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GLOBAL DELIVERY MODELS: THE ROLE OF TALENT, SPEED AND TIME ZONES IN THE GLOBAL OUTSOURCING INDUSTRY

Abstract:

We investigate antecedents and contingencies of location configurations supporting global delivery models (GDMs) in global outsourcing. GDMs are a new form of IT-enabled client-specific investment promoting services provision integration with clients by exploiting client proximity and time-zone spread allowing for 24/7 service delivery and access to resources. Based on comprehensive data we show that providers are likely to establish GDM configurations when clients value access to globally distributed talent pools and speed of service delivery, and in particular when services are highly commoditized. Findings imply that coordination across time zones increasingly affects international operations in business-to-business and born-global industries.

Key words:

Global sourcing, outsourcing, offshoring, internationalization strategies, information and communication technology, geographic distance, business-to-business industries, born-global firms, 24/7 operations

INTRODUCTION

One of the most impactful recent trends in international business has been the global outsourcing of business services, such as IT, software development, call centers, administrative services and knowledge work (Doh, 2005; Manning et al., 2008; Mudambi, 2008; Kenney et al., 2009). Across industries, client firms, particularly from the U.S. and Western Europe, outsource business processes to specialized service providers across the world (Couto et al., 2008; Mudambi & Venzin, 2010; Massini et al., 2011). This has spurred a significant growth in the service provider industry which is populated by both large players offering a variety of services (such as U.S.-based Accenture, IBM, and HP, and India-based Infosys, Genpact, and Wipro) and numerous more specialized small and midsize providers.

In this article, we seek to understand how service providers geographically configure their international activities to serve global clients. Recent studies have indicated that service providers from both developed and developing countries have started expanding their operations beyond their home countries to foster a new form of global connectivity that optimizes services provision integration with their clients (e.g., Kedia & Lahiri, 2007; Luo et al., 2012; Jayaraman et al., 2013; Lorenzen & Mudambi, 2013). Specifically, research indicated that service providers are establishing so-called *Global Delivery Models* (GDMs) (Carmel, 2006; Garud et al., 2006; Ang & Inkpen, 2008; Niosi & Tschang, 2010; Govindarajan & Ramamurti, 2011), which can be understood as a particular service delivery structure that "*balances the need for proximity (for close coordination) with the need for access to technical capabilities and lower offshore costs*" (Carmel, 2006: 46).

Yet, our knowledge of firm internationalization in support of GDMs is still rather limited. In particular, while it is well known that providers in business-to-business (B2B) industries often follow the global footprint of major clients to generate co-location advantages (Chen & Chen, 1998; Martin et al., 1998; Hitt et al., 2006; Chittoor et al., 2009), the implications for professional services are not so clear. Compared to manufacturing, geographic distance in business services has typically been conceived of as less important, especially since information and communication technology (ICT), service digitalization and process commoditization have decreased costs of long-distance communication (Apte & Mason,

1995; Davenport, 2005; Mithas & Whitaker, 2007). At the same time, client pressures for efficient and seamless service coordination and delivery have prompted service providers to search for innovative strategies such as building project management and client specific capabilities to successfully differentiate themselves (Amit & Zott, 2001; Zaheer & Manrakhani, 2001; Ethiraj et al., 2005).

Accordingly, we investigate the antecedents and contingencies of establishing international configurations supporting GDMs in the service provider industry. Seeing service provider internationalization as a form of client-specific investment to create relational quasi-rents (Dyer, 1996), we argue that time zone differences are critical when considering the establishment of geographically dispersed business service operations. While digitalization of services already facilitates coordination across distances (Apte & Mason, 1995; Mithas & Whitaker, 2007), service providers differ in their ability to meet client demands for efficient and timely service delivery (Amit & Zott, 2001). In particular, growing client expectations and increasing coordination costs and transactional complexities prompt service providers to establish global configurations in support of GDMs to increase speed of service delivery while also granting access to globally distributed talent pools. Having service units that are close to the time zone of clients as well as 'back-office' operations in other time zones, the GDM configuration of operations allows service providers to access globally distributed talent and expertise, and facilitate timely responses to client requests while at the same time reaping benefits of operating 24/7, in particular when services are highly commoditized. We provide arguments and empirical evidence supporting this argumentation, based on comprehensive data collected by the international Offshoring Research Network (ORN).

Our article makes a number of contributions. First, we contribute to the understanding of internationalization strategies in professional service industries by focusing on the establishment of GDM configurations across time zones. Specifically, we propose that service providers are seeking new ways of creating relational quasi-rents through the establishment of global configuration of service delivery units across time zones (cf. Niosi & Tschang, 2010; Govindarajan & Ramamurti, 2011). This suggests that the establishment of GDM structures should be seen as an important component of ensuring process

integration with their global clients (cf. Kedia & Mukherjee, 2009; Luo et al., 2012). A consequence of this trend, however, is that the emerging service provider configurations consisting of operations close to global clients with remote offshore operations granting access to various resources and providing 24/7 support may change the economic geography of global sourcing (Beugelsdijk & Mudambi, 2013)—from client-driven location choices as part of global sourcing strategies to increasing delegation of location decisions to globally operating service providers. Second, this research increases our understanding of competitive strategies in 'born global' and B2B industries, such as global business services. Rather than assuming initial competitive advantages to result from geographic origin (e.g., providers from developed countries that benefit from proximity to clients vs. providers from developing countries that benefit access to cheap labor), we argue that competitive dynamics are more related to the overall set-up of geographically distributed operations vis-à-vis global clients. Finally, while there has been much outsourcing-related research focusing on how clients alter their structures and strategies to optimize performance (see a recent overview by Schmeisser, 2013), our knowledge of the service providers side is relatively limited. Accordingly, by applying a service provider perspective we enhance our understanding of the competitive dynamics in global business services (Kedia & Lahiri, 2007; Manning et al., 2011; Luo et al., 2012; Jayaraman et al., 2013).

THEORETICAL BACKGROUND

Internationalization in the global business services industry

Service provider internationalization can be traced back to the 1980s when U.S. client firms began to hire low-cost tech professionals, in particular from India, to perform service work onsite (Saxenian, 2000; Ethiraj et al., 2005).[1] In the 1990s, improved ICT infrastructure in India and other developing countries, along with client experience with foreign service professionals onsite, promoted global outsourcing practices which further exploited labor arbitrage effects. Later on, service providers from the U.S., India and other countries started setting up service delivery units abroad (Niosi & Tschang, 2010; Govindarajan

[1] See Appendix 1 for an overview of empirical research on the service provider industry.

& Ramamurti, 2011). In particular, as services have become more commoditized and competition for global client projects has increased (Davenport, 2005; Manning et al., 2008), more providers have begun to establish delivery centers globally. Figures 1a and 1b illustrate the growing importance of geographically distributed service units of one major U.S. provider (Accenture) and one major Indian provider (Infosys) between 2005 and 2013.

****Figures 1a and 1b around here****

An important factor in explaining service provider internationalization relates to the uncertainties and transactional hazards facing clients when outsourcing business processes to foreign locations (Srikanth & Puranam 2011; Luo et al., 2012; Jensen et al. 2013). For example, recent research has focused on how the hidden costs of managing offshoring and outsourcing operations often erupt after implementation and eventually undercut clients' anticipated benefits (Dibbern et al., 2008; Stringfellow et al., 2008; Larsen et al., 2013). Client firms may experience inefficiencies, service quality problems, and lack of qualified personnel needed for particular operations (Narayahan et al., 2011; Demirbag et al., 2012), which may relate to a lack of alignment of supplier operations with client needs (Luo et al. 2012), and get amplified as client firms grow their outsourcing operations across tasks (Kumar et al., 2009; Srikanth & Puranam, 2011). Workers with cultural and language differences at geographically dispersed locations may struggle to engage in informal, face-to-face coordination, and may find themselves forced to rely on less-superior, technology-based coordination mechanisms (Storper & Venables, 2004; Manning et al., 2013).

