Social Shaping Leadership in Enterprise System Acquisition and Development: The Influence of Reference Users in Xizi Holdings

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Abstract:

Acquisition and development remains an important aspect of enterprise systems research. In practice, it means reference users interact in and across organizations to fill gaps in knowledge and offer their experience as models or standards for others. Despite their importance, how reference users influence the acquisition process and the role of IT in its development have received scant attention. This paper presents a study of how reference users shape and lead the acquisition and development of enterprise systems (ES). We derive our findings from investigating and conducting a case study on Xizi Holdings, one of the largest private enterprises in China. Our model deploys a theoretical lens of the social shaping of technology in the context of inter-organizational ES adoption. We build the model on stage-wise observations of the roles that reference users play across the ES acquisition and development process in Xizi, and how Xizi brings together hundreds of autonomous IT systems across 128 subsidiaries under one enterprise-wide vision. Our study model identifies three intermediary mechanisms (i.e., attaching, staging, and shaping of technology) that reference users in the process of negotiating ES acquisition and development enable.

Keywords: Enterprise Systems Acquisition, Enterprise Systems Development, Reference Users, Social Shaping, Collective Leadership.

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1   Introduction

When acquiring enterprise systems (ES), organizations generally focus on evaluating and selecting vendors and packages and on what influence users will have on that process (Bhatti, 2014; Esteves & Pastor, 2001; Shanks, Seddon, & Willcocks, 2003). When ill-managed, the acquisition process may impact the biography of the ES in a firm, which includes the implementation process (Verville, Bernadas, & Halingten, 2005; Verville & Halingten, 2002). Ultimately, poor acquisition and implementation results in poor system performance (Bhatti 2014) and limits innovation in general (Ahuja & Katila, 2001). The acquisition of software that can accommodate changing business conditions is a basic protocol of ES implementation (Donovan, 2001). In line with the views of Peter Drucker, who has commented that assuming that "only senior executives make decisions or that only senior executives' decisions matter…[is] a dangerous mistake" (2004, p. 4), making correct ES-acquisition decisions is crucial at every level of an organization (Gürbüz, Alptekin, & Işıklar Alptekin, 2012; Kamhawi & Gunasekaran 2009; Wang et al. 2006) because information asymmetries between users, vendors, IT managers, and so on during the process can adversely affect ES implementation projects (Worthen, 2008). Conversely, the unnecessary bureaucracy or exhaustive due diligence that accompanies a rigorous acquisition process can alienate involved stakeholders and result in an overwhelming flood of information and, thus, lead to "analysis paralysis" and delays in the strategic decision making process (Bhatia, 2007; Overby, Bharadwaj, & Sambamurthy, 2006). Hence, a growing number of information systems (IS) studies have begun to examine the key roles that reference users play in providing information and assurances that help their organizations evaluate vendors (Howcroft & Light, 2010; Monteiro, Pollock, & Williams, 2014; Pollock & Hyysalo, 2014). Analogously, inter-organizational leadership is often socially constructed (Connelly, 2007) and known to inspire IS adoption and acceptance (Neufeld, Dong, & Higgins, 2007). From this perspective, reference users fill a gap in knowledge in that they play key roles in helping their organizations acquire and develop new systems.

Despite the importance of reference users in the acquisition and development phases of ES implementation, three separate bibliographical analyses on the cumulative body of ES research over the last two decades (see Eden, Sedera, & Tan, 2014; Esteves & Bohórquez, 2007; Esteves & Pastor, 2001) reveal that their role in the acquisition phase in particular has received little attention. We can attribute these observations to several factors. First, ES researchers have mainly examined the implementation phases (Eden et al., 2014) of the ES lifecycle because most projects tend to be at the implementation phase when researchers study them (Esteves & Pastor, 2001). Other phases regularly studied include adoption and use (Eden et al., 2014). Second, the strong influence of consultants in the acquisition phase makes it difficult to access information relating to the role of other stakeholders (e.g., vendors and customers). Third, the ES acquisition process rarely receives in-depth scrutiny. The literature relatively well documents the factors that influence decision makers during the acquisition phase, including IT vendor selection (Annamalai & Ramayah, 2011), costs, reliability (Keil & Tiwana, 2006), and IT functionality (Gürbüz et al., 2012; Keil & Tiwana, 2006). However, singular studies rarely examine both the role of IT in the actual process of acquisition and how reference users influence this process. Consequently, we lack in-depth studies on ES acquisition and the ways in which different stakeholders may influence the process, and we also lack understanding about how the process may vary across different contextual conditions. An in-depth study of how stakeholders' shape acquisition and development could reveal important power relations in organizations (Howcroft & Light, 2006), lead to the development of new technologies (Boersma & Kingma, 2005), or influence larger economic outcomes (see Ranganathan & Brown, 2006). We address this gap in this study.

