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Client dependence and vendor innovation: The moderating role of organizational culture☆

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ABSTRACT

With the dramatic increase in technological interconnectedness between firms and the overall speed of technological change, organizations depend on each other to survive and stay competitive. While it is generally believed that dyads and networks can offer advantages over internal development in the innovation process, the authors suggest that it is not necessarily the case. Using a sample of 120 vendor firms that work in information technology industries in the Indian subcontinent, they find that client dependence in the inter-organizational relationship decreases vendor innovation. To resolve this dark side of business relationships, they further examine how the organizational culture can impact the dependence-innovation relationship. In line with organization literature, the authors distinguish two sub-dimensions of outcome-oriented culture: performance orientation, which reflects a firm's internal focus on employee performance, and competitiveness, which reflects a firm's focus on external competitors and markets. It is found that a vendor's competitiveness facilitates innovation, and that it weakens the negative effect of client dependence on vendor innovation. However, performance orientation strengthens the negative effect of client dependence on vendor innovation. Accordingly, in order to prevent themselves from falling into the dependence trap in the innovation process, firms need to build an externally oriented competitive culture and avoid overemphasizing their internal performance.

1. Introduction

With the dramatic increase in technological interconnectedness between firms and the overall speed of technological change, organizations depend on each other to survive and stay competitive. Change is ubiquitous and innovation facilitates the process of adaptation to change. It is believed that inter-firm collaboration can at times offer advantages over internal development in the innovation process (Fisher, 2006). Studies examining inter-organizational relationships have argued that “cooperative competency” in dyads and networks derived from the concepts of mutual adjustment and relational capability affects new product development success (e.g., Sivadas & Dwyer, 2000). This stream of research has examined a variety of factors that facilitate innovation such as: relationship length and industry characteristics (Gassmann, Zeschky, Wolff, & Stahl, 2010), power balance between partners (Furnari, 2016; Hingley, 2005; Özen, Uysal, & Çakar, 2016), and the nature of interaction between partners (Nooteboom, De Jong, Vossen, Helper, & Sako, 2000).

Despite the importance of relational dependence, there are conflicting findings about its impact on innovation in partner organizations. Intuitively, a strong inter-organizational relationship between partner firms is expected to foster innovation. However, some studies have argued that excessive dependence in certain circumstances can create power imbalances and produce rigidities where the partners become more technologically conservative and less innovative (Gassmann et al., 2010; Johnsen & Lacoste, 2016); whereas in other circumstances dependence allows partners to trust, communicate and coordinate, which enables them to explore innovative options (Sivadas & Dwyer, 2000; Varadarajan & Cunningham, 1995). In this research we attempt to better understand the phenomenon of dependence in the client-vendor dyad. In recent times, client firms are becoming increasingly dependent on their suppliers (Johnsen & Lacoste, 2016; Wathne & Heide, 2000). As such, we focus on client dependence, and examine whether a high level of client dependence hinders vendor innovation. To further understand the effects of dependence, we adopt a contingency perspective and consider organizational culture as a contextual variable. We suggest that different levels of cultural values can either strengthen or weaken the effect of client dependence on vendor innovation.

Organizational culture is defined as “a complex set of values, beliefs,

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assumptions and symbols that define the way in which a firm conducts its business" (Barney, 1986, p. 657). There is sufficient anecdotal and research-based evidence that organizational culture plays an important role in innovation (e.g., Büschgens, Bausch, & Balkin, 2013; Chandler, Keller, & Lyon, 2000; Gopalakrishnan, Kessler, & Scillitoe, 2013). Many different cultural values are related to firm innovation, such as innovative culture (Chandler et al., 2000), participative decision-making (Hurley & Hult, 1998), and emphasis on flexibility vs. control (Quinn & Rohrbaugh, 1983).

In this research we take interest in the organizational culture profile (OCP) developed by O'Reilly, Chatman, and Caldwell (1991) where they take an outcome-oriented view to assess the person-organization fit. This was subsequently modified by Sarros, Gray, Densten, and Cooper (2005) who have suggested that the tool can also be useful in assessing whether organizations are in need of cultural change (Marmenout, 2007). While early studies often viewed outcome-oriented culture as a single aggregate construct, some researchers have found that it is not uni-dimensional (Saeed, Yousafzai, Paladino, & De Luca, 2015; Sarros et al., 2005). Instead, it should be categorized into two sub-dimensions: performance orientation, which reflects a firm's internal focus on employee performance, and competitiveness, which reflects a firm's external market focus. Such a distinction underlines a key facet that impacts the extent to which firms assimilate environmental factors and use them to become more adaptive and innovative. Performance orientation amplifies employees' enthusiasm for their work and the job outcomes whereas competitiveness exemplifies the extent to which the firm stands out in the competitive market.

Following this logic, we adopt these two outcome-oriented cultural attributes, and argue that they play distinct roles in influencing the dependence-innovation relationship. We use a sample of 120 vendor firms engaged in Information Technology (IT) to test our hypotheses. Our findings contribute to extant literature in several ways. First, the industrial marketing literature has diverse views of effects of inter-firm dependence. While there has been an implicit assumption in numerous past studies about the bright side of dependence, there has been recent research that exposes its dark side (Abosag, Yeh, & Barnes, 2016; Hingley, 2005; Mitręga & Zolkiewski, 2012). We follow the latter stream of research and examine how one firm's strategic dependence may negatively impact another firm's innovation. Furthermore, we suggest that a firm's organizational culture can indirectly influence (i.e., moderate) the inter-organizational relationship. We distinguish two sub-dimensions of outcome-oriented culture, performance orientation and competitiveness. Although prior research generally suggests a uni-dimensional effect of this culture, we find that different dimensions manifest distinct interactions with dependence, which are in opposite directions, underscoring that they are indeed distinct theoretical constructs.