Thus, the coordination costs and transactional complexities of outsourcing services across vast distances, combined with growing client expectations and growing commoditization of services, have promoted providers' interest in setting up foreign delivery units. As service providers seek process integration with their clients (Luo et al., 2012), the establishment of foreign units creates a vehicle for service providers to better meet client demands. As emphasized by the "Internalization School" of firm internationalization (Buckley & Casson, 1976; Hennart, 1982), when markets for intermediate products are imperfect (i.e., the transactional complexities of conducting geographically dispersed work as a

consequence of outsourcing), there is an incentive to bypass them by creating internal markets in foreign location (i.e., the establishment of foreign service centers). Thus, service provider internationalization can be seen as a form of client-specific investment to generate relational quasi-rents (e.g., Dyer, 1996). However, while this perspective may explain why service providers would internationalize their activities, it does not inform us about where and how service providers internationalize their service centers. In manufacturing supplier industries, such as automotive production, location choice has to a large extent been explained by so-called 'follow-the-client' strategies, in which suppliers typically follow their domestic clients in their international expansion process in order to meet the expectation of clients to develop and maintain highly integrated relationships with their main suppliers (Erramilli & Rao, 1990; Bonaccorsi, 1992; Majkgard & Sharma, 1998). Clients and suppliers sharing physical co-location of facilities can lower coordination and transportation costs and also enable better control of supplier performance (Yeung et al., 2006). Similarly, suppliers might be driven in their internationalization process to get closer to important clients in foreign countries in order to better match co-location advantages of their foreign rivals (Martin et al., 1998), and to learn from rivals about how to compete in their domestic markets. Thus, location choice in these industries can largely be explained by the providers' desire to achieve physical proximity or co-location to important clients.

In services— such as professional services (Hitt et al., 2006; La et al., 2009) and even Internet services (Kotha et al., 2001; Zaheer & Zaheer, 2001)—proximity to clients has also been shown to be an important driver of internationalization. However, unlike in manufacturing where suppliers develop, produce and deliver tangible products to their corporate clients on a regular basis, in services products are typically intangible and do not need to be physically 'transported'. Transportation costs should therefore be a less important factor in the location decisions of service providers. In particular, although services requiring a high level of face-to-face interaction, such as consulting, typically still benefit from the co-presence with client, the increasing digitalization of services—such as tech support, administrative services, and engineering services—enables electronic delivery according to client specifications without the need for co-location (Apte & Mason, 1995; Mithas & Whitaker, 2007).

In contrast, we suggest that the internationalization of service providers to a large extent enables providers to better manage time zone differences to major clients. Specifically, we argue that differences in time zones of clients and providers involve substantial costs of coordinating global outsourcing. As communication is necessary to coordinate work (Thompson, 1967; Allen, 1977), the effectiveness of communication is hampered, both in quality and timeliness, when teams are separated by time zones. Coordination across time zones is particularly challenging due to lean communication media, difficulties in resolving unclear messages, reduced opportunities for spontaneous interaction, and lack of contextual reference (Espinosa & Carmel, 2004). For example, time zone differences add substantial delay costs whereby a client must wait for a provider to begin the work day. If task requirements are misleading or underspecified, the client would need to incur costs of reworking the specifications. Thus, time zone separation involves coordination costs adding to the transactional complexities of managing global outsourcing (Stein & Daube, 2007).

Global Delivery Models, coordination and the role of time zones

To understand how service providers geographically configure their international activities to manage challenges of time zone differences, we draw on the concept *Global Delivery Models* (GDMs) (Carmel, 2006; Garud et al, 2006; Ang & Inkpen, 2008), which has been defined as "*the ability of a service provider to deliver seamless services from an optimized delivery structure that involves resourcing skills and resources*" (Ang & Inkpen, 2008: 339). Unlike sales offices, GDMs constitute a globally integrated service delivery system which typically involves multiple centers at globally dispersed locations that contribute to the delivery of particular client services, e.g. IT system maintenance, call center operations or software development. Therefore, while the establishment of *particular* delivery centers may be motivated by access to certain local resources such as cost of labor or client proximity, GDMs characterize overall *networks* of delivery centers that are designed to develop optimized delivery configurations. As Carmel (2006: 46) argues, "*GDM is a rather loose model that encompasses the concept of task allocation, project structure, and governance."*

The term GDM was originally coined in the late 1980s by the Indian service provider Infosys to explain how a company could conduct service delivery from multiple service locations. Most major service providers now strictly follow the Capability Maturity Model Integration (CMMI) that has led to the formalization and fine tuning of the service delivery process (Carmel, 2006). Still, although firms use slightly different terminologies, they are increasingly employing GDMs for an array of their services. For example, while US providers may refer to Global Delivery (Accenture) and Global Delivery Model (IBM), Indian providers may refer to Value Global Delivery Model (Infosys) and Global Network Delivery Model (TCS). Yet, all these providers employ GDMs of some kind to distribute process activities and resources internationally while simultaneously integrating them in a quest to provide quality, yet cost-efficient, services.

Notably, providers and clients have experimented with different GDM configurations over time. For example, to better coordinate service deliveries across time zones, many providers have started to co-locate service delivery centers within time zone proximity of major European and US clients (Athreye, 2005; Carmel & Prikladnicki, 2010). However, the formerly tightly coupled GDMs that utilize daily handoffs of work activities in a 24-hour development model have mostly been abandoned in favor of loosely coupled GDMs (Carmel et al, 2010). Nonetheless, the adoption of GDMs in various forms continues to grow, and GDM operations continue to get more internationalized.

****Figure 2 around here****

Importantly, we argue that GDMs have become particularly important in managing the challenges arising from time zone differences between clients and service providers. GDMs are based on the configuration of operations close to clients with 'back-office' operations in other locations, allowing service providers to utilize various resources simultaneously *beyond* single locations (Ang & Inkpen, 2008). As such, GDMs enable providers to utilize globally distributed team structures to help deliver services and give around-the-clock support according to client needs, while at the same time having teams close to client sites that can coordinate service requests. This way, service providers can both reduce the transactional complexities of coordinating service orders and requests as well as being able to access

strategic resources around the world. Obviously, in many cases physical co-location and time zone co-location with clients coincide. In other cases, however, physical distance may be rather large, whereas time zones are still the same or close to clients. As such, GDMs encapsulate two locational components (see Figure 2).

First, service providers need time zone proximity to core clients so that timely and efficient coordination and negotiation of orders and tasks can be carried out. Obviously, while this does not exclude physical proximity with clients, it is not a necessity. For example, anecdotal evidence suggests that the reason why U.S. or Indian providers have expanded into Central and South America (e.g. Costa Rica in the case of Infosys) or South Africa (in case of Accenture) (see Figure 1a 1b) is not necessarily because of resource advantages. In fact, costs may be similar or even higher than in India or the Philippines. Nor do these locations provide *physical* proximity advantages to major U.S. or European clients. Still, they do combine favorable factor conditions (skills, language availability) with time zone proximity to major clients, which, in combination with other locations in other time zones, e.g. in India, enable providers to operate GDMs. Such time zone proximity to clients is the emphasis of a study of the IT industry in Brazil, which finds that "*Brazil benefits from time zone overlap with North America and Europe […]. It allows both sides to conduct more of their work interactively rather than as a highly-structured process. This overlap facilitates dense synchronous communications and helps to foster warm relationships between the Brazilians and their foreign partners*" (Carmel & Prikladnicki, 2010: 1). Reinforcing this finding, a Brazil-based executive at a US MNC states that "*Time zones are a key aspect of why we exist here in Brazil [because] we are not the cheapest so the time zones help us be a good choice*" (Carmel & Prikladnicki, 2010: 10). Gabriel Rozman, Executive Vice President and Head of the Emerging Markets Business Unit for Tata Consultancy Services (TCS), similarly said, *"we opened Argentina as a delivery center because … our strategy is to continue to be the dominant Indian force in Latin America providing solutions and providing offshoring from multiple locations, using our global delivery network model that most of our clients would like to use. Well Latin America providing same time zone work it is one of the pillars of our strategy"* (TCS, 2009). When Infosys (2007a) started

investing in Mexico it had a similar strategy, their then Director and Head – Worldwide Delivery and Sales and later CEO, S.D. Shibulal said, *"We are looking at Mexico as a development center. It will be a near-shore center to our customers in the US … We are not at this point looking at the local market; we are looking it as a resource pool which will support our US operations predominantly in the same time zone with multi-language capabilities."*

Second, providers need time zone spread of operations to access various resources and to operate 24/7. For example, when asked about their new delivery center in Brno, Czech Republic, Infosys Chairman Mohandas Pai describes the approach of his company in the following way: "*The Brno centre is part of our strategy to build nearshore centers in various parts of the globe. This, along with our large offshore centers in India and the centre in China, gives us an expanded global network, allowing proximity to our clients and seamless flow of work on a 24x7 basis.*" (Infosys, 2007b). Similarly, Pankaj Vaish, Accenture's managing director, delivery center network for BPO, argues: "*The ability to serve the needs of our clients using a global capability is a key strength of Accenture. […] Our Global Delivery Network enables us to mobilize the right people with the right skills and capabilities to deliver solutions for our clients in a cost-effective and efficient manner*." (Accenture, 2008). Moreover, US headquartered IT services provider Cognizant recently opened a delivery center in Costa Rica taking advantage of time zone proximity and further expanding global service delivery capabilities. Chief Executive Officer Francisco D'Souza said *"Our new center in Costa Rica marks an important milestone in our ongoing mission to leverage the best talent globally and is part of our endeavour to offer clients strong local relationship management with robust global service delivery capabilities"* (Economic Times, 2013). This spread of operations is further illustrated in Figure 1a 1b with the global expansion of Accenture and Infosys.

