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Developing a Leading Digital Multi-sided Platform: Examining IT Affordances and Competitive Actions in Alibaba.com

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Abstract:

In recent times, digital multi-sided platforms (DMSPs) have revolutionized electronic commerce by enabling new forms of competition and collaboration. Existing studies provide useful insights yet do not recognize the role of information technologies (IT) in examining the development of DMSPs. To address this knowledge gap, we conducted a case study of Alibaba.com (henceforth simply Alibaba), the largest online B2B marketplace in the world with over 80 million members. We applied the theoretical notion of IT affordances to examine the possibilities for competitive action at a platform level based on organizational variables and IT features in the context of the environment in which they function. Our findings show that, toward market leadership, Alibaba has developed competitive actions from actualizing IT affordances. At Alibaba, actualizing IT affordances links closely with its defined organizational goals of developing: (1) a collectivist structure, (2) a coopetitive structure, and (3) an autonomous community among platform constituents. Our stage-wise model captures the relational aspects of IT affordances and proposes actionable prescriptions for a DMSP to achieve market leadership.

Keywords: Digital Multi-sided Platform, E-commerce, Case Study, China.

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1 Introduction

Alibaba Is a Threat to Amazon, eBay, Walmart and Everyone Else

Alibaba vs. Amazon: Who Will Win the Global E-Commerce War?

—Headlines in *Forbes* in 2014

A digital multi-sided platform (DMSP) is an IT-enabled commercial network of suppliers, intermediaries, and customers (Cusumano & Gawer, 2002) that facilitates transactions between these different entities to create value (Gawer & Cusumano, 2008). The phenomenal success of DMSPs in the e-commerce landscape over the past decade has fueled their rise to economic prominence in recent years (Farhoomand & Lai, 2008; Hagiu & Yoffie, 2009; Osterwalder & Pigneur, 2010). Notable DMSPs include eBay, which serves as a platform for buyers, advertisers, and sellers, and Google, which serves as a platform for advertisers and Internet users (Eisenmann, Parker, & Van Alstyne, 2006; Hidding, Williams, & Sviokla, 2011; Rochet & Tirole, 2003). The *Forbes* headlines cited above illustrate the intense competition among three of the largest and most commercially successful DMSPs in the digital economy; namely, Alibaba, Amazon and eBay. The holy grail of platform competition is attaining market leadership (Gawer & Cusumano, 2008), which, in turn, requires competitive actions, defined as overt behaviors or newly developed initiatives that challenge the market's status quo. Once a DMSP has established itself as a market leader among other platforms, it possesses the ability to drive innovation in the industry (Gawer & Cusumano, 2002, 2014), establish the marketplace's transaction rules, influence changes in relative market share, and, in many cases, enjoy high profitability (Boudreau & Hagiu, 2009). When a DMSP becomes a leader, it can unilaterally define system architectures and technical developments in a market. Hence, closing the gap between itself and the current leader, dethroning the current market leader, and sustaining market leadership are the key organizational goals for any DMSP engaged in inter-platform competition (Ferrier, Smith, & Grimm, 1999; Smith, Ferrier, & Grimm, 2001; Tiwana, Konsynski, & Bush, 2010).

The emergence of DMSPs presents significant opportunities and challenges for information systems (IS) researchers for several reasons (Tiwana et al., 2010; Yoo, Boland, Lyytinen, & Majchrzak, 2012). First, few studies, with the exception of Hagiu's (2009) preliminary work, have examined the process of establishing a DMSP in relation to buyer and seller actions in specific market settings. Consequently, we lack knowledge about how one should establish, manage, and nurture DMSPs (Gawer & Cusumano, 2014). Second, successful DMSPs tend to be the exception rather than the norm (Hagiu, 2014). While some DMSPs have grown explosively, many have struggled to remain viable over time (Evans & Schmalensee, 2010). For example, Brightcove, a leading provider of online videos, has struggled to serve multiple customer groups on its platform simultaneously. Similarly, Apple's Macintosh personal computers performed poorly when Apple decided not to open up the Macintosh architecture and software to third party complementors and licensees (see Hagiu, 2014). These cases highlight that a DMSP's *ecosystem* of entities (see Gawer, 2009) and its business model must evolve constantly for the DMSP to remain competitive as new challengers or technologies emerge and as markets change (Gawer & Cusumano, 2014). Third, DMSP ecosystems are fluid and amorphous in nature, but existing studies have tended to adopt a static view as opposed to examining how platforms may evolve over time and respond to the dynamics of their environment (Tiwana et al., 2010). Moreover, in the reference disciplines of economics and strategy, most of the existing studies on platforms focus on pricing strategies (e.g., Evans, 2003b; Rochet & Tirole, 2003) without addressing the technological, social, and cultural aspects of the phenomenon or its strategic implications (Pettigrew, Woodman, & Cameron, 2001; Suhomlinova, 2006). Competitive strategies, in particular, can shape inter-platform competition, DMSP growth strategies, and their related trade-offs.

Given the research gaps identified above, we address the following research question:

RQ: How does IT enable DMSP market leadership?

To address this question, we conducted a case study of Alibaba, the largest online B2B marketplace in the world (Hidding et al., 2011) and a large and vibrant DMSP with over 80 million members. In our analysis, we focused on Alibaba's IT affordances, competitive actions, and platform development strategies and how they evolved over time. More specifically, we drew evidence from how Aibaba.com established itself as a B2B platform in 1999, expanded into a platform for B2C online retail in 2003, and subsequently further transformed its business model by incorporating third party online-payment and advanced data-centric cloud-computing services and other essential Internet services. Based on our

findings, we constructed a stage-wise model (in the manner of Montealegre (2002), Newman and Robey (1992) and Newman and Zhao (2008)) that depicts how an IT-enabled firm can achieve and exercise DMSP leadership to compete in global markets. In this paper, we also contrast our model with prior studies and present a contextualized analysis on which future research can potentially build.

2 Literature review

2.1 Digital Multi-sided Platforms and Research Opportunities

The multi-sided platform concept is not new. Prior studies in economics and IS have conceptualized multi-sided platforms as intermediaries that facilitate transactions among two or more groups of constituents such as consumers, sellers, advertisers, and suppliers (Hagiu, 2014; Gawer, 2009; Tiwana et al., 2010). A shopping mall that brings together consumers and store owners is an example of a multi-sided platform. Platforms have paying and subsidized groups. The paying groups are the entities on the platform who contribute directly to its revenue. Subsidized groups, on the other hand, are entities whose participation in the platform the paying groups highly value, especially when they are attracted in sufficient volume. In other words, if a platform can attract enough entities from the subsidized groups, entities from the paying groups are likely to be willing to pay to reach them (Evans, 2003a, 2003b).