2. Research background

2.1. Dependence and innovation in client-vendor dyads

The client-vendor relationship is a vertical dyad where the vendor supplies required products and services to the client. In this research we examine such dyadic relationships in the context of IT outsourcing in the Indian subcontinent. Since the 1990s IT outsourcing has grown in volume and in importance and the Indian subcontinent is a major destination for outsourced work generating $143 billion revenue and $1.2 trillion global spending (www.nasscom.in). As outsourcing has become more pervasive, managing these relationships on a long-term basis has become more important both from a client's and a vendor's point of view (Lee, Huynh, Kwok, & Pi, 2003).

Previous studies have explored the relationship from the client's perspective (Dibbern, Goles, Hirschheim, & Jayatilaka, 2004). For example, Jugdev and Müller (2005) examine efficiency-oriented measures from the client's perspective; Ang and Straub (1998) have focused on the financial impact of inter-firm collaboration on the client; and Janita and Miranda (2013) investigate how product and service delivery influences the client's loyalty. However, since such a relationship is dyadic, it is essential to understand both sides of the relationship. In line with some prior studies (e.g., Ojha, 2002; Palvia, King, Xia, & Palvia, 2010), this research shifts from a client focus to a vendor standpoint.

The resource dependence theory has focused on resources that are obtained from external or third party sources by imposing certain inter-organizational ties (Pfeffer & Salancik, 1978) and vertical disintegration (Paulraj & Chen, 2007). The theory suggests that clients and vendors manage their relationships through developing structural inter-organizational links that balance power and create dependence between them (Pfeffer & Salancik, 1978). At times, the distribution of resources and competencies may be unequal between partners, resulting in asymmetric inter-firm relationships. This is likely to generate power imbalance. Some research has found that mutual dependence increases the possibility of institutional change because it induces the actors to create new shared institutions (Furnari, 2016); yet, excessive dependence encourages the party in power to maintain their status quo (Furnari, 2016). In this regard, over-reliance on business partners is likely to hinder the desire of the one or both sets of actors to change because of lack of trust, opportunistic behavior patterns, or extreme complacency in outcomes of this asymmetric relationship (Johnsen & Lacoste, 2016; Mitręga & Zolkiewski, 2012; Rosene, 2003). Without changes, it is impossible for firms to adapt quickly to the environment, which in turn creates setbacks in their innovation processes. Additionally, either party can develop unilateral control mechanisms over the other partner (Johnsen & Lacoste, 2016). This can constrain information flow between partners creating conflicts and inconsistencies (Grayson & Ambler, 1999) that in turn may decrease learning activities and making it difficult to achieve strategic goals (Munksgaard, Johnsen, & Patterson, 2015; Yli-Renko & Janakiraman, 2008).

One critical strategic goal for firms is to stay competitive through an emphasis on adaptability and innovation. At the firm level, innovation is usually defined as the adoption of an idea or behavior, pertaining to a product, service, device, system, policy, or program, that is new to the adopting organization (Gopalakrishnan & Damanpour, 2000; Zaltman, Duncan, & Holbek, 1973). In our empirical setting of IT industries, the products and services are intangible and perishable. Also, a close interaction between the client and the vendor in service delivery processes makes it difficult to distinguish between product and process innovations. For example, an innovative solution to a client's problem in the service context can include a product associated with a service, and the process of delivering the innovation is intangible (Hogan & Coote, 2014). As a result, in this research we use a broad conceptualization of innovation as the new products and services adopted by a firm to close an actual or perceived performance gap (Gopalakrishnan & Damanpour, 2000).

We further examine the possible gaps in previous research on vendor-client or supplier-customer dyads. One the one hand, it is suggested that relationship-specific learning and establishment of trust and commitment between partners in a dyad fosters positive outcomes such as innovation and relationship longevity (Chen, Lin, & Chang, 2009; Morgan & Hunt, 1994; Sivadas & Dwyer, 2000). However, power imbalance can create a lack of trust, conflict, increased opportunism, increased complacence, all of which can have negative consequences for one or both partners (Cowan, Paswan, & Van Steenburg, 2015; Gummesson, 1999; Johnsen & Lacoste, 2016). In this research we examine whether client dependence may drive vendor complacency and affect their ability to innovate (Friend & Johnson, 2017; Rosene, 2003;). To mitigate the negative impact of dependence, we suggest that vendor firms should build an appropriate organizational culture.

2.2. Outcome-oriented organizational culture

An organization's culture grows and strengthens via norms, and norms are powerful determinants of behavior (Bettenhausen & Murnighan, 1985; Hogan & Coote, 2014). The links between organizational culture and measures of firm performance have been examined in a substantial body of research (Quinn & Rohrbaugh, 1983). An important aspect is that the prevailing organizational culture impacts a firm's innovation capabilities (Green & Cluley, 2014; Hurley & Hult, 1998; Tellis, Prabhu, & Chandy, 2009).

As innovation is a key outcome dimension in firm performance, we examine the role of outcome-oriented culture in the inter-firm relationship. These culture dimensions are derived from organizational culture profile (OCP) (O'Reilly et al., 1991), which has been widely adopted in organization studies. Early research on OCP focuses on the person-organization fit and its links to organizational outcomes such as organizational commitment, job satisfaction and employee retention (e.g., Chatman & Jehn, 1994; O'Reilly et al., 1991; Sheridan, 1992). Later research has disaggregated the outcomes orientation into more specific dimensions such as the importance of internal vs. external orientation (i.e., performance orientation vs. competitiveness) in driving organizational identity (Ashforth & Mael, 1989; Saeed et al., 2015; Sarros et al., 2005; Slate & Narver, 1995).

