By making such fine distinctions, we attempt to clarify how each type of IT capabilities contributes to which form of innovation capabilities. Importantly, the multidimensional forms of innovation capabilities and IT capabilities need to be addressed and simultaneously tested in a single study to understand the value of both organizational capabilities.

Second, little is known about how internal-focused and market-focused IT capabilities can serve as enablers of other organizational capabilities to achieve superior performance outcomes in the presence of dysfunctional competition. Thus, we offer the first set of empirical evidence to demonstrate how dysfunctional competition moderates the effects of IT capabilities on innovation capabilities, and similarly moderates the effects of innovation capabilities on firm performance.

Using survey data collected from 241 firms to test our hypotheses, the results provide support for the enabling roles of internal- and market-focused IT capabilities on process and product innovation capabilities. More specifically, H1a and H1b predict that the positive effects
of IT internal integration on product and process innovation capabilities would be enhanced by dysfunctional competition. The test results show that the interaction of IT internal integration and dysfunctional competition has a significant positive effect on both product innovation capability \((b = .13, t = 1.97, p = .025)\) and process innovation capability \((b = .12, t = 1.74, p = .041)\), thus providing support to both H1a and H1b. H2a and H2b predict that the positive effects of IT market integration on product and process innovation capabilities would be weakened by dysfunctional competition. The test results show that the interaction of IT market integration and dysfunctional competition only has a significant negative impact on process innovation capability \((b = -.27, t = 2.45, p = .008)\). The test results provide support to H2b, but not H2a.

As predicted in H3a, dysfunctional competition significantly weakens the positive effect of product innovation capability on competitive performance \((b = -.31, t = 2.16, p = .016)\), thus supporting H3a. As predicted in H3b, dysfunctional competition significantly strengthens the positive effect of process innovation capability on competitive performance \((b = -.38, t = 2.53, p = .006)\), providing support to H3b. In summary, we found support for five out of six proposed moderation hypotheses, providing strong evidence in support for our theory and model that dysfunctional competition faced by firms in emerging markets affects the influence of IT integration capabilities on product and process innovation capabilities and the competitive performance benefits that accrue from these innovation capabilities.

Extending previous theoretical developments and empirical evidence (e.g., Li and Atuahene-Gima 2001; Li and Zhang 2007; Sheng, Zhou, and Lessassy 2013), our study and its findings clearly explain variations in IT-enabled capabilities and their subsequent impacts on firm performance in the presence of dysfunctional competition. When can different types of IT capabilities be effective to enable different forms of innovation capabilities to achieve
competitive advantages in the presence of dysfunctional competition? Our findings indicate that IT capabilities are likely to create positive effects on other organizational capabilities and performance outcomes. Indeed, one can also see from our results that if dysfunctional competition is controlled, all of the main effects are positive and statistically significant. However, when dysfunctional competition is included in our model as a moderator, most of the main effects change in either direction or magnitude. We believe that it is because dysfunctional competition induces an unpredictable impact, disturbing the efficacy of IT capabilities and their enabling effects on firm performance. In conclusion, we believe that the examination of dysfunctional competition advances the IT-enabled organizational capabilities perspective and the findings provide insights as to which types of IT capabilities show stronger or weaker enabling effects on process and product innovation capabilities, that in turn affect firm performance.