HYPOTHESES DEVELOPMENT

In the following, we develop hypotheses on the likelihood that service providers set up global configurations in support of GDMs. Specifically, to effectively internalize the market imperfections created by time zone differences, we emphasize that GDMs in global services must capture two location

decision factors: a) service providers need time zone proximity to core clients so that timely and efficient coordination and negotiation of orders and tasks can be carried out; b) providers need time zone spread of operations to facilitate follow-the-sun operations and to promote access to various resources in service delivery. We discuss how client demand for qualified personnel and speed of service delivery creates an incentive for service providers to establish GDM structures. Moreover, we discuss how the degree of commoditization may affect both strategic drivers and thus the likelihood of establishing GDMs.

Client demand for qualified personnel

Whereas early outsourcing projects were mainly driven by short-term labor arbitrage effects (Doh, 2005), accessing a growing pool of qualified personnel outside the home country has become a major strategic resource interest of client firms (Manning et al., 2008; Lewin et al., 2009). This interest has been driven in particular by shifts in availability of qualified personnel from developed to developing regions (Freeman, 2005). Research has pointed to underlying causes such as the decreasing willingness of Western high school graduates to enter certain careers, e.g. in IT and engineering (Lewin et al., 2009); growing shortages because of low birth rates in many developed countries; and increasing numbers of available staff in developing countries due to improved education systems and a growing population (Freeman, 2005).

In more general, skills and expertise needed to perform particular tasks are increasingly distributed globally rather than concentrated in particular locations (Demirbag & Glaiser, 2010). Notably, advanced communication technology and the lowering of coordination costs across distances have facilitated access to distributed pools of expertise across distances (Apte & Mason, 1995; Mithas & Whitaker, 2007). At the same time, securing access to these talent pools has been challenging for many client firms. Not only do many firms find it difficult to identify and recruit qualified personnel abroad (Manning et al., 2012), but many have been challenged by high employee turnover at various offshore locations (Demirbag et al., 2012). Consequently, service providers have developed a competitive advantage vis-à-vis clients in their ability to access and manage personnel for global service delivery

(Lewin et al., 2009). Among other things, their increasing scale of operations allows them not only to better utilize staff and economize on staff training, but also to provide more attractive career paths.

Thus, to circumvent the potential transactional hazards of outsourcing (Luo et al., 2012), we argue that service providers' perception of a client demand for qualified personnel creates an incentive to access relevant talent pools from distant locations. By supplying skills and expertise for global service delivery, providers are positioned to internalize a market imperfection and thus generate relational quasi-rents vis-à-vis major clients (Dyer, 1996). However, in order to make talent pools accessible for major clients, providers are required to set up new service centers in foreign locations that can offer such resources (Treinen & Miller-Frost, 2006; Gupta et al., 2007). In particular, to access talent and facilitate 24/7 operations on behalf of their clients, providers are likely to establish new foreign operations across a variety of time zones. By establishing globally distributed talent access points, providers are positioned to access and provide various resources and thus facilitate the GDM delivery. For example, while competition for talent at particular locations has increased which has led to increasing diseconomies of agglomeration in certain regions such as Bangalore, India (Manning, 2013), the ability to access different locations generates advantages vis-à-vis clients who will find it more costly to set up captive operations granting the same strategic and operational advantages.

Accordingly, we propose that providers are more likely to grow operations abroad in support of GDMs if they perceive clients' demands for qualified personnel to be a strong factor in their outsourcing decision. Accordingly, by internationalizing to secure access to qualified personnel, service providers proactively reduce the transactional complexities of conducting global sourcing. Therefore:

> *H1: Perceived client demand for qualified personnel in clients' decision to outsource and select a particular provider has a positive influence on the likelihood that providers will configure their service locations in support of global delivery models.*

Speed of service delivery

Besides access to globally distributed skill sets, we argue that another critical factor explaining the investment in GDMs is speed of service delivery. Being able to process services in a timely and seamless

manner can be an important capability that adds value to setting up otherwise costly location structures in support of GDMs. Thus, speed of delivery should not be confused with 'avoiding delays'. Rather, it emphasizes the ability of providers to propose upfront a more seamless and speedy delivery of services than competitors. In fact, speed of service delivery, and resulting efficiencies for clients, has become an important competitive tool and source of value creation in global business services (Amit & Zott, 2001; Zaheer & Manrakhani, 2001; Ethiraj et al., 2005). Indeed, while research indicates that cost of service delivery and service quality remain the primary provider selection criteria (see e.g. Lahiri et al., 2012; Luo et al., 2012), optimizing time to complete projects can be perceived as an *additional* differentiating factor (see also Heijmen et al., 2009).

Speed of service delivery involves two interrelated aspects: the time it takes to coordinate client requests and the time it takes to process tasks once clients and providers have agreed on task specifications. As for speed of coordination, firms have traditionally relied on co-location to facilitate frequent communication with suppliers. As mentioned, co-location reduces coordination costs and helps intensify client contacts (Hitt et al., 2006). This is still the case in manufacturing industries (Yeung et al., 2006). Interestingly, even in business services, co-location, in form of temporary onsite services at client sites, was initially an important means to promote client trust and to facilitate coordination of client projects (Saxenian, 2000; Ethiraj et al., 2005). However, new ICT has increasingly facilitated 'virtual co-location' through frequent meetings via Internet technology (e.g., Skype and Cisco's teleconference), and consequently undermined to some extent the importance of actual co-location. Yet, while actual face-to-face contact during meetings is increasingly matched with advanced communication technology, setting up meetings and coordinating time across distances can still be costly (Stringfellow et al., 2008). In particular, if client and provider facilities are far apart in terms of time zone differences, common time for task coordination becomes a scarce resource.

Thus, we argue that having operations in the same or close to the time zone of major clients has strong potential competitive advantages for providers, if speed is perceived by providers as an important differentiating factor. In order to facilitate and speed up coordination of client requests, providers benefit

from establishing units and allocate resources within or close to the time zones of major clients. In the service provider industry, time zone proximity has traditionally been a competitive advantage of U.S.-based service providers, such as IBM and Accenture, whose major clients also operated in the U.S. This initial disadvantage was arguably a main reason for India-based firms, such as Infosys, to set up 'consulting units' in the U.S. whose main task is to coordinate client requests. The case evidence above supports this notion.

However, speed of service delivery also involves a second aspect: the speed of processing client requests. Compared to the concentration of processes in one location, process intermediation across specialized units at multiple locations across time zones has speed advantages. Process decentralization allows providers to benefit from both location-specific expertise and skill sets within their corporate network. At the same time, the processing of tasks can be accelerated by operating across different time zones. For example, prior research indicates that providers have become very proficient in organizing services into customized 'front-ends' and modularized 'back-ends' (Sako, 2006). Thus, potential speed advantages of decentralizing processes are enhanced when locating these sub-processes in different time zones. This way, service providers are able to process tasks and client orders around the clock, and can meet client needs in a timely manner.

Based on this, we argue that a provider attention to attracting clients for whom speed of service delivery is an important and necessary selection factor favors the establishment of delivery units close to the time zones of client locations *along with* the distribution of multiple units participating in the delivery of particular services across time zones. This way, service providers can reduce coordination costs and transactional complexities by having operations close to clients as well as speeding up processing of client requests that do not need frequent coordination with external clients through 'back-office' operations in other time zones. Thus, service providers' emphasis on speed of delivery as a strategy to attract client projects favors the establishment of locational configurations in support of GDMs. We hypothesize:

H2: Perceived importance of speed of service delivery in clients' decision to outsource and select a particular provider will increase the likelihood that providers will configure their service locations in support of global delivery models.

Service commoditization

Services differ in the extent to which increasing access to qualified personnel and speed of service delivery benefit client experience. For example, timeliness may be particularly critical in the case of day-to-day operations, e.g. HR work and finance and accounting, which are highly integrated into client operations, than for more ad-hoc tasks, such as market research and other forms of knowledge work which may benefit more from access to qualified personnel. We focus in particular on the degree of service commoditization as a key contingency in prompting providers to respond differently to client demands when considering the set-up of structures in support of GDMs. This corresponds to prior research which has emphasized how task and service attributes play an essential role in ensuring a smooth workflow and reintegration of disintermediated tasks from the perspective of clients and providers (Kumar et al., 2009; Luo et al., 2010; 2013).