One way to assess culture quantitatively is to understand the importance of these cultural values to organization's central value system (Enz, 1988; O'Reilly, 1989). The internal vs. external orientation provides a sense of what kind of cultural outcomes and norms a firm values. One with an internal orientation focuses on firm-specific knowledge, resources, operations, and how employees perform in delivering the results (Miller, Eisenstat, & Foote, 2002). This has also been labeled the “inside-out” approach (Saeed et al., 2015). One with an external focus is interested in outcomes of the organization in relation to its industry and changes in its environment and has been labeled “outside-in” (Saeed et al., 2015). Such a firm achieves competitive advantage by anticipating market requirements ahead of competition (Day, 1994). Therefore, an organizational culture not only drives a firm's overall propensity for results and productivity; it also serves as a contextual lens that drives norms and behavior that impact how the firm interprets and deals with external stakeholders beyond the organizational boundary.

Accordingly, an outcome-oriented culture has been conceptualized and empirically tested in two sub-dimensions (Sarros et al., 2005): performance orientation, which reflects an internal focus on employee performance; and competitiveness, which reflects an external market focus. However, organizations may not have cultures that are exclusively internally or externally focused. In other words, performance orientation and competitiveness are not competing values; they may be complementary and co-existing at times. High performing organizations may display elements of both performance orientation and competitiveness, although firms may be more pre-disposed to one which may be indicative of their driving identity and central value system (Ashforth & Mael, 1989; Hatch & Schultz, 1997; Whetten, 2006). In this research we adopt the two sub-dimensions of outcome-oriented culture, performance orientation and competitiveness, to examine their respective effects in the relationship between client dependence and vendor innovation. Fig. 1 displays the conceptual model.

3. Hypothesis development

3.1. Main effects

Dependency can work in two ways: (a) the vendor depends excessively on the client to grow their business or, (b) the client overtime can become dependent on the vendor. Past research has suggested when vendors are dependent on their clients, they tend to be quick learners, develop better understanding of their business partners, learn from their own past mistakes, and present trends, and they are keen to innovate (Baker & Sinkula, 2007; Husain, Dayan, & Di Benedetto, 2016). In this research we switch the perspective and examine how client dependence impacts a vendor's incentive to innovate. When client dependence on the vendor increases, innovation may be impeded at the vendor site, and we identify two reasons for this: investment in relationship-specific assets by the vendor, and client's lack of trust and possible relational opportunism.

First, over time the vendor invests in unique competencies or relationship specific assets (RSAs as labeled by transaction cost economists) and these investments increase the vendor's ability to add value to the client (Bäck & Kohtamäki, 2015; Chiles & McMackin, 1996). These RSAs provide the vendor with greater power and create a power imbalance because their skills are difficult to imitate (Gulati & Stych, 2007; Mitręga & Zolkiewski, 2012). Under such circumstances, it becomes difficult to move activities backshore to the client site because of degradation of the client's knowledge base (Cha, Pingry, & Thatcher, 2008). This further increases the client's dependence and makes the vendor more complacent about this partnership and less willing to innovate. While the RSAs facilitate relationship-specific learning (Chen et al., 2009), they discourage firms from learning outside of this relationship. As such, their shared business experience and inertia in learning create an unproductive relationship where the vendor is satisfied with minor or no changes to existing products and services, rather than invest more in innovation (Christensen, Suárez, & Utterback, 1998; Sobrero & Roberts, 2002). This has been labeled as the “tyranny of success” where the vendor prefers to replicate past products and services rather than create new ones through innovation (Nijssen, Hillebrand, de Jong, & Kemp, 2012; Tushman & O'Reilly, 1996).

Second, clients' dependence increases their vulnerability makes the power distribution asymmetric causing them to engage in economic and relational opportunism that may inhibit trust and in turn restrict the

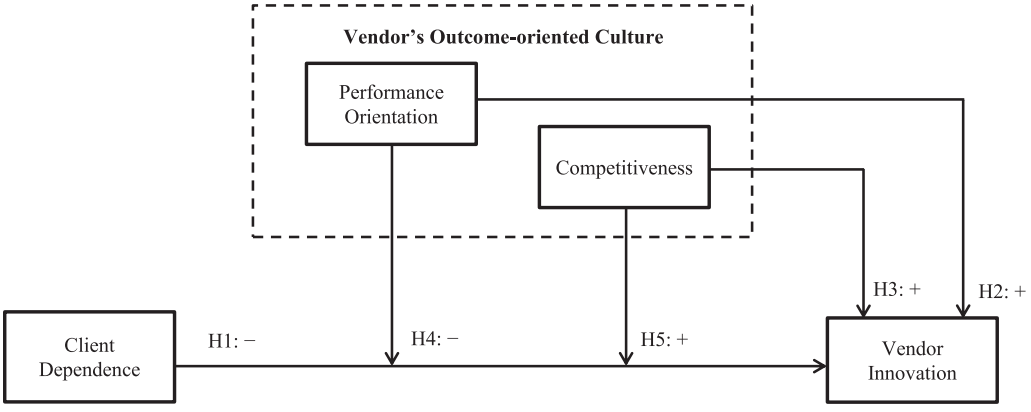

Fig. 1. Conceptual model.

free flow of information to the vendor (Barclay, 1992; Mitręga & Zolkiewski, 2012). Information about client needs could provide novel ideas for user-generated innovation at the vendor site (Von Hippel, 1988). If the client constrains such an information flow, it will delay or block the vendor's learning opportunities for innovative ideas from outside of the organization. As a result of these two broad reasons, we expect that:

H1. Client dependence has a negative effect on vendor innovation.