Contribution:

This study fills the knowledge gap in IS research on the role of reference users in shaping how organizations acquire and develop packaged enterprise systems. We test the theoretical lens of the social shaping of technology in the context of inter-organizational ES adoption. Our findings illustrates that autonomous IT systems across multiple subsidiaries under one enterprise-wide strategy requires an organization to develop reference projects, reference roles, and a reference identity. We show the importance of IT-enabled mechanisms, including technology attaching, technology staging, and technology shaping for socially shaping ES acquisition and development.

The following research question (RQ) guides our study:

RQ: How do reference users shape ES acquisition and development?

Although ES research represents one of the most established and mature areas in the IS discipline, we contribute to the discussion on ES acquisition and development from the perspective of social shaping. In particular, we focus on 1) identifying the stages in which reference users shape ES acquisition and development and 2) advancing knowledge of the intermediating roles that technology and its reference users play in the acquisition process. To do so, we conducted a revelatory case study of an ES acquisition and development project that Xizi United Holding Corporation (Xizi Holdings) undertook for its 128 subsidiary companies across its six major business areas (i.e., elevators, boilers, heavy machinery, property, department stores, and aircraft maintenance).

The paper proceeds as follows: in Section 2, we discuss the theoretical lens of our research. In Section 3, we discuss our case organization, Xizi Holdings, and our analytical strategy. In Section 4, we discuss our research findings. In Section 5, we discuss our findings' research implications. Finally, in Section 6, we discuss the paper's limitations and conclude the paper.

2 Literature Review

In this section, we 1) review the literature on enterprise systems acquisition and development and position our study in this literature and 2) present the theoretical lens that we draw on—specifically, the theoretical notions of social shaping of technology—to describe what influence reference users have on the ES acquisition and development process.

2.1 Enterprise Systems Acquisition and Development

According to Esteves and Pastor (1999), acquisition occurs when an organization decides to adopt an enterprise system and has to select the vendor and ES package. Table 1 summarizes the activities that constitute the acquisition and development process, the descriptions of those activities, and several representative studies related to each activity. Despite the maturity of ES research, scholars (e.g., Bernroider & Stix, 2006) have called for more attempts to better understand how organizations conduct these activities and how they weigh the evaluation factors in the overall acquisition process. For example, in one of the most comprehensive acquisition studies to date, Kiel and Tiwana (2006) identified the factors that IS managers used to evaluate packaged software solutions. While the authors found many valuable insights, they examined only the importance of different evaluation factors in hypothetical ES purchasing scenarios. They did not scrutinize actual purchase decisions and did not consider the effect of real external pressures imposed on organizations. Damsgaard and Karlsbjerg (2010) conducted another case study and listed seven principles to assist organizations during the acquisition phase. Once again, while these principles can be useful in practice, researchers have yet to empirically validate them; as such, the generalizability and effectiveness of the proposed principles remain unknown.

Table 1. Summary of ES Acquisition and Development Activities

Activity*	Description	Representative studies
Acquisition approach	The approaches used to decide on a specific ES system package and vendor.	Bernroider & Stix (2006)
Acquisition evaluation	Strategies used to evaluate ES vendors to ensure the selection of an ES package that best aligns with the requirements of the organization.	Gürbüz et al. (2012), Keil & Tiwana (2006), Wang, Klein, & Jiang (2006)
Integration issues	Issues that occur in the integration of emerging technologies with an ES system.	Bose et al. (2008), Koh, Gunasekaran, & Goodman (2011), Madaan, Kumar, & Chan (2012)
* Adapted from Esteves and Bohorquez (2007)		

Once an organization has selected a package, it proceeds to the implementation process phase. Implementation typically involves configuring and customizing a system to meet an organization's requirements. Subsequently, the organization enters the evolution phase in which it focuses on integrating new technologies and developing existing technologies (Esteves & Bohórquez, 2007). New and existing technologies must undergo development to improve their functionality and to minimize the gap between the organizational requirements and the system's functionality (i.e., to improve overall fit). The premise for

integrating evolutionary technology with an ES is to prevent the ES from becoming a stagnant technology artefact. Bose, Pal, and Ye (2008) and Downing (2010) illustrate as much in comparing the benefits and challenges of no supply chain integration, non-Web-based supply chain integration, and Web-based supply chain integration with an ES system.

2.2 Leadership and Social Shaping

Strategic change in pluralistic organizations requires collective leadership (Denis, Lamothe, & Langley, 2001) because it shapes the enactment of collaboration (Huxham & Vangen, 2000). This form of inter-organizational leadership is often socially constructed (Connelly, 2007), and it affects not only the actions of networked organizations but also the outcomes of inter-organizational collaboration (Müller-Seitz & Sydow, 2012), such as IS acceptance and diffusion (Neufeld et al., 2007).

