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Institutional Antecedents and Consequences of Modularity in Business Process Outsourcing

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ABSTRACT
In the practice of business process outsourcing, firms face increasing challenges of losing control, knowledge misappropriation, information security and partners’ opportunism. Modularization strategy can reduce such risks and transaction costs. This research-in-progress paper introduces the concept of modularity of outsourced business process (MOBP). Drawing upon the institutional theory, we examine how three institutional pressures impact the degree of MOBP. We explore the impacts of MOBP on communication and knowledge transfer between outsourcing firms and vendors. This paper also describes the research plan to test the research hypotheses. Contributions to research and practice are also highlighted.

Keywords  
Business process outsourcing, modularity, institutional pressures, communication, knowledge transfer.

INTRODUCTION
Business process outsourcing (BPO) is expected to be “the next big wave” in the development of information technology services (Yang, Kim, Nam and Min, 2007). According to Gartner, worldwide BPO services reached the market size of 173 billion in 2007, among which offshore BPO accounted for about 15% (Tanriverdi, Konana and Ge, 2007). BPO means the delegation of one or more IT-intensive business processes to an external service provider, who owns, administers and manages the processes, based on a set of defined and measurable performance metrics (Stone, 2004). Offshore BPO is outsourcing business processes to a provider from a country that is geographically remote from the client enterprises (Stone, 2004). Organizations are increasingly relying on offshore BPO partners (Mehta, Armenakis, Mehta and Irani, 2006). The concept of BPO is not new. Its recent notable growth can be attributed to technological advancements, such as the Internet and mobile services, and more cost-conscious customers, which have greatly reduced communication costs and facilitated internationalization of business processes (Mahnke, Overby and Vang, 2005; Yang et al., 2007).

Several risks are inherent in the practice of BPO, such as knowledge misappropriation, loss of control, contractual risks and coordination problems (Yang et al., 2007; Tanriverdi et al., 2007). Decoupling the outsourced business process from the rest of business process, i.e. increasing the modularity of outsourced business process (MOBP), may be a feasible approach to reduce these risks. As a design strategy, modularity can bring many benefits to the outsourcing firms through encapsulating organizational knowledge as the interfaces of the outsourced business (Gadde and Jellbo, 2002; Howard and Squire, 2007; Tiwana, 2008a). Amazon.com, ebay, and Google, for example, have established outsourcing alliance portfolios that are successful without much formal control because of the modularity of the outsourced projects (Tiwana, 2008b).

In China, there are abundant IT outsourcing (ITO) and BPO providers, who increasingly adopt modular outsourcing strategy to reduce costs and enhance their innovative abilities in their cooperation with outsourcing firms. The outsourced projects such as alliance software development, device maintenance, customer support, payroll processing, and training services, are with high modularity. However, there is little research which exploited the impacts of the degree of MOBP on outsourcing practices in the Chinese context.

To our knowledge, there are only a few studies which examined the impact of modularity in the realm of BPO. Miozzo and Grimshaw (2005) challenged the general claim that modularity stimulated innovations in the outsourcing of knowledge-intensive business services. Tiwana (2008a,b) explored the impacts of modularity on knowledge sharing and control in software outsourcing alliances. The results showed that modularity lowered the need for knowledge sharing and
complemented vendor’s ignorance of outsourcing firm’s organizational knowledge (Tiwana, 2008a) and that modularity substituted process control but not outcome control (Tiwana, 2008b). Tanriverdi et al. (2007) indicated modular process design reduced transaction, coordination and production costs and had significant impact on firms’ choice of sourcing mechanisms. The findings showed domestic outsourcing was preferred over offshore outsourcing at higher level of process modularity and when processes were tightly coupled with the IT infrastructure. Fang and Liu (2008) examined the impacts of flexibility pressure (customer demand diversity and supplier specialization) and integration pressure (asset specificity) on business process modularity. The results indicated that flexibility pressure facilitates modular process design and business process assets specificity lowers the attractiveness of modular business process design.

Whether a firm adopts modularization strategy in BPO is influenced not only by the firm’s idiosyncratically technical capabilities, but by its institutional context, i.e. coercive, normative and mimetic pressures from external parties such as service suppliers, competitors, professional institutions, and government agencies (Mikkola, 2003). Different from the above studies, the present paper relies on the institutional theory to understand the impacts of institutional pressures on MOBP. We also explore the effects of MOBP on communication and knowledge transfer between the outsourcing firm and the vendor. The rest of this research-in-progress paper proceeds as follows. The next section introduces the theoretical background, followed by the development of research hypotheses. In the following sections, we lay out the research plan to test the research hypotheses and conclude with research implications.