Next, we explore the relationship between the two outcome-oriented culture variables and vendor innovation. As discussed earlier, performance orientation implies that a firm's culture is internally focused or inside-out. It emphasizes expectations for employee performance, enthusiasm for the job, results orientation, and being organized (Saeed et al., 2015; Sarros et al., 2005). Internally focused culture could be either rule following or relationship-based (Choo, 2013). When rule compliance is emphasized, firms tend to focus on cost control, compliance, and accountability; when relationships are the focus, the emphasis is placed on internal communication, participation, and commitment (Choo, 2013). The former focuses on meeting the current performance expectations of clients and delivering existing products and services in a more efficient manner. This can result in cost differentiation which increase innovation performance (Kim & Atuahene-Gima, 2010; Zhang, Wu, & Cui, 2015). The latter (relationship focus) emphasizes improving mechanisms for superior delivery of products and services. This can increase participation and communication among organizational members (Choo, 2013), which also facilitates generation of innovative ideas (Nonaka, 1994). Furthermore, as a performance-driven culture is also labeled “inside out”, it suggests that firms often employ their internal resources to renew their existing skills and capabilities (Teece, Pisano, & Shuen, 1997), which is likely to generate innovative outcomes within the organization. As a result, we expect that:

H2. The vendor's organizational culture of performance orientation has a positive effect on its innovation.

A competitiveness culture is more externally or market focused. Competitive firms prioritize achievement in the marketplace, emphasis on quality, and being distinctive from competition. Being focused on external competition forces organizations to benchmark their skills to their competitors and improve their standing in the marketplace, making themselves more risk-taking and adaptive (Choo, 2013). This in turn enables firms to experiment with new ideas and explore new opportunities (March, 1991). Competitiveness also implies that firms have a market focus and their primary attention is towards the external environment (Day, 1994; Kirca, Jayachandran, & Bearden, 2005). Firms that emphasize competitiveness tend to have an “outside-in” orientation, which suggests that they tend to assimilate market intelligence to better develop innovation to meet customer needs (Saeed et al., 2015). Coupled with superior knowledge of the marketplace, these firms respond to the changing environment quickly and accurately (Atuahene-Gima, 2005; Day, 1994) and their in-depth market knowledge allows them to come up with innovative offerings (Atuahene-Gima, Slater, & Olson, 2005; Slater & Mohr, 2006). Such firms typically achieve competitive advantage by engaging in innovation that creates superior value for customers relative to competitors (Hurley & Hult, 1998; Kirca et al., 2005). As a result, we expect that:

H3. The vendor's organizational culture of competitiveness has a positive effect on its innovation.

3.2. Moderating effects

Thus far, we have suggested that both performance orientation and competitiveness favor vendor innovation, but that client dependence hinders vendor innovation. We would like to explore circumstances where the negative effect of dependence can be ameliorated. Following this logic, we examine the extent to which the vendor's prevailing cultural preferences moderate the proposed association between client dependence and vendor innovation.

As discussed earlier, client dependence decreases vendor innovation likely because the vendor's inertia to learn and the client's reluctance to share its knowledge. When performance orientation is high, the vendor is primarily internally focused – the firm is motivated to act by internal resources, mission, structure, and systems and they are not driven as much by their external environment in terms of impetus to action. In this regard, the vendor is even more protective of their own competencies and knowledge base in order to take advantage of their existing resources within the organization. The vendor firm therefore is likely to fall into the trap of “core rigidity” (Leonard-Barton, 1992) – that is, it focuses on utilizing own resources but crowds out exploration of radical innovation opportunities (Atuahene-Gima, 2005). As such, performance orientation seems to amplify the negative effect of client dependence on vendor innovation. Especially, the vendor firm often tailors their own assets to develop products and services for its existing client base, which results in highly specialized assets which are specific to current relationships (Bäck & Kohtamäki, 2015; Chiles & McMackin, 1996). Such specialization can increase inertia in market learning for innovation development (Adams, Day, & Dougherty, 1998). When performance orientation is high, the internal focus will further enhance the inertia and block learning from the external environment, thereby making the vendor firm's motivation to innovate even weaker. As a result, we expect that:

H4. Performance orientation inflates the negative effect of client dependence on vendor innovation – that is, the stronger the performance orientation, the stronger the negative effect of client dependence on vendor innovation.

A culture that emphasizes competitiveness allows the firm to better explore its external dependencies (Atuahene-Gima, 2005; Saeed et al., 2015). Specifically, firms that are competitive understand client dependencies and are more focused on delivering what their clients want. Those firms build their strategies by understanding current customer needs and responding to them by innovating new products and services (Lukas & Ferrell, 2000). As such, while client dependence restricts the vendor to its own resources, competitiveness can attenuate such an effect because it motivates the vendor to continuously absorb external knowledge in order to innovate (Cohen & Levinthal, 1990). Generally, client dependence discourages the vendor firm's learning activities. However, when competitiveness is high, firms are forced to constantly observe the external environment, interact with it, and respond to changes in a timely manner. Thus, learning form customers and competitors is essential and competitively oriented vendors interact with their customer and other stakeholders to try and gain more knowledge about their latent needs (Day, 1994). This can decrease the negative effect of dependence on market learning. Last, when the competitiveness culture is high, firms are likely to track new customers in order to identify market opportunities (Atuahene-Gima, 2005). The motivation for market development tends to override the vendor's complacency that client dependence engenders, and makes the vendor more likely to take risks so as to differentiate itself from other vendors in the marketplace. As a result, we expect:

H5. Competitiveness attenuates the negative effect of client dependence on vendor innovation – that is, the stronger the competitiveness, the weaker the negative effect of client dependence on vendor innovation.

4. Research methods

4.1. Sampling and sample characteristics

We adopted NASSCOM (National Association of Software and

Table 1
Measure, confirmatory factor analysis and convergent validity.

