

Evolving IT Organizational Identity as a Source of IT-enabled Enterprise Agility in China

Completed Research Paper

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Abstract

Prior research has proposed that IT may hinder the attainment of enterprise agility; how to prevent this hindrance and further achieve IT-enabled enterprise agility remains known. Because IT organizational identity can be an important guidepost for eliminating the hindrance, the purpose of this paper is to explore how to achieve IT-enabled enterprise agility through an evolving IT organizational identity. By drawing upon recent thinking in the enterprise agility and organizational identity literature, this paper proposes a process model of IT organizational identity evolution to argue that the process of recreating an IT identity leads an enterprise to attain IT-enabled agility. In the present study, the case of China's Haier Group is comprehensively analyzed based on the process model. Our study not only contributes to the knowledge of organizational identity and broader concepts of enterprise agility, but also provides useful means for practitioners to establish appropriate IT organizational identities over time.

Keywords: IT organizational identity, enterprise agility, typology, case study

Introduction

“The most impressive experience of working at Haier is that we made a big leap from playing a supporting role to being a strategic decision-maker over the past 15 years.” – CIO of Haier

In today’s turbulent, fast-paced, uncertain business environment, enterprise agility has been commonly regarded as imperative for business success (Christensen 1997; Sambamurthy et al. 2003). Enterprise agility is defined as the ability of firms to sense environmental change and respond readily and can be commonly broken down into two components: sensing and responding (Overby et al. 2006). Agile enterprises continually and quickly sense, detect and respond to market opportunities (Sambamurthy et al. 2003). The need of being an agile enterprise is particularly important in countries like China where rapid development of economy triggers much more turbulences and uncertainties in comparison to western countries, impressing the message that attaining enterprise agility for Chinese firms is a must. Prior research highlights how information technology (IT) provides firms with a wide range of functionalities to shape business strategies, organizational capabilities and customer relations to quickly attain enterprise agility (Fink and Neumann 2007; Oosterhout et al. 2006; Overby et al. 2006; Sambamurthy et al. 2003). Because the importance of IT in enterprise agility is broadly recognized, firms are striving to advance their IT capabilities to attain IT-enabled enterprise agility in their dynamic business environments (Fink and Neumann 2007; Overby et al. 2006; Tan et al. 2010b). However, for two reasons, firms’ efforts may sometimes result in the opposite outcome of hindering enterprise agility (Overby et al. 2006; Seo and Paz 2008). First, inappropriate IT management makes it difficult for firms to adjust to changing conditions, leading to non-reactive responses when the firm seeks new strategies (Overby et al. 2006). Second, the development of IT capabilities lacks clear guideposts, so firms may lack the capacity to effectively process a high volume of information (Dutton et al. 2010).

To resolve these two difficulties, we argue that the IT department, which holds the major responsibility for enhancing and managing IT capabilities, must constantly *sense* environmental changes and *respond* to them readily and proactively, for attaining IT-enabled enterprise agility. To do so, IT organizational identity, which refers to the identity of IT department, plays a critical role because it guides and manages the development of IT capabilities by constantly reminding employees about *“what we are aiming for as an IT department”* (Kogut and Zander 1996; Tripsas 2009). Organizational identity is defined as an organization’s members’ collective understanding of the features presumed to be central, enduring and distinctive (Gioia et al. 2000). Specifically, Tripsas (2009) defines the organizational identity as the organizational insiders and outside constituents’ collective understanding of the features that can be viewed as central, permanent and distinctive towards the organization. Based on the two definitions of organizational identity, therefore, we define our IT organizational identity as an IT department’s insiders and outside constituents’ collective understanding of the features of IT department presumed to be central, enduring and distinctive. Thus, such identity serves as an important guidepost in directing firms’ efforts to achieve IT-enabled enterprise agility.

However, because firms continually shift their business strategies over time, shifts of IT organizational identity will be triggered accordingly (Corley and Gioia 2004). Firms must possess different IT organizational identities to cope with the changes induced by their continual strategic shifts (Gioia et al. 2000; Tripsas 2009). As a result, IT organizational identity must be reestablished over time and at different developmental phases to attain IT-enabled enterprise agility. Given the lack of prior research on this important phenomenon, there is great interest in understanding how firms especially in China achieve IT-enabled enterprise agility based on the evolution of their IT organizational identity. The purpose of this paper is to provide an understanding of the process of recreating an IT organizational identity in different phases of IT capability development for enterprise agility by analyzing a Chinese case company. We posit that, by the end of each re-creation, a new IT organizational identity is derived in response to the strategic shift. Therefore, our research question is as follows:

How can IT-enabled enterprise agility be achieved through an evolving IT organizational identity?

The rest of the paper is structured as follows. First, we explore the theoretical background for our framework. Second, we provide a case description to show how our framework was developed. Finally, we discuss the contributions of the paper and close with a conclusion and directions for future research.

Theoretical Background

Existing Perspectives on IT-Enabled Enterprise Agility

In order to thrive in dynamic business environment, firms must possess the ability to *sense* changes in the organizational environment and the ability to *respond* efficiently and effectively in a timely, cost-effective manner (Overby et al. 2006; Seo and Paz 2008). The role of IT in enabling enterprise agility has attracted much attention recently (Mathiassen and Pries-Heje 2006; Overby et al. 2006; Sambamurthy et al. 2003). According to Mathiassen and Pries-Heje (2006), the literature relevant to IT-enabled business agility includes two levels of analysis, namely firm-level and process-level analyses. At the firm level, existing papers have focused on the role of IT in enabling enterprise agility (Overby et al. 2006; Sambamurthy et al. 2003), the change factors requiring agility (Oosterhout et al. 2006) and how to improve a firms' agile practices (Borjesson et al. 2006). At the process level, existing papers have investigated how the concept of agility can be applied to current business processes such as supply chains (Hovorka and Larsen 2006) and software development practices (Conboy 2009; Viden and Wang 2009). What has been noticeably missing from the current literature is a holistic investigation of the process of achieving IT-enabled enterprise agility. As a result, few suggestions exist concerning practical actions for firms to take in order to achieve IT-enabled enterprise agility and to gain a competitive advantage over time (Tan et al. 2010a). To understand the process of achieving IT-enabled enterprise agility, we first draw on the basic logic of pursuing enterprise agility: *"The organization must perceive incoming signals from its internal and external environments and responding reactively and proactively"* (Seo and Paz 2008). The need for enterprise agility in external environments to adapt to economic shifts and technological advancements, among other changes, has been widely noted (Overby et al. 2006), whereas incoming signals from the internal environment have not been considered in the existing literature.

In this paper, we aim to address the above-mentioned two gaps on IT-enabled enterprise agility. We argue that the IT department should be the primary actor to sense the changing signals of internal environment that are related to IT. One of the important signals is the misalignment between a firm's strategic shift and its current IT organizational identity. This is so for two reasons. First, IT organizational identity manages and guides the development of IT capabilities (Kogut and Zander 1996). Thus, a strategic shift introduced in the firm may trigger a need to adjust the firm's IT organizational identity due to induced identity ambiguity, which may result in a loss of direction in developing firms' IT capabilities (Corley and Gioia 2004; Tripsas 2009). Second, the role of IT in sensing the environment is to capture large amounts of data, likely from multiple sources (Seo and Paz 2008). Identity ambiguity caused by strategic shifts may blur the IT organizational identity, preventing the firm from effectively capturing data. When changes in the internal environment are sensed, a firm should initiate proactive and reactive responses. As proposed by Seo and Paz (2008), the respond may take the form of re-alignment of resources, business process restructuring, or, if the change is significant, the formulation of new strategic objects. Thus, we argue that reconfiguring IT capabilities can be a most relevant response because changes in capabilities may result in changing the IT organizational identity in a way that can be aligned with the new strategy (Autio et al. 2011; Bingham 2009; Overby et al. 2006; Srinivasan et al. 2009).