THEORETICAL BACKGROUND

Business Process Modularity

Modular system theory is a design approach to complex organizational and technological systems and has been proposed for firms to adapt to dynamic markets (Worren, Moore and Cardona, 2002). The principle of modular system design can be applicable to any complex system which can be decomposed into loosely connected components that are coordinated by standard interfaces, such as product design, information technology architecture, organizational design and processes design (Sanchez and Mahoney, 1996; Oshri and Newell, 2005).

Business process modularity can be defined as loose coupling between components (modules) of business process (Fang and Liu, 2008; Tanriverdi et al., 2007). Modular business process can be created by decomposing the organization’s business processes into components each of which has a specific function, and specifying interfaces between components in detail that define their attachment (how they fit together), information exchange and interactions (Sanchez and Mahoney, 1996; Tiwana, 2008a). Business process modularity is said to be high when business process’s components can be disaggregated with a high degree of inter-independence and recombined into new configurations without loss of functionality. Modular business process has features of ‘encapsulation’ and ‘plug-and-play’ (Fang and Liu, 2008).

Modular business process architecture and its supporting IT architecture can enable firms easily to obtain some process modules from outside vendors without losing functionality (Tanriverdi et al., 2007). Popular techniques and tools such as Business Process Management (BPM) and Service-Oriented Architecture (SOA) can help firms implement standardized and modularized business process management, and on-demand configuration of processes and IT.

Based on the characteristics of modular business process, we can define MOBP as the looseness of coupling between outsourced business process and other business process in the outsourcing firm (outsourcer) (Fang and Liu, 2008; Tanriverdi et al., 2007; Tiwana, 2008a,b). MOBP is exhibited as comprehensiveness, definiteness and stableness of interface specifications of the outsourced process, and little interdependence and loose coupling between the outsourced process and outsourcer’s other processes. MOBP can be achieved by specifying interfaces and performance requirements at the outset of the alliance (Tiwana, 2008a).

MOBP and BPO

Increasing MOBP can bring a lot of benefits to BPO alliances. Well-defined interfaces and performance specifications reduce the volume and diversity of the information vendor needs to execute the process. Outsourcer only needs to work out interface specifications of the outsourced process, without need to go into specific details of service delivering process, and vendor only needs to focus on the process in its control (Tiwana, 2008b; Tanriverdi et al., 2007). Encapsulated functionality minimizes interaction and interdependence between outsourcer and vendors through making the outsourced process self-contained. The outsourced process works autonomously without consulting, interacting and exchanging with outsourcer’s other processes too much (Tanriverdi et al., 2007). The changes within the outsourced process will not significantly affect the design or the functions of other processes. Therefore, modularity lowers the necessary communication and knowledge sharing between outsourcer and vendor, mitigating knowledge misappropriation hazards and largely reducing transaction...
costs, in that interfirm coordination relies more on the predefined specifications than managerial authority. Modularity implies low level of specificity and greatly relieves “maladaptation problem” in an arm-length relationship (Tanriverdi et al., 2007), which is defined as “the haggling and friction” due to ex post changes and adaptations when contracts are incomplete (Tadels, 2002).

Higher MOBP enables competitors more easily to imitate organizational advantages stemming mainly from the outsourced process by the same vendors, however, the overall business process architectures (i.e. the sheer number of processes and the interactions among them) of firms are difficult to observe, decipher and imitate, due to their historical dependence, causality ambiguity and complexity (Tanriverdi et al., 2007). Therefore, outsourcers need not only to develop and properly manage a portfolio of relationships with external vendors who provide services of individual process modules, but focus on the design, management, and continuous renewal and update of their business process architectures (Tanriverdi et al., 2007). That is why they should know more than they make (Brusoni, Precipe and Pavitt, 2001). Both abilities are becoming important sources of competitive advantages in the era of intensive outsourcing practices (Tanriverdi et al, 2007).

Institutional Research in IT Outsourcing Research

Institutional theory can well explain the fact that outsourcing practices propagate in organizational fields (Vitharana and Dharwadkar, 2007). Institutions are socially constructed “rules of the game” that guide, enable and constrain firms’ behaviors (North, 1990). The institutions put pressure on organizations in the form of normative, coercive and mimetic pressures. Coercive pressures are often thought of as formal institutions of regulations or laws but can also be informal expectations on organizations. Informal coercive pressures include technical standards and certain standards imposed by someone exerting power over another actor (e.g. a parent-subsidiary relationship) (DiMaggio and Powell, 1991). Normative pressures consist of social pressures on organizations and its members to conform to certain norms. They are closely related to the concept of professionalization where professional norms are transmitted to an organization as a source of legitimacy (DiMaggio and Powell, 1991). Mimetic pressure often appears in a context of uncertainty, where firms model themselves on other organizations in their fields that are perceived as more legitimate or successful (DiMaggio and Powell, 1983). The mimetic pressures put on the organization lead to an isomorphic behavior towards convergence with the institutional environment. In practice, these three pressures are difficult to distinguish from one another and their respective influences on organizations are not the same (DiMaggio and Powell, 1983).