Construct	Scale item	SFL	α	CR	$\sqrt{AVE}$
Client dependence			0.716	0.761	0.792
(1 = strongly disagree, 5 = strongly agree)	This client is very dependent of us for its business.	0.953			
	We are very important to this client's future profitability.	0.588			
Vendor innovation	How would you characterize your overall performance?		0.781	0.793	0.811
(1 = much below average, 5 = much above average)	Number of new products added in the last three years	0.824			
	Number of new services added in the last three years	0.797			
Performance orientation			0.801	0.804	0.713
(1 = not at all, 5 = very much)	Having high expectations for performance	0.649			
	Enthusiasm for the job	0.667			
	Being results oriented	0.846			
	Being highly organized	0.673			
Competitiveness			0.706	0.701	0.609
(1 = not at all, 5 = very much)	Being competitive	0.664			
	Being distinctive – being different from others	0.524			
	Achievement orientation	0.633			
	An emphasis on quality	0.608			
Control variables					
Firm size	Number of employees: 1 = between 0 and 50; 2 = between 51 and 200; 3 = between 201 and 500; 4 = between 501 and 1000; 5 = between 1001 and 5000; 6 = between 5001 and 10,000; 7 = between 10,001 and 15,000; 8 = above 15,000				
Number of verticals	Business activities in information technology enabled services				
Number of clients	More than 50% of our revenues come from: 1 = 1 client; 2 = between 2 and 5 clients; 3 = between 6 and 10 clients; 4 = more than 10 clients				
Client location	1 = USA; 2 = Europe; 3 = Asia; 4 = others				
Vendor location	1 = North (New Delhi, Gurgaon, and Noida); 2 = South (Chennai, Hyderabad, and Bengaluru); 3 = West (Mumbai and Pune); 4 = East (Kolkata)				

SFL = standardized factor loading, α = Cronbach's alpha, CR = composite reliability, AVE = average variance extracted.
Notes: All factor loadings are significant at the 0.05 level.

Services Companies) as the sampling frame of this study and focused on firms in IT (information technology) and ITES (information technology enabled service). NASSCOM is a non-profit organization in the IT and business processing management (BPM) industries in India. A majority of member firms of NASSCOM were IT or IT-enabled vendors that provided other firms with various services, such as software development, hardware development, business processing outsourcing, IT infrastructure management, and so forth. Because those member firms were vendors that provide products and services to their clients, the vendor-client relationship represented an inter-organizational context. In addition, IT-related industries are a major driver of research and innovation. Past research has often employed those industries for innovation research (e.g., Patanakul, Chen, & Lynn, 2012; Zhang et al., 2015).

While those industries have witnessed an expansive annual growth rate of 25-30% in early 2000s (www.businesstoday.in), the global recession in late 2000s led to a significant drop in demand. As a result, they faced pressure on growth, and thus had to change focus to sustain growth by offering more innovative products and services (www.businesstoday.in). Successful firms have leveraged their long-term software service relationships with global clients to build capabilities to be more innovative. In conclusion, NASSCOM is an ideal empirical context for us to examine firm innovation in the client-vendor relationship.

We tested our hypotheses using an online survey study. A survey draft was pre-tested with practitioners based on US who used international IT vendors. Specifically, we interviewed members from IT client firms prior to developing the questionnaire. Additionally we pre-tested the questionnaire with members from outsourcing firms to see whether the questions were relevant in the context of IT vendors in India. After satisfactory feedback, we made several modifications to finalize the survey instrument. Furthermore, all survey items in this questionnaire were randomized so that common method bias was reduced. The survey was sent to all members of NASSCOM, including 1578 firms. Four follow-up emails were sent to non-respondents as reminders. Two hundred and fourteen surveys were received, which resulted in a response rate of 13.6%. We further removed a number of responses either because respondent firms were not eligible for our study (i.e., their main business segments were not in IT industries or they did not have vendor-client relationships) or because their surveys had excessive missing values. One hundred and twenty responses remained and were used for model testing. This sample size is similar to recent industrial marketing studies (e.g., Gnizy, 2016; Pulles, Schiele, Veldman, & Hüttinger, 2016). We did not find significant difference in firm size ($p = 0.829$), firm age ($p = 0.893$), and revenue ($p = 0.802$) between early and late respondents. Thus, non-response bias was not a concern in this study. In addition, NASSCOM classified India's IT vendors into four broad categories: large sized players, mid-sized players, emerging players and small/start-ups. Our sample well resembled the distribution of the four categories.

Because we were interested in effects of an inter-firm relationship on vendor innovation, the vendor firm was considered as the unit of analysis in this study. To control for the time effect, we asked respondents to assess relationships with their clients and innovation outcomes in the past three years so that the timeframe across participating firms were kept consistent. Each respondent was asked to focus on the major client that contributed the most revenue to his or her firm so that we were able to examine the dyadic client-vendor relationship. Respondents were practitioners involved in vendor-client activities. They held management-level positions, including director or executive director (30.0%), C-level officer (18.3%), manager (16.7%), president or vice president (10.0%), district head or department head (10.0%), and others (15.0%). Accordingly, respondents had sufficient knowledge of their firms' business activities and performance. Participating firms had diverse firm size in terms of the number of employees, ranging from below 50 to above 15,000. The firm headquarters were located in major districts in India, including Greater Delhi area (including Noida and Gurgaon), Bengaluru, Chennai, Hyderabad, Mumbai and Kolkata.

4.2. Measures

Table 1 displays all scale items, factor loadings, and reliability indices. Descriptive statistics and correlation matrix are provided in

Table 2
Descriptive statistics and correlations.