Overall, when a firm *senses* a misalignment between its new strategy and its current IT organizational identity, it is likely to *respond* by reconfiguring its IT capabilities to recreate its IT organizational identity and to attain IT-enabled enterprise agility. Next, we will introduce the concept of IT organizational identity and its evolution for attaining IT-enabled enterprise agility.

IT Organizational Identity

Although the importance of organizational identity has been well studied in the management and sociological literature for over 60 years (Fiol and OConnor 2005; Foote 1951; Hsu and Hannan 2005; Kogut and Zander 1996; Sutton and Callahan 1987), the construct has received little attention in the context of information systems. We will thus revisit the existing discourse on identity and subsequently introduce the concept of IT organizational identity, which plays a critical role in attaining IT-enabled enterprise agility. Organizational identity comprises those features that members of the organization perceive as central, enduring and distinctive in character and that contribute to how they define the organization and identify themselves within it (Dutton and Dukerich 1991; Sutton and Callahan 1987).

Organizational identity not only defines “*who we are*” as an organization but also informs strategic shifts and problems such as how to develop or reconfigure capabilities and resources (Dutton and Dukerich 1991). Organizational identity can also be defined as the collective identity of a group of people who pursue specific goals (Cooper and Thatcher 2010; Hardy et al. 2005). Although research on organizational identity is extensive, a number of gaps remain in the literature.

First, the continuity of identity ensures stability both within the firm and in its projections to outsiders, enhancing long-term survival (Hannan and Freeman 1984). However, environmental changes always necessitate a shift in identity (Tripsas 2009). For example, a strategic shift will necessitate a corresponding identity shift. Although our cumulative knowledge of identity construction and change is considerable (Corley and Gioia 2004; Pratt 2000), the dynamic process of identity change remains poorly understood. Our understanding of the construction of organizational identity will remain limited until this underlying process is characterized.

Second, most of the existing research on identity tends to focus on the construction and management of organizational identity (Derue and Ashford 2010; Pratt 2000) and neglects other types of identities that exist within the organization itself. Prior research showed that employees within an organization may receive weaker messages from organizational identity than from workgroup identity, which may provide more defined activities and opportunities for employees to see their impact on the group (Aron and McLaughlin-Volpe 2001). Workgroup identity refers to the collective identity of organizational teams that work on interdependent tasks within an organizational context (Guzzo and Dickson 1996). Nevertheless, workgroup identity merely provides guidelines to employees within the group itself, regardless of the organizational context (Cooper and Thatcher 2010). These two types of identities each have their own drawbacks: the scope of organizational identity may be too broad to have an effective impact within the organization, whereas the scope of workgroup identity may be too narrow to have an influence at the organizational level. Drawing on current discourse on both organizational and workgroup identities (Anteby 2008; Cooper and Thatcher 2010; Hardy et al. 2005), we theorize a new kind of identity, *intra-organizational identity*, that incorporates concepts of both organizational identity and workgroup identity. Intra-organizational identity can primarily be observed for departments because we argue in contemporary organizations, departments especially IT departments frequently perform activities across the whole organization. Therefore, the intra-organizational identity of an IT department must manifest a positive image both inside and outside of the IT department (Dutton and Dukerich 1991). Thus, we derive the concept of IT organizational identity, which is a specific case of *intra-organizational identity*.

Third, the linkage between identity and capability has been demonstrated in the previous literature (Burns and Stalker 1961; Dutton et al. 2010; Kogut and Zander 1996). Although it is obvious that the constructs are related, we still know surprisingly little about the underlying mechanisms of how changes in capabilities may lead to identity shifts. For example, the “innovative” identity of Apple has been confirmed based on its capacity to constantly roll out unique IT products.

Overall, the lack of understanding of intra-organizational identity and dynamic identity change processes indicates a weak theoretical foundation on which to broaden the application of the identity concept into a practical context. In this paper, we aim to understand how the evolution of IT organizational identity plays a role in a firm attaining IT-enabled enterprise agility that explores the underlying identity change process and enhances our understanding towards *intra-organizational identity*.

The Evolving Process of IT Organizational Identity

Changes in the organizational environment (such as strategic shifts) typically necessitate changes in IT organizational identity because the IT department must adapt to the organizational environment as a responsive player (Tripsas 2009). Previous research has shown that the loss of structural coherence in a firm’s capabilities changes the firm’s identity. The structural coherence of capabilities can break down when the firm’s capabilities are reconfigured (Burns and Stalker 1961; Dutton et al. 2010; Joshi et al. 2010). Therefore, upon sensing the need for an identity change from misalignment between new strategy and current IT organizational identity, we argue that an IT department should reconfigure its current IT capabilities in response to the misalignment to create a new IT organizational identity that is congruent with the current strategic shift.

Sensing Misalignment

Strategic shifts are common within an organization because organizations continually reorient their development and targets in response to environmental change (Overby et al. 2006). Strategic shifts, therefore, can blur an organization's current IT organizational identity because a change in strategy requires a higher level of IT capabilities to fulfill the strategic vision, thus leading to misalignment between the desired strategy and the organization's current IT organizational identity. Such misalignment causes uncertainty within the IT department and further results in ambiguities of IT organizational identity, which makes it difficult for IT department members to make sense of "*who we are as an IT department*" (Corley and Gioia 2004). Consequently, temporal identity discrepancies will gradually emerge and drive the IT department to pursue who they should be as an IT department, subsequently giving rise to motivational drivers (Corley and Gioia 2004; Pratt 2000). With such motivational drivers in mind, IT strategic goal will come to the surface across the IT department gradually.

Responding with Capability Reconfiguration

Drawing on prior research on the construction of organizational identity and identity change (Corley and Gioia 2004; Derue and Ashford 2010; Pratt 2000; Tripsas 2009), we aim to illustrate the nature of identity evolution over time through reconfiguring IT capabilities by exploring how IT organizational identity evolves along with the strategic shifts within an organization. According to Lavie (2006), three mechanisms are involved in reconfiguring capabilities: capability substitution, capability transformation and capability evolution. Drawing upon these reconfiguration mechanisms, to recreate IT organizational identity, we argue that an IT department must perform the following: **1) De-identification**, which includes two components that are necessary to build internal identity. The first requires loosening ties to old identities by reconfiguring current capabilities (Fiol 2002). The second involves institutionalizing means for bringing coherence and stability to the reconfigured capabilities (Bingham 2009). **2) Iterative cycles of feedback** are ongoing processes in which the IT department closely observes and interacts with other areas of the organization to understand how others view the IT department in an effort to better realize the organization's IT efforts (Hall 2002); and **3) Organization codification** is a process in which, once the internal and external identities are built, the IT department solidifies the new beliefs as part of the organization's core ideology by embedding the new knowledge derived from its reconfigured capabilities into operating routines, thereby forming a deeply structured identity both inside and outside of the IT department (Ibarra 2003; Pratt and Foreman 2000).

Overall, in response to sensed misalignments between IT organizational identities and new organizational strategies, we argue that an IT department must perform the three steps above repeatedly over time to recreate IT organizational identities that are compatible with the new strategies. The process of sensing and responding to capabilities associated with the creation of a new IT organizational identity will bring IT-enabled enterprise agility to the organization as the IT organizational identity evolves.