IS research has investigated outsourcing decisions from the institutional perspective. Miranda and Kim (2006) summarized IS outsourcing research based on institutional theory before the year of 2006. They identified three noted trends in the institutional perspectives in IS outsourcing research—first, explicitly exploring the impacts of external institutional pressures to outsource on internal outsourcing decisions, second, independently considering the impacts of external pressures on the outsourcing decisions, third, considering decision making as strategic interventions by organizational decision makers into their institutional environments. In addition, there is a forth tendency in recent IS outsourcing research appropriating institutional theory, which is the link of institutional theory and transaction cost economics, or in other words, the appropriation of the logic of transaction cost economics contingent on decision makers’ institutional context (Miranda and Kim, 2006; Vitharana and Dharwadkar, 2007). Miranda and Kim (2006) investigated professional and political contexts in city governments in the U.S. and examined how institutional factors mitigate otherwise transaction cost heuristics. Different from Miranda and Kim(2006), Vitharana and Dharwadkar (2007) appropriated the transaction cost framework and introduced three phases of innovation institutionalization (diffusion, stability, de-institutionalization) to the IS outsourcing setting, comparing the relative explanation abilities of institutional factors and transaction cost factors to outsourcing decisions in each phase.

RESEARCH MODEL AND HYPOTHESES

In this section, we develop a research model as shown in Figure 1. In the model, we include both institutional antecedents and the consequences of MOBP. In the next, we examine the relationships of three institutional pressures (coercive, normative and mimetic pressures) and MOBP, and the relationships of MOBP and communication and knowledge transfer.

Institutional Pressures

Institutional theory explains non-choice behaviors of organizations in the context of competitors, norms and professional associations (Vitharana and Dharwadkar, 2007). Depending on the context, the focal organization may be more influenced by the attitudes, beliefs, behaviors and practices of organizations that are similar, or by those with which it has contacts (Scott, 2001). Coercive, normative, and mimetic pressures existing in the context of modular BPO may influence organizational predisposition toward modularization and outsourcing of business process (DiMaggio and Powell, 1983).
Coercive Pressure

Coercive pressures are formal or informal external pressures exerted on organizations to adopt the same attitudes, behaviors and practices by other more powerful organizations upon which they are dependent (DiMaggio and Powell, 1983). Firm’s coercive pressures can stem from any member of corporate stakeholders including resource-dominant trading partners (customers and providers), regulatory bodies (government agencies) and parent corporations (Teo, Wei and Benbasat, 2003). For example, a wide range of manufactured products such as IT products and telecommunication devices are required to acquire China Compulsory Certification marks before being exported to or sold in China’s market (www.CCC-mark.com).

Institutional arguments on coercive pressures are mainly from the resource-dependence perspective (Teo et al., 2003). A resource-dominant organization may demand other organizations dependent on it to adopt programs beneficial to itself, and these resource-dependent organizations can only comply with the demands for their survival (Pfeffer and Salancik, 1978), otherwise the maintenance of the exchange relationship would be more difficult and require greater effort, or worse, be unsustainable (Teo et al., 2003).

In the BPO alliance, coercive pressures can arise from vendor or outsourcer, when one party relies on the other to gain such important resources as knowledge, technology or customers. The alliance is required to adopt modularization strategy by outsourcer or vendor, the one who is more powerful and believes such strategy will achieve preferable alliance outcomes. The alliance has to passively comply with the requirement and carry out modular outsourcing to survive. Coercion exerted on the alliance of BPO to take modularization strategy may also come from parent corporations, who consider it as a strategy to reduce transaction costs and risks and increase flexibility. In the outsourcing alliances facing higher coercive pressures, well-defined interface specifications of the outsourced process will be made and black-box style service (i.e. internal details concealed service) will be provided, which show a higher degree of MOBP. MOBP is lower in the outsourcing alliances which have not carried out modular outsourcing of business process because of lower coercive pressures. We hypothesize:

H1: Coercive pressure has a positive effect on the degree of MOBP.