	Mean	SD	1	2	3	4	5	6
1. Client Dependence	3.875	0.831						
2. Vendor Innovation	3.440	0.805	− 0.056					
3. Performance Orientation	4.114	0.562	0.176†	0.385**				
4. Competitiveness	4.215	0.536	0.217*	0.451**	0.766**			
5. Firm Size	2.664	1.636	0.281**	0.078	0.050	0.060		
6. Number of Verticals	6.617	7.520	0.094	0.304**	0.182*	0.114	0.188*	
7. Number of Clients	2.609	1.002	− 0.074	0.254**	0.086	0.095	0.126	0.267**

SD = standard deviation.
† $p < 0.10$.
* $p < 0.05$.
** $p < 0.01$ (two-tailed).

Table 2. In addition, we tested multicollinearity by examining VIF (variance inflation factor). The values of VIF ranged between 1.239 and 2.615, which were below the cutoff value of 10 (Hair, Black, Babin, Anderson, & Tatham, 2006). Thus, multicollinearity was not a concern in our model testing.

4.2.1. Client dependence

We adjusted items from Şengün and Wasti (2007), and asked respondents to assess the extent to which client depended on the vendor in terms of business and future profitability.

4.2.2. Organizational culture

Scale items for competitiveness and performance orientation were adopted from Sarros et al. (2005). Performance orientation, which reflected an organization's internal orientation, included four items: expectations for performance, enthusiasm for the job, results orientation, and being highly organized. Competitiveness, which reflected an organization's external orientation, included four items: being distinctive, being competitive, achievement oriented, and having an emphasis on quality.

4.2.3. Vendor innovation

We asked each participating firm about the extent to which new products and services added in the three-year window were above or below average of its overall past performance.

4.2.4. Control variables

In addition to the focal variables, we included control variables in model testing. We controlled for firm size and number of verticals, because they were related to number of business activities, which may affect innovation outputs. Firm size was measured as the number of employees. For number of verticals, we asked respondents to choose IT-related services they provided to different industries in the market. Also, we controlled for each firm's number of major clients, because it affected how dependent each focal firm was to each client. Last, we controlled for client location and vendor location. Three dummy variables were created for four client location categories: USA, Europe, Asia, and others. Three dummy variables were created for four vendor areas in India: North (New Delhi, Gurgaon, and Noida), South (Chennai, Hyderabad, and Bengaluru), West (Mumbai and Pune), and East (Kolkata).

4.3. Measurement model, convergent validity, and discriminant validity

We conducted confirmatory factor analysis for the measurement model. Based on Hu and Bentler's recommendation (Hu & Bentler, 1999), the following fit indices show satisfactory model fit and unidimensionality: $\chi^2 = 55.918$, d.f. = 48, $p = 0.202$; Tucker-Lewis index (TLI) = 0.974; comparative fit index (CFI) = 0.981; incremental fit index (IFI) = 0.982; standardized root mean square residual (SRMR) = 0.051; root mean square error of approximation (RMSEA) = 0.039. In addition, as Table 1 shows, all reliability indices exceeded 0.70 and all standardized factor loadings exceeded 0.50. In conclusion, we obtained satisfactory reliability and convergent validity of each construct.

Furthermore, we used four methods to test discriminant validity. First, none of the correlations between constructs in Table 2 exceeded the cutoff value of 0.85 (Kline, 2005). Second, we used a bootstrapping technique to obtain 95% confidence interval (CI) of each correlation. None of the 95% CI included one, indicating satisfactory discriminant validity (Torkzadeh, Koufteros, & Pflughoeft, 2003). Third, the square root of a given average variance extracted (AVE) in Table 1 exceeded correlation coefficients between the pair of corresponding constructs in Table 2 (Fornell & Larcker, 1981), except the correlation between performance orientation and competitiveness. This is likely because, as discussed earlier, the two cultural values often co-exist – that is, firms focusing on internal performance are probably also competitive in the market. However, because their correlation was lower than 0.85 and 95% CI (0.671, 0.840) did not include one, we suggest that these are two distinct constructs. To validate our conclusion, we adopted a fourth method. In SEM (EQS 6.3), we created a model where the correlation between the two constructs was constrained to unity (Torkzadeh et al., 2003). All model fit indices for the constrained model dropped below the recommended cutoff value (Hu & Bentler, 1999), and compared with the unconstrained model where the correlation was freely estimated, the change in chi-square was significant ($\Delta\chi^2 = 56.194$, Δd.f. = 6, $p < 0.01$). Accordingly, the two constructs showed satisfactory discriminant validity.

4.4. Common method bias

We employed three techniques to address the issue of common method bias. First, all scale items in the survey instrument were randomized. With randomization, we still obtained satisfactory reliability for each construct (see Table 1), suggesting sufficient attention paid by respondents. Second, Harman's single-factor method was used to test the four multi-item constructs. We loaded all scale items on one latent variable. The single-factor model showed the following model fit: $\chi^2 = 147.677$, d.f. = 54, $p < 0.01$; TLI = 0.728; CFI = 0.778; IFI = 0.784; SRMR = 0.101; RMSEA = 0.126. Compared with the measurement model based on EQS, the single-factor model had a significantly poorer fit ($\Delta\chi^2 = 91.759$, Δd.f. = 6, $p < 0.01$). Third, we employed the marker technique (Lindell & Whitney, 2001). Employee diversity was selected as the proxy for common method variance, because it was theoretically unrelated to the inter-firm context. We used the lowest positive correlation between the marker variable and other variables (r = 0.006) to partial it out in the correlation matrix. All unadjusted significant correlations at the 0.05 level remained significant after the adjustment. In summary, common method bias is not a concern in this study.

Table 3
Results.