DMSPs extend the concept of multi-sided platforms, and researchers in several disciplines have been motivated to contribute to the body of knowledge on DMSPs in recent years (e.g., Farhoomand & Lai, 2008; Hagiu & Yoffie, 2009; Osterwalder & Pigneur, 2010). IT underpins DMSPs, which enables their immense scalability and range of services (Hagiu, 2009). As such, DMSPs tend to be even larger and more valuable for the participating entities. A DMSP's ecosystem comprises both the platform and the constituents specific to it (Boudreau & Hagiu, 2009). Hence, a platform must attract enough customers from both the paying and subsidized groups and provide them with adequate value to achieve sustainable growth in its ecosystem. At its core, a DMSP performs two functions: it 1) reduces the search costs incurred by platform constituents when seeking transaction partners, and 2) reduces the shared costs incurred during the actual transaction (Hagiu, 2009, p. 5). A case in point is Google: Google offers free Web searches for individual Internet users, and advertisers become more willing pay Google for advertising space as exposure to a greater number of Internet users increases. Advances in technology have provided firms that are operating in traditional, one-sided markets with the opportunity to fundamentally transform their business and operations. As part of this transformation, the increasing awareness of the strategic and business benefits of DMSPs has prompted many firms to attempt to become "the next eBay" (Hagiu, 2014, p. 78).

Notwithstanding the theoretical and practical contributions of the emerging studies in this area, many scholars, citing several untapped research opportunities, have expressed the view that the extant literature on platforms remains inadequate. First, despite the growing prominence of DMSPs in the market, few studies move beyond examining their pricing structure, which comprises the costs and subsidies of platform participation (e.g., Evans, 2003b; Rochet & Tirole, 2003). Most of the existing studies on DMSPs also focus on factors as opposed to processes. Moreover, in line with the general trend in e-commerce research, these studies tend to focus on the socio-technical issues related to the complex organizational mechanisms that underlie the performance of emergent platforms (e.g., Beynon-Davies, 2010; Buenstorf & Fornahl, 2009; Chu & Smithson, 2007; Treiblmaier & Strebinger, 2008). Some scholars have called for more research into the technological aspects of changing platform environments (Gawer & Cusumano, 2008, 2014) to better understand how DMSPs stimulate and channel innovation and to better inform the strategic decisions of DMSP leaders and their challengers. One direction would be to explore the reported open affordances on digital platforms (Yoo et al., 2010). Such research on platforms would bring the IT artifact into the core of theoretical development regarding platform evolution and, in doing so, contribute unique insights that are distinct from strategy and economics. In Section 2.2, we discuss the theoretical notion of affordances that are specific to IT artifacts. This theoretical lens sheds light on the implications of IT-associated change in DMSPs.

Second, as platforms become larger and increasingly complex, they become especially challenging to manage (Siggelkow & Levinthal, 2003; Teece, 2009) with issues arising in relation to integrating organizational units (Ross, Weill, & Robertson, 2006) at the platform and firm level. Relationships between constituent groups may be naturally strengthened or broken over the course of time (Lenox, Rockart, Lewin, 2007; Munksgaard, 2010) depending on the alignment of interests (Hagiu, 2009) and the interdependencies arising from working relationships and structures (Crowston, 1994; Kumar & Van

Dissel, 1996). These strengthening or breaking relationships result in multi-level buyer and seller actions (Parker & Van Alstyne, 2005). Managers cannot readily apply the conventional mechanisms prescribed in the IS development literature because platforms' scope is significantly wider than that of individual firms because the former includes managing interactions and interdependencies that are beyond a firm's boundaries (Boudreau & Hagiu, 2009). Furthermore, a platform entails generativity in that previously uncoordinated constituents can produce unexpected, novel combinations and changes in the ecosystem (Yoo, 2013; Yoo, Henfridsson, & Lyytinen, 2010). Therefore, both a DMSP and its constituents need to carry out micro and macro actions. Such actions are shaped by environmental and organizational influences, occur in and outside the organizational boundaries of the platform constituents, and facilitate both the paying and subsidized groups.

Platform ecosystems function like markets where collaboration between platform entities is not a simple "cooperate or not" decision. Consequently, different strategies demand scrutiny of the mechanisms of coordination among multiple constituents (Tiwana et al., 2010) in terms of the rules and operating procedures, adaptive planning and scheduling, and mutual adjustments for effective collaboration (Munksgaard, 2010). At the ecosystem level, a possible approach is to examine the interplay and consequences of competitive actions among leading and challenging firms (Ferrier et al., 1999; Smith et al., 2001). These competitive actions, based on Schumpeter's (1934) theory, refer to any overt behavior or newly developed initiative that challenges the market's status quo to influence customers' buying decisions (Smith et al., 2001). These actions may include new pricing schemes, product introductions, and promotional campaigns. One needs to understand the competitive actions because doing so will reveal how market leaders defend their position against their challengers and how these actions creates the motivation for challengers to undertake new competitive actions in an attempt to improve their market position. In turn, in this paper, the affordances of the DMSPs (which enable action), which we define as "what is offered, provided, or furnished" (Volkoff & Strong, 2013, p. 822) to the platform constituents, underpin those competitive actions. Consequently, examining the competitive actions of DMSPs from the perspective of IT affordances would reveal how the sum of the actions of individual constituents shapes the DMSP's competitive actions. Adopting this perspective may also confer the additional benefit of generating more nuanced insights because it considers the contextual differences among individual constituents (Zammuto, Griffith, Majchrzak, Dougherty, & Faraj, 2007), which could shed light on the mechanisms through which each constituent interprets and actualizes the relevant IT affordances depending on the constituent's specific purpose for engaging with the DMSP. Accordingly, we turn to the literature on IT affordances to construct a theoretical lens to guide our inquiry (Klein & Myers, 1999; Strauss & Corbin, 1990).

2.2 Theoretical Lens: IT Affordances and Actions

The notion of affordances stems primarily from ecological psychology (Gibson, 1977). The notion explains how individuals perceive the inherent values and meanings of things in the environment and how they can use this information to define the possibilities and constraints for action that a material object offers to an actor or how a material object becomes implicated in human activity. Scholars have formalized the affordance concept as, for example, dispositional properties of the environment (Turvey, 1992), relations between the abilities of organisms and features of the environment (Chemero, 2003) and as an opportunity for action (Stoffregen, 2003).

In this study, we use IT affordance to mean an action potential; that is, what individuals or organizations with a specific purpose can do with technology (Strong et al., 2014). Several scholars have suggested that examining affordances can inform studies of IT-associated organizational-change processes (Volkoff & Strong, 2013) and can help scholars develop theory on how technologies offer action possibilities to work teams and organizational units (Gaver, 1991; Robey, Anderson, & Raymond, 2013) and create new organizational forms (Leonardi, 2011; Zammuto et al., 2007). The focused nature of the affordance concept is especially useful in examining the effects of introducing technology to organizations in that it allows one to explain organizational-level affordances (Volkoff and Strong, 2013). In reality, we can view IT-associated organizational change as interacting strands of affordances spanning time, which can include basic (mandated or intended use), integration, standardization, control, analysis, and communication affordances (Volkoff & Strong, 2013). For example, the affordances of technology for learning include information accessibility, task automation, knowledge representation, and communication/collaboration with peers and experts (McCrary, Putnam, & Jansen, 2008). On the other hand, the affordances of technology for healthcare range from electronic health records and personal health records to decision-support and telemedicine systems, which afford clinicians the ability to access

patient data and medical histories electronically and inform their healthcare decisions (Chad, 2011; Goldschmidt, 2005).