Research Methodology

Because we aim to understand the dynamic evolutionary process of IT organizational identity for IT-enabled enterprise agility, and because both of these are complex, multi-faceted phenomena that are deeply embedded in their organizational context (Tan et al. 2010b), we used an inductive and field-based case study that is well situated for resolving our "how" research questions (Pan and Tan 2011; Ravishankar and Pan 2008). The organization we studied is the Haier Group, which is a multinational corporation that has specialized in manufacturing home appliances since 1984. One of our authors has been tracing the development of Haier for 5 years. Although studying a single organization limits the generalizability of the findings, it provided us with opportunities to delve into the organization and, thus, to develop a richer understanding of the dynamic evolution of IT organizational identity by integrating interview data with content analysis of archival data from websites, books and other sources. The case organization was selected for three reasons. First, Chinese firms are relatively young in comparison to Western firms; this case allowed us to explore a complete timeline of Haier's IT department growth to better understand the evolution of IT organizational identity. Second, the rapid growth of Chinese firms, influenced by the booming Chinese economy, has triggered frequent strategic shifts within the organization and has required sweeping IT organizational identity change to align with the shifted strategies (Corley and Gioia 2004). This rapid change allowed us to identify a wide range of derived identities that eventually led to IT-enabled enterprise agility. Third, Haier Group successfully attained IT-enabled enterprise agility by continuously recreating its IT organizational identity. Thus, it meets the

criteria for a case study examining how to attain IT-enabled enterprise agility by exploring evolving IT organizational identity.

Data Collection

Data covering the entire lifespan of Haier's IT organizational identity were primarily collected from four sources: 1) semi-structured interviews conducted in September 2010; 2) participant observation from June 2005 through October 2010; 3) internal archival materials, such as meeting minutes, from the IT department; and 4) public sources. The reasons for collecting data from multiple sources are to establish a unique perspective incorporating both insiders' and outsiders' points of view (Evered and Louis 1981) and to triangulate the themes and conclusions (Miles and Huberman 1984).

Initially, one of the authors conducted a number of semi-structured interviews at Haier as part of other research projects started in 2005. The original research purpose of these interviews was to understand Haier's product innovation management. The focal research topic of IT organizational identity gradually emerged based on the author's prior interviews with Haier. Based on the author's contacts established with Haier, we were given access to internal company documents, including meeting minutes during Haier's strategic shifts. In total, 52 interviewees from top management in each functional area of Haier were interviewed (as in table 1). Interviews averaged one-and-a-half hours each, were open-ended, and followed a protocol that evolved with the research project (Strauss and Corbin 1998). Some of the interviews lasted for half of a day, and we spoke to some of the interviewees multiple times. Between 2005 and 2010, one of the authors engaged frequently in participant observation and recorded detailed field notes (Lofland et al. 2005).

Table 1. Research Activities and Interview Protocols			
Date	Role	No. of Interviews	Research activities
2005-2007			
Jun. 2005	Senior managers, middle-level managers	9	Interviews on business process engineering
Dec. 2005	Senior lecturers of Haier University	5	Workshop on trainings of sale managers
Jun. 2006	Product developers, Middle-level managers	7	Interviews on product innovation management
Mar. 2007	Deputy CEO	2	Onsite meeting on organizational strategies
2008-2009			
Aug. 2008	Research analysts, Senior managers at agent companies in Bei Jing and Ji Nan	5	Onsite meeting on customer relationship management and supply chain management
Apr. 2009	Senior Managers	5	Interviews on order fulfillment systems
2010			
Sep. 2010	CIO, senior managers, middle-level managers, senior IT executives	15	Interviews on the development of IT department, the identity of IT department and organizational strategies
Oct. 2010	Senior IT executives	4	Follow-ups through email and offsite meeting on order fulfillment systems of Haier

The core interview questions (as in Table 2) were derived from the theoretical underpins in section 2 and

are consequently organized by the sensing and responding activities as well as the outcomes at the end of each phase. Other relevant questions include the overall history of IT development, difficulties Haier met during system development, team and interviewee background, and some other questions to probe interviewees' understanding of IT organizational identity and IT-enabled enterprise agility.

Themes	Core questions
Sensing misalignment	<ol style="list-style-type: none"> 1. What are the milestones of Haier's organizational strategy? 2. How does IT play a part in those milestones? 3. How does IT department respond when the goal set by top management is unclear?
Responding with capability reconfiguration	<ol style="list-style-type: none"> 1. How does IT department respond in order to fit with the new strategy? 2. How does IT department improve its external impact through identity-building? 3. What is the basis for IT department to make a conclusion that a new IT organizational identity was recreated?
Outcome received	<ol style="list-style-type: none"> 1. As the significance of IT organizational identity increases, how does this identity changing process benefit Haier as a whole?

All interviews were taped and transcribed. Before visiting the site, the IT department provided internal archival materials describing the general development process of the IT department so that we could conduct preliminary analyses. After we completed our interviews, supplementary data from public sources were sought to corroborate the data obtained. The sources included books, newspaper articles and Haier Group's official corporate website. Field notes previously taken by one of the authors were also referenced to complement the primary source of data.

Data Analysis

We analyzed the data in tandem with data collection (Kirsch 2004). Before arriving onsite, we identified a number of pertinent themes from the literature that might be relevant to the development of IT organizational identity for IT-enabled enterprise agility. The internal archival materials were the starting point from which we conducted preliminary theme refinement. The purpose of this refinement was to form the basis of our theoretical lens, which served as a "sensitizing device" (Klein and Myers 1999) to direct our later data analysis. While we were onsite, we verified the alignment between our preliminary model (derived based on the literature) and the collected data to modify our theoretical lens accordingly. The majority of data analysis efforts took place during the offsite period. To fully analyze the data, we followed the open coding and axial coding techniques introduced by Strauss and Corbin (1998). Open coding provides measurements to label the phenomena and concepts embedded in data and group these concepts into categories. Followed by axial coding, identifications of relationships within these categories and validation of relationships were carried out. Specifically, we performed three separate steps to facilitate our understanding of data and ambiguous information while eliminating preliminary biases.

First, we analyzed the transcripts for similar comments and issues (to highlight the key topics) and grouped them into themes accordingly. The same process was repeated until a final set of themes was developed. A number of analysis strategies were applied, including the temporal bracketing strategy, narrative strategy and visual mapping strategy (Langley 1999). The first step was to eliminate irrelevant information on the basis of the wealth of the information and its potential for variance (Strauss and Corbin 1998).

Second, a detailed analysis was performed to identify information that addressed our research question (Lofland et al. 2005). Because the purpose of this paper is to explore how the evolving IT organizational identity can be a source for IT-enabled enterprise agility, the storyline of the final set of themes was

organized and codified based on this purpose without introducing preliminary analytic biases. Our goal was to capture the essence of Haier’s IT organizational identity over time. To eliminate bias in our interpretation, our conclusions were confirmed with archival materials and publicly available materials.

Third, we began to recursively focus on aligning the empirical data, our theoretical lens and the process model (Kirsch 2004; Ragin 1994). Based on visual maps and the narrative created in the first step, our analysis of the interviews, internal archival materials and previous field notes revealed that an internal strategic shift is the major trigger of a need to change the current IT organizational identity to fit with the shifted strategy. In responding to the sensed change, an IT department needs to reinvent its identity by reconfiguring its current IT capabilities to attain enterprise agility. This observation resonated with the findings from the agility and organizational identity literature (Corley and Gioia 2004; Overby et al. 2006; Sambamurthy et al. 2003; Seo and Paz 2008; Tripsas 2009). From the empirical data, three distinctive phases were noticed based on the different IT organizational identities that emerged over time. Strategic decisions, events and activities were classified into these three phases based on the phases themselves and on our confirmed theoretical lens. Data were analyzed iteratively until a state of theoretical saturation was reached (Glaser and Strauss 1967).

