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Aligning information technology and business strategy with a dynamic capabilities perspective: A longitudinal study of a Taiwanese Semiconductor Company

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Abstract

Strategic alignment involves the development and reconfiguration of information technology (IT) to support business strategies. This paper applies the dynamic capabilities perspective to analyze the strategic information system alignment process. The paper further argues the approach is constructive in understanding and overcoming difficulties in achieving and sustaining alignment. From a longitudinal case study of a semiconductor company in Taiwan, the results show an unaligned strategic information system (with an implemented IT strategy that varies from the intended IT strategy) impedes the development of IT. Path dependence, or the implications of prior IT decisions, is another barrier for alignment. A broader view of intended alignment, focusing on IT combined with clear business vision, can be beneficial for adding future IT resources. In addition, dynamic capabilities, which are critical for the creation and strength of IT resources, positively influence the alignment process and its future implementation success.
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1. Toward a process model of strategic alignment

Managing information technology (IT) can be conceptualized as an issue of aligning organizations with their IT to gain competitive advantages (Reich & Benbasat, 2000). Researchers agree strategic alignment, or the fit between business strategy and IT is the most significant issue facing IT (Bergeron, Raymond, & Rivard, 2004; Brown & Magill, 1994; Burn, 1993; Reich & Benbasat, 1996; Sambamurthy, Bharadwaj, & Grover, 2003; Teo & King, 1997). Prior studies have found that IT alignment continuously varies with changes in the environment, strategy, organization structure, or technology itself. Therefore, achieving and sustaining strategic alignment is difficult and often frustrating (Grant, 2003; Sabherwal, Hirschheim, & Goles, 2001).

In prior strategic alignment studies, scholars sought ideal alignment patterns among the various organizational elements (Bergeron et al., 2004; Chan, Huff, Barclay, & Copeland, 1997). This approach usually focused on strategy formulation but often neglected strategy implementation. Other alignment studies have been criticized because they focused only on resulting business performance and not the alignment implementation process (Van Der Zee & De Jong, 1999). Hirschheim and Sabherwal (2001) agree the difficulties in achieving and sustaining alignment have been largely underestimated.

Scholars had regarded strategic alignment as an on-going process and not as a short-term program with a beginning and an ending date (Henderson & Venkatraman, 1993; Sabherwal et al., 2001). Others agree that strategic planning for IT requires evolutionary approaches tailored to organizational needs at different stages of business growth or life cycles.

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The goal of the strategic alignment process, however, remains and is to evaluate or reconfigure organizational assets, resources, and competencies to aligning IT strategy with business strategy. The strategy formation and implementation is a gradual process requiring different competencies over time (Montealegre, 2002). Thus, the process of strategic alignment encompasses the process of resource development and accumulation for integration. From the view of resource development, it is critical to reconfigure IT resources for changing external business environments. For this reason, the developmental of IT could significantly influence the process of strategic alignment, but has been overlooked in prior research. This leads to the research question posed by this study—*How does an organization develop IT to effectively deploy resources and achieve strategic alignment*?

2. The alignment process with the dynamic capability perspective

Mintzberg (1978) argues strategy has at least two different meanings—one "take strategy as a plan" (strategy-as-intend) and another "take strategy as a pattern" (strategy-as-implemented). In prior studies, scholars measured the level of strategic alignment between executives and IT managers (Bergeron et al., 2004; Burn & Szeto, 2000; Byrd, Lewis, & Bryan, 2006; Reich & Benbasat, 1996, 2000) to understand their commitment to business and IT objectives. These studies treated alignment *as intended* and lacked a thorough analysis on actual or implemented business strategy and IT alignment. Nevertheless, the *intended alignments* are not always realized in practice (Hirschheim & Sabherwal, 2001). Thus, we argue the meanings and related activities of strategic IT alignment can be explained by *intended alignment* in short-term periods as well as by past patterns of alignment (*implemented alignment*).

The *intended alignment* occurs as planning and discussion for alignment takes place. In this stage, organizations are usually at the low implemented alignment stage. Next the *strategic alignment processes* occurs through *continuous adaptation and organizational change* so *intended alignment* is realized as *implemented alignment*. Following the strategic alignment process is *implemented alignment*. Here activities link both organizational processes and IT infrastructure (Brown & Magill, 1994; Henderson & Venkatraman, 1993). The three stages of alignment operate repeatedly because alignment is "a moving target." As shown in Fig. 1, organizations are continuously attempting

to achieve or maintain alignment. Strategic alignment may only exists for a short time period after ongoing adjustments among organizational elements are made (Jarvenpaa & Ives, 1993).

Today, IT is a critical resource supporting daily operations within organizations. IT strategy should direct managerial activities toward integration with IT resources. Exploiting IT and its functionality can be a distinct resource for IT strategy planning (Byrd et al., 2006; Henderson & Venkatraman, 1993). From the resource-based view of the firm, IT assets are firm specific. IT competencies are controlled and used by firms to develop and implement strategies (Barney, 1991). While the strategic value of tangible IT resources (i.e., systems, hardware, software) has often been questioned (Carr, 2003); intangible IT abilities (i.e., a firm's ability to integrate, build, and reconfigure IT assets to match business developments and environmental changes) are considered critical for IT effectiveness (Feeny & Willcocks, 1998; Santhanam & Hartono, 2003).

Few studies on the resource-based view of IT have addressed how a firm develops, manages, and deploys IT resources to support the alignment between IT strategy and business strategy. The dynamic capabilities perspective (Teece, Pisano, & Shuen, 1997) is an extension of the resource-based view focusing on the strength and competency of resource reconfiguration. This perspective has been widely accepted in the business strategy literature (Eisenhardt & Martin, 2000; Winter, 2003; Zollo & Winter, 2002) but is generally unknown in the IS literature. The perspective posits that the development of dynamic capabilities is limited by a firm's existing resources and is shaped by its current market position and history of developing past resources (Grant, 1996; Montealegre, 2002; Teece et al., 1997).

The resource-based view tends to define resources broadly, to include assets, knowledge, competencies and capacity. It emphasizes the properties of resources are valuable and rare and cannot be imitated or substituted. Compared with the resource-based view, the dynamic capability perspective focuses on adapting, integrating, and reconfiguring skills, resources and abilities. In particular, the dynamic capability perspective emphasizes the capacity to renew competences to achieve congruence with changing environments (Teece et al., 1997). Because dynamic capabilities are further defined as a set of specific and identifiable processes, they are the antecedent organizational and strategic routines to create, adapt and combine other resources into new sources of competitive advantage.

The theoretical framework first identified by Teece et al. (1997) describes the dimensions of dynamic capabilities which include processes, positions, and paths as shown in Fig. 2. *Processes* describe the patterns of practice and learning in a firm; *positions* are the technological assets, intellectual property and complementary assets; and *paths* refer to the strategic alternatives available to organizations, which are influenced by current positions, processes and
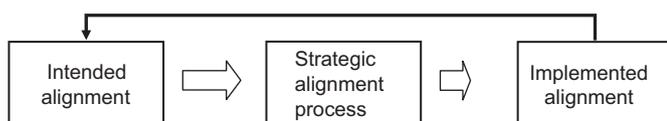

Fig. 1. Perspectives for analyzing strategic IT alignment.