	Model 1: control-only	Model 2: main effect	Model 3: moderation
Main effects			
Client dependence		− 0.206*	− 0.189*
Performance orientation		0.027	0.024
Competitiveness		0.420**	0.424**
Moderation effects			
Client dependence × performance orientation			− 0.335*
Client dependence × competitiveness			0.419**
Control variables			
Firm Size	0.038	0.050	0.007
Number of Verticals	0.214*	0.209*	0.204*
Number of Clients	0.170†	0.129	0.141†
ClientLocation_1	− 0.126	− 0.056	− 0.042
ClientLocation_2	− 0.135	− 0.111	− 0.113
ClientLocation_3	− 0.086	− 0.097	− 0.076
VendorLocation_1	0.204†	0.148	0.170†
VendorLocation_2	0.151	0.165	0.193†
VendorLocation_3	0.136	0.131	0.151†
R^2	0.166	0.349	0.395
F value	2.428*	4.785**	4.903**
F Change		10.059**	4.000*

Notes: All coefficients are standardized.
† $p < 0.10$.
* $p < 0.05$.
** $p < 0.01$ (two-tailed).

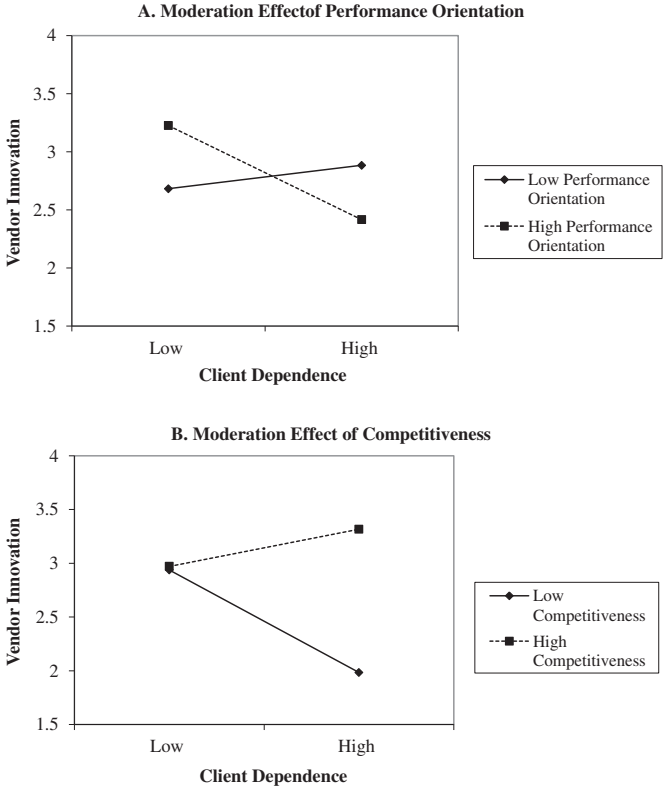

Fig. 2. Moderation effects.

5. Results

H1 state that client dependence is negatively related to vendor innovation. According to Model 2 in Table 3, the coefficient of client dependence was negative and significant (b = − 0.206, $p < 0.05$). Thus, H1 is supported. H2 and H3 state that the vendor's two organizational cultures are positively related to its innovation. According to Model 2 in Table 3, competitiveness was positively related to vendor innovation (b = 0.420, $p < 0.01$), but performance orientation was not ($p = 0.831$). Thus, H3 is supported, but H2 is not supported.

H4 and H5 state that performance orientation and competitiveness respectively strengthen and weaken the negative relationship between client dependence and vendor innovation. Variables included in interaction terms were mean-centered (Aiken & West, 1991). According to Model 3 in Table 3, the interaction terms for the two organizational cultures were respectively − 0.335 ($p < 0.05$) and 0.419 ($p < 0.05$). Thus, H4 and H5 are supported. The moderating effects were displayed in Fig. 2A and Fig. 2B. We further conducted simple slope analysis, and set high and low levels of performance orientation and competitiveness at one standard deviation above and below the mean. When performance orientation was high, client dependence had a negative effect on vendor innovation (b = − 0.487, t = − 3.146, p < 0.01), but its effect was not significant when it was low (t = 0.720, $p = 0.473$). When competitiveness was low, client dependence had a negative effect on vendor innovation (b = − 0.574, t = − 3.677, $p < 0.01$), but its effect was not significant when it was high (t = 1.229, $p = 0.222$).

6. Discussion

In this section we discuss three areas related to the findings of the study. First, we elaborate further on the dark aspects of client dependence in a dyadic relationship, second, we examine the role of organizational culture in shaping organizational outcomes and specifically examine why performance orientation was not related to innovation, and, finally, we discuss our sample of vendors in a developing nation such as India and the implications of our findings for the vendors.

Vendor-client dyads may be symmetric or asymmetric in terms of distribution of resources and power. While symmetric relationships are more likely to personify the positive or the brighter side of dyadic relationships such as mutuality, collaboration, and trust (Kumar, 1996), asymmetric relationships bring to the fore the darker aspects of the relationship (Hingley, 2005). Hitherto, the extant literature has argued that asymmetrical relationships result in opportunism and increased conflicts or goal divergence (Fang, Chang, & Peng, 2011; Johnsen & Lacoste, 2016). The results of this study showed that there were other negative effects from asymmetry such as vendor complacency that negatively impacted vendor innovation. The cultural dimensions that exacerbated the dark side of client dependence included performance orientation or the inside-out focus; and others like competitiveness or the outside-in focus helped ameliorate the dark effects.

Organizational culture served as the contextual lens through which firms viewed and managed their internal activities as well as inter-organizational relationships (Lund, Scheer, & Kozlenkova, 2013). While we found support for the direct positive effect of competitive culture on vendor innovation, there was no significant direct relationship between performance orientation and vendor innovation. We attribute two possible reasons for this insignificant result. First, in some cases the vendor is smaller than the client. Performance orientation will motivate the vendor to focus on transaction/relationship-specific investments that are directed at improving existing performance with the current customers. Performance-oriented vendors probably provide quality outcomes retaining the status-quo rather than innovating in new areas. Second, an internally-focused culture also may favor process innovations which improves internal efficiencies but hinders product innovations; and in a service industry such as ours, the distinction between product and process innovation is blurred.