Reliability and Construct Validity

Interpretive-based research has been questioned with the issues relating to reliability and validity in particular. To ensure the reliability and validity during the study, we adopted the techniques proposed by Yin (2003), as in table 3.

Table 3. Steps to Ensure Reliability and Construct Validity		
Reliability		
<p>1. Case study protocol</p> <ul style="list-style-type: none"> • Identifications and selections of case study sites • Informant profiles and contact information • Samples of interview questions • Possible informant characteristics • List of other potential topics 	<p>2. Case study database</p> <ul style="list-style-type: none"> • Recorded audiotapes and transcripts • Email and telephonic discussion with informants • Field notes: impression of informal conversations with informants during fieldwork • Company documents such as meeting minutes relating to IT development 	
Validity		
<p>1. Multiple sources of evidence</p> <p>We have already discussed the use of multiple sources of evidence, which are: 1) Semi-structured interviews 2) Participant observation 3) Internal archival materials 4) Public sources</p>	<p>2. Establishing a chain of evidences</p> <p>In the section of case description, we used extensive information from the case study database. The data collected from each sources were carefully recorded. This is to ensure a recoverable audit trail. The chain of evidence presented thus helps link the empirical material with the findings.</p>	<p>3. Review of case drafts</p> <p>The draft of the case was reviewed by two informants via email. They also recommended some changes. Feedback workshop was organized with the case company during subsequent visits.</p>

Case Description

Haier Group is now the third largest manufacturer of white goods worldwide. Its products cover a wide range of categories ranging from refrigerators to computers. Haier Group started as the Qingdao Refrigerator Plant in the early 1980s and nearly filed for bankruptcy after a few years of establishment due to deficit financing of up to US\$ 230,000. In 1984, the current CEO of Haier, Ruimin Zhang, took over the company and began to make fundamental management changes at Haier, especially focusing on quality control. Since then, Haier Group has gradually established itself as a world-renowned brand with excellent quality and services. By 2009, the 25-year-old Haier had successfully built its production and sales network to include 30 overseas factories and manufacturing bases, 18 research and development centers, 10 industrial parks, 58,800 sales offices and 96 product group categories ranging from

refrigerators and washing machines to computers and televisions. It currently has more than 50,000 employees worldwide and achieved an annual revenue for 2010 of US\$ 20.7 billion.

Haier's IT department was established in the early 1990s and placed Haier in the first group of enterprises in China to invest in emerging IT. Intrigued by IT booming in China, Haier invested large amounts of money and resources in shaping its IT infrastructure to transform the identity of IT department. The department shifted gradually from a supporting function to a strategic decision-making role over a period of 15 years. The number of employees in the IT department increased from 10 people at its creation to 265 people today. The IT development at Haier can be categorized into three phases, namely, automation, inputs of multiple systems and ubiquitous integration of systems. Based on our prior theoretical underpin, we will now discuss each of these phases in relation to the following themes: 1) a sensed strategic shift causing a blurred current IT organizational identity (misalignment); 2) responding to the new strategy by reconfiguring current IT capabilities; and 3) outcomes.

Phase 1: Automation (1994-1997)

With the booming Chinese economy and the worldwide new trend of IT development in the mid-1990s, Haier's top management had a vision of leveraging the novel IT to strengthen its existing business operations. With this vision in mind, Haier invested more than US\$ 4.5 million to introduce high-end technologies into the organization in an attempt to replace manual work with computer-based work. Haier's efforts served as a starting point for its computerization. Although Haier's first IT attempt yielded some benefits at the operational level (such as shortening the product research period), its IT vision in that period was not fully realized.

Later in 1996, triggered by Haier's new strategy of creating famous brand in China, Haier's IT department cooperated closely with an external vendor to build its first official corporate website. The website not only helped Haier to rapidly market its products and organization, and enabled it to have business footprints worldwide, but also served as an information-gathering center for Haier headquarters and its subsidiaries across China. In 1997, based on the positive feedback received from the website endeavor, the IT department was authorized to build Haier's customer service center to form a network of service information that was available nationwide. Upon its completion, Haier was able to provide information services to more than 7,000 customers per day and thus gained a reputation for excellent customer service.

From 1994 to 1997, Haier's IT department helped to establish the foundation of IT infrastructure upon which multiple systems were later built. Because of the recent introduction of IT in China, most employees did not know how to use a mouse and keyboard properly. To solve this problem, the IT department recruited external experts to train its staff in the implemented technologies. After the IT staff had fully mastered these technologies, one-on-one training was provided to the rest of the Haier staff who might potentially need to use the technologies. To drive the technological change introduced in Haier, top management introduced a policy stating that staff would be qualified to work only after receiving a training certificate from the IT department. A summary of evidences related to our theoretical underpin is provided in Table 4.

Table 4: Re-creation of IT organizational identity in Phase 1	
Sensing Misalignment	
Strategic Shift	<p><i>"In the period of 1995 to 1997, Haier aimed to build a nationwide famous brand. So, we greatly expanded our production line, sales network and customer services."</i> - Senior IT Executive A</p> <p><i>"Haier reached a new high in its business development through establishment of 4 more factories in 1997, bringing the total number of agent companies selling Haier's products up to 42."</i> -Head of Division One</p>
Identity Ambiguity	<p><i>"With the expansion, the traditional paper-based working practice was unable to handle such a large amount of information simultaneously. We were then trying to fulfill what had been requested by the top management."</i> - Manager of Division Three</p> <p><i>"Because the firm expanded so rapidly, many problems started to emerge, including the requirement of just-in-time service, inaccurate product delivery and a drop in customer satisfaction. As an IT department, we did not know how to help with these problems."</i> - Senior IT Executive A</p>

IT Strategic Goal	<p><i>"To respond to the goals from top management, we aimed to build the intranet and official website in 1996 and were among the first group of enterprises in China to offer a customer service center via phone in 1997." - Manager of Division Two</i></p> <p><i>"We felt that the company needed a new approach to managing its current overwhelming information flow, so we proposed a number of plans based on current business operations and handed them over to an external software vendor for implementation." - Head of IT Infrastructure Division</i></p>
Responding with Capability Reconfiguration	
De-identification	<p><i>"Because of the urgency of facilitating Haier's new strategic vision, we introduced a number of technologies to our business operation. It was very challenging initially as we lacked qualified employees to use the systems, but they understood that the IT change was necessary and that getting used to the new way of doing things was a must." - Senior IT Executive B</i></p> <p><i>"For the new system implemented in Haier, top management urgently wanted to see a return, so a number of policies were constituted to encourage employees to learn swiftly." - Head of Strategy Division</i></p>
Iterative cycles of feedback	<p><i>"We did not provide formal training. All of our training was provided on a one-to-one basis. Employees from the IT department taught other system users step by step. We would not stop training them until they were able to use the system to receive orders and distribute jobs." - Manager of Division One</i></p> <p><i>"In the early stage of the new information systems, most employees in the firm could not even use a mouse and keyboard properly. With the training provided, they started to realize that the new system could help to reduce their workloads tremendously." - Manager of Division One</i></p>
Organizational codification	<p><i>"Prior to introduce systems, employees did not have the concept of so-called 'processes'. After we trained them, the first thing they came to understand was the processes in which they were involved. Gradually, they understood the value of their work and its relationship with the downstream and upstream elements of the process." - Manager of Division Two</i></p> <p><i>"IT department had normalized employees' daily working routines and had driven employees' initiatives to a large extent." - Head of Division One</i></p>
Outcome	
<p><i>"The implementation of CAD, led by the IT department, shortened the development cycles of IT systems, thereby transforming customers' needs into actual products more quickly. Meeting the market needs faster improved the company's competitive edge tremendously." - Head of IT Strategy Division</i></p>	