Building on the concepts of the social actor (Lamb & Kling, 2003) and the community of ES users (Koch, 2005), the *reference user* refers to an individual user or a network of users in and across an organization that form a part of a wider-packaged ES community (Monteiro et al., 2014). Reference users are not only involved in IT work in their own organizations but also interact across organizations with current and prospective adopters and with packaged system vendors to offer their organization's experience as a model or standard for others. Reference users include wider groups (Wilson & Howcroft, 2005) of users who may not have initiated the *referencing activity* or identify themselves as performing an IT role but who may participate in the referencing activity when it occurs. More recently, scholars (e.g., Pollock & Hyysalo, 2014) have shed light on the role of groups and users in the social shaping of technology (SST). They explain that insights from an SST perspective could reveal how new reference user roles become part of the politics of packaged software acquisition and how reference users position themselves in relation to the vendor in order to wield influence on current and future development strategies (Pollock & Hyysalo, 2014; Williams & Edge, 1996). Conversely, groups have different perceptions of ES due to its inherent richer functionality (Boersma & Kingma, 2005; Usman, Coombs, & Neil, 2014). Studies have also shown how ES systems can take away control and power from stakeholders; in some cases, users choose to circumvent the system completely (Alvarez, 2008; Boudreau & Robey, 2005). Because different groups assign different interpretations to a technological artefact due to their distinct motives, social shaping is a relevant approach to investigate and understand how reference users use ES and to generate insights that can help organizations better use ES systems in their post-implementation stages due to different organizational-dependent contexts (Boersma & Kingma, 2005; Usman et al., 2014).

The SST perspective draws attention to how innovations continue, in terms of implementation and use, even after the IT artefact has left the vendor's premises (Williams & Edge, 1996). SST emphasizes choices; it sheds light on the cycles of domestication and appropriation that system adopters enact to meet local organizational circumstances and on a wide range of actors such as intermediate and final users, who are crucial in making new systems work in practice (Pozzebon & Diniz, 2012b). If we are to understand the development of technology as a social process, we need to take the artefacts as the relevant groups view them as opposed to monolithic definitions of what constitutes success and failure (Pinch & Bijker, 1987). To do otherwise would simply imply that the technology is autonomous. We delineate these groups according to similarities in how they interpret technology so that all members of a certain social group share the same set of meanings attached to a specific artefact (Howcroft & Light, 2010). To do so, one can apply interpretive flexibilities to identify actors' assumptions, expectations, and interests to understand how problems and solutions associated with a technology present themselves differently to different groups of people (Pinch & Bijker, 1987). Focusing on the emergence of reference users, their roles, and how they become entwined into the politics of packaged ES acquisition and development provides one the opportunity to understand emergent intermediating referencing mechanisms, which provide accounts of a packaged system's capacities and benefits. Besides reference users from organizations, the existing literature also discusses networks of business people and groups (Giaglis, Klein, O'Keefe, 2002; Meehan & Jonker, 2012) and technology users as potential intermediaries (Peng, Lee, &Y Hong, 2014).

3 Case Study Method

We selected the case research method for our study. The case method suits our study for several reasons. First, case research suits studies that examine "how" research questions (Pan & Tan, 2011; Walsham, 1995) and processes (Gephart, 2004), and we examine both a "how" question and delve into the process of ES acquisition and development. Second, since ES acquisition and development is an

inherently complex and multi-faceted phenomenon, it is more appropriate to examine the phenomenon by interpreting the shared understanding of the relevant stakeholders (Klein & Myers, 1999). Given our research focus, we selected the case based on two criteria: 1) the organization had to have recently acquired and developed an ES and 2) reference users must have played a significant role in influencing the acquisition and development process at the organization. Based on these criteria, we found the case of an ES acquisition and development project at Xizi Holdings to be particularly appropriate for our purpose and, accordingly, selected it for our study. We identified reference users for interviews after several consultations with senior management.

3.1   Data Collection and Analysis

We collected and analyzed data in line with the principles for conducting interpretative field studies (Klein & Myers, 1999). We collected data from mid-2014 to early 2015; we made multiple field visits to Xizi Holdings and several of its largest subsidiaries, including Xizi-OTIS Elevator Co., Xizi Boiler Co., and Xizi Aviation Co. in Hangzhou, China. We supplemented data from the interviews with data that we gathered from company publications and corporate websites in order to provide a more holistic picture. We conducted 17 semi-structured interviews with informants who represent reference users, including the chief information officer (CIO), his chief digital officers (CDO), the IT managers of Xizi Holdings, and the business users in the subsidiaries (Table 2 summarizes the interviews we conducted). Each interview lasted 60 to 90 minutes. The interviewees had knowledge of the company's internal structures, the role of IT, and played key reference roles themselves; as such, they could provide a holistic perspective (Klein & Myers, 1999) of our phenomenon of interest. Overall, the interviews generated over 100 pages of transcripts. Based on our literature review, we narrowed the focus of our inquiry to three pertinent themes: 1) the acquisition and development of ES across Xizi holdings and its subsidiaries, 2) the actions of the reference users, and 3) the development of ES as influenced by social shaping. When we identified new themes in the initial interviews, we added new questions to the protocol so we could explore the emergent themes in subsequent interviews. We recorded and transcribed the interviews to ensure that we maintained a complete record (Bryman & Bell, 2007; Seidman, 2006).