This study demonstrates that the culture scales that were used in the developed economies were also relevant for identifying firm values in developing nations. In recent times, cost escalation and the availability of numerous alternatives require that the vendors in countries like India to become more competitive through focusing on new product and

service development and increasing knowledge absorption from their collaborative networks (Hsuan & Mahnke, 2011; Kang, Wu, & Park, 2012; Stanko & Olleros, 2013). Especially as India is a major IT outsourcing destination, findings of this research provide implications for outsourcing success. This study demonstrates that one way for firms to stay innovative is to be more externally focused through a competitive culture. Such a cultural orientation keeps vendors more connected to their market that helps overcome the complacency that client dependence creates (Friend & Johnson, 2017; Rosene, 2003).

6.1. Theoretical implications

Theories of inter-organizational relationships have shed light on the positive role of dyads and networks in firm innovation. It was commonly believed that firms learn from each other in alliances to increase their own innovation performance (Chen et al., 2009). However, this is not always the case and we have come to realize that every coin has two sides – a bright side and a dark side. Researchers in the industrial marketing domain have recently brought attention to the dark side of business relationships (Abosag et al., 2016; Hingley, 2005; Johnsen & Lacoste, 2016). Despite the demonstrated evidence in negative outcomes associated with inter-firm relationships, there is only limited understanding of challenges and drawbacks associated with structural issues in business dyads (Abosag et al., 2016). In this research we find that in inter-firm dyads one party's extreme reliance can in fact inhibit another party's innovation outcomes. We develop a conceptual framework to better understand the dark side of dependence in alliances. Thus, this research extends extant literature of inter-organizational studies by adding novel insights into the unconventional role of dependency in dyads.

Sometimes dependency is unavoidable and there are times when a vendor may desire the client's dependence because it results in relational stability. We underline that the vendor's culture could play an interesting role. We conceptualize culture with two sub-dimensions: performance orientation and competitiveness. While both fulfill the firm's tendency to achieve desired outcomes, there is a sharp contrast in how they orient the organization – inward looking vs. outward looking. We find that an externally-focused culture facilitates firm innovation; whereas an internally-focused culture exacerbates the negative effects on innovation.

We demonstrate that culture has dual role in firm innovation – direct and indirect. First, a majority of studies of organizational culture focus on its direct effect on firm performance. Yet, in this research we find that organizational culture can interfere with inter-firm dynamics. Since the vendor cannot completely control the extent of client dependence; we suggest that they can build an appropriate cultural context to overcome negative impacts of inter-firm relationships. This highlights an indirect role of organizational culture play in the inter-organizational setting.

6.2. Managerial implications

In a number of industries buyer firms are becoming excessively reliant on their suppliers because outsourcing has progressively become an industry-wide norm (Johnsen & Lacoste, 2016). This is more typical within IT-related functions across different industries, where clients often outsource specific services like customer relationship management or business processes management to vendor firms. In general, we suggest that managers on the vendor side pay sufficient attention to their clients in order to respond to changes quickly. However, as discussed earlier, being too comfortable with the existing status with a dependent client can lead to inertia, complacency and a lack of innovation. To overcome the inertia, firms should aspire to develop appropriate cultural values that will allow them to continuously acquire knowledge from their alliance partners and respond to client needs in a timely manner by innovating their products and services.

We find that the two organizational cultures play opposite roles in the dependence-innovation relationship. We suggest that firms with strong innovation ambition in inter-firm relationships should build a competitive culture. Competitiveness requires firms to be more externally focused. This may require them to constantly observe various stakeholders outside of the organization, including alliance partners, customers, and competitors. While performance orientation does not directly impact firm innovation, it inflates the negative effect of client dependence on vendor innovation. This is because an internally-focused culture leads firms to focusing on productivity and efficiency, and encourages them to exploit their existing knowledge base and resources that focuses on existing customers. However, innovation – especially radical innovation – requires exploration of new knowledge and market opportunities. From this point of view, we recommend that managers should monitor employee performance and creativity in their organizations to prevent excessive use of internal or existing resources and competencies.

6.3. Limitations and future research

First, this study's empirical setting was India's IT industries. Although those vendor firms have extended their businesses to many global clients across many industries or verticals, the surveyed firms were all located in India. Since this research examines organizational culture, an interaction with national culture may exist in terms of impact on innovation (Tellis et al., 2009). Thus, we recommend that future studies examine the same framework in different countries to examine whether or not national culture may influence the findings.

Second, we focused on the number of innovative outputs as the dependent variable in this study. As mentioned earlier, in our empirical setting of IT industries, it is difficult to distinguish product innovation from process innovation. Process innovation reflects operational efficiency of new product development, and it focuses on how to innovate with lower cost and shorter time. As process innovation may play a distinct role in inter-firm collaboration, it is important for researchers to examine how it is affected by dependency in an empirical context where product innovation and process innovation are clearly separated. In addition, while innovation is a key output of inter-organizational cooperation, other outcomes, though important, are not examined in this research, such as client attractiveness and relationship satisfaction (Pulles et al., 2016). We recommend that researchers examine other outcomes in such a dyadic relationship.

Third, in this survey study we followed most academic practice of asking each respondent to select a major client. However, it is possible that one vendor has more than one large (or small) client. In addition, this study is cross-sectional in nature. The vendor-client relationship is dynamic and may change over time. As a result, we recommend that future research should consider examining each vendor's client network from a longitudinal perspective.

Last, we examined client dependence in this research. In dyadic relationships, however, vendors should also have certain dependence on their clients. Our research focus is that client characteristics can impact vendor performance. We recommend that in future studies, researchers investigate how mutual dependence results in (a)symmetric power between business partners, which in turn affect their performance.

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