Phase 2: Inputs of Multiple Systems (1998-2004)

Before 1998, a product-oriented organizational structure governed by IT-enabled automation enabled Haier to rapidly diversify its product offerings. Although the rapid expansion exceeded Haier's capability to handle information in 1998, the benefits brought by increased IT capabilities were diluted by the excessive coordination efforts between different product departments due to the emergence of information boundaries. Incomplete and inefficient information flow within the organization would inevitably put Haier in a risky situation in which its current business model, including marketing, logistics and finance, was seriously affected by the new, fast-paced market conditions, forming barriers to Haier's vision of becoming an internationally recognized brand. From 1998 to 2004, in order to respond to the market in a speedy and flexible manner, Haier reengineered its business processes by unifying marketing, procurement and finance across all product departments. In addition, Haier aimed to increase its market shares worldwide and started to establish factories and research centers overseas. Therefore, a number of systems were introduced to Haier including B2B and B2C platforms, procurement systems and ERP etc.

In the wake of the IT department's efforts, Haier was able to outperform its competitors in terms of responding to the market in a swift manner. For example, prior to the unification of logistics procedures, each product department had to make its own procurements from a number of different vendors. By leveraging BBP systems, the procurement procedure was standardized for all of the product departments and was restricted to purchases from only two regular vendors, which significantly reduced the procurement costs. Based on the IT foundation built previously, the IT department transformed Haier's IT knowledge from basic IT use to a higher level of IT-based business process standardization, reducing the necessary coordination efforts by spanning boundaries that blocked information flows between product departments. A summary of evidences related to our theoretical underpin is provided in Table 5.

Table 5: Re-creation of IT organizational identity in Phase 2
Sensing Misalignment

Strategic shift	<p>“Our CEO presented an idea of solving the ‘time’ and ‘space’ problems via ‘speed’. The main idea behind this was to improve operational agility through integrated business processes.” –Senior IT Executive C</p> <p>“As our businesses expanded in 1998, the most important question we faced was how to shorten the information flow cycles across the globe to respond to the market faster.” – Manager of Division Three</p>
Identity ambiguity	<p>“With the business process of reengineering started, we felt that although employees were placed in the same department for the purpose of integrating business processes, the IT knowledge of each employee was still isolated. We in the IT department felt we should focus on crossing IT knowledge boundaries rather than on introducing new systems without being well prepared.” –Head of Division Four</p>
IT Strategic Goal	<p>“Prior to the inputs of these systems, we thought a project should be completely finished as long as its implementation was done. But now, we have to watch all the way through its implementation and use until we find it to be fully effective.” - Head of IT Strategy Division</p> <p>“With the strategic shift from business expansion to rapid responding to the market, we realized that we have to integrate current business processes to better utilize our own performance.” – Manager of Division One</p>
Responding with Capability Reconfiguration	
De-identification	<p>“Beginning in September 1998, Haier started to transform its business processes. To facilitate these efforts, since each product department had its own IT division that was working on promoting learning of new IT knowledge; now we have connected these divisions together to build a unified platform for each process.” – Head of Division Three</p> <p>“The impetus to use information systems came from top management, which required the IT department to integrate IT knowledge across Haier. For example, we were required to interpret the data observed from each IT-enabled business process, and even the CEO and CIO did the same thing as we did, to set examples for the rest. Given the efforts, now we are getting used to linking up the IT knowledge to get a holistic picture of the organizational operations” – Senior IT Researcher A</p>
Iterative cycles of feedback process	<p>“Taking procurement as an example, prior to introduction of ERP, the process was very complicated and time consuming. With the IT department’s long-time promotion of ERP systems, Haier grasped the essence of ERP systems.” – Manager of Division Two</p> <p>“After 1998, when Haier proposed some new management ideas, the IT department had to fulfill the needs based on prior IT knowledge and in close cooperation with external vendors to connect the processes across departments.” – Manager of Division Four</p>
Organizational codification	<p>“From 1998 to 2004, information systems covered nearly every single department at Haier and maintained information sharing among departments.” – Senior IT Researcher B</p> <p>“Compared with the period of 1994 to 1997, the biggest change we made in phase two was to integrate the isolated systems across Haier to provide visualized data for the entire business process, reflecting the ‘end to end’ visualization required by the top management.” – Manager of Division One</p>
Outcome	
<p>“The top management was able to visualize the entire business process to quickly find out which part of the process was being affected by the information log, thereby responding to the market very fast.” –Head of Division Two</p>	

Phase 3: Ubiquitous Integration of Systems (2005-Present)

In 2005, although Haier entered the strategic phase of developing a globalized brand, the backend systems could not keep up the pace necessary to support this vision. Two major problems from previous phases have yet to be solved. First, the systems implemented in phase two were not fully utilized, resulting in resource wasting and information distortion. Second, the IT department adopted a learning-by-doing approach to build Haier’s information systems and lacked a thoughtful plan for the implementation as a whole. In 2007, aiming to solve these problems, the CEO of Haier proposed the idea of an “information revolution” that would last for 1,000 days. Therefore, the major responsibility of the IT department in phase three is to integrate all 600 isolated systems and to make efforts to establish connections with overseas factories to fulfill the need for configuring resources in a global context. In addition to this responsibility, the CEO of Haier proposed an “order fulfillment system for every single employee”, which means that every employee at Haier must make his or her own prediction about how many products he or she must produce or sell in a day, a week and a month. This proposal put much pressure on the IT department, which was required to lead the process. Once the system is successfully implemented, it will be the backbone of Haier’s entire operation. Therefore, the IT department must be able to drive the fulfillment of the vision.

From 2005 to the present, the IT department has focused primarily on two missions. One is to build the order fulfillment system and operationalize its use; the other is to build the so-called “Global Value Systems” that are centered around the ERP system and involve many other systems. The achievements of these two missions are vital for the survival of Haier in the global context. In order to meet Haier’s globalized brand vision, the IT department is making ongoing efforts to explore the values of the developed systems to create a better fit with its strategic target, and it has become involved in many decision-making processes. For example, when the CEO proposed the “1000-day information revolution” in 2007, the IT department was the core decision maker in the boardroom. The identity of the IT department has been transformed from its initial supporting function to that of a strategic decision maker.