By commoditization we mean the extent to which a task or a service is standardized, modular and unspecific to a particular client or industry (Davenport, 2005; Sako, 2006; Tanriverdi et al., 2007). Commoditization has been identified as a key driver of growth of the global service provider industry (Sako, 2006; Manning, 2013). As services—including more knowledge-intensive work—have become more commoditized, not least through provider-led efforts, service providers have become able to offer services at lower costs. This has created scale and scope economies and specialization advantages vis-à-vis clients, as a result of which client firms have become less incentivized to internalize the delivery of these services (Tanriverdi et al., 2007; Jacobides & Winter, 2012). At the same time, increasing commoditization bears the risk of increasing competitive cost pressure, as knowledge about the performance of particular tasks will diffuse more easily and prevent specific providers from generating sufficient margins in the long term (Sako, 2006). Accordingly, providers have sought to counteract this

trend by generating more distinctive competitive advantages, including the establishment of GDM structures.

First, we argue that service commoditization positively impacts the relationship between speed of differentiation through service delivery and the likelihood of establishing structures in support of GDMs. Specifically, commoditization is based on the task properties of standardization and modularization. Standardization builds on process activity and flow standards, process performance standards, and process management standards, and facilitates hand-offs, ease comparative measures of performance, and make information less 'sticky', i.e. less difficult to communicate (von Hippel, 1994; Szulanski, 1996; Kumar et al., 2009). Relatedly, modularity describes the degree to which interfaces between systems or tasks are specified in such a way that they can be operated or performed with minimized interaction or coordination (Sanchez & Mahoney 1996; Baldwin & Clark, 2000). Modularity keeps interfaces 'thin' (Baldwin, 2007) which eases the transfer of tasks across globally distributed operations (Kumar et al., 2009; McDermott et al., 2013) and, thus, also contributes to speed of delivery. Combined, standardization and modularity reduce the need for costly coordination as it entails hierarchies with property of near-decomposability that simplifies behavior, and thus makes global distribution of tasks more feasible (Apte & Mason, 1995; McDermott et al., 2013). Importantly, over time, both providers and clients have individually and jointly experienced speed and coordination advantages coming from high degrees of service commoditization. Arguably, this has increased client expectations as to the possibility of accelerating speed of service delivery in the case services are highly commoditized. By contrast, in the case of less commoditized services, speed considerations may not play such an important role in clients' provider selection decisions.

Thus, we argue that speed of service delivery may prompt providers to set up GDM structures in particular when services are highly commoditized. A high degree of commoditization mitigates costly coordination across time zones, and helps scale up services for different uses, and thus promotes speed of service delivery in driving the establishment of GDM structures. Moreover, clients are likely to perceive speed of delivery as value-adding in particular when services are commoditized. For example,

commoditization can facilitate bundling of services which eases coordination when a provider offers multiple services to the same clients. In those cases, GDM structures offer added value coming from bundling services such that a certain degree of customization can be achieved across services while each service itself is highly standardized. This way, speed advantages can be coupled with generating added customer value favoring the set-up of GDM structures compared to a locally concentrated delivery of services. Hence, we formulate the following hypothesis:

H3a: Perceived importance of speed of service delivery will increase the likelihood that providers will configure its service locations in support of global delivery models in particular when service commoditization is high rather than low.

Low service commoditization, in contrast, means that services are more specific to particular needs of clients and industries. Whereas the ability to provide more specific services, such as analytical services, product design work or client-specific software, may in itself provide a competitive advantage, providers face the constant challenge of making resources available to perform these particular tasks. For example, knowledge-intensive work requires specific skill sets which are often not readily available in a single location, but are distributed across geographic clusters across the world (Demirbag & Glaiser, 2010; Manning, 2013). Unlike more commoditized work which can be more easily allocated, based on capacity and demand, to teams with generic skills in various locations, or even in just a single location, more specific work often requires skills that tend to be more 'sticky' or bound to particular locations (Alcácer & Chung, 2007). For example, consulting services in preparation of particular client software projects cannot be easily allocated to teams in remote locations but typically require teams that are located close to client facilities.

Thus, while increasing speed of service delivery through GDM structures may not be internally feasible or important from a client perspective when services have a low degree of commoditization, setting up globally dispersed structures may still give a competitive advantage by easing access to specialized talent pools. Having access to globally dispersed talent pools allows them to allocate even highly specific bundles of tasks to available teams with highly specific skills. In particular, under

conditions of low service commoditization where services are defined by complex process interfaces and low process modularity clients may find it particularly challenging to access qualified personnel. Thus, providers are particularly incentivized to establish operations in locations that can offer such resources, despite the challenges of distributing tasks across locations, and thereby taking advantage of time zone differences.

Moreover, prior research has shown that services, including knowledge work, become more commoditized over time (Apte & Mason, 1995; Davenport, 2005; Mithas & Whitaker, 2007). This implies that over time providers are more likely to benefit from speed advantages through distributed operations. This also means that setting up globally distributed structures even when services are not yet commoditized may be feasible in the long-term, in particular when access to qualified personnel is a major current concern. Hence, we also expect that providers set up globally distributed structures across time zones to minimize future adjustment costs once services become more commoditized and speed-based differentiation advantages across time zones arise. Based on this rationale, providers may further capitalize on setting up structures that not only give access to globally dispersed talent pools but are also configured to allow for potential speed advantages once services become more commoditized. Taken together, we propose:

> *H3b: Perceived client demand for qualified personnel will increase the likelihood that providers configure their service locations in support of global delivery models in particular when service commoditization is low rather than high.*

DATA COLLECTION

We test our hypotheses based on data collected by the international Offshoring Research Network (ORN). The ORN is a research network of scholars in the U.S., Europe, and Australia studying major offshoring drivers, risks, and sourcing projects from the perspective of client firms, as well as client-seeking strategies, risks, service and location portfolios, and performance indicators from the viewpoint of service providers, based on annual independent surveys of clients and providers respectively (e.g., Lewin &

Couto 2007; Manning et al., 2011; Larsen et al., 2013). In this study we use data from both the service provider and the client survey.

The service provider survey collects detailed information from business service providers across the world (since 2007). Survey participants give firm and service level information on factors such as the services they provide, the locations they provide services from, their client base, perceived client expectations, perceived operational risks, experience, and future plans. The survey has been taken online: some respondents reach the survey website through external links or email invitations, whereas others randomly open the website and register for the survey. Once registered and approved by the ORN survey team, respondents are added to the database. In some cases, in particular large firm respondents (see below) would submit the survey uncompleted, resulting in missing data, despite reminders to answer all questions. This is a limitation of this rather comprehensive multi-level survey design.

As of 2012, the service provider database contains data from 755 providers based in different countries and regions. Among the providers in the sample are most major players, including Accenture, Infosys, TCS, IBM Global Services, Genpact, Tata Consulting, Cap Gemini etc., but also numerous small and midsize firms. It should be noted, however, that for this study, only 181 providers gave sufficiently detailed information resulting in a usable sample of 442 data points (as each provider on average provided information for 2.4 services) after removing responses with missing values. The subsample of 442 service-specific responses will be used for empirical testing of the hypotheses. The providers within this selected sample are headquartered all over the world and the two most important regions are: USA (40%), Western Europe (19%) and India (12%). The three most important classes of services offered are: IT (21%), Software (17%), and Call Centers (10%).

We addressed the risk of nonresponse bias by comparing the sample of firms with valid responses for all variables we use in model with the sample of firms with missing responses for some or all variables used in our model. In particular, we compared subsamples by firm size, headquarter location, and distribution of services specified. As for headquarter and service distribution, differences between subsamples are insignificant. This is not the case for size. The completed responses sample is

significantly biased towards small firms with less than 500 employees (60%) and midsize firms with more than 500 but less than 10,000 employees (31%) vs. large firms with more than 10,000 employees (9%). By comparison, the missing responses sample has a distribution of 34% small, 40% midsize and 25% large firms. The main reason for this difference is that large firm respondents have difficulties taking the detailed multi-level questionnaire as they typically offer more services than smaller firms. Although various methods exist to replace missing values (e.g., Royston, 2004), we decided to use only actual responses as respondents giving complete information are more likely to be accurate with any particular data item than respondents giving incomplete information. While the resulting nonresponse bias related to size might be a limitation, one positive side effect is that the usable sample corrects the overrepresentation of large firms in the total sample, which resulted from efforts to include most major vendors. In practice, however, midsize and smaller firms are the vast majority of providers which is reflected in the sample used for this study.