Normative Pressure

Normative pressures are pressures of organizations to adopt standards, systems and techniques, which are considered to be legitimate and more advanced by professional groups. It can originate from a variety of sources including professional associations, technology suppliers and educational systems. Normative pressures describe the effect of professional standards on organizations, which are usually conveyed and diffused through education and training of professionals, information exchange in forums and communities, and certification processes authorized by professional bodies (DiMaggio and Powell, 1983). Organizations will be harmed by their improper response to normative pressures. Organizations will experience dissonance and discomfort, their legitimacy will be called into question, and their abilities to gain resources, customers and social fitness harmed, if they do not adopt the standards, systems and techniques peers and trading partners have already adopted (DiMaggio and Powell, 1983). For example, Chinese software companies have to get the certification of CMM/CMMI before undertaking international software outsourcing projects.
In the context of BPO, when professional institutions advocate modular outsourcing strategy, outsourcers and vendors are likely to adopt this strategy in their outsourcing practices for legitimacy, especially when their decision makers are members of these institutions. Firms will voluntarily adopt modular outsourcing strategy if such strategy has been taken by a large number of outsourcing alliances. In the outsourcing alliance experiencing high normative pressures, outsourcer’s business processes will be modularized before modules are outsourced and MOBP will be high. On the contrary, the outsourcing alliances facing lower normative pressures will not carry out business process modularization and the corresponding MOBP will be lower. We hypothesize:

**H2:** Normative pressure has a positive effect on the degree of MOBP.

**Mimetic Pressure**

Mimetic pressures are the pressures of organizations to emulate other organizations’ activities, systems or structures because of competition and regulation. Mimetic pressures can arise from interpersonal ties among executives who serve on interlocked boards, and/or from structural equivalence within organizational fields wherein organizations imitate the actions of other successful organizations that are similar to them (DiMaggio and Powell 1983; Burt 1987). Mimetic pressures may cause an organization to change over time to become more like other organizations in its environment (DiMaggio and Powell, 1983).

In the field of BPO, when other organizations carry out modular outsourcing strategy and report its positive outcomes, firms will consciously seek and copy examples of successful organizations’ modular outsourcing practices of business process, because they believe those practices can yield similar positive outcomes to them (Shi, Shambare and Wang, 2008). The decision to outsource may be induced by imitative behavior among firms. For example, Kodak’s outsourcing decision made many other firms begin to consider IS outsourcing as a viable alternative (Yang et al., 2007).

However, firms may imitate modular outsourcing practices of others just for following fads and fashions, because they are afraid of being deemed as ‘old fashioned’ or ‘laid back’, which is known as the “bandwagon” effect, without any clear evidence of performance improvements (Shi et al., 2008). The alliances facing high mimetic pressures will imitate other outsourcing alliances which have implemented modularization strategy and carry out such strategy in practice. We hypothesize:

**H3:** Mimetic pressure has a positive effect on the degree of MOBP.

**Consequences of Modularity of the Outsourced Business Process**

We will next analyze the impacts of MOBP on communication and knowledge transfer between outsourcer and vendor in the practice of BPO.

**Modularity and Communication**

According to social exchange theory, effective communication is essential to achieve intended alliance objectives (Mao et al., 2008). Intensive communication keeps the two exchange parties better informed and promotes shared understanding, which enhance their confidence in the relationship and willingness to keep it alive (Mirani, 2007). Communication can be realized through a variety of channels ranging from lunch conversations, phone calls, instant chatting tools (e.g. Windows Messenger and Tencent QQ), emails to personnel exchange. Communication quality decides the level and outcomes of inter-organizational cooperation (Mirani, 2007).

In the practice of BPO, modularity complements interfirm communication and information sharing by fully specifying the interfaces among the outsourced process and other processes (Tiwana, 2008a), which increase autonomy (Sanchez and Mahoney, 1996). This level of client-vendor interaction resembles the arm’s-length model based on traditional adversarial relationships, where a low level of communication occurs (Howard and Squire, 2007). Higher MOBP leads to a more independent and black box style outsourcer-vendor relationship (Gadde and Jellbo, 2002), where once fully specified interfaces and a detailed Service Level Agreement (SLA) have been made, outsourcer and vendor need only communicate about the information of cost and quality monitoring and outsourcer’s feedbacks, saving communication about the process details of how to deliver service. On the contrary, lower MOBP requires more communication and information sharing between outsourcer and vendor, because internal changes in the outsourced process are inherently likely to create a cascade of required changes in outsourcer’s other processes (Tiwana, 2008a). We hypothesize:

**H4:** MOBP has a negative effect on communication between outsourcer and vendor.
Modularity and Knowledge Transfer

Knowledge transfer can be described as the process through which information and skills between entities are systematically exchanged (Wang, Tong and Koh, 2004). Knowledge transfer relates to a variety of mechanisms including personnel movement, training, communication, observation, replicating routines, presentations, technology transfer, interactions with suppliers and customers and other forms of interorganizational relationships (Chua and Pan, 2008). Previous studies have investigated the impacts of knowledge attribute, alliance characteristics, absorptive capacity, social capital, trust, mutual power, reciprocal commitment on knowledge transfer (e.g. Chen, 2004; Muthusamy and White, 2005; Walter, Lechner and Kellermanns, 2007; Rottman, 2008).