Table 6: Re-creation of IT organizational identity in Phase 3	
Sensing Misalignment	
Strategic shift	<p><i>“The strategy had been shifted from internationalization to globalization. These two sound very similar but there is a difference. Internationalization focuses only on the market perspective, but globalization must also consider the service rather than only the market.” – Manager of Division One</i></p> <p><i>“Our group aims to set sales targets for every single employee within the group. The information systems have been supporting this vision.” – Manager of Strategy Division</i></p>
Identity ambiguity	<p><i>“We were not clear about how we could help with the new strategy until 2007.” – Senior IT Executive D</i></p> <p><i>“Each IT division worked for its own product department, regardless of what was currently happening at the organizational level” – Senior IT Researcher C</i></p>
IT Strategic Goal	<p><i>“Although each division had done its best to fulfill the strategic need, the cumulative efforts did not pay off. So we need to have a long-term development strategy in mind.” – Manager of IT Strategy Division</i></p> <p><i>“In responding to the development of order fulfillment systems, we have to integrate all the information onto the same platform, requiring better performance from the IT department.” - Senior IT executive E</i></p>
Responding with Capability Reconfiguration	
De-identification	<p><i>“Since 2005, we have been working on integrating the information systems onto a single platform from which every participant can access information directly. The platform will gradually evolve IT employees’ routines from spanning boundaries to being major players.” – Manager of Division Three</i></p> <p><i>“Before 2005, the IT department was under the strategy department and called the IT strategy department. In order to promote innovation, the IT department was spun off from the strategy department and had its name changed to the process and system innovation department.” – Manager of Division Four</i></p>
Iterative cycles of feedback process	<p><i>“The IT department takes the major responsibility of leading the 1000-day information revolution and is the decision maker on business process changes within the organization to fulfill the order fulfillment system vision from top management” – Manager of Division Two</i></p> <p><i>“The ordering fulfillment system is to set individual targets for every employee and to be used as a monitoring tool to achieve this goal.” – Manager of IT Strategy Division</i></p>
Organizational codification	<p><i>“Based on our past achievements, we have been thinking about how we can make better changes for Haier, especially from the perspective of the IT department.” – Manager of Division Three</i></p> <p><i>“We are now pretty clear about what we are doing and where we are going to.” – CIO of Haier</i></p>
Outcome	
<p><i>“With the support of our Global Value Systems, our group is able to respond to the market in a swift and clear manner by providing localized production, design and marketing worldwide.” - Manager of IT Strategy Division</i></p>	

Discussion

In the present study, we aimed to understand how enterprise agility can be achieved through an evolving IT organizational identity. Guided by our preliminary underpin, the patterns that emerged from our data have been classified into three distinct phases of IT organizational identity evolution from which our final process model can be inductively derived (refer to Figure 1). We will next discuss how our model is corroborated by the current literature on enterprise agility and organizational identity and, in turn, how our model will enrich the relevant literature.

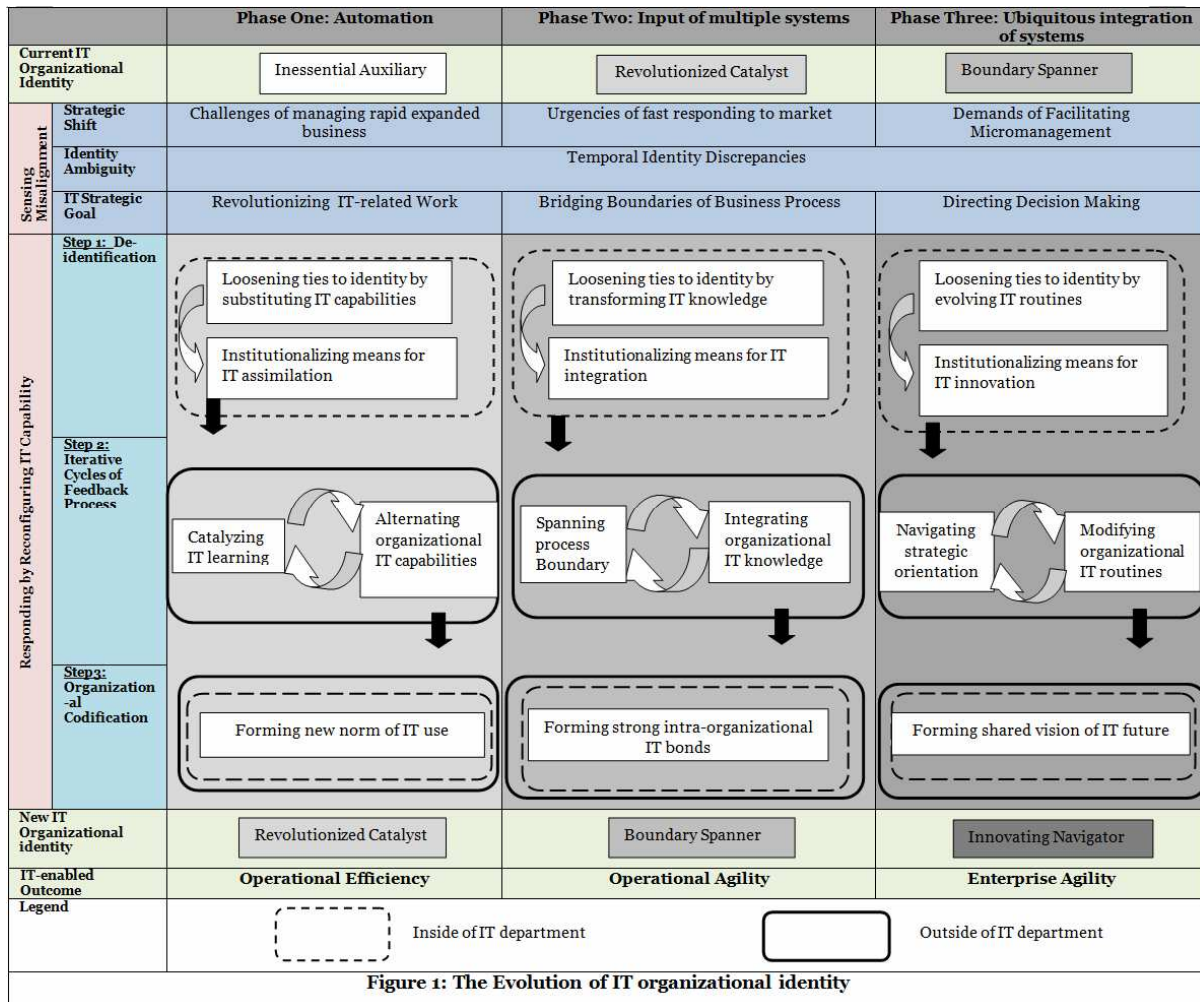


Figure 1: The Evolution of IT organizational identity

From Inessential Auxiliary to Revolutionized Catalyst

At the beginning, the IT organizational identity was theorized as an *Inessential Auxiliary* because IT organizational identity had less of a positive impact on directing IT capability development (Dutton et al. 2010). However, due to Haier’s goal of creating famous national-wide brand, *Inessential Auxiliary* became blurred because of temporal identity discrepancies aroused by the strategic shift. This sequence of events is in line with the notion that organization members recognize an inconsistency in identity claims when they compare a desired image with present identities that are still important for them (Corley and Gioia 2004). Our data further reveal that the recognition of the identity inconsistency will subsequently elicit the motivational drivers that lead organization members to set a clear IT strategic goal of attaining the desired identity (Pratt 2000).

Due to sensed misalignment, the IT department introduced advanced technologies to Haier for the first time to align with Haier’s branding strategy. This is in line with the notion of capability substitution, as it changes the portfolio of capabilities, requires immediate action and has strong responsiveness (Lavie 2006). Upon introducing the needed technologies, the IT department institutionalized new policies and regulations to facilitate the assimilation of these technologies, confirming the understanding of de-identification as “*unfreezing current beliefs with old identification*” (Fiol 2002). Next, the mission of IT department was shifted to catalyze the rest of Haier to learn the new technologies and further assimilate them. Therefore, the IT department interacted closely with the rest of Haier in an attempt to catalyze learning about current IT capabilities at the organizational level. This reflects the conceptualization of *feedback process* states in which the basis for the viability of identity elements is the matching of decisions and practices with identity elements (Seidl 2005). Eventually, our data reveal that a norm of IT use was formed in response to the efforts by the IT department to recreate its identity (Brown and Starkey

2000). This is in line with organizational codification as proposed by Rousseau (1998). As a result, a new IT organizational identity was derived – the *Revolutionized Catalyst*. By swiftly sensing and responding to the strategic shifts, the process of recreating the IT organizational identity contributed significantly to the attainment of operational efficiency (Conboy 2009; Lyytinen and Rose 2006).