Researchers face several challenges and issues when attempting to apply the notion of affordances in IS research. According to (Volkoff & Strong, 2013), affordances are a type or subset of generative mechanisms. Just as generative mechanisms are non-deterministic, different actors may actualize affordances differently. At the organizational level, actualization refers to the collective actions that actors take to take advantage of affordances through their using technology to achieve outcomes in support of organizational goals (Strong et al., 2014). Just as a mechanism exists whether or not one exercises it, some affordances may never be actualized (or even perceived) in reality unless there exists someone who, in addition to having the necessary capability, is also motivated by organizational goals that can be fulfilled by actualizing the affordance. Furthermore, an organization's macro context has an immediate effect on the shared beliefs, leadership, structures, and norms that define a firm's operations (Schein, 2010), which include the hierarchical setup and roles of stakeholders as defined by an organizational goal that is served by actualizing the affordance. In other words, for IT artifacts designed and implemented for a particular functional need, researchers must note that the intentions of the IT artifact's designer are not always realized in use because artifact users with their own purposes in mind may ignore or work around the intentions. The status of an affordance at any given time is potentially: a) possessed but unexercised, b) exercised but unactualized (or partly actualized), and c) actualized but not necessarily empirically observed (Volkoff & Strong, 2013). Understanding that mechanisms can be both powers and liabilities reminds one that affordances can both enable and constrain. In addition, multiple affordances exist at the same time. Therefore, in addition to uncovering these affordances, researchers must pay attention to the nature of the relationships between affordances to examine the different structural levels from which they emerge in their constituent parts (Volkoff and Strong, 2013). In other words, researchers must account for the way in which individuals and organizations temporally activate actualized affordances. One way to do so is to focus on a single affordance, which allows one to center on the way this focal affordance might unfold through time should an actor attempt to actualize it and on the other affordances or mechanisms that interact with the focal affordance. Lastly, one must conceptualize the affordances that material artifacts offer at a higher level of analysis than the individual level such that the analysis must scale up to describe the relationships between aggregated technologies and larger social collectives (Robey et al., 2013, Zammuto et al., 2007). This analysis is applicable to all major types of IT applications and to an organization as a whole.

3 Research Method

In this study, we focus on an emerging phenomenon that has only recently attracted IS researchers' attention. Recognizing that DMSPs form an inherently complex and multi-dimensional phenomenon, an objective approach to research might be difficult (Koch & Schultze, 2011) and, thus, make it more appropriate to examine the phenomenon by interpreting the relevant stakeholders' shared understanding (Klein & Myers, 1999). The case study research methodology is particularly appropriate for such an exploratory research endeavour (Siggelkow, 2007). Using the qualitative case research method, we could unearth operational processes (Gephart, 2004; Majchrzak, Rice, Malhotra, King, & Ba, 2000) and address our "how" research question (Pan & Tan, 2011; Walsham, 1995). We adopted an interpretive approach (Klein & Myers, 1999; Walsham, 1995) because we found no established theoretical model available to explain how DMSPs achieve and exercise leadership. Applying the existing knowledge on leadership and using IT affordances as our theoretical lens, which serves as a "sensitizing device to view the world in a certain way" (Klein & Myers, 1999, p. 75), and using our research approach, we conducted the study and analyzed the data based on prior theories. However, our approach also allowed new, unexpected, and in-depth findings that were not previously known at the outset of the inquiry to emerge from the data (Pan & Tan, 2011).

We used four criteria to select our case study. First, the DMSP needed to be situated in a competitive environment that required the DMSP to devise new competitive actions. Second, the DMSP needed to serve paying and subsidized groups so that we could study the underlying mechanisms for managing the different groups. This requirement also implied that constituents needed to reflect their motivation for participating in a DMSP (i.e., to lower search costs and shared costs) (Hagiu, 2009). Third, and related to the first two criteria, the DMSP needed to have sophisticated-enough internal structures and operations so that the DMSP demonstrated its capabilities (both IT and non-IT capabilities) across business functions (including operations planning, order processing, and product research and development) Finally, the

DMSP selected for the case study needed to be commercially successful so that the way in which its firm managed and leveraged the platform for business value could provide an illustrative example for practitioners. Overall, the case organization needed to be a widely recognized DMSP leader so we could adequately investigate market leadership in the context of inter-platform competition. Based on these criteria, we chose Alibaba—currently the largest and most commercially successful DMSP in Asia—as our case organization.

In line with our literature review, we narrowed the focus of our inquiry to three pertinent themes: 1) Alibaba's strategic goals and environment, 2) the Alibaba platform's and its constituents' IT affordances and competitive actions, and 3) the development and business value that Alibaba and its constituents have achieved. To this end, we conducted 23 face-to-face interviews with various stakeholders in Alibaba including suppliers, retailers, merchants, and individual users (Appendix 1 lists interviewees) The internal informants were predominantly senior and middle managers of the Alibaba Group and its subsidiaries. We chose these informants deliberately because we sought to leverage the depth of knowledge, experience, and leadership (especially in championing IT use) that managers often possess (Bassellier et al., 2003; Cooper & Ellram, 1993). We conducted face-to-face interviews so we could capture participants' interpretations in an effective way (Walsham, 1995), illuminate important factors in depth (Oppenheim, 1992; Walsham, 1995), and follow up with questions for clarification (Oppenheim, 1992). We adopted a semi-structured interview approach with which we could further clarify ideas and issues (Taylor & Bogdan, 1998; Walsham, 1995). We used secondary data sources, including newspaper articles, books, and information from Alibaba's corporate website to supplement our analysis and enhance our understanding of the data we collected from the interviews. We also used these secondary data sources to triangulate the data from the documents and archival records accessible via online public domains (Neuman, 2014). Table 1 summarizes how we applied Klein and Myers' (1999) seven principles for conducting interpretive field research.

We analyzed the data as we collected it to take full advantage of the case research approach's flexibility (Eisenhardt, 1989). During the analysis, we sought to compare the initial findings of the case against the initial statements and our theoretical lens to achieve confidence in our theorizing (Pan and Tan, 2011). If findings emerged that went beyond our lens's propositions or if we found propositions that our empirical data did not support, we conducted additional interviews to iteratively explain these findings and propositions (Walsham, 2006). By moving between the empirical data, our guiding lens, and the related literature (Eisenhardt, 1989), we uncovered new themes in the data, developed further mappings of the coded responses, and, subsequently, extended our theory. We also performed open, axial, and selective coding (Strauss & Corbin, 1990) on the translated notes and documents we obtained when collecting secondary data.

As part of our data analysis, we also combined the temporal bracketing, narrative, and visual mapping strategies to organize the empirical data (Langley, 1999, 2009). We then verified the event timeline (our interpretive account of the events that unfolded) and the diagrammatic representations of our theoretical ideas that resulted from adopting these strategies with our informants. In particular, we extracted, confirmed, and used pieces of evidence that illustrated the interplay between Alibaba and the various constituent groups of its DMSP. In line with our theoretical lens and consistent with analyses in prior studies (Strong et al., 2014), we mapped the case data against the constructs of organizational goals, IT affordances, and competitive actions based on the events that unfolded in each stage of Alibaba's development. We then verified our mappings to shape our conceptualization of the phenomenon and developed a stage-wise model that addressed our research question in an emergent manner. We performed this process iteratively until we reached the point of theoretical saturation (Eisenhardt, 1989).