While most of our variables, including the dependent and the main independent variables, were generated from the service provider survey, we also included some control variables from external databases, such as geographic distance (in air miles) between provider and client countries, as well as variables from the ORN client survey. As for the latter, we used for this study data from surveys of 743 client firms across industries (e.g. manufacturing, financial services, software), size (34% > 10,000 employees, 26% 500-10,000 employees; 40% <500 employees) and headquarter locations (35% US, 54% Western Europe, 11% other). Clients report on location and governance decisions for concrete offshoring projects by a range of service functions, e.g. call centers, IT services, legal services etc. These service functions correspond with the classification of services in the service provider survey. This helped us generate variables that capture relevant specifics of the client market (such as location distribution of sourcing projects and size of projects) by type of service, which could then be used as service-specific controls in our empirical models. Notably, we combined data from both outsourced and captive client projects (total: 2,605) in order to capture features of the total potential client market, including clients who have not used external providers yet, but might switch in the future.

Using data from different surveys and data sources helps lower the common method bias, which is regarded as a potential limitation of survey-based designs, in particular when using data from a single survey (Chang et al. 2010). In addition to using data from two surveys, we also controlled for the risk of biases in the service provider survey itself. First, the questionnaire of this survey consisted of different scales, some of which were reversed, which diminishes the risk of biases. Second, we performed a number of statistical analyses to assess the severity of common method bias. In particularly, a Harman's one-factor test on the items indicated that common methods bias was not an issue. That is, multiple factors were detected and the variance did not merely stem from the first factors (Podsakoff & Organ, 1986). In fact, the items included in the model form several factors with an eigenvalue > 1 and with the two major factors only explaining 18% and 14%, respectively. Also, we ran a confirmatory factor analysis where all items loaded on the same factor (a Single Factor Model). The assumption is that the existence of a single factor that is the common denominator across all items reflects the presence of a common method bias (Podsakoff et. al, 2003). However, in our case the goodness-of-fit statistics is highly unsatisfactory for the Single Factor Model capturing the common method bias, which indicates that we do not have a major problem of common method bias in the data.

STATISTICAL MODEL AND VARIABLES

We test our hypotheses using a logit model, as our dependent variable is the binary variable *GDM Location Configuration*. The two main independent variables are *Importance of Talent* and *Importance of Speed*. In addition, we performed a split sample analysis for observations with high vs. low degree of *Service Commoditization*. For robustness checks, we alternatively used a probit model. Results are virtually identical. We report marginal effects in the results section. Next, we introduce all variables and operationalizations (see also summary in Table 1).

****Table 1 around here****

Dependent variable: GDM location configuration

To measure the geographic set-up of service operations in support of GDMs we constructed a variable based on survey information on the geographic distribution of service delivery units for each service. On

average, providers have distributed services across 3.48 locations, whereby a high proportion of services (33%) are delivered from just one location. However, rather than focusing on particular locations, our main interest is in the distribution of service delivery units across time zones. For this purpose, we computed the coverage of time zones across delivery units using publicly available information on time zone positioning of each country. Notably, for countries covering multiple time zones, we selected the middle time zone, e.g. CST (-6) in the case of US. This is a notable limitation in our study as we lacked specific city data on service delivery location.

In terms of time zone distribution of service delivery units, 35% of services across the provider population are delivered from one time zone, 32% from two, 13% from three. Notably, in 19% of cases, services are provided from more than three and up to 18 time zones (in one case). Yet, as noted earlier, in order for GDMs to work not the number of time zones covered is important but whether or not multiple units are located in different time zones. Accordingly, we computed several alternative measures capturing the time zone spread of locations, e.g. spread across 3 to 6 hours. However, since we do not know from the survey how exactly providers make use of the time zone spread of operations—i.e. what time gap works best for any particular provider—we decided to focus on whether or not service operations spread across different time zones at all, rather than being run within a single time zone. (For robustness checks, however, we also used alternative measures in the regressions, as reported below.)

Beside the ability to spread time zones, GDMs also rely on another feature: proximity to major client operations. To capture this, we used survey data on the reported location of top clients. Specifically, providers are asked in which countries their three most important clients are located. Most providers gave information at least for their single most important client which we used as the most reliable data point. (Yet, we also constructed measures based on all three major clients for robustness checks.) 58% of providers report that their major clients are located in the United States. Western Europe (25% of major clients) is the next most important client region. Importantly, many providers (40%) are headquartered outside the country of their main clients. For example, 34% of providers who primarily serve US clients are headquartered outside the United States (e.g. 14% are based in India). Again, we are interested here in

particular in time zone differences between client and provider locations. Taking again the example of US client-serving providers, 31% of providers are based more than three time zones away from US Central Time; Indian providers (14%) are based eleven time zones away. However, 45% of operations by those US client-serving providers who are based more than three time zones away use delivery units that are located either in the U.S. or in the same time zone (Central time). 47% are within +3/-3 hours time zone range. We argue that the availability of such units is an important condition for operating GDMs as they facilitate coordination with clients.

Based on these considerations, we constructed our Dependent Variable *GDM Location Configuration* as a dummy variable that takes the value 1 if a service that a particular provider offers is delivered from multiple (rather than a single) locations that span multiple (rather a single) time zones, *and* if at least one of the service delivery units is within +3/-3 hours range of the time zone of major client firms. Allowing for this range corrects potential measurement errors coming from the fact that we do not have city-specific location data for clients or providers. Using this variable, we can proxy whether or not providers have configured their service operations geographically in a way that allows them to operate GDMs.

****Table 2 around here****

Within our dataset, 62% of service operations across providers are configured in a way that favors the use of GDMs. Importantly, no provider has such a set-up by 'default'. For example, US-based providers serving US clients do fulfill the proximity condition but need to have additional service operations outside their home time zone in order to operate GDMs. India-based providers serving US clients fulfill the distance condition by default but need to have additional operations within +3/-3 hours range of US clients to match this capacity. Revealingly, however, the vast majority of provider investments into foreign locations favor the use of GDMs – across the provider population. Table 2 shows all relevant geographical configurations of globally distributed operations. It indicates that 88% of these configurations favor the use of GDMs. This underlines the combined importance of client proximity and time zone spread as a feature of internationalization strategies in this industry.

Importance of talent

To measure the effect of the perceived importance of access to qualified personnel in clients' outsourcing decisions on the likelihood that providers set up GDM structures, we use the survey item *Importance of Talent* as an independent variable. We combined two complementary survey items for this variable. They are relatively highly corrected (0.43), but the main rationale for combining them is their complementarity in capturing two key dimensions of the importance of talent for clients. The first survey item focuses on the perceived need of clients for qualified personnel abroad and reads: "For each class of services that your company provides, how important is in your opinion access to qualified personnel offshore in clients' decision to outsource this particular service?" The second item emphasizes the importance of shortage of qualified personnel at home as an outsourcing driver: "For each class of services that your company provides, how important is in your opinion the shortage of qualified personnel at home in clients' decision to outsource this particular service?" Importantly, both items are measured individually for each class of services, e.g. IT infrastructure, call centers, engineering, software development etc. (see Table 2). They are measured on a scale from 1 (= not important) to 5 (= very important). We computed the average of the two items for our model. The mean value is 3.71 (standard deviation: 1.01).

Importance of speed

To measure the effect of speed of service delivery as a provider selection factor for clients on the geographic set-up of operations of providers, we combined two survey items capturing the perceived *Importance of Speed*. The main rationale for combining the two survey items as discussed below is their complementarity in measuring the importance of speed and efficiency in clients' decision to outsource services and select particular providers. More specifically, the first item reads: "In your opinion, how important is the time to complete projects in order for a client to select your company as a service provider?" This variable is measured on a scale from 1 (= not important) to 3 (= very important). It is measured at the firm level as it relates to the overall client-seeking strategy of providers rather than their ability to provide particular services. The second item, however, is measured at the service level. It reads: "For each class of services that your company provides, how important is in your opinion increasing

operational efficiency in clients' decision to outsource this particular service?" This item is measured on a scale from 1 (= not important) to 5 (= very important). To combine both items we transformed the first variable into a five-scale Likert scale measure, and then computed the average score. The mean of this combined measure is 3.30 (standard deviation: 1.02).

Degree of service commoditization

To measure the degree of service commoditization, we use a combined two-item measure. Respondents were asked "for each class of services that your company provides, how commoditized has this service become?" and they indicated this on a 5-point scale (1=very low and 5=very high) for "extent of commoditization today" and "extent of commoditization in next 18-36 months". The obtained Cronbach alpha-value was 0.87, and in the confirmatory factor analysis the construct obtained reliability, with values of 0.93 for composite reliability and 0.87 for average variance extracted (AVE). The mean of the variable is 3.28, but with some variation given the standard deviation of 0.99. Importantly, the measure we use is based on perceptions of providers regarding the degree of service commoditization rather than an 'objective' measure of commoditization. Since we are interested in how (perceived) service commoditization affects providers' strategic decisions, rather than how (actual) service commoditization may affect provider performance, we use the more nuanced, subjective measure.