From Revolutionized Catalyst to Boundary Spanner

In the second phase, due to the isolation of business processes across Haier, the overall time necessary to respond to the market lagged behind because of the lengthy time taken to process the received information effectively. The temporal identity discrepancies emerged again (Corley and Gioia 2004), caused by the misalignment between the current IT organizational identity - *Revolutionized Catalyst* - and the strategic shift. To process information in a swift and efficient manner, the IT department should reinvent its IT organizational identity as a *Boundary Spanner* between different product departments.

Based on the substituted IT capabilities obtained in phase one, the IT department introduced a number of technologies to modify its current IT knowledge base and routines (Ravishankar and Pan 2008), reflecting the notion that capability transformation changes particular capabilities, requires gradual but confined change and integrates routines and knowledge (Lavie 2006). Through such efforts of IT department, the internal identity was achieved within the IT department; this was followed by building an external identity by interacting with the rest of the organization. In the last step, a strong intra-organizational IT bond was formed (Gioia et al. 2000; Pratt 2000) to maintain close interaction between different product departments by leveraging IT. By the end of second phase, the new IT organization identity was transformed to *Boundary Spanner*. Meanwhile, the recreation of IT organizational identity again contributed significantly to the attainment of operational agility (Conboy 2009; Lyytinen and Rose 2006).

From Boundary Spanner to Innovating Navigator

In the third phase, our data reveal that top management of Haier started to pursue its globalization strategy and rolled out a number of new ways of managing production and marketing, especially focusing on aspects of micromanagement. In order to align with these new strategies, the IT department was motivated to direct decision making at Haier. Therefore, capabilities were developed to build a new internal and external IT organizational identity by navigating strategic directions and modifying employees' routine jobs (Pan et al. 2007), reflecting the notion of capability evolution in which the capabilities of the IT department have strong path dependence on prior configurations (Lavie 2006). By the end of the third phase, a shared vision of the IT future was formed as employees heavily relied on leveraging IT to complete their jobs and actively provided suggestions for developing a more comprehensive IT system for Haier (Pratt 2000). The IT organizational identity thus changed from *Boundary Spanner* to *Innovating Navigator*. Based on the IT department's cumulative efforts to recreate IT organizational identities, the firm will be able to attain IT-enabled enterprise. This is because, in line with the notion of enterprise agility (Overby et al. 2006; Seo and Paz 2008), the IT department can swiftly sense and respond to environmental changes.

Overall, the continual sensing and responding activities of IT department for recreating IT organizational identity (Overby et al. 2006; Seo and Paz 2008) will lead to IT-enabled enterprise agility in a phased approach. Specifically, the need to change the IT organizational identity is triggered by sensing a misalignment of a new strategy and the current IT organizational identity. In other words, the current IT organization identity is incompetent to direct a firm's IT knowledge base, IT capabilities and the information filters that are necessary to achieve the shifted strategy (Bingham 2009; Tripsas 2009), leading to temporal identity discrepancies between the current and desired identities. Such temporal identity discrepancies result in identity ambiguity (Corley and Gioia 2004) that subsequently arouses the IT department's motivation to overcome the ambiguity (Pratt 2000).

In response to the sensed misalignment, the IT department recreates its IT organizational identity by reconfiguring IT capabilities (Autio et al. 2011; Bingham 2009; Sapienza et al. 2006) through the three steps that we proposed namely, de-identification, iterative cycles of feedback process and organizational codification. By the end of the three steps, a new IT organizational identity will be derived that is competent to direct the firm's IT knowledge base and capabilities (Anteby 2008; Derue and Ashford 2010). Our data reveal that the three steps of recreating IT organizational identity have different points of emphasis. Step one focuses primarily on the internal identity of the IT department because de-

identification should begin within the organization itself (Fiol 2002). Step two then moves on to the interaction between the IT department and the rest of the organization, thus constructing the external identity of the IT department (Hardy et al. 2005; Pratt 2000). Finally, step three aims to consolidate the IT organizational identity internally and externally by embedding the obtained routines, knowledge and capabilities into daily operations (Rousseau 1998). Specifically, the underlying process behind is building internal IT organizational identity, reinforcing external IT organizational identity, and solidifying both identities respectively. Internal IT organizational identity represents a shared understanding among IT department members regarding what is central, distinctive and enduring about the department (Yin 2003); when compared to external IT organizational identity, which represents how others view the department, internal IT organizational identity is much more closely associated with the core ideology (Pan et al. 2007). In terms of reconfiguring IT capabilities, our data suggests that the three capability reconfiguration mechanisms (i.e., capability substitution, capability transformation and capability evolution) proposed by Lavie (2006) happened at three consecutive phases of IT organizational identity development. In other words, the three mechanisms built upon each other phase by phase according to the increasing magnitude of actions that the IT department took during its development, which also reflects that the enabling role of IT organizational identity in attaining IT-enabled enterprise agility has been reinforced over time.

Typology of IT organizational identity

Four types of IT organizational identities have been theorized over three distinct phases, namely *Inessential Auxiliary*, *Revolutionized Catalyst*, *Boundary Spanner* and *Innovating Navigator*. In relation to these four types of IT organizational identities, our data further reveals that Haier's organizational structure has been shifted from mechanistic to organic during the three phases. At first phase (1994-1997), Haier pursued a more mechanistic structure to start with its business since Haier maintained a relatively rigid structure that is inflexible and bureaucratic. For example, Haier distributed monthly sell targets to each product departments on a regular basis. However, as the need of responding to the market in a swift manner in second phase (1998-2004), Haier started to make transformation on its structure from mechanistic to organic. Such change was also triggered by the fact that Haier's rapid expansion of businesses required a flexible structure with few levels of hierarchy so as to maintain a shorter responding cycle. During the second phase, a more organic structure was adopted as departments started to be given permissions on introducing changes. For example, IT department was allowed to decide what kind of technologies they need to input at the departmental level. At the third phase (2005-present), Haier has completed the structure transformation and entered into the organic-oriented structure. For example, the weekly and monthly sell targets can be calculated and decided by employees themselves without reporting to the managerial-level staffs.

Based on the structure transformation during the development of IT organizational identity at Haier, our study suggests that the IT department must possess the appropriate IT organizational identity under different organizational structures in order to direct the firm's IT capabilities for attaining IT-enabled enterprise agility. Identity researchers have discussed the role of organizational context in providing situational cues that can prime one aspect of identity over another (Dutton et al. 2010; Pratt 2000). Although organizational context may be characterized by many factors (Dutton et al. 2010), organizational structure may be applicable to a wide range of organizations and is directly linked to the four IT organizational identities discussed above, given that we theorize that IT organizational identity is a form of intra-organizational identity that is closely linked with organizational structure. A twofold typology of organizational structure was observed in our research, namely mechanistic and organic organizations (Burns and Stalker 1961; Dutton and Dukerich 1991; Dutton et al. 2010). Mechanistic organizations are characterized by highly formalized employer-employee obligations, expected behaviors and an emphasis on chain of command and hierarchy (Dutton and Dukerich 1991; Dutton et al. 2010). Organic organizations are characterized by overlapping responsibilities, broadly defined employee responsibilities and decision-making authority that is decentralized to lower levels (Burns and Stalker 1961; Joshi et al. 2010).