Table 1. Application of Klein and Myers' (1999) Seven Principles for Interpretive Field Research

Principle	Evaluative criteria for principle (summarized from Klein and Myers (1999))	How we applied the principle in our research methodology
Fundamental principle of the hermeneutic circle	"Requires that all human understanding is achieved by iterating between considering the interdependent meaning of parts and the whole that they form" (p. 72).	We conducted interviews with Alibaba's senior and middle management, their subsidiaries, and several of their key constituents including Alibaba sellers and buyers. These internal and external stakeholders provided detailed knowledge of their daily operations in their firm and the role of IT. With their responses to specific questions (see Appendix 1), we could move from a functional understanding to understanding the larger DMSP marketplace and global context.
Principle of contextualization	"Requires critical reflection of the social and historical background of the research setting, so that the intended audience can see how the current situation under investigation emerges" (p. 72).	We interviewed senior and middle managers. The stakeholders were vastly experienced. Besides pertinent research questions, we discussed generic topics to understand the context of daily operations in the DMSP, interrelationships with constituents and in the marketplace, milestones, and critical growth phases.
Principle of interaction between researchers and subjects	"Requires critical reflection on how the research materials (or 'data') were socially constructed through the interaction between the researchers and participants" (p. 72).	We employed an iterative interview strategy; the findings from the first interviews informed new questions that we used in the second interviews and so on. We consistently shared findings with the managers to obtain feedback; for example, after Taobao executives discussed the payment and credit system, Alipay, we verified this information with the Alipay Executive Vice-President when discussing relationships with external financial institutions.
Principle of abstraction and generalization	"Requires relating the idiographic details revealed by the data interpretation through the application of Principles 1 and 2 to theoretical, general concepts that describe the nature of human understanding and social action" (p. 72).	We created a preliminary lens based on concepts derived from the literature relating to DMSPs and their competitive marketplaces, the role of IT, leadership, and competitive actions to sense, capture, and organize field notes. During the interviews, we took field notes to relate specific instances and idiosyncrasies to theoretical concepts though not forcefully.
Principle of dialogical reasoning	"Requires sensitivity to possible contradictions between the theoretical preconceptions guiding the research design and actual findings ('the story which the data tell') with subsequent cycles of revision" (p. 72).	Our preliminary conceptualizations were challenged during and after the site visit. As such, we revised our original theoretical lens. We discovered an understanding of DMSPs from a competitive action perspective through this process.
Principle of multiple interpretations	"Requires sensitivity to possible differences in interpretations among the participants as are typically expressed in multiple narratives or stories of the same sequence of events under study; similar to multiple witness accounts even if all tell it as they saw it" (p. 72).	We triangulated our data (Darke, Shanks, & Broadbent, 1998) to ensure the convergence of interpretations by interviewees from different backgrounds and work areas. For example, we used follow-up and confirmation questions to clarify contradicting responses among the interviewees. We asked interviewees to describe or affirm their interpretations of critical events if needed.
Principle of suspicion	"Requires sensitivity to possible 'biases' and systematic 'distortions' in the narratives collected from the participants" (p. 72).	We analyzed secondary data sources, including newspaper articles, books, and information from Alibaba's corporate website, to eliminate possible distortions and false interpretations of interviewees and researchers. We had several discussion sessions between ourselves to ensure we reliably and consistently interpreted the data.

4 Case Description and Findings

Alibaba, established in 1999 in Hangzhou, China, is a leading DMSP that provides an online marketplace to connect small businesses in China to buyers all over the globe. It is the flagship business of the Alibaba Group. The growth of the Alibaba platform in terms of registered users has been phenomenal throughout its history. By June 2010, Alibaba had over 53.4 million registered users in China and 13.6 million internationally (Alibaba.com Limited, 2010). In September 2014, Alibaba Group began trading its shares on the New York Stock Exchange. As of 2016, it was valued at over US\$231 billion, making it larger than Amazon and eBay combined (Picker & Chen, 2014). At the time of writing, Alibaba ranked 55th among the world's most visited websites according to Alexa.com (Alexa.com, 2015).

We organized our case findings by reference to three interrelated stages, which highlights how Alibaba—through a chain of strategic events—developed its capabilities and transformed itself from a B2B e-business into a leading DMSP. In Sections 4.1 to 4.3, and, in Tables 2, 3, and 4, we present the three development phases and the corroborating evidence related to our constructs of interest.

4.1 Phase 1 (1999-2003): Collectivism and Trust among Constituents

At the outset, Alibaba's executives pursued a clear organizational goal to build collectivism and trust among Chinese businesses. They believed that creating an IT platform was tied to that vision. The initial manifestation of Alibaba was an online directory called ChinaPages.com, established in 1995. At a time when the knowledge and availability of commercial Internet services were virtually non-existent, ChinaPages.com created value for local businesses by providing them with the means to establish a Web presence. For approximately US\$3,000, ChinaPages and its U.S. collaborators would translate (and index) the business's corporate and product information and publish them on a website. With these services, ChinaPages could provide unique value for clients, who were mainly small local businesses, by enabling them to market their products globally.

In 1997, Jack Ma and his team at Alibaba began work on an initiative (backed by China's Ministry of Foreign Trade and Economic Cooperation) to create an electronic data interchange in a closed nationwide optical network. The resulting ChinaMarket.com served as an e-commerce platform linking Chinese exporters to foreign businesses. Yet, despite the branding of the ChinaMarket business model as a B2B online marketplace, the flow of products and services was unidirectional: from Chinese exporters to global buyers. In this model, Chinese firms also had to pay a sizeable membership fee. The downsides of ChinaMarket presented a market opportunity that led to the establishment of Alibaba in 1999 to *afford* the online trading capabilities that small and medium-sized enterprises (SMEs) need. As a result of its unique value proposition, Alibaba quickly established itself as a B2B online marketplace that provided a platform to connect SMEs in China to buyers around the world (a focal IT affordance).

China's entry into the World Trade Organization in 2001 placed Alibaba in a position to capitalize on the surge in foreign demand for Chinese-manufactured goods. In general, the SMEs that use Alibaba have tended to be less willing and able to invest in ICT possibly because they lack the requisite knowledge and resources (Levy & Powell, 2005) and, thus, face formidable barriers to entering the global marketplace. For Chinese SMEs, the Alibaba DMSP afforded key services such as online trading education, website development, transaction management, and merchant information. As the Vice-President of Alibaba Group aptly explained in our interviews: "The strategy (was) not to take on the rich but to educate the poorer firms that can't afford (to go online)... on how our services work". Based on the focal yet basic affordance of connectedness through IT, the DMSP was configured in a way that created other strands of affordances. In particular, the launch of two IT-enabled initiatives for sellers established the value proposition for the DMSP, which resulted in a larger membership base. The first was GoldSupplier, which delivered services such as product advertising, Web training, and development for registered Chinese SMEs. The second was TrustPass, which, as a Web service, measured credibility based on a member's transaction history. By late 2002, Alibaba developed itself as the *de facto* platform for China's SMEs to conduct their business online. Word-of-mouth referrals quickly led to significant membership growth, and, with it, Alibaba gained essential merchant and client information and business opportunities over its competition. The opportunity to diversify into other markets then presented itself through a growing number of members (averaging 1,500 new members every day since 2001).