We performed a sub-sample analysis to test how service commoditization affects the degree to which our independent and control variables affect the likelihood that providers set up GDM structures. More concretely, we split the sample almost in half whereby one sub-sample includes all service observations for which the combined degree of service commoditization today and in the next 18-36 months is lower than 7 (45% of observations); the other sub-sample captures all other service observations. The main rationale for using this threshold is to generate similarly sized sub-samples. However, we also used different splits (6 and 8) yielding very similar results. For robustness checks, we also split the sample by 'actual' degree of service commoditization by calculating the average perception across the provider population for each type of service. The main effects are virtually the same. In addition, we used other related service-level measures, such as complexity of tasks associated with

particular services (low complexity as a proxy for high commoditization and vice versa). Main effects are the same. An alternative to using sub-samples could have been the construction of interaction variables measuring more directly the moderating effect of degree of service commoditization. We preferred sub-samples for two main reasons: First, the interpretation of interaction effects in logit models is difficult, in particular after incorporating a range of control variables (Bowen, 2012). Second, and more importantly, we were interested in how degree of service commoditization affects a range of variables, including controls, so that a split-sample solution was more practical in our context. As we discuss later on, aside from the main effects, our split sample analysis yielded interesting results regarding controls which could stimulate future research.

Control variables

We used various control variables in our regressions. First, we include importance of labor and other costs as a two-item measure capturing the perceived importance of labor costs (1st item) and other costs (2nd item) in clients' decision to outsource particular processes. Each item is based on a scale from 1 (not important) to 5 (very important). We computed the average for this analysis. The main rationale for including this measure is the widely shared assumption that client interests in cutting costs matter not only in decisions to outsource but also in the decision of providers to internationalize and set up globally distributed structures in support of GDMs. We also included size of provider (measured by log of number of employees), and percentage of revenue coming from large clients (> 2billion sales), ranging from 0% to 99%. The assumption here is that large providers are more likely to use and benefit from GDMs, and that, in turn, serving (and generating revenue from serving) large rather than small clients makes the set-up of GDM configurations even more likely, as larger clients typically have more complex service requirements and additionally benefit from GDMs as their own operations are typically globally distributed. In addition, we include years of experience with delivering a particular service as a control since we assume that experience supports the development of service delivery capabilities, e.g. management of interfaces (Manning et al., 2013), which facilitate the set-up and effective coordination of multiple delivery locations. Moreover, we use a dummy that captures whether or not providers use

subcontractors for delivering particular services. Subcontractors may facilitate the geographic distribution of operations since less investment is required to set up new operations and hire personnel.

We also included a number of measures related to the geographic position of providers as well as the distance between client and provider operations. First, we added a dummy that captures whether providers are headquartered east (rather than west) of the major clients in terms of time zones to account for potential effects of being ahead or behind in time (Quah, 1999). Second, we control for geographic distance (measured in air miles) between the home countries of providers and their top clients (based on Google data). Adding this control allows us to capture to what extent the set-up of GDM structures serves to reduce distance, similar to follow-the-client strategies. Third, we included a dummy variable capturing whether the main languages spoken in the home countries of provider and client are different (value 1) or the same (value 0). The role of language as a driver for service provider internationalization has been indicated in other studies (e.g., Ang & Inkpen, 2008). Finally, we included dummies for the headquarter regions of providers to determine whether providers from particular countries are more likely to use GDM configurations to better compete in the outsourcing market. For a robustness test, we also used alternative dummies specifying whether or not providers have any operations in particular major regions which may expose them to regional or local pressure prompting them to set up GDM structures in order to better compete with co-located providers.

Finally, we included service-related factors which may affect the likelihood that providers set up GDM structures. First, we included dummy variables for major types of services, including administrative services, call centers, IT and software services, product development, and analytical work (e.g. market research and financial analysis). Our expectation is that global delivery configurations may be more common in particular service domains rather than others. Second, we included variables from the ORN client survey that specify characteristics of the client market at the service level. These include (a) the average number of locations client firms would source particular service functions from (which proxies the level of preferred service location concentration vs. spread from a client perspective); (b) the average number of employees clients would employ (or have providers employ) for particular operations in

different service domains (indicating the scalability of operations for particular clients and the related possibility to divide labor across locations for specialization advantages). Importantly, these variables do not inform about clients of *particular* providers, but rather about client types who providers might target within particular service segments.

RESULTS

Table 3 lists descriptive statistics and correlations between dependent, independent and control variables. Correlations involving core variables do not exceed 0.41. The highest correlation (0.41) is between *GDM Location Configuration* and *Provider HQ USA*. Also, *Geographic Distance between Provider and Client HQs* is highly correlated with *Provider HQ USA, Provider HQ India* and *Provider HQ China,* and *Analytical Work* is highly correlated with *Average Client Service Locations,* all of which however does not affect the overall model. To further check for potential multicollinearity issues, we computed the variation inflation factors (VIFs) for all independent variables used in the model. They range from 1.17 to 5.50 (which are far below the critical threshold of 10 and, thus, indicate no multicollinearity issues). *Provider HQ USA* has the highest VIF. To make sure that Provider HQ variables, in particular HQ USA, do not obscure the model, we ran models with and without these Provider HQ dummies. Main effects remain the same.

The regression models are reported in Tables 4: Model 1 (Columns 1-3) tests the effect of *Importance of Talent* and *Importance of Speed* on the likelihood that providers geographically configure their operations in support of GDMs (*GDM Location Configuration*). Column 1 (Model 1a) reports the effects of controls only; column 2 (Model 1b) includes all variables; column 3 reports odds ratios for Model 1b. Model 2 (Columns 4-6) performs the same logit model for the subsample of service-related observations for which the perceived degree of service commoditization is relatively low (<7). By comparison, Model 3 (Columns 7-9) runs the model for the subsample of service-related observations for which the perceived degree of service commoditization is relatively high (>=7). We now discuss major results for all models.

****Tables 3 and 4 around here****

Model 1 indicates that Hypotheses 1 and 2 can be supported. *Importance of Talent* significantly increases ($\beta = 0.580$; $p < 0.01$) the likelihood that providers set up service locations globally in a way that supports the use of GDMs, as measured by *GDM Location Configuration*. Hypothesis 1 can thus be supported. Similarly, *Importance of Speed* in attracting client projects highly significantly ($\beta = 0.283$; $p < 0.05$) increases the likelihood that providers set up service locations globally in support of GDMs. Hypothesis 2 can be supported. We also performed a likelihood-ratio test to determine if the addition of the main independent variables contributes to explaining the set-up of GDM structures. The chi-squared value for the test is 26.30 with a very low p-value (< 0.0001). This suggests that both independent variables combined significantly contribute to the explanatory power of the logit model.

In addition, the model suggests that, counter to common belief, *Importance of Cost* has no significant effect on the likelihood that providers set up GDM structures. This indicates that provider do not perceive a sustainable labor cost advantage in setting up GDM structures vis-à-vis competitors. We discuss this interesting finding further below. By contrast, both *Provider Size* ($\beta = 0.195$; $p < 0.01$), and *Importance of Large Clients* ($\beta = 0.826$; $p < 0.05$) have positive coefficients, and significant effects. This indicates that large providers (who typically also serve larger clients) are more likely to set up GDM structures. In addition, results indicate that the *Use of Subcontractors* positively affects the likelihood that providers set up GDM-supporting structures ($\beta = 0.843$; $p < 0.01$). Further, we find that being located East of major client locations significantly decreases the likelihood ($\beta = -1.400$; $p < 0.05$) of setting up GDM structures. This implies that being located east of clients already gives a potential time zone advantage, in terms of operating 24/7 (see also Quah, 1999), so that investing into GDM structures, from this perspective, is less needed. Finally, the model reveals a strongly significant positive effect of *Provider HQ USA* on *GDM Location Configuration* ($\beta = 2.895$; $p < 0.01$) – independent of client location. This strongly positive relation is further supported by a relatively high odds ratio (18.084) compared to other variables. This suggests that whether or not providers are headquartered in the US strongly increases the likelihood that they set up GDM structures. Interestingly, the same effect occurs when dropping the condition that GDMs structures need to include units close to clients (which might generate a bias). This

means that operating across time zones is characteristic for US providers. As a robustness check, similar effects occur when including dummies indicating *any* operation in the U.S. (as well as other regions). Specifically, having operations in the U.S. as well as having operations in Western Europe both positively affect the likelihood that providers set up GDM structures. We discuss this finding below. In addition, in the controls only model, language difference between provider home country and the home country of major clients has a significant positive effect ($\beta = 0.762$; $p < 0.05$) on the likelihood that providers set up GDM structures, which supports the notion that language availability matters in setting up and operating GDMs. However when adding the main effects, this variable turns insignificant. By comparison, geographic distance is insignificant across all models. As for service features, none of the service dummies has a significant effect on GDM location configuration, at least in the main model. This suggests that GDMs are not a service-specific capability but rather allow providers to respond to client needs across services. As for the two client service market variables we generated from the ORN client survey, both turned out insignificant, which may indicate that providers respond to demands from their existing clients rather than signals from the broader potential client market.