Prior research has distilled four types of work-related identities: virtue, evaluative, developmental and structural (Dutton et al. 2010; Joshi et al. 2010). Because we focused on the developmental pathway to recreate IT organizational identity, developmental work-related identity will be our lens to classify our

four types of IT organizational identities. Under developmental identity, prior research has primarily identified two approaches, namely adaptive and progressive (Dutton et al. 2010). The adaptive approach is characterized by a change in identity content toward a better fit with the internal or external environment (Ibarra 2003; Pratt and Foreman 2000), whereas the progressive approach is characterized by a change in identity content toward a better or ideal identity (Carlsen 2006; Hall 2002). Drawing on the concepts of organizational structures and developmental identities, our data reveal the following typology of IT organizational identities (refer to Figure 2).

		Developmental Approach	
		Progressive	Adaptive
Organizational Structure	Organic	<p>Boundary Spanner</p> <ul style="list-style-type: none"> ● Synchronized the pace of IT change and organizational transformation ● Attained operational agility 	<p>Innovating Navigator</p> <ul style="list-style-type: none"> ● Innovated organizational structure and IT-based routines ● Attained enterprise agility
	Mechanistic	<p>Revolutionized Catalyst</p> <ul style="list-style-type: none"> ● Triggered fundamental IT change ● Attained operational efficiency 	<p>Inessential Auxiliary</p> <ul style="list-style-type: none"> ● Content with status quo of IT ● Provided minimum IT support
Figure 2: Typology of IT Organizational Identity			

The organizational structure significantly determines the type of IT organizational identity that an IT department should develop under different developmental approaches. The first two types of IT organizational identity were derived under the mechanistic system, in which the IT department was ordered to follow instructions from top management (Burns and Stalker 1961; Joshi et al. 2010). The last two types of IT organizational identity were derived under the organic system, in which the IT department was authorized to make its own decisions and changes to fit with the strategy of the organization (Burns and Stalker 1961; Joshi et al. 2010). With respect to developmental approach, the *Inessential Auxiliary* and the *Innovating Navigator* identities fall into the category of adaptive under different organizational structures. The *Inessential Auxiliary* was derived from the adaptive developmental approach under a mechanistic system because organizations may focus on strategy and business development at the early stage so that IT organizational identity conforms to the internal and external environment (given the limited resources and capabilities devoted to IT). Yet, at a very late stage of organizational development, the IT organizational identity of the *Innovating Navigator* was developed to best fit with the internal and external environment under authorized powers (without the need to pursue an ideal self) (Dutton et al. 2010). *Revolutionized Catalyst* and *Boundary Spanner* fall into the category of progressive development because both of them were developed for the purpose of pursuing an ideal or better identity to help the IT department align itself with the organization’s strategy.

Conclusion

Theoretical and practical contributions

The model of IT organizational identity evolution that emerged from history of China’s Haier provides new insights into how to achieve IT-enabled enterprise agility through recreating appropriate different types of IT organizational identities especially for firms in China. By answering the research question set forth at the beginning of this paper, our study makes a number of important theoretical and practical contributions. In terms of theoretical contributions, first, this study provides an empirically based framework that examines the holistic process of achieving IT-enabled enterprise agility over time, addresses the lack of specific actions for achieving IT-enabled enterprise agility and provides empirical evidence supporting current propositions in the IT-enabled enterprise agility research (Overby et al. 2006; Sambamurthy et al. 2003; Seo and Paz 2008; Tan et al. 2010a). Our proposed model therefore can be seen as an important complement to the existing conceptual knowledge about achieving IT-enabled enterprise agility (Overby et al. 2006; Tan et al. 2010a) that takes the novel perspective of evolving IT organizational identity. Furthermore, our study provides a basis for future research to examine other possible ways of attaining IT-enabled enterprise agility and thereby advances the current theoretical base.

Second, this paper empirically illustrates how firms sense and respond to environmental change to advance our understanding of the enabling characteristics of IT-enabled enterprise agility (Seo and Paz 2008). Our model empirically proves that sensing and responding components are necessary, but not sufficient, conditions for enterprise agility (Overby et al. 2006). This study complements these conditions by arguing that firms must consider other influential factors to achieve IT-enabled enterprise agility, such as the identity of the IT department (which was the major leader of IT-related changes within the firm in this study). Although prior research has shown that the sensing and responding components are a must for enterprise agility (Overby et al. 2006; Seo and Paz 2008), the mechanisms and the sensing and responding actors have remained ambiguous or left unaddressed. In this sense, our study contributes to the IT-enabled enterprise agility literature by illustrating that the IT department can be viewed as the sensing and responding actor to apply the mechanisms of recreating IT organizational identity in attaining IT-enabled enterprise agility, thereby providing practical actions for firms.

On the other hand, this paper provides significant contributions to the organizational identity literature. First, the process model of IT organizational identity evolution developed in our study not only illustrates the dynamic changes in an organization's identity but also structures the process of recreating the identity step by step for each phase, which strengthens our understanding of the changing characteristics of organizational identity (Corley and Gioia 2004; Pratt 2000) and sheds light on the construction of organizational identity (Fiol 2002; Tripsas 2009). Second, whereas prior research primarily focuses on exploring the effects of organizational identity and workgroup identity on directing firms' behaviors (Aron and McLaughlin-Volpe 2001; Pratt 2000), our study theorizes a new organizational identity, *intra-organizational identity*, that addresses the previously discussed limitations of organizational identity and workgroup identity (Aron and McLaughlin-Volpe 2001; Cooper and Thatcher 2010; Guzzo and Dickson 1996). Third, the relations between strategy, capability and identity that were profoundly embedded within the organizational context are clearly explored in this paper, providing a holistic picture of how a change in one will affect another. Fourth, by classifying the types of IT organizational identities that emerge under different developmental pathways and organizational structures, our study sheds light on how to develop appropriate IT organizational identities according to the needs of organizations in the different developmental phases, thus contributing to the current literature on the logic of constructing organizational identities (Dutton et al. 2010).

In terms of practical implications, this paper provides insightful suggestions and practical actions for firms especially Chinese firms to achieve IT-enabled enterprise agility by adopting a phased approach. IT is a double-edged sword that can facilitate or hinder the attainment of enterprise agility (Daniel and Wilson 2003; Overby et al. 2006). By exploring the evolving IT organizational identity as a source of IT-enabled enterprise agility, our study provides means for firms to concentrate on recreating appropriate IT organizational identities by reconfiguring IT capabilities to avoid the hindering effect of IT on a firm that is trying to achieve agility. The appropriate IT organizational identity can serve as a guidepost in firms' attempts at attaining IT-enabled enterprise agility, thereby directing the firms' IT capability reconfigurations, knowledge integration and routine modifications in a rather explicit manner (Bingham 2009; Tripsas 2009). This paper also brings practitioners' attention to ways in which an IT department can construct a positive and appropriate IT organizational identity in ways that add value to the organization as a whole.

Limitations and Future Research

Our study does have limitations. First, the single case applied in this paper may be criticized for a lack of generalizability or external validity (Walsham 2006). Nevertheless, we assert that our study is valid and has the potential to be generalized into other organizational contexts because our two models are not only empirically grounded in real organizations but are also corroborated by most of the established management and information systems literature. Thus, our study fulfills the principle of 'analytic generalization' (Yin 2003). Second, this paper aims to explore the evolution of IT organizational identity, which can be viewed as a source of IT-enabled enterprise agility over time. However, we did not consider in depth how the organizational identities at different phases can positively or negatively affect the recreation of IT organizational identity. The linkage between these two constructs is obvious because IT organizational identity is profoundly embedded in the organizational context. Future research should examine the relationship between IT organizational identity and organizational identity to further advance our understanding of IT organizational identity and its effects within an organization.

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