Table 2. How Alibaba Built Trust and Collectivism Among Constituents

Organizational goal	Description and evidence	
Collectivism amongst SMEs	Empower sellers	"Where traditionally firms would work for profit, our [Alibaba's] focus is on the needy.... We very much appreciate the volume of SMEs over providing exclusive services, and our shorter term strategy is B2B because no one else is doing it, (the goal is) to stimulate user account growth and address the information needs of our customers." (Vice-President, Alibaba Group)
IT affordance	Description and evidence	
Lower barriers to market entry (seller-side)	Provide free access to resources for trading online through the IT platform	"[The] first stage is to service only Alibaba. Using our rich traders' data and unique money-on-delivery payment model, we first ensure insurance and trust between our sellers and buyers on Alibaba.... The government has interests in a credit system, including credit settlement and loans. We prefer to listen and fulfil our customers' needs ... to them [SMEs], Alipay is like providing warmth on a bitter winter day, and we become the trusted ally in payment." (Executive Vice-President (Strategy), Alipay) "... unlike search engines, we are the owners of the information.... The rise of the Internet empowers us to provide technical expertise and lower trading costs for our clients." (Vice-President, Alibaba Group)
	Offer inclusive access for services	"We could have diversified earlier but [Jack] Ma told us to focus and place our resources just on the B2B e-business services platform for SMEs, this will be our foundation.... There were other sites helping clients search for a market for their goods etcetera, but we [Alibaba] will offer to help set up their business." (B2B General Manager, Alibaba)
Access to core competencies (buyer side)	Increase knowledge exchanges through IT	"If [e-commerce] knowledge is low, we ask firms to post their corporate details and products via a bulletin board system.... As information builds and because we control the information, we can help our clients find supplier information, product specifications, trading relationships.... We then inform them of where to find this information on our site, via email. Using this information, we can potentially connect buyers to sellers and vice versa." (B2B General Manager, Alibaba)
Competitive action	Description and evidence	
De facto B2B trading platform	Educate masses of SMEs on online trading	"We educate our SMEs so that they address their own skills shortage problems.... Compared [with the US], we offer education to SMEs in China and a more stable online trading structure." (Executive Vice-President (Strategy), Alipay) "We addressed SMEs' biggest desire [which is] to conduct their business online and to connect with other SMEs globally.... The other sites slowly peeled away after realizing that too late." (B2B General Manager, Alibaba)

4.2 Phase 2 (2004-2008): Pursuing Alliances and Encouraging Participation among Firms

Alibaba's rise coincided with the decline of eBay in China, which did so because it failed to recognize that the Chinese market and business environment were different from that of the West. Its exit presented an important opportunity for Alibaba. However, it had become clear that Alibaba could not fulfil the massive demand for the products of its members: it had to expand its network to help create synergies and collaboration through alliances. As such, it developed a two-pronged strategy to involve other partners.

First, it delegated part of the burden of meeting buyers' needs to the sellers. Alibaba launched a new business named Taobao (which translates as "digging for treasure") as a free-of-charge option for individuals buying and selling virtually any product. Taobao soon became China's largest online C2C retail website (see Analysys-International, 2005) and a one-stop IT platform for basic affordances such as shopping, socializing, and information-sharing for users. In diversifying into a C2C site, Alibaba had the strong support of its platform members. Second, it developed Alipay, an online payment system, to facilitate the goals of platform participation. Being more attuned to the Chinese way of transacting, Alipay became the most popular means of payment on Taobao.com by 2004. In addition, to cater to the mistrust of online transactions in the Chinese market, Alibaba began negotiations with several financial institutions to provide escrow services through Alipay. The cooperation of numerous banks led to Alipay's separating from Taobao to become an independent business entity.

Alibaba also formed alliances on the back of acquiring or investing in other existing platforms. For example, in October 2005, Alibaba Group acquired China Yahoo! as part of its strategic partnership with the company. China Yahoo! was one of the leading Chinese Internet portals with a focus on essential Web services including news, email, and search. In addition, in 2006, Alibaba Group strategically invested in Koubei.com (which had started in 2004 as a lifestyle portal) to extend its search capabilities. Alibaba also established Alimama, an online advertising trade platform for both publishers and advertisers, during this phase to take on Baidu.com (the leading Chinese search engine). Alibaba also engaged experts and invested in a research center to monitor the traffic on Alipay and conduct research on buying patterns and structures. With an extended and more comprehensive suite of services, Alibaba had more control over its operational boundaries than other DMSPs. At Taobao, buyers could become sellers and vice versa because the boundaries between the B2B and C2C businesses in terms of users and services had blurred as a result of Alibaba’s new approach to managing the DMSP. Our examples reveal that complex customer services may *emerge* from interacting IT affordances (from payment to searching and advertising), and actors (e.g. researchers) performing similar tasks may need to account for the development of synergies and participation.

Table 3. How Alibaba Encouraged Coopetition

Organizational goal	Description and evidence	
Confrontational strategies to create a cooperative structure	Implement a divide and conquer strategy Identify potential synergistic networks	“Ali [Alibaba] has always adopted the attack approach to tackle competition, we established Taobao to attack eBay, and we introduced Alimama [an online advertising trade platform for publishers and advertisers] to tackle Baidu.com [the leading Chinese search engine]. All these subsidiaries are platforms that provide [Alibaba] indirect access to different markets.” (Vice-President, Alibaba Group) “Before 2004, we had no intention of joining forces, after 2004 we had a strategy for who we wanted to work with.... Originally it was customers first, shareholders second, workers third. Now it’s customers first, partners second, workers third, and shareholders fourth.” (Vice-President, Alibaba Group)
IT affordance	Description and evidence	
Develop synergies in markets (seller side)	Build trusted, cooperative alliances; build deeper interdependencies	“It is a cooperative yet competitive relationship. Mr Ma, branch president of China Merchants Bank, agrees that the partnership with Alipay is bigger than being competitors.” (Executive Vice-President (Strategy), Alipay) “Alibaba has its own logistics system, [links to] many delivery firms, and also a third-party payment service called Zhifubao, these are all the compelling reasons why sellers like to choose Taobao for selling their goods.” (A Taobao.com user)
Access to new products and services (buyer-side)	Expand platform, IT tools, and new markets	“We have proposed five principles which represent five directions in our development, including e-marketing and business [with Alibaba B2B and Taobao], building trust [TrustPass and evaluation system on Taobao], payment [Alipay], searching [China Yahoo!], and tools [Alisofware].... This is because the markets will only get more saturated and the cost of transactions will only go lower, we must have...new innovations to keep our clients happy.” (Vice-President, Alibaba Group)
Competitive action	Description and evidence	
Open platform with sophisticated supply chain and customer services	Add value to customer services Open and extend operations	“[Having] access to other subsidiaries’ databases is a key advantage... It is the difference (between Alimama) and Google.... We can do behavior targeting and content match so different commercials and advertisements are available to different users depending on their profiling.” (Senior Manager, Alimama) “...from 2006, we broke up functional units in Alibaba to form subsidiaries that operate freely with their clients.” (Vice-President, Alibaba Group)

4.3 Phase 3 (2008–Present): Promoting Autonomy and Community among Constituents

Alibaba continued to enjoy robust growth in the first half of 2008 in line with the increasing penetration of the Internet across China. Despite this welcome trend, many Chinese SMEs remained reluctant to commit to using IT to manage their businesses due to their perceiving that IT was cumbersome and expensive. To

address the issue, Alibaba decided to establish itself as an IT application service provider for its sellers based on the prediction that the sellers could, in turn, take ownership of some of the IT services that Alibaba provided for the buyers on its platform. A senior manager at Alibaba explained: “If the first wave was B2B and the second wave was C2C, then the third wave would be tools”. Actualizing IT service provision required the platform to first reinvent its services and competencies as the Alibaba DMSP matured and as its platform members became more familiar with its capabilities. Second, and as next-generation leaders such as Alibaba CFO Maggie Wu noted in interviews, it needed to create a communal marketplace where small businesses could not only “meet” but also “live” on Alibaba.

