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Delivering Business Value of Information Technology: the Moderating Role of Alignment

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ABSTRACT
The business value of IT has been hugely studied in previous research. Although much effort has been paid to it, the so-called “IT productivity paradox” does not seem to be completely resolved so far. Some researchers argued that it is an issue of analysis level, while others tried to come up with new measures of firm performance. Another perspective, which is adopted in this paper, is to find out the complementary assets which facilitates the realization of IT payoffs. I propose that alignment serves as one kind of such complementary asset: the strategic alignment between IT and business objectives may positively moderate the relationship between IT investment and firm performance. If the social dimension of alignment between IT and business objectives is high, the relationship between IT investment and firm performance is likely to be positive; otherwise, the relationship is likely to be neutral or negative.

Keywords
Business Value of IT, Dynamic Capability, Strategic Alignment.

INTRODUCTION
Business value of IT is one of the most widely examined research topics in IS literature, but inconsistent results, referred to the “IT productivity paradox”, have puzzled researchers and practitioners for quite a while (Brynjolfsson et al. 1998). The recent launch of Information Work Productivity Council by major IT players, dedicated to “cracking the productivity paradox”, showed that the puzzle is far from being resolved (Abrahams 2003).

Some researchers argue that it is an issue of analysis level. For example, Barua et al. (1995) open up the black box and look into the processes and applications in order to examine the effects of IT. Mukhopadhyay Rajiv, and Srinivasan (1997) put their analysis on process level and found positive relationship between IT and process output & quality. Another group of researchers were looking at the complementary assets that help deliver the business value of IT (Brynjolfsson et al. 1998; Kettinger et al. 1994; Wheeler 2002). Sambamurthy, Bharadwaj and Grover (2003) argued that combined with firm processes, IT is able to form the platform for business agility. Mata, Fuerst and Barney 1995 examine four IT related assets—“capital requirement”, “proprietary technology”, “technical IT skills” and “managerial IT skills”, showing that only managerial IT skills are likely to generate superior performance. Clemons and Row 1991 specify that structural differences enable firms to employ IT gaining competitive advantages.

This paper proposes that strategic alignment is one important complementary asset as well. More specifically, I am trying to investigate the role of strategic alignment in the relationship of IT investment and firm performance. A literature review shows that there is ample research in IT business alignment linking alignment to firm performance directly. Most of them argue there is positive relationship between strategic alignment and firm performance (Chan et al. 1997; Sabherwal et al. 2001a). Firm performance in previous research is a multidimensional construct. In most literature of business value of IT, it was defined as the financial return to firm, to which this paper concurs. However, this paper will propose another angle of the impacts of strategic alignment – the moderating role of strategic alignment in IT-firm performance relationship.

CONCEPTUAL DEVELOPMENT
The understanding of why alignment is one complementary asset critical to deliver business value of IT points to the fact that information systems are implemented, deployed, integrated and supported by IS department. IS department is justified as an efficient means to manage IT infrastructure, IT applications and human technical skills to address organizational needs of information processing. Otherwise, an organization will have IT outsourced. Analogous to an organization, it is natural to
think of IS department as a production unit with its own input and output. We could reasonably say that the input of IS department is IT investment. Because the goal of IS department is to manage IT resources to meet organizational information processing needs, we define IS department performance as how well it achieves this goal. The better IS department performance, the better it meet information processing needs, and the higher the ability of transforming IT investments to firm output.

Contingency theorists and strategic researchers often argue that the organizational alignment and internal alignment would positively associate with firm performance. By analogy, this study reveals that the strategic alignment might also differentiate the performance of IS department, which in turn moderates the relationship between IT investment and firm performance.

**Organizational Alignment as a Dynamic Capability**

The concept of alignment is deeply rooted in contingency theory. In particular, alignment is welcomed in strategic management and organizational science literature (Venkatraman 1989; Venkatraman and Camillus 1984). In fact, strategy is traditionally viewed as aligning different organizational components (Andrews 1971). As to organizational alignment, formulation perspective focuses on matching with external environment while internal alignment is the primary concern in implementation perspective (Venkatraman et al. 1984).