We analyzed the data concurrently as we collected it to take full advantage of the flexibility of the case research approach. We analyzed the statements from one manager and compared other details of the interview with our theoretical underpinnings. We continued to compare the statements with the second, third, and subsequent interview notes. Constantly moving back and forth between the initial statements, the first sets of statements from the interview data, and theoretical perspectives while consulting the relevant literature became the foundation we used to code and analyze the data. We also used our understanding of the literature on SST as a theoretical lens to examine the initial data.

We performed open, axial, and selective coding (Strauss & Corbin, 1990) on translated notes. During open coding, we assigned conceptual labels on the data to capture activities that explain the (social-shaping) process in firm activities and acquisition processes. We did so to reduce the data to manageable categories and to identify recurring themes. We took some conceptual labels such as "interpretive flexibilities" and "reference users" from the literature, while we inductively derived others from the data such as "standards" and "function". Next, we linked and matched similar concepts from open coding with theoretical constructs to form axial themes. For instance, we uncovered "constructing inclusive structure" in the technology attaching phase, which the literature has not previously discussed. Our approach focused on both the acquisition and development processes and outcomes in Xizi Holdings and its subsidiaries.

Subsequently, we identified patterns to understand how IT enacts reference users by effectively enabling interpretive flexibilities and developing referencing mechanisms. For example, we observed that constructing an inclusive structure (the role of the reference user) requires IT to support data visualizations (the role of IT) in order to develop a hive mentality among companies. Based on the emerging data, we developed further mappings of the coded responses and theory; for example, we observed three distinct phases and their associative mechanisms. Moving between the empirical data, our guiding theory, and related literature exposed new patterns and allowed us to develop further mappings of the coded responses. We compared the mappings with our conceptual model in order to shape opinions of the phenomena and present an emergent model that consolidated emergent findings that the literature has not discussed.

If our findings did not fit with our guiding theory or if our empirical data did not support the theory's propositions, we conducted additional interviews to verify our findings and build an explanation iteratively

(Walsham, 2006). As part of our data analysis, we also adopted a combination of temporal-bracketing, narrative, and visual-mapping strategies to organize the empirical data (Langley, 1999; Langley, 2009). We subsequently analyzed the event timelines (from temporal bracketing), visual maps, and narratives with our informants. We also drew on secondary data such as newspaper articles, books, and information from Xizi Holdings' corporate website to triangulate our findings.

Table 2. Summary of Interviews

No.	Title	Department	Topics discussed
1	CIO (three interviews)	Xizi Holdings	Buy-in strategy, creation of new roles in company, business IT strategy, selection of steering committee, process of integration
2	Deputy operations director	IS/IT department (Xizi Holdings)	Acquisition and development strategies, relationships between parent company and holding subsidiaries, growth
3	Project management officer	IS/IT department (Xizi Holdings)	Project management team, e-human resource systems and the influence of business intelligence, relationships between parent and subsidiary company
4	Operations and maintenance manager	IS/IT department (Xizi Holdings)	Operations efficiency and effectiveness pre- and post-ES in Xizi-OTIS
5	Human resource manager	Human resources	E-human resource project, human resource operations
6	Deputy finance director and business intelligence program director	Finance	Functional areas and responsibilities, development of business intelligence program, financial systems, IT strategy, NC operations
7	Software planner	IS/IT department (Xizi Holdings)	Software planning development programs, IT development strategy
8	Finance operations officer	Finance	Financial systems and output, IT strategy, non-compliance operations
9	Finance support officer	Finance	
10	IT infrastructure manager	IT department (Hangzhou Boiler)	Infrastructure and architecture
11	IT planner (Hangzhou Boiler)	IT Department (Hangzhou Boiler)	IT planning, scope documents, SAP projects, reference projects
12	SAP planner (Hangzhou Boiler)	IT Department (Hangzhou Boiler)	History of boiler SAP system implementation in Hangzhou Boiler
13	Software project manager (Hangzhou Boiler)	IT department (Hangzhou Boiler)	Implementation of Epicor ES
14	Head of IT	IT department (Aviation)	Implementation of ES, non-compliance, plant maintenance