In BPO alliances, outsourcers and vendors need to share organizational knowledge relevant to the outsourced processes to achieve prospective alliance outcomes and also adopt control mechanisms to curb opportunism. MOBP mitigates knowledge misappropriation hazard while simultaneously achieving alliance objectives, because of its characteristics of loosely coupling, competency centralization and autonomy (Fang and Liu, 2008; Tiwana, 2008a). MOBP allows vendors to only need know the interfaces of the outsourced processes (i.e. inputs received from other processes and outputs to them in return), oblivious to other modules not under their control (Tanriverdi et al., 2007), which lowers the need for outsourcers to reveal their private organizational knowledge to vendors (Tiwana, 2008a). As MOBP increases, internal design changes in the outsourced process bring less impact on other processes. Thus there is less need for vendors to transfer their process management knowledge to outsourcers.

However, there are some situations where firms want to access and internally maintain ‘peripheral’ knowledge through outsourcing in order to be able to more effectively govern outsourcing alliances (Tiwana and Keil, 2007). In such alliances, MOBP still has some extent of impact on knowledge transfer, such as requiring more efforts and costs. Therefore, increased MOBP will lead to less knowledge transfer between outsourcers and vendors including the transfers of vendors’ specialized knowledge in the outsourced domains and outsourcers’ organizational knowledge. We hypothesize:

H5: MOBP has a negative impact on knowledge transfer between outsourcer and vendor.

RESEARCH PLAN

We plan to test the research hypotheses using survey method. Currently, we have collected scales and measures from previous studies in our literature review. We are making corresponding changes on these scales to adapt to the context of our study and will pretest the questionnaire with a pilot study. In order to measure the main construct in our research, MOBP, we have surveyed the relevant literature. We will use a six item, seven-point scale to measure MOBP from the aspects of stability and comprehensiveness of interfaces, interindependence, loosely coupling, easy assessment of the performance and interoperability with other processes, based on descriptions and measurements of MOBP construct in the modularity literature (Fang and Liu, 2008; Mikkola and Gassman, 2003; Sanchez and Mahoney, 1996; Schilling, 2000, Tanriverdi et al., 2007; Tiwana, 2008a, b).

The unit of analysis is the project dyad, since the level of modularity within the same relationship dyad can vary across different projects. Thus, in the main data collection, we plan to survey BPO service providers and their clients in China to collect data on the constructs of institutional pressures, MOBP, communication and knowledge transfer. We have collected a preliminary list of the companies providing and receiving BPO services in China. We plan to use partial least squares or structural equation modeling to test the validity and reliability of measurement and research hypotheses.

China’s BPO market is growing rapidly and receiving greater international attention. Service abilities of Chinese BPO providers have improved dramatically, because of favorable domestic environment for the development of service outsourcing industry. The scale of BPO industry amounted to 4.27 billion dollars in 2006 and 6.16 billion dollars in 2007. To facilitate the growth of services outsourcing industry, relevant institutions have built public service platforms, which provide standardized techniques, training, property right and norms, and services in order to spread the shared brand name ‘ChinaSourcing’. There exist 3000 software and information service outsourcing providers in China now, among which are such notable companies as Neusoft, Dalian Xinhua Infotech, and China Data Group (Beijing). China’s service outsourcing value chain is transferring from low-end to high-end, and the profit margin has improved. Chinese outsourcing service providers have already been dominant in Japan’s and South Korea’s ITO/BPO markets. Now they are trying to exploit ITO/BPO markets in the U.S. as well as the EU countries. Therefore, a study of China BPO will shed invaluable light to the research community of modularization and outsourcing.

CONCLUSIONS

This research introduces the concept of MOBP in BPO. It enhances our understanding of how mimetic, coercive, and normative pressures shape MOBP in the BPO practice, and how MOBP impacts communication and knowledge transfer.
between outsourcers and vendors. Studies on ITO and BPO have not examined the institutional context of modularization and outsourcing of business process as well as the impacts of MOBP on communication and knowledge transfer. This research will fill up these gaps and make contributions to the research on BPO and modularity.

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