Table 4. How Alibaba Developed Autonomy Among its Constituents and a Sense of Community

Organizational goal	Description and evidence	
An autonomous structure	Integrate/demarcate constituents to co-create value	“Up to 2006, the strategy was to let our subsidiaries operate on their own, now the strategy is to channel and share their resources, capabilities, and to collaborate. From a technical perspective, it is easy to open up the B2B and C2C market but from a business perspective how do we get Alibaba and Taobao to open up? So (the strategy was) from 2008, we withdraw Alibaba to enterprise level and reallocate resources and operations from there, the impact was minimal.” (Vice-President, Alibaba Group)
Self-protection and risk aversion	Re-analyze expansion plans and risks	“China is big enough, we don’t need to be international yet, we cannot move on until we do well in the Chinese market.... Our [Taobao’s] competition is not eBay, it’s Walmart; they are currently on 3.5 billion (RMB) per year and have 50% market share. Internationally, eBay has five times more transactions, but, in Asia, Taobao is number one. The next step [is] to be the world’s best!” (Executive Vice-President, Customer Relations, Taobao)
IT affordance	Description and evidence	
(Re)invent communal services and structure (buyer-side)	Create opportunities to partake in line product design and sales	“From 2008, we transformed Taobao [still a separate platform] from solely a C2C to a B2C platform to help customers with the product brand and type...where C2C is for the price conscious customers, and B2C is for consumers who want product care and service.... At the moment, our clients trade on Alibaba. We want them to be able to live on Alibaba in future.” (Executive Vice-President, Customer Relations, Taobao)
Joint ownership of innovations (seller-side)	Explore, pool, and channel constituents in joint operations	“In June [2008], the operations of China Yahoo! and Koubei were integrated, forming Yahoo Koubei. The results were a massive, convenient and trusted lifestyle service platform [that operated] on the back of Koubei’s lifestyle services resources and China Yahoo!’s leading Web search capabilities and significant member base. The platform now collaborates with other communities and media to serve sole proprietors (to) build their own lifestyle e-business.” (Customer Relations Manager, Yahoo Koubei)
Competitive action	Description and evidence	
Alibaba as a community leader and platform for co-creation amongst constituents	Provide new and co-created services	“Now, Taobao is a community. Taobao is also a retailer. The original intention for Taobao was a place for buyers to meet, now [it’s more].” (Executive Vice-President, Customer Relations, Taobao) “In the longer term, when SMEs grow, they become our partners and our source of innovations.... They give back to us.” (Vice-President, Alibaba Group)

Alibaba successfully combined its B2B and C2C businesses while providing integrated services through enhancing the capabilities of its platform members. This development not only solidified its position as a platform leader but also generated IT affordances for exploration, reinvention, and innovation. The actualization led to the emergence of Alicollege and Alisoft, which Alibaba established specifically to counter the platform members’ lack of IT and operational capabilities. Alicollege provided e-merchants with business, Internet, management, legal, and regulatory knowledge through a range of face-to-face and online training programs. Alisoft provided a range of software-based Web services and solutions enabling customers to integrate e-commerce with their back-end systems. A clear reflection of this integration of services is the Alibaba Group’s “Big Taobao” strategy, which merged China Yahoo! with Alipay and Taobao to create a one-stop e-commerce portal. In 2009, Alibaba Group created a cross-business team comprising senior members from these three businesses to execute a full-scale roll-out of the Big Taobao

strategy. In 2010, the group also launched a social networking service (Tao Jianghu), a consumer-focused magazine (Taobao Tianxia) and an aggregate data-sharing service (Taobao Data Cube) to enhance the user experience on Taobao. In addition, in October 2009, the group established Alibaba (China) Education Technology Co. (also known as the Ali-Institute) as a formal subsidiary of the Alibaba Group.

5 Discussion: How Alibaba Achieved Market Leadership

Our study of Alibaba illustrates how IT enables a DMSP to achieve marketplace leadership. In particular, our findings suggest that marketplace leadership requires IT-enabled competitive actions. These competitive actions represent the actualizing of IT affordance according to the platform's defined organizational goals. In Alibaba, the focal affordances' actualization and the interaction of the focal affordances with other strands of affordances require that the DMSP be configured in a particular way to deliver value for both seller-side and buyer-side constituents in the platform's ecosystem. The creation, emergence, and development of platform IT affordances that we discuss here illustrate the IT-associated change processes in a DMSP. Table 5 summarizes this notion and the stages through which the Alibaba DMSP developed to become the global leader of the online B2B and B2C space that it is today.

Table 5. Summary of Stages through which the Alibaba DMSP Attained Market Leadership

Stage	IT affordance		Actualization of IT affordance			
	Seller side	Buyer side	DMSP goal	IT-enabled competitive action		
				Actions		Illustration of outcomes
1	Lower barriers of entry	Knowledge and competence	Encourage collectivism and trust	Provide free and inclusive access to resources and services	Creates → Influences ←	<p>Capabilities and Information Provided De facto platform</p>
2	Market synergies	Access to new products and services	Nurture cooperation	Build interdependencies and expand IT tools	Leads to → Influences ←	<p>Capabilities and Information Regulated Open platform</p>
3	Joint ownership of innovations	Re-invention of products and services	Develop autonomy	Channel and pool communal constituent capabilities	Develops → Influences ←	<p>Capabilities and Resources Consolidated Community platform</p>

Our findings show that establishing collectivism (see House, Hanges, Javidan, Dorfman, & Gupta, 2004; Lowry, Cao, & Everard, 2011; Martinsons & Ma, 2009) should be a strategic goal when a DMSP is in a

nascent stage of development particularly because it has implications for the platform's long-term sustainability. In the case of Alibaba, collectivism manifested in its initiatives to realize critical transaction volumes (Boudreau & Hagi, 2009; Evans, 2003b) between its seller and buyer sides through educating its members and protecting their interests. Recognizing that Chinese SMEs lacked knowledge and the ability to connect to the Internet, Alibaba offered free platform membership and provided access to crucial services such as online trading education, website development, and transaction management to ensure the SMEs adopted the platform as a trading intermediary. At this preliminary stage, IT's role is to be a conduit between customers and the platform service providers from which they will acquire business capability. IT affords SMEs' means of enhancing long-term competitive capabilities and their intellectual capital. As a result, the DMSP affords access to sources of knowledge and, ultimately, lower barriers of entry for its platform members.

Comparing our findings with other studies on DMSPs also reveals that some individuals and organizations may fail to sufficiently actualize the focal IT affordances to achieve a platform's common goals. For example, on other established platforms such as the U.S.-based Mercata.com (see Kauffman & Bin, 2001; Sandoval & Kawamoto, 2001), limited transaction volumes prevented them from realizing benefits associated with offering low prices (Kauffman, Bin, & Miller, 2002). In addition, Alibaba pursued identity protection, invested IT resources locally into Taobao.com, and concentrated on its local market rather than moving to the international market with this offering. This pursuit demonstrates that acting on IT affordances may create unintended results, and DMSPs may need to address "conflicts of interest between constituents" (Hagi, 2009, p. 25), which is in line with the service-dominant perspective. In particular, to gain customers' loyalty, the service-dominant perspective suggests that it is important to establish trust through tailored products and services because such trust ultimately results in more intimate relationships (Vargo, Maglio, & Akaka, 2008). In this way, Alibaba quickly became the de facto platform and a trusted business partner of its platform members, which confirms suggestions in previous research that trust is important to customer loyalty on the Web, especially in the case of China where consumers are more risk averse (Cyr, 2008). In line with Martinsons and Ma's (2009) views, we contend that Alibaba's decision to remain distinctively Chinese may also explain its ability to establish and maintain market leadership among DMSPs in China in the long term.