3.2 Case Background

Xizi United Holdings Co. is one of the largest public enterprises in China and, at the time we conducted our study, employed 30,000 people in over 128 subsidiaries across the world. Xizi's businesses and current product lines extend from the manufacturing of elevators, industrial boilers, and heavy machinery to aviation and property development. One of their largest subsidiaries is Xizi-OTIS Elevator Co., a joint-venture company founded in March, 1997, between Xizi Elevators Group and OTIS, the largest manufacturer of elevators, escalators, and moving walkways in the world. Xizi Holdings is renowned as a supplier of airframes, parts, and services for large commercial aircraft and has clients such as Airbus, Boeing, and Bombardier. Recently, Xizi became the first and only privately owned Chinese supplier of the C919 narrow-body twin-engine airliner being developed by the Commercial Aircraft Corporation of China. The C919, which will be the largest and first commercial airliner designed and built in China when launched, forms part of China's long-term goal to break the duopoly of Airbus and Boeing in the global commercial airliner industry. Prior to the time we collected data, the investment of Xizi Holdings in its ES architecture (including its subsidiaries) amounted to approximately US$8 million. This significant investment has translated to national recognition for the extent of IT use at Xizi. In particular, the Chinese

Government recently gave the CIO of Xizi Holdings an award to recognize him as one of the top 50 CIOs in private corporations across China.

4   Case Study Findings

In analyzing our data, we found several interesting insights into how reference actors at Xizi Holdings and some of its subsidiaries influenced the process of ES acquisition and development. For instance, the CIO of Xizi Holdings revealed that, when he first arrived at Xizi in early 2010, he realized that, despite the organization's scale of operations, it lacked the capabilities to manage the hundreds of autonomous IT systems that the organizations under its corporate umbrella used. Consequently, the organization largely lacked the symmetries required for overall operational efficiency. The CIO revealed the challenge that stemmed from Xizi Holdings' position vis-à-vis its subsidiaries at the time:

> Usually you have the father [parent company] before the son [subsidiaries]. However, Xizi is different. All our [subsidiaries] were successful and had working models to begin with. Now, there's a father [Xizi Holdings] who wants control, so the acquisition and development of systems becomes unique. Some of our subsidiaries are 30 years old, but the holdings group is only a couple of years old.

Due to its rapidly expanding lines of business in the early 2000s, Xizi Holdings maintained a biography of the package software in use, but all of its subsidiaries had different starting points and several new subsidiaries were about to commence or in the process of ES acquisition and development. For example, the Hangzhou Boiler group, which began in 1956 and first acquired ES in 2002, maintained over six systems at the time in 2002.

4.1   Technology Attaching through Reference Projects (Early 2010 to Mid-2012)

To initiate the enterprise-wise acquisition and development of ES, the CIO revealed the importance of anchoring ES acquisition and development to one or more reference projects. The CIO of Xizi Holdings explained:

> My strategy to convince subsidiaries to invest in ES is through BI [Business Intelligence] first. This goes against the usual implementation trajectory of moving from transactional systems, to ES, to BI. Only after you have BI would you realize how much data we are generating across the organization, and how useful that data could be… I convinced the CEO in saying we are late to the game, and that we have to pay our debts of our previous inaction. That started it all.

By pushing through reference projects related to business intelligence and demonstrating tangible gains from those projects, Xizi employees developed an *attachment* to technology, and the central IT department quickly grew in stature. These factors created a snowball effect that paved the way for the organization to initiate more ambitious, high-impact IT projects. For example, the CIO initiated a mobile computing project that the CFO of Xizi had projected to cost RMB$10 million. However, using a novel cloud-based solution, the CIO was able to deliver the project at under RMB$3million. In doing so, he again increased his influence in the organization and made it easier when the CIO had to convince all the organizations under Xizi's corporate umbrella of the viability of his vision for an enterprise-wide ES. The IT infrastructure manager of Hangzhou Boiler, another of Xizi's largest subsidiaries, described the influence of the CIO at the time:[The] CIO did a fantastic job with SAP implementation at one of the subsidiaries and he's doing a fantastic job here". The CIO also established a monthly IT forum that external consultants and vendors hosted and representatives of all of Xizi's subsidiaries attended. He said: "We built a 'hive' mentality [that] brings out the common requirements. Then we integrate them, while allowing them to retain their own personality". Similar to some of the strategies prescribed in the literature (Monteiro et al., 2014; Venkatesh, Sykes, & Venkatraman, 2014), the CIO and his IT team quickly established a consensus to institutionalize emerging technological fields. They actively interpreted the properties of the systems for prospective adopters and cast ES as an object of consumption for others under the corporate umbrella of Xizi Holdings.