Models 2 and 3 indicate that Hypothesis 3a can be supported, whereas Hypothesis 3b cannot be supported. As for Hypothesis 3a, *Importance of Speed* in attracting client projects highly significantly ($\beta = 0.417$; $p < 0.05$) increases the likelihood that providers set up GDM structures when the degree of service commoditization is relatively high (Model 3). By contrast, there is no significant effect of this independent variable when degree of service commoditization is relatively low. This means that high service commoditization is perceived by providers to be an important facilitator for generating speed advantages through GDMs. Hypothesis 3a can thus be supported. However, *Importance of Talent* has a significantly positive effect on the likelihood that providers set up GDM structures both when service commoditization is low ($\beta = 0.514$; $p < 0.05$), as predicted, but also when service commoditization is high ($\beta = 0.822$; $p < 0.01$). That is, high perceived relevance of access to talent as a client driver of outsourcing particular services prompts providers to set up GDM structures for these services, no matter if they are highly commoditized or more idiosyncratic. Thus, Hypothesis 3b cannot be supported. We discuss this

finding and its implications below. Again, we also performed a likelihood-ratio test for each model to determine if the addition of the main independent variables contributes to explaining the set-up of GDM structures in each model. In Model 2, the chi-squared value for the test is 5.11 with a p-value of 0.0776 (marginally significant), whereas in Model 3, the respective test value is 22.48 with a very low p-value of <0.0001 (highly significant). This suggests that the two main independent variables significantly add to the explanatory power of both Models 2 and 3, but that their contribution to explaining the likelihood of GDM structures is particularly strong in Model 3.

In addition, the subsample analysis reveals some interesting findings in terms of different effects of controls. We can see that, as expected, *Importance of Costs* is significantly positively related to the setup of GDM structures when services are highly commoditized – yet only within the controls-only sample (Model 3a). After adding the main independent variables (Model 3b), this variable loses significance. This suggests that relative to our main independent variables talent and speed, cost does not significantly matter in providers' decisions to set up GDM structures, even if service commoditization is high. We discuss this rather unexpected finding further below. Further, when services are little commoditized, especially large providers seem to benefit from globally dispersed operations. Their ability to scale up even more idiosyncratic processes across multiple locations may explain that. By contrast, when services are highly commoditized a greater number of factors seem to support the set-up of GDMs, including the importance of large clients, the availability of subcontractors and time zone positioning vis-à-vis clients. This suggests that commoditization serves as an enabler of various other supporting conditions of GDM structures, for example the ability to better serve large clients who typically maintain multi-service contracts with providers and whose various services can be better coordinated through units close to client facilities; or the greater likelihood of finding specialized subcontractors who can take on parts of commoditized services and possibly further speed up and professionalize service delivery.

DISCUSSION AND IMPLICATIONS

The purpose of this paper has been to investigate what drives service providers to expand their operations beyond their home countries by establishing global delivery models (GDMs) in which they can balance

client proximity and the need for access to globally distributed skills. Much research has successfully emphasized how service providers alter their structures and strategies to accommodate for client needs and thus optimize performance (Kedia & Lahiri, 2007; Manning et al., 2011; Luo et al., 2012; Jayaraman et al., 2013). Yet, little research has investigated the recent patterns of international expansion of global business service providers to meet client demands (Niosi & Tschang, 2010; Govindarajan & Ramamurti, 2011). Using comprehensive data from the Offshoring Research Network, we have addressed this issue by arguing that service providers internationalize their operations in support of GDMs emphasizing time zone proximity to clients along with time-zone differences beyond single locations to meet client demands for talent and speed, especially when service commoditization is high.

This paper makes an important contribution to understanding when service providers are likely to internationalize their operations in structures that support GDMs. Our findings contribute to research on firm internationalization, in particular in B2B industries, by shifting focus from more conventional drivers of entering particular locations, such as resources and market access, to the role of time zones in understanding international expansion. Prior research has emphasized geographical proximity to major clients as an important internationalization motive for suppliers (Martin et al., 1998; Yeung et al., 2006), as evidenced by 'follow-the-client' strategies (Erramilli & Rao, 1990; Bonaccorsi, 1992; Dyer, 1996; Majkgard & Sharma, 1998). In this study, we have argued that physical distance to potential clients and markets due to ICT advancements may become less important (Apte & Mason, 1995; Friedman, 2005; Mithas & Withaker, 2007), but that speed of service delivery and access to talent have become critical concerns driving the global configuration of service delivery units across time zones. Obviously, speed of delivery and access to talent across time zones does not replace more conventional location decision factors, such as low cost labor and market access, but it prompts firms to embed single location choices in a larger global strategy of operating efficiently across locations. We therefore invite future research to examine how time zone considerations relate to other types of distance (e.g., geography, culture, institutions, etc.) in firms' location decisions (Dow & Karunaratna, 2006; Bertrand & Mol, 2013).

Moreover, we have argued that the establishment of GDM configurations can be seen as an asset specific investment to create relational quasi-rents vis-à-vis clients (Dyer, 1996). At the same time, we have argued that the degree of service commoditization spurs speed of service delivery and thus facilitates the establishment of GDMs, beyond the ability to access distributed talent pools. In this respect, an interesting dilemma arises: to realize speed advantages for particular clients through GDMs, high service commoditization is needed to efficiently operate across distances. While enhanced coordination with top clients adds client specificity, both for particular services and *across* services, which eventually creates rents, increasing service commoditization also suggests that services become more standardized, modular and unspecific to a particular client or industry (Davenport, 2005; Sako, 2006; Tanriverdi et al., 2007). The latter, on the one hand, helps providers reutilize globally distributed talent pools and service capabilities for new clients, but, on the other hand, bears the risk of increasing competitive pressure coming from other providers with similar capabilities. Being able to exploit service commoditization for scale and scope economies, while at the same time generating more client-specific competitive advantages – not least *across* services – is thus an important balancing act for service providers in their effective use of GDMs. Correspondingly, our findings suggest that in particular large providers who serve large clients – typically through multi-service agreements – benefit from the use of GDMs as they may generate client specificity across services, while also generating service-level scale and scope advantages across clients.

Second, our insights have broader implications for competitive strategies in 'born global' industries. Using a context such as the global service provider industry characterized by providers from both developed and developing countries, a pertaining question relates to how speed, access to talent, and related client specific advantages that do not result from geographic origin, but are related to the set-up of geographically distributed operations vis-à-vis global clients, contribute to sustained competitive advantages. While conventional views may hold that developed country providers benefit from proximity to clients and developing country providers from access to low-cost labor (Dossani & Kenney, 2007), our results suggest a much more dynamic view in which internationalization can be regarded as key

mechanism to achieve speed of delivery and other global advantages. Thus, rather than the need to expand from local to regional and global markets (Johanson & Vahlne, 1977), internationalization patterns in 'born global' industries are driven by global competitive dynamics (Wieserma & Bowen, 2008; Chittoor et al., 2009; Nadkarni et al., 2011), and in particular the increasing need to differentiate globally rather than within particular regional markets.

Relatedly, the ability of GDM structures to not only bridge, but also exploit time zone differences, may alter the distribution of teams and IT-based processes across distances. For example, whereas production facilities may continue to benefit from co-location with client sites (Majkgard & Sharma, 1998; Yeung et al., 2006), supporting digitalized service operations may follow different global distribution patterns where positioning in particular time zones becomes a more important driver of resource allocation. At the same time, the increasing ability of global service providers to obtain relational quasi-rents by bundling services and building hub-and-spoke operations targeting various clients (see also Sako, 2006) may help them take 'service intermediary' functions in other B2B industries as well. Increasing outsourcing activities of professional services firms, for example, are an indicator of this trend (Heijmen et al., 2009). Relatedly, understanding the specifics of 'networked operations' in *different* industries (e.g. global services) and resulting resource and specialization advantages may add nuance to the growing 'network paradigm' in IB (Johanson & Vahlne, 2009) and the functionality of globally distributed network structures.