Following the nascent stage of development, some DMSPs tend to pursue aggressive confrontational strategies in response to the changing nature of competition and the challenges of new markets. Hence, they tend to be more reliant on intermediaries such as IT vendors to provide solutions that prevent unnecessary work and delays (Fang, Benamati, & Lederer, 2011). Alibaba clearly had a bigger appetite for risk than other IT firms in China, which contrasts with Zhu, Kraemer, and Xu's (2003) and Cyr's (2008) observations that more informed e-business firms tend to be more cautious. Alibaba engaged its competitors head-on and fluidly built strategic alliances (which increased interactions and reinforced its constituents' relationships with the Alibaba DMSP) in an attempt to outweigh the potential downsides of direct competition. Aligned with this goal, IT creates deeper interdependencies (Caglio & D'itillo, 2012; Lenox et al., 2007) between existing constituents, which can lead to friction and competition. IT can ameliorate this, however, by supporting complex knowledge transfers so that platform constituents have the ability and motivation to locate and potentially collaborate with one another. In other words, IT, in the form of Web services and communication tools, can afford a DMSP the power to guarantee the operational continuity of its various supply chains. Through acquiring China Yahoo!, the Alibaba DMSP extended its services beyond supporting transactions to include more value-adding and tailored services. Ultimately, this role expansion on the part of the platform leader to a more open platform appears to have reinforced collectivism in its ecosystem as well. The GLOBE report (House et al., 2004) states that businesses and their leaders in China are less likely to encourage input from others when making and executing decisions; instead, they emphasize delegation and duty. Our observations of Alibaba somewhat contradict to this statement. At Alibaba, DMSP constituents took advantage of network effects through a shared space for value co-creation (Prahalad & Ramaswamy, 2004) in a complex, cooperative marketplace (Quinn, Cooke, & Kris, 2000). The shift from pure competition to cooperative value co-creation, in turn, demands deeper interdependent relationships (i.e., characterized by pooling and reciprocal behaviors) and trust (Lenox et al., 2007; Lim, Tan, Cyr, Pan, & Xiao, 2011; Munksgaard, 2010).

Finally, some DMSP leaders tend to encourage autonomy among platform members when the platform is at maturity beyond the cooperative co-creation of value. Our findings show that IT allows one to develop a community platform. In other words, IT's role has evolved from supporting to enabling and driving business on multiple dimensions. IT allows organizations to facilitate customer co-creation and co-innovation. For customers, IT affords autonomous control over the software and services that they can

access. Big Taobao's development represents one such example of value co-creation between members of Alibaba as the platform leader. Ali-Institute, which offers training and certification in e-commerce for SMEs and B2B clients, represents another example. In turn, Alibaba expects its SME members to become partners and sources of innovation in the long term. Subsequently, clients assume control over certain resources, systems, tools, or processes. As such, Alibaba's case seems to suggest that, as a DMSP establishes new service infrastructures, the traditional mindset and culture of the old organization change, which lays the groundwork for a new service-oriented culture.

6 Research Implications and Contributions

Our study has implications for theory and particularly for how one should use the affordance notion in IS research. Our case study of Alibaba demonstrates that developing a leading DMSP requires competitive actions that one can achieve through actualizing IT affordances. While IT affords capabilities that promote market diversification and autonomy among DMSP constituents through integrated (search, advertising, and payment) services, new service infrastructures, and new social networking systems, constituents on both the buyer side and seller side acting on affordances can jointly support the development of a collectivist and co-creative community. In Alibaba's case, this stratification allowed us to simultaneously consider affordances at different levels and, extending prior studies, provide a more nuanced and multi-layered account of how IT-associated affordances across a DMSP interact rather than only considering each affordance individually. In other words, DMSPs must recognize the role of IT affordances arising from constructing a collectivist structure, nurturing co-competition, and promoting autonomy while fostering a sense of community among platform constituents.

Consistent with prior work, our study demonstrates that affordances are relational such that one may see organizational routines as possibilities for collective action that depend on both their material properties and human agents' ability to perceive and use them. Embedded IT functions in DMSPs offer functional affordances to human agents to appropriate, work around, and enact in ways that may deviate from the templates and inscriptions and, thus, to discover new features that afford different kinds of action. Our study is one of the first that reveals how platform-level affordances can arise from a complex IT artifact (i.e., a DMSP), its constituent users, and the actors who need to negotiate the DMSP's goals. The focal and interacting forms of IT platform affordances that our study highlights can help organizations manage the effects of introducing IT into the operations of DMSPs and help explain the variety of outcomes that a platform may experience.

Through our theoretical lens, our study also advances the understanding of DMSPs and the evolution of their business ecosystems. More specifically, our IS-oriented perspective underscores the important interactions between a DMSP (as the IT artifact, its affordances, and their interactions) and its internal and external environments. This technological aspect of platforms is largely absent in the body of platform development research in the literature (Gawer & Cusumano, 2014). From the perspective of IS strategy, our study also corroborates the notion that developing new capabilities and relationships aligned with changing opportunities is crucial for competitive positioning in a dynamic context.

For practice, our study identifies the digital tools or components that allow firms to build a DMSP and the digital capabilities that the platform requires to support its different and expanded functions. These digital technologies (Yoo et al., 2010) confer a new competitive dynamic. Like Brynjolfsson and McAfee (2012), our model leads us to suggest that technology can facilitate the matching of buyers and sellers, the mechanics of the transactions, and, in some cases, even the marketing and pricing decisions. The accelerated competition among DMSP marketplaces coincides with a sharp increase in the quantity and quality of IT investments that organizations are making to bolster (or altogether replace) their existing operating models (McAfee & Brynjolfsson, 2008; Tiwana et al., 2010). Starting from focusing on Alibaba's ability to offer a unified and easy way to connect constituents and provide foundational technologies that were previously unavailable to small businesses in China, we offer a consultable record of how a firm achieves market dominance as a result of IT affordances to integrate increasingly heterogeneous bodies of knowledge (Brynjolfsson, Hu, & Smith, 2010).

Echoing prior work (Boudreau, 2012; Cusumano & Gawer, 2002; Tiwana et al., 2010), we found that platform ecosystems require substantial coordination such that platform leaders need to find the right balance of buyer-side and seller-side actions and to establish the appropriate type and depth of interdependencies necessary to create a synergistic marketplace. These IT-enabled competitive actions

may assist the engagement of DMSPs with their constituents in collaborative decision making, coopetition, and co-innovation to capitalize on new opportunities.