In summary, our findings highlight the significance of users' attachment to technology and for organizations to anchor ES acquisition and development to one or more reference projects. We support the extant notion of establishing a framework for selecting projects (Wei, Liang, & Wang, 2007)—especially when firms face ever-increasing pressure to justify IT investments and projects. Extending the knowledge in extant studies, we posit that delivering a reference project will determine whether reference

users and a hive mentality emerge. This delivery of a reference project extends the knowledge of extant studies on the integration of IT systems to support supply chains, and we contend that IT systems automatically enable operational performance and that cooperation among departments would naturally ensue. In practice, although often carefully rationalized in advance, firms often fail to realize all expected benefits immediately after the IT-implementation stage such that they often disassociate expectations of enterprise systems projects from their continuance (Bhattacherjee, 2001; Nevo & Chan, 2007). A lack of expectations severely undermines a firm's realizing benefits in supply chain-enabling commercial packages, such as advanced planning systems (e.g., Lee, Jeong, & Moon, 2002) and scheduling and controlling systems (Shobrys & White, 2002).

4.2   Technology Staging through Expanding Reference Roles (Late 2012 to Mid-2014)

Despite the rollout of several high-impact reference projects, the CIO nevertheless realized that the he also needed to expand his central IT team members' roles if he was to secure the full commitment of Xizi's many and varied subsidiaries to ES acquisition and development. Consequently, he told members of the central IT team to make every effort to make a good impression during their reference user visits to the subsidiaries and to introduce those subsidiaries to the products of the selected vendor (i.e., SAP) carefully. This strategy, akin to Pollock and Hyysalo's (2014) arguments, underscores the notion that reference actors inhabit a space where they are independent yet aligned to a vendor. A project management officer working under the CIO explained:

> When the HR system implementation came about, he [a HR manager – a reference user] was brought from HR to help. Once the systems went online, he was supposed to monitor data but his role did not prepare him for this task. So he had to learn and expand his role. His job scope had changed, and the CEO had to create a consulting role for him to include negotiation, payment, innovation, and support.

The new responsibilities of the members of the central IT team involved serving as intermediaries of change (Hirt & Willmott, 2014). These IT managers now had to mediate between the directives of the parent company, the requirements of the subsidiaries, and the demands of the vendor. Previously, managers governed the IT departments of the subsidiaries primarily through formal controls. However, the presence of asymmetric information between the parties during implementation rendered the formal controls ineffective, which created the need for intermediation (Sahay & Ranjan, 2008), and reference users had to resort to using social media to effect a number of informal controls. A HR manager who had the role of a reference user explained:

> As a key user, I participated in implementation to learn about SAP's HR system. WeChat [social media platform] was used to create communities in the organization so that we can share what we learnt with the IT departments [of Xizi's subsidiaries]".

With the use of social media and the emergence of new intermediaries (Grabowicz, Ramasco, Moro, Pujol, & Eguiluz, 2012), the IT managers were able to *set the stage* for learning about ES acquisition and development and to promote its impact and benefits. This expansion in reference users' roles with different working styles created an environment of co-specialization as a business intelligence program director said: "The result is co-specialization. Every person has their own set of devices. Now I use an iPad, e-brochures, and it makes it easier to do what I do.".

In summary, we support extant notions that complex IT tools such as enterprise systems often induce a cultural shift (Strong & Volkoff, 2010) and that reference users are central to coordinating and uniting core organizational entities. However, we posit that creating reference roles in social-shaping IT and coordination mechanisms to manage the complexity of structures in a firm's set-up and across cooperating units (Gözübüyük, 2013) is not straightforward, especially for large and complex firms with diversified operations and processes. Doing so requires leadership to develop interdepartmental interdependencies such that different interdependence types (Munksgaard, 2010) demand different coordination methods in terms of rules and operating procedures, adaptive planning and scheduling, and mutual adjustments. In positioning our findings, we support the view that social-shaping operational performance requires new management practices, processes, structures, or techniques (Vaccaro, Jansen, van den Bosch, & Volderba, 2010) at the operational level that provide insights into what managers do and how they influence and negotiate (Pozzebon & Diniz, 2012) to achieve the competitive advantage they seek.

4.3 Technology Shaping through Pursuing Reference Identity (Late 2014 to Today)

From our data, we also found that reference users not only bore uncertainties on behalf of other project stakeholders but also added value by brokering between IT and operations under conditions of information asymmetries (Downing, 2010). The deputy operations director of Xizi's central IT team explained:

> IS used to be marginalized as a back office that only appeared when there's an IT problem. Previously, even the CEO thinks anything 'electronic' is considered our job. Now, we operate on moving targets as IT departments are working to improve other units work because they are not domain/business experts. Our status has improved to being an entrepreneurial aid.