From the dynamic capability perspective, a firm gains competitive advantage because it has dynamic capabilities “adapting, integrating and reconfiguring” firm’s strategic resources (Teece, Pisano and Shuen 1997). Dynamic means constantly changing organizational competences to keep aligned with external environment; capability refers to the ability to combine, exploit and appropriate the internal and external organizational resources and competencies to meet the turbulent circumstances (Teece et al. 1997). On the one hand, the way that managers coordinates the organization and match it to external market forms one organizational and managerial process which carries the competence. On the other hand, organizational congruence with external environment can endure for some time but it will be punctuated by organizational or environmental changes, implying it is dynamic itself (Sabherwal, Hirschheim and Goles 2001). In this sense, the organizational alignment is a dynamic capability.

An organizational capability may not necessarily be strategic, i.e. potential to differentiate the firm’s financial performance. Strategic management literatures conclude that only those that can be “honed to a user need”, “unique” and “difficult to replicate” are strategic capabilities (Teece et al. 1997). Barney (1991) identifies several sources that make a capability difficult to replicate. The first one is social complexity. For example, if an organizational process requires a lot of mutual understanding and social interaction among people, it is even difficult for insiders to understand, let alone imitate. The second one is history. History is usually a valuable asset of a firm. For example, a firm with long history will acquire much experience doing business. This path, however, can never recur to other competitors. Causal ambiguity is also a potential source. A firm may have thousands of different resources or capabilities. More, there are even more combination of these resources or capabilities. Even the firm itself may not be able to identify which resource or combination of resources contributes to the sustained competitive advantage. To sum up, a dynamic strategic capability is a source of sustained competitive advantage and therefore creates above-market financial return to the firm.

**IT Business Alignment and Internal IT Alignment Influencing Effective IT Investment**

The aforementioned resource based view can be applied to IS department. The dynamic IT capability is defined as the IS department’s ability to exploit and appropriate as well as continuously change the profile of IT resources and competencies to meet the organizational information processing needs. There are also both strategic and non-strategic IT capabilities. For example, Mata et al. (1995) have argued IT technical skills are not a source of sustained competitive advantage, while IT management skills potentially are. Just analogous to strategic organizational capability, the dynamic IT strategic capability is potential to gain a “competitive” advantage for the IS department. That is to say, if the IS department has unique, difficult-to-imitate IT capability, the IS department will have an above-average performance—an above-average ability to transform the IT investment to firm output. Therefore we have,

**H1:** The dynamic IT strategic capability determines IS department performance, and hence the ability to transform IT investment to firm’s financial performance. The dynamic IT strategic capability positively moderates the IT investment-firm performance relationship. That is, the relationship between IT and firm performance will be positive if the IT capability is high. The relationship will be neutral or negative if the IT capability is low.
Strategic alignment could be the potential source of the dynamic IT strategic capability. IT business alignment is the managerial capability to adjust IT strategy to conform to business strategy norm and vice versa. Previous research indicates that this alignment has two dimensions: intellectual and social dimension (Reich and Benbasat 1996; Reich and Benbasat 2000).

**Social IT Business Alignment**

The social dimension relates to the mutual understanding and commitment of business and IT executives. In Reich and Benbasat (2000), the communication between business and executives and connections between business and IT planning are identified to influence the social dimension of alignment. Effective communication, which means not only the volume but also the quality of communication, is the necessary means to improve mutual understanding. The close connections between IT and business planning process contribute to the mutual commitment and support. The more domain knowledge IT and business executives share, the more capable they are of communicating and connect. What’s more, a successful IT implementation history is beneficial to forge an environment of mutual trust, which is also conceptually linked to communication and connection. (Reich and Benbasat 2000)

The social dimension of IT business alignment creates the barriers for competitors to imitate. First, this social dimension is rare among firms. Although IS strategy is supposed to be in line with business, they are often inconsistent in reality. The reasons can be internal, e.g. the frequent subrogation of IS or business executives and shaky organizational infrastructure; they can also be external, e.g. the radical change of technology, the variation of environment and fluctuation of economic cycle.