Our study also contributes knowledge on how innovations propagate in a specific form of business ecosystem (i.e., a DMSP). The pervasiveness of DMSPs in the digital age, with their flexible open affordances (Yoo et al., 2010), has made them the focal point of many innovation activities in the digital economy. On a related note, our study also reveals the impact of DMSPs, in the form of pervasive digital technologies, on the distributed, heterogeneous nature of innovations. Similar to Boudreau (2012), our study shows that the increase in product diversity stimulates innovation in a platform and its ecosystem, whereas simply adding more similar products in a crowded market has little effect. Our findings can serve as a catalyst for future discussions about the delicate balance of generativity and control in platforms (Yoo et al., 2010) in the sense that too much control may choke generativity and drive out innovation and too little may result in a platform that is too varied and fragmented to generate coherent value from innovations.

Finally, our study also sheds light on how cultural differences and beliefs can positively (or negatively) influence the competitiveness of an entire DMSP. While some of our findings align with established perspectives on culture, others indicate the evolutionary changes induced by the broader trends of liberalization, globalization, and the proliferation of IT across China (e.g., Chinese firms such as Alibaba becoming more confrontational and encouraging members' autonomy). To the best of our knowledge, few studies to date have investigated DMSPs against a similar cultural backdrop. Moreover, most of the published works on IS-related topics in this context tend to be "rather primitive" (Davison, Kien, & Ying, 2008, p. 336) in that they focus on narrow technical aspects instead of organizational, managerial, socio-technical, cultural, or institutional issues. Both scholars and practitioners have suggested that China's phenomenal economic growth provides a kaleidoscopic array of business opportunities for businesses all over the globe. Thus, it may be important to critically re-examine and embrace the appropriate models of governance, leadership, and administration (Chen & Mille, 2011; Miller, 2010) to capitalize on those opportunities.

7 Conclusion

Despite receiving a great deal of attention in recent times, we know little about DMSPs. Because business competition tends to be no longer between firms but between platforms and their ecosystems, our research provides a starting point for a conversation and a deeper inquiry into DMSPs in the IS discipline. Our study addresses how organizational change unfolds in a DMSP and in its marketplace. Understanding and accounting for how affordances can help organizations better introduce IT into their DMSPs' operation and manage its effects (both anticipated and unintended) that occur through the platform's functionalities. According to the theoretical lens of affordances, how constituents engage with IT functions is at the heart of inquiries into the effects of IT on organizational structures and on a constituent or group of individuals (buyers/sellers) performing similar tasks.

Based on our findings, we contend that DMSPs thrive on strategic partnerships between interdependent entities because such partnerships increase the potential for market leadership and service autonomy. To extend their reach, leaders—regardless of their origin—must understand the ability and tendency of platform members to multi-home (i.e. participate on multiple platforms). Beyond their own capabilities, DMSP leaders must also help develop their platform constituents' capabilities (Hackbarth & Kettinger, 2004), which involves considering platform members' needs at different phases of the platform's development. The competitive terrain requires firms to be agile and to reconfigure their resource base to keep up with the demands of the changing landscape. We share Tiwana et al.'s (2010) view that platforms provide opportunities to investigate the means of governing platforms and the tensions that such means can create. For example: under what circumstances must the platform owner retain sufficient control to ensure the platform's integrity while relinquishing enough control to encourage innovation?

This study has several limitations. First, a common criticism of research that adopts the case study approach is the problem of transferability or generalizability (Walsham, 2006). While we acknowledge that statistical generalization is impossible, we contend that our findings are nevertheless generalizable beyond the current context because they are corroborated by, and built on, other studies' findings in the literature (e.g., Lai & To, 2012). Nevertheless, future research could be directed towards statistically validating our findings to better define the boundary conditions of the process model that we develop in this paper. Second, our interview data has limited dependability (Trochim, 2006) given the general inability

of any researcher to account fully for the dynamic context in which research occurs. We were restricted in who we could speak to because we necessarily identified our informants through snowball sampling (Pan & Tan, 2011). As such, our interview data may be susceptible to bias and errors of recall. To mitigate such bias, we conducted interviews with multiple stakeholders and ensured that each of our findings was corroborated by more than one data source. Nonetheless, future research could adopt a broader exploratory sequential approach (Morse, 2003) whereby researchers collect further data to build a consolidated theory to explain the process model (Gregor, 2006).

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Appendix A: List of Interviewees and Topics Discussed

Table A1. List of Interviewees and Topics

No.	Interviewee	Topics discussed
1	Industry analyst A	The development of seller trading on Alibaba platform, advantages and disadvantages of Alibaba Group, the embedding of culture in Alibaba's operations
2	Industry analyst B	
3	Alipay executive vice-president (strategy)	Motivation for setting up Alipay, competition between Taobao and eBay, customer relationship management, relationships between Alipay and external entities, revenue model of Alipay
4	Taobao executive vice-president (customer relations)	Initial strategy of Taobao, evolution of Taobao, establishment of Taobao Mall, reputation system of Taobao, revenue model of Taobao
5	Alimama senior manager	Motivation for setting up Alimama, business objectives of Alimama, difference between Alimama and Alisoft, competition of Alimama, marketing and services of Alimama, role of Alimama in the Alibaba Group, revenue model of Alimama
6	Alisoft executive vice-president	Strategy of Alisoft, business objectives of Alisoft, business model of Alisoft, competition of Alisoft, role of Alisoft in the Alibaba Group, revenue model of Alisoft
7	Alibaba B2B general manager	Initial strategy of Alibaba B2B, evolution of Alibaba B2B's strategy, Alibaba B2B's competitive environment, Alibaba's ecosystem, future development plans of Alibaba, revenue model of Alibaba
8	Alibaba group vice-president	Motivation for setting up Alimama, corporate structure of Alibaba, nature of Alibaba's ecosystem, evolution of customer needs, competitors of Alibaba, revenue model of Alibaba
9	Yahoo Koubei customer relations manager	Motivation for acquiring Yahoo and Koubei, business objectives of Yahoo and Koubei, evolution of the strategies of Yahoo and Koubei, competitive advantages that stemmed from acquiring Yahoo and Koubei
10	Alibaba gold supplier	Alliance between suppliers on Alibaba's platform, changing customer needs, nature of Alibaba's business ecosystem, the embedding of Chinese culture in Alibaba's operations
11	Power seller on Taobao	Relationships and interactions between customers and Taobao, entrepreneurship on Taobao, services provided by Taobao
12	Alimama user and Taobao 5 star seller A	Services offered by Alimama, relationships and interactions between customers and Taobao, entrepreneurship on Taobao, services provided by Taobao
13	Alimama user and Taobao 5 star seller B	Services offered by Alimama, relationships and interactions between customers and Taobao, entrepreneurship on Taobao, services provided by Taobao
14	Taobao user A	Experience of using Taobao, services provided by Taobao
15	Taobao user B	Experience of using Taobao, services provided by Taobao
16	Taobao user C	Experience of using Taobao, services provided by Taobao
17	Taobao user D	Experience of using Taobao, services provided by Taobao
18	Yahoo Koubei user	Experience of using Yahoo Koubei, services and functions of Yahoo and Koubei
19	Alibaba B2B user A	Experience of using Alibaba B2B, services provided by Alibaba B2B
20	Alibaba B2B user B	Experience of using Alibaba B2B, services provided by Alibaba B2B
21	Alibaba B2B user C	Experience of using Alibaba B2B, services provided by Alibaba B2B
22	Alisoft user A	Experience of using Alisoft, services provided by Alisoft
23	Alisoft user B	Experience of using Alisoft, services provided by Alisoft

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