The changing nature of the systems adoption environment across the Xizi group meant that the reference users had to take on further responsibilities in the package adoption and development process, which reinforced their identify as reference users. In particular, two quotes in the interviews illustrate the changes in the routines of ES acquisition and development:

> In the past every administrator kept a logbook, and everyone filled out a form. But now our data repositories have scheduled backups and restoration points. We have crisis response systems and situated learning systems. New processes are formed". (Operations and maintenance manager IS/IT department, Xizi Holdings)

> There is a group IT purchase/buying program in Xizi now, to lower TCO [total cost of ownership], to streamline support and to improve efficiency. (IT planner, Hangzhou Boiler)

In summary, our research reveals new specialized stakeholders that emerge as reference users with capabilities that address digital technologies. In turn, these reference users enable manufacturing firms to take advantage of advances in digital technologies to determine organizational, technological, and operational changes. IS researchers have a long tradition of studying identity-related issues and users (Lamb & Kling, 2003), and they have also used users as a symbol as a blueprint to examine IT systems use and their processes (Gopal & Prasad, 2000; Ng & Tan, 2004). Adding to extant literature on IS capabilities (Bharadwaj, 2000), we reveal how reference users seek to combine or co-present socially shaped capabilities or resources with other resources and capabilities. This finding adds to existing IS research that has also identified a comprehensive set of different types of capabilities that a firm can hold, which include outside-in capabilities that deal with market response, inside-out capabilities that deal with internal operations, and spanning capabilities that integrate the previous two (Wade & Hulland, 2004). Researchers warn that many large and small manufacturers need the ability to stay current and responsive to emerging trends to develop new manufacturing capabilities and plant-performance technology (Banker, Bardhan, Chang, & Lin, 2006; Tanriverdi, 2006). Our findings that suggest that firms should repurpose reference users over time also highlight how business leaders must create an environment in which organizations can quickly and easily revise their behaviour (Mithas, Ramasubbu, & Sambamurthy, 2011). Our findings further lends support to extant notions in IS research that enhancing performance and IT-enabled agility requires capabilities that fosters alignment creation (Tallon & Pinsonneault, 2011).

5 Research Implications

From the case study findings, we developed a summary model (see Figure 1). The model builds on empirical accounts of the social-shaping activities and inter-organizational leadership in ES acquisition and development at Xizi Holdings. This study and the summary model have several implications for theory and practice.

For theory, the model in Figure 1 illustrates for the first time the processes in which reference users identify assumptions, expectations, and interests (the interpretive flexibilities) account for emergent intermediating capacities and benefits of a packaged system (the referencing mechanisms). Over the years, many studies (e.g., Agarwal, Shankar, & Tiwari, 2007; Huang, Ouyang, Pan, & Chou, 2012; Lui, Piccoli, & DeSouza, 2007) have highlighted the important role of enterprise-wide IT in enabling performance in firms and in supply chains. Whilst extant studies make important contributions, an insufficient number of studies have examined how organizations manage socio-technical issues (Levina & Ross, 2003; Pollock & Hyysalo, 2014) related to the complex organizational mechanisms that underpin their performance (see Chu & Smithson, 2007; Richardson, Kettinger, Banks, & Quintana, 2014). Thus,

this study addresses calls by scholars (e.g., Pollock & Hyysalo, 2014) for more works that elucidate the underlying *mechanisms* that different reference actors use to exert influence on technology adoption and, ultimately, realize the full potential of such IT projects.
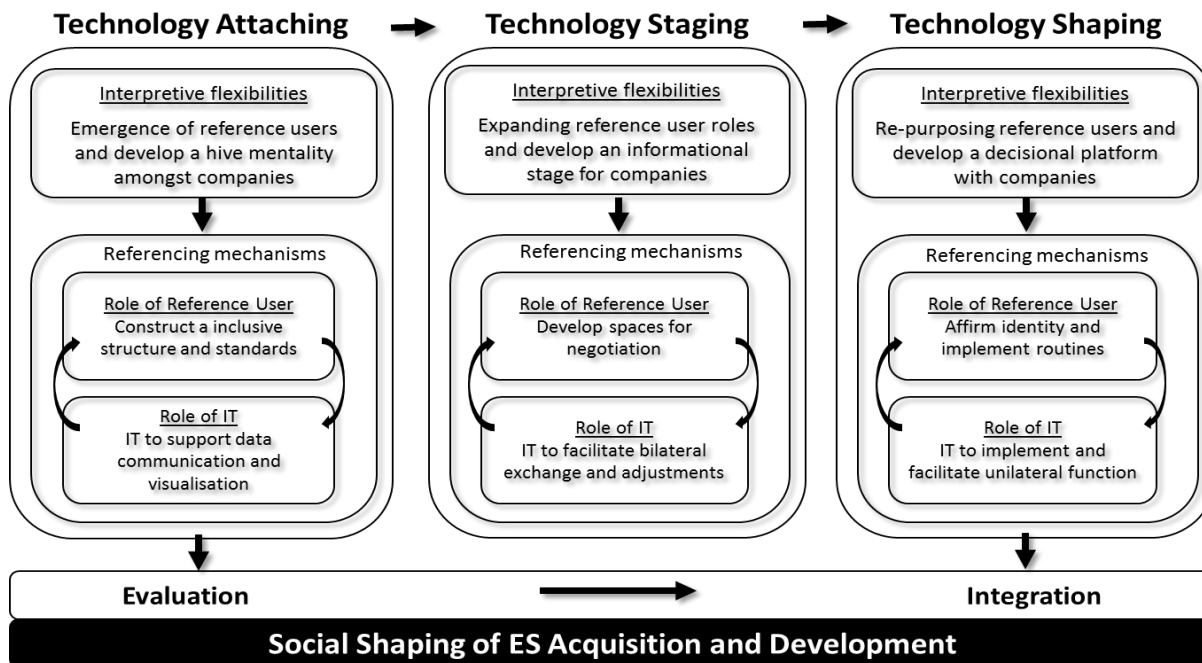