The social dimension is also socially complex. Social dimension of alignment requires extensive mutual understanding. On the individual level, we know there are many factors influencing mutual understanding, among which are personality and the communication. Reich and Benbasat (2000) emphasize that effective communication and close connection determine the social dimension of alignment. Both of them involve interpersonal relations between business and IT executives.

Finally, this social dimension is likely to be shaped by IT history. It is shown in Reich and Benbasat 2000 that IT implementation success significantly influences the alignment between IT and business objectives.

Therefore, the social dimension of IT business alignment forms one source of dynamic IT strategic capability. The social dimension of IT business alignment is likely to differentiate the performance of IS departments. The higher social IT business alignment, the more capable IS department is of generating “returns” from IT investments.

**H2: The social IT business alignment is a source of the dynamic IT capability and will positively moderate IT-business performance relationship. More specifically, historic success, IT-business communication effectiveness, IT-business mutual understanding, IT-business mutual commitment are the second-order factors of the dynamic IT capability.**

**Intellectual IT Business Alignment**

Intellectual dimension refers to the extent to which IT and business conforms to each other’s objectives. The intellectual dimension requires “internal consistency” (Reich and Benbasat 1996). That is, to be aligned intellectually, the stated objectives of IT must be consistent with business objectives within that firm, and vice versa. The stated IS planning and business planning must be in line. This consistency does not appear to be socially complex because the stated alignment is imitable. Each firm will easily attain the consistency in strategy statements. That is, the intellectual dimension of IT business alignment is not difficult to copy (Teece et al. 1997). Therefore,

**H3: The intellectual IT business alignment is not a source of the dynamic IT strategic capability.**

**Internal IT Alignment**

Internal IT alignment is defined here as the internal consistency among IS departmental subgroups, structures, routines and processes. Although internal IT alignment and IT business alignment are presumably expected to coexist consistently, they
are indeed incompatible sometimes. Miller (1992) identified a few reasons of the conflict between environmental and internal
fit, which could be extended to the discussion about the tradeoff between internal IT alignment and IT business alignment.

First, the unambiguous, definite and clear expression of IT strategy is critical to attain the internal IT alignment, but it may
not meet the demand of high uncertainty in organizational information processing needs and hence the business strategy. The
high uncertainty in business strategy may stem from the environmental dynamics or radical organizational structural changes.
Secondly, loose internal coupling can enable IS department to adapt itself to business more efficiently and quickly, but it
would sometimes cause collisions within IS department.

On the other hand, internal alignment will enhance the efficiency and reduce unnecessary resource waste in IS department.
Complementarities among the structure and process in IS department are necessary for a frictionless operation. This may
cause positive effects of internal alignment on the performance of IS department. The final outcome depends on the
occasions and situations where the inconsistencies occur and the relative strengths of these two opposing forces. Miller
(1992) concluded that the incompatibility between internal and environmental fit seldom arise in large, public and profession
organizations (p. 162). Extend the arguments to IT department, the internal IT alignment is a potential source of IT strategic
capability since the scope of research is large IT departments with multiple functions.

H4: The internal IT alignment is a potential source of the dynamic IT strategic capability. More specifically, the social
dimension of IT internal alignment is a source of IT strategic capability, while the intellectual dimension is not.

Figure 1 sum up the theoretical framework.

Figure 1. IT business alignment and IT-Firm Performance relationship
RESEARCH DESIGN

At this stage, the empirical analysis is still in progress, an appropriate research method will be survey study. The samples are organizations with large and professional IS departments. An important issue would be to test the hypotheses against the rival theory rather than null hypothesis. A good rival theory is IT investment moderates the relationship between social IT-business (and social IT internal) alignment and firm performance.

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REFERENCES