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Contents

Information Technology Alignment and Innovation: 30 Years of Intersecting Research

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ABSTRACT

Business-IT alignment (hereafter alignment) and information technology-enabled innovation (hereafter innovation) are essential for firm performance and competitive advantage. During the past 30 years, alignment and innovation literature streams have grown and become important areas of inquiry in the Information Systems field. Nevertheless, both literature streams have remained separate; it is unclear where and how the two streams overlap. To our knowledge, none of the existing review articles has systematically examined this overlap or how each literature stream informs the other. In this monograph, we bridge this gap and present findings from a review of the alignment and innovation literature streams published between 1990 and 2020 in the Senior Scholars' Basket of Eight Journals of the Association for Information Systems. We summarize approaches, challenges,

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and opportunities seen in the alignment and innovation literature streams. Our analysis reveals that alignment scholars tend to overlook the complexities inherent in the process of innovating and view innovation as a black box. Meanwhile, innovation scholars assume different organizational components during the innovation process seamlessly work together to support alignment. We conclude that scholars in both camps should consider undertaking studies that examine aligning and innovating as interdependent processes: aligning involves coordination and cooperation among business units, and in many cases, innovations are needed to achieve alignment. Similarly, innovating with information technology jolts the organization out of its previous alignment and requires aligning in parallel to innovating to restore alignment. We end the monograph by presenting guidance to both scholars and practitioners interested in alignment and IT-enabled innovation.

1

Introduction

Business-IT alignment (hereafter alignment) research and information technology-enabled innovation (hereafter innovation) research have burgeoned in recent decades. Practitioners also acknowledge the importance of information technology (IT) innovations and alignment as sources of competitive advantage (e.g., Coltman *et al.*, 2015; Kappelman *et al.*, 2018; Vial, 2019). Journals aimed at academics and practitioners publish research in both areas of inquiry. Nevertheless, and despite the importance and growth of both fields, it is unclear where and how the two literature areas overlap.

Strategic business-IT alignment is a type of alignment that describes the fit between IT and an organization's strategy and objectives. It is probably the most commonly studied type of alignment (Baker *et al.*, 2011; Coltman *et al.*, 2015; Gerow *et al.*, 2014, 2015; Grant, 2010; Karpovsky and Galliers, 2015). Alignment between business and IT can be viewed as the degree to which the goals, missions, and objectives of these two components are consistent with each other. It involves connections and relationships among the IT-business infrastructure, plans, strategy, processes, and routines (Chan and Reich, 2007;

Henderson and Venkatraman, 1993; Reich and Benbasat, 1996). It also involves human, technical, process, and physical elements.

Most existing research evidence suggests that alignment positively impacts competitive advantage, profitability, and other aspects of firm performance (Baker *et al.*, 2011; Coltman *et al.*, 2015; Gerow *et al.*, 2014). When a firm effectively and strategically uses IT to support its business goals, strategies, and plans, the firm can efficiently exploit and respond to opportunities internally and in the marketplace (Gerow *et al.*, 2015; Karpovsky and Galliers, 2015). Misalignment impacts the resources, finances and growth of organizations (Gerow *et al.*, 2014). Consistent with most of the alignment research, practitioners acknowledge that alignment is one of the top challenges facing their organizations. Trade magazines, practitioner journals, blog posts, and consultant survey reports often examine the value of alignment for firms and the struggles they face to achieve and maintain this alignment (Chan and Reich, 2007; Coltman *et al.*, 2015; Gerow *et al.*, 2015). For example, a Chinese shipbuilding company[1] realized that their distributed IT planning decisions became a challenge in times of economic downturn. While the distributed IT decision-making worked well when responding quickly to customer needs, the same approach was very costly when facing economic downturns. It involved lengthy discussions that delayed changes aimed at meeting customer needs, leaving them unsatisfied. To effectively respond in the sluggish economic environment fraught with changes, the company needed a more centralized decision-making approach. Thus, when environmental conditions changed, a new alignment strategy became imperative (Liang *et al.*, 2018). This example illustrates that alignment is an evolving phenomenon; even if it can be fleetingly achieved, it is difficult to maintain, especially when there is frequent change in the firm or its environment.