Figure 1. Process Model of How Reference Users Shape ES Acquisition and Development

We identify three IT-enabled mechanisms that reference users adopt to socially shape ES acquisition and development: 1) technology attaching, 2) technology staging, and 3) technology shaping. We propose that organizations need these mechanisms for their stakeholders to transition from evaluating a system to successfully integrating it. In our study, stakeholders achieved technology attaching through delivering a reference project, technology staging through creating reference roles, and technology shaping through pursuing the reference identity. In our study model and per our theoretical lens, interpretive flexibilities influence the emergence and development of referencing mechanisms. Furthermore, stakeholders' accounts of their roles and the capacities and benefits of the IT systems continuously shape these referencing mechanisms.

Furthermore, our study contributes to recent IS discourse on users' expanding role in influencing the development of packaged enterprise systems and their acquisition. Our study also indicates that reference users and networks of groups in organizations can function as intermediaries. As intermediaries, they can broker between the directives of the parent company, the requirements of the subsidiaries, and the demands of the vendor under conditions of information asymmetries (Sahay & Ranjan, 2008). Further studies could examine the role of these intermediaries in greater depth by examining their role in facilitating system and task transitions. Doing so could potentially provide solutions to problems that arise when an organization transitions from one ES to another, including excessive dependence on vendors and other key users or constant unwarranted comparisons with other systems that prevent their own judgments from becoming stabilized. For practice, our case study sheds light on how management could potentially expand reference users' roles and leverage technology to determine and lead ES acquisition and development. Based on our data at Xizi Holdings and building on the existing literature, we posit the role of reference users as inter-organizational leaders in ES acquisition and development.

6 Limitations and Conclusions

Our study has several limitations. First, our research design adopts a single case study, and researchers have commonly criticized the approach for its lack of generalizability. However, we contend that one can generalize our study beyond its singular context by invoking the principles of "analytic generalization" (Yin, 2003, p. 32) in "generalizing from description to theory" (Lee & Baskerville, 2003, p. 235) because we

ground the model we developed in the empirical reality of the XiZi Holdings case and corroborate it via some of the most established works in the literature on acquisition and development activities. Nevertheless, future research could statistically validate our propositions to better define the boundary conditions of our model. Thus, we urge caution—especially when replicating our study or applying our prescriptions in a different context. Second, we intentionally focus on only one phase of the ES lifecycle. Consequently, one should interpret our results with caution. Third, the model does not exhaustively list social-shaping mechanisms. Instead, it offers an empirically grounded and theoretically supported framework for understanding the process of how reference users shape ES acquisition and development. As such, it represents a substantive theoretical contribution to the growing literature on ES.

In spite of its limitations, we believe that management will nevertheless find interest in our findings to better understand ES acquisition and development from a social-shaping perspective, which could be a fruitful avenue for future inquiry. For scholars, a relevant research agenda to investigate concerns identifying the kind of organizational capabilities that an organization requires to fully take advantage of technological advances and the kinds of capabilities that stakeholders need to better use emergent data to enhance performance. Moving forward, we hope to build on our study to formulate a more holistic theory of ES acquisition and development from a social-shaping perspective, which the existing IS literature lacks (Eden et al., 2014). Our findings lay the foundation for further research that could demonstrate that the reference users' perspectives on ES acquisition and development are based on not only a reflection of their beliefs but also the reference projects and identities that shape decision making behavior and impact others (Lamb & Kling, 2003; Pollock & Hyysalo, 2014). Our process model already hints at a number of contributions, and further studies can explore how reference users can then use their knowledge to affirm the identity of the organization and their ownership of the process of which they have taken charge.

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