In general, innovation is "an idea, practice, or object that is perceived as new by an individual or other unit of adoption" (Rogers, 2003, p. 12). Within an organizational setting, a new product, process, service, or business model can be considered an innovation if it satisfies two criteria (Kohli and Melville, 2019; Nambisan, 2013): first, the innovation must

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be created by an entity for organizational use or for the market; and, second, with or without modification, the innovation must be adopted and used by an entity for the first time within that setting, even if other external entities have used the same innovation previously. The entity that creates, adopts, or modifies the innovation can be an individual inventor, a developer, a group or team, a unit, a single organization, or a group of organizations (Klein and Sorra, 1996). As firm management and stakeholders grow to understand the value of an innovation, firms are expected to rapidly identify, adopt, apply and standardize innovative technologies, infrastructure, processes, and routines (the innovation adoption process) to reduce costs, make profits, and sustain competitive advantage (Kohli and Melville, 2019; Nambisan, 2013). Rapid innovation adoption processes are transforming existing organizational structures and industries at large (Nambisan, 2017).

Digital technologies and other types of IT support an increasingly wide range of activities, refining IT's role and value in the firm's process of innovating and its outcomes. Furthermore, IT's proliferation and pervasiveness have redefined how firms interact with and leverage it. (Nambisan, 2013). IT-enabled innovation (particularly digital innovation) has changed how value can be created by developing new products, services, and processes (Nambisan *et al.*, 2017). Innovation is not confined to one firm as different actors within and outside a firm can work together to innovate (Boudreau and Lakhani, 2013; Porter and Heppelmann, 2014), leading to new innovation forms, for example, globally distributed innovations (Nambisan, 2013, 2017). We now witness new types of innovations: open, platform, ecosystems, and collaborative (Nambisan, 2013).

While innovation and alignment are essential for organizational survival and growth, it remains unclear how firms simultaneously innovate to respond to changing environmental conditions and maintain alignment. Alignment and innovation typically are discussed in separate literature streams. This divide leaves unclear how IT-business aligning overlaps with IT-enabled innovating. To address this, we conduct a review of the alignment and innovation literatures from 1990 to 2020 in the Association for Information Systems (AIS) Senior Scholars' Basket

of Eight Journals.[2] We describe this research with a focus on areas of intersection or overlap. To our knowledge, no review of the literature has systematically (a) described this overlap or (b) examined how each area of research informs the other. This monograph addresses these gaps.

1.1 Literature Review Process

A literature review article's primary goal is to synthesize key themes, debates, and gaps in the extant literature (Templier and Paré, 2018; Vom Brocke *et al.*, 2015). Scholars follow several distinct literature review approaches that focus on specific areas of inquiry (Paré *et al.*, 2015). In this review, we combine elements from a descriptive review approach with elements from a narrative review approach by following the guidelines recommended by several literature review authorities (Paré *et al.*, 2015; Templier and Paré, 2018; Webster and Watson, 2002). A descriptive review approach focuses on a specific research area to reveal or support "any interpretable patterns or trends with respect to pre-existing propositions, theories, methodologies or findings" (Paré *et al.*, 2015, p. 186). A narrative review approach is thought to "assemble and summarise the extant literature and provide a comprehensive report on the current state of knowledge on the topic of interest" (Templier and Paré, 2018, p. 505).

To conduct our literature review, we searched the AIS Senior Scholars' Basket of Eight Journals from 1990 to 2020. These eight journals are recommended by IS senior scholars as high-quality outlets in the IS field.[3] In this timeframe, researchers have explored IT's morphing from a tactical tool to an essential strategic resource, publishing a series of influential articles (Coltman *et al.*, 2015).

We selected search terms recognizing that previous scholars have used several terms to refer to IT alignment. Some of these terms have become less common, but others continue to be used in the

[2] https://aisnet.org/general/custom.asp?page=SeniorScholarBasket.
[3] https://aisnet.org/general/custom.asp?page=SeniorScholarBasket.

literature. Among the most common terms are fit, synergy, congruence, and alignment (see Chan and Reich, 2007). The term innovation has continued to be used consistently by scholars although more recently the focus has been on "digital innovation" vs. the more general "IT-enabled innovation." Consequently, to identify articles reporting alignment and innovation research, we searched the Web of Science database using the following keywords: innovation and alignment/fit/synergy/congruence/strategy. The search returned relevant articles: "innovation and alignment" (61 articles), "innovation and fit" (43 articles), "innovation and synergy" (seven articles), "innovation and congruence" (four articles), and "innovation and strategy" (369 articles). However, when we specifically searched for *digital* innovation instead of merely innovation, the articles identified by the search were noticeably fewer (see Appendix A). Since IT or information technology is a fundamental part of the business-IT alignment, articles that include alignment also include IT by default. Thus, there was no need to specify the terms "IT" and "information technology" as we searched for alignment articles. We downloaded these articles into a Zotero database.

We initially used the *combination* of the search terms to identify articles that addressed both alignment and innovation. However, in the articles identified and downloaded into our database, the attention given to alignment and innovation often was not equal. That is, even when the article included both terms, the focus was almost always on one of them while the other received very little attention. As predicted, we found that only a few articles dealt thoroughly with alignment and innovation together. Thus, we expanded our search for articles that included either alignment, IT innovation, or digital innovation. We also used the Web of Science. After reviewing the abstracts of the articles within our Web of Science query, we identified 22 articles that included "aligning," 37 articles that included "alignment," 65 articles that included "digital innovation," and 81 articles that included "IT innovation." We downloaded another 24 articles that we did not have in our previously prepared Zotero database. To ensure that we had identified *all relevant* articles, we conducted a second confirmatory search on the EBSCO Business Source Premier database. We found no new articles to be included in the review. No other articles were added.

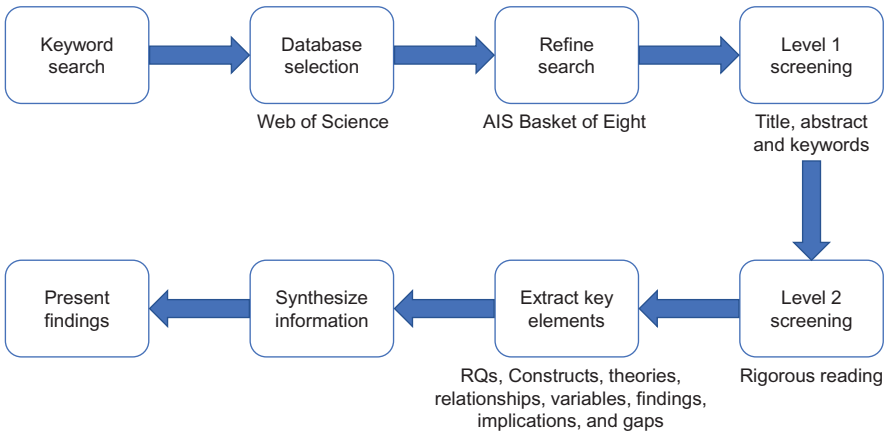

Figure 1.1: Literature review process.

We adopted the procedures recommended by Webster and Watson (2002) to identify, screen, and review articles. First, the authors reviewed the abstracts independently. Then, the authors met to discuss their assessments of the abstracts and the importance of the articles for this literature review. Any discrepancies were resolved, and the final count of articles included was 85. Second, on a further detailed review of every article, we dropped 16 more articles because they did not discuss either alignment, innovation, or their intersection thoroughly and used these terms tangentially. This left us with a total of 69 articles that were used to generate our findings. See Appendix B for a summary. Figure 1.1 summarizes the steps followed in our review. Next, we more fully introduce alignment and innovation.

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