Finally, our study may help refine future research on the dynamics of global sourcing, as we shift focus from client firms' sourcing location choices (Graf & Mudambi, 2005; Bunyaratavej et al. 2008; Mudambi, 2008; Demirbag & Glaister, 2010; Hahn et al., 2011) to provider location configurations. For example, whereas prior studies would examine the rationale of US client firms for sourcing IT-services from India using captive or outsourced delivery models, this paper suggests that global service providers increasingly take 'location decisions' on behalf of clients, thereby combining various resource and operational advantages, including speed of delivery across time zones. It thus becomes inaccurate to assume that the economic geography of sourcing operations is primarily determined by client decisions

(Mudambi, 2008). Rather, future research should embrace a more dynamic perspective on how, and particularly where, client-supplier relationships emerge in highly competitive and dynamic global domains such as global business services. As emphasized by Luo et al. (2012: 501) *"A BPO provider and its global client need to work together to ensure quality services and unify the standards, procedures, and policies, which can in turn generate considerable benefits in reducing operating costs or administrative overhead and improving customer responsiveness*". Accordingly, we encourage future studies to not only look at client interests in factors such as cost savings, service quality, data security and reliability, but pay more attention to provider decisions and performance (Lahiri & Kedia, 2009; Lahiri et al., 2012). In particular, as the provider market has matured and competition for client projects has increased, it is important to understand the survival and profitability of providers, and how performance relates to their location configurations vis-à-vis clients.

Our findings also reveal some interesting additional insights. *First*, our findings suggest that providers are likely to set up GDM structures in response to client demand for service-related talent and skills, no matter if services are commoditized or not. This implies that even in the case of generic skills, providers may benefit from a globally distributed structure. One explanation could be that a distributed structure lowers the risk of – temporary or permanent – shortage of personnel in any one location, combined with the flexibility of shifting tasks as needed, in particular when service commoditization is high. Future research needs to further investigate these interesting dynamics. *Second*, irrespective of service commoditization, large provider and client size seems to favor the time zone distribution of service delivery. A more nuanced analysis of different service capabilities of large vs. small providers and of client expectations towards large vs. small providers may reveal reasons for this effect. As noted earlier, the use of GDM structures may amplify the ability of large providers to offer multiple services to the same clients (through units near client sites), while also benefitting from distributed back-end structures in scaling up operations across clients. This might arguable benefit in particular large clients who providers enjoy multi-service contracts with. Understanding specifics of this particular market segment therefore seems to be crucial. *Third*, the fact that providers are headquartered – or, in fact, simply

operate – in the U.S. (among other locations) seems to significantly increase the likelihood that providers set up GDM structures. This indicates that peer observation and competitive pressure in particular locations and regions may have an effect on providers' location set-up. In addition to this insight, we found in a separate analysis that certain provider linkages (e.g. HQ in US and operations in India) may also promote the set-up of GDMs. This corresponds to prior literature that diaspora networks between countries may promote the diffusion of particular business and client-serving models (see also Saxenian & Hsu, 2001; Lorenzen & Mudambi, 2013). Future research needs to further investigate these interesting correlations. *Fourth*, our analysis suggests that while language differences to some extent affect the set-up of GDM structures, this is not the case for geographical distance. As explained above, unlike in the case of follow-the-client strategies, which are primarily about *reducing* distance to clients, GDM structures are about *managing and utilizing* distance to the operational advantage of providers. Thus, setting up GDM structures may be beneficial both for providers who start out distant from clients (to create proximity), and for providers who start out close to clients (to create 24/7 operations). Also, geographical distance may or may not coincide with time zone difference to clients. All this may explain the non-significant effect of geographical distance on the set up of GDM structures. Yet, future research needs to further elaborate this complex relationship. *Fifth*, type of service does not seem to significantly affect whether or not providers concentrate or geographically distribute service delivery. One explanation is that due to increasing commoditization *across* service types, services may converge in the way they are coordinated – combining client-specific 'front-end' and highly modularized and standardized 'back-end' (see also Sako, 2006). Another explanation for not observing 'significant' effects in either direction for any particular service might be that some factors, such as the need for specific talent e.g. for analytical work may favor the set-up of GDM structures, whereas certain challenges, such as coordination, may lower the feasibility of investments into GDMs. Future research thus needs to engage in a more nuanced analysis of potentially contradicting drivers. *Sixth*, especially when services are highly commoditized, the ability to use sub-contractors appears to further facilitate the set-up of GDM structures. This suggests that further geographic fragmentation is correlated with further organizational fragmentation of the service value

chain. This needs to be further illuminated in future studies. *Seventh*, labor costs have typically been seen as a major outsourcing driver for client firms (Lewin & Peeters, 2006; Dossani & Kenney, 2007). Our results do suggest that labor costs also drive the establishment of GDMs, but only when tasks are highly commoditized and when the main independent variables are excluded. Thus, relative to our main hypothesized effects, client demand for low cost labor does not seem to warrant the establishment of GDMs. Arguably, short-term labor arbitrage effects are offset by the potential investments needed to set up GDM structures. Future research should therefore investigate more specifically the elasticity of provider responses to client demand for low costs.

Our research has several managerial implications for the global outsourcing industry. First, our findings suggest that service providers, who plan to internationalize, need to pay close attention to time zone locations of key clients as they configure delivery networks to satisfy demands for talent and speed. Second, differentiating based on speed and time proximity to clients may become particularly relevant, not least for small and midsize providers, as services get increasingly commoditized. Third, implementing GDM structures effectively may require agile and other more recent methodology, which, based on short time-boxed iterations and continuous integration, enables daily handoffs and seamless processing (see e.g. Carmel et al, 2010). Fourth, the utility of GDM structures may be supported by new internal social media technology that helps maintain quality, based on regular knowledge exchange, while delivering faster service at a reasonable cost (see e.g. Bharati et al., 2012).

Our study also has some notable limitations which need to be addressed in future research. *First*, while focusing on the role of speed and access to talent in promoting location distribution across time zones, we acknowledge that other factors might also influence global configurations, such as signaling the ability to operate globally, and generating location flexibility. More comprehensive studies should integrate those and other aspects. *Second*, our analysis is based mainly on data collected through a single survey which might involve the risk of common method bias. Future studies are invited to combine data with other surveys to a greater extent we were able to do, for example on client location configurations and client preferences related to GDM structures, to perform a more nuanced analysis. *Third*, longitudinal

designs can help better understand the co-evolution of client relationships and global configurations of service delivery, including the question to what extent global delivery set-ups are motivated by *existing* or rather by the search for *new* client relationships. *Fourth*, more in-depth micro-level studies may reveal how providers actually make decisions regarding the use of GDM structures and to what extent different GDM operating practices affect performance. Such an analysis may also involve a more nuanced account of provider-client relationships and, possibly, relational capabilities both parties invest in to support the use of GDMs.

In conclusion, this study invites future research to pay increasing attention to new patterns of internationalization, such as the use of GDMs. While we have focused explicitly on the role of time zone differences, future research should embrace additional enablers and constraints to internationalization (Dow & Karunaratna, 2006; Bertrand & Mol, 2013). Moreover, future research should look beyond global business services, as global IT-based service delivery is likely to become a more integral part of global B2B client relations. Thus, this study is intended to stimulate a broader agenda on the increasing global integration of business relationships, and the impact of ICT-based operations in this process.

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Appendix 1: Empirical research on the service provider industry

Theoretical focus	Research questions	Key insights	Indicative literature
Capability development and value creation	• How are service providers capabilities defined? • How do service providers build such capabilities?	• Two key capabilities are client-specific capabilities and project management specific capabilities. • Service provider capabilities emerge as a result of repeated interactions and persistent investments in infrastructure and systems. • Service providers' ability to generate rents from idiosyncratic resources depends on their management capabilities.	• Athreye (2005) • Amit & Zott (2001) • Ethiraj et al. (2005) • Lahiri et al. (2012)
Coordination, control and integration	• Which coordination and process integration strategies do service providers and clients utilize? • What is the influence of task characteristics on effective integration and performance?	• Key coordination strategies include ongoing communication, modularity, and tacit coordination. • Process integration depends on the fit between the task characteristics and the interdependencies with global clients. • Effective service provider organizations emerge as a result of the interaction, reinforcement and balance between various design elements.	• Jayaraman et al. (2013) • Luo et al. (2013) • Manning et al. (2011) • Narayahan et al. (2011) • Srikanth & Puranam (2011) • Garud et al. (2006)
Firm inter-nationalization	• What are the characteristics of service firm internationalization? • How does the internationalization of service providers compare to the internationalization of manufacturing firms?	• Service providers internationalize as a part of 'climbing the value chain'. • Levels of human and relational capital with clients explain service provider internationalization. • Service providers internationalize through global delivery models to overcome coordinative	• Carmel (2006) • Garud et al. (2006) • Hitt et al. (2006) • Majkgard & Sharma (1998) • Niosi & Tschang (2009)

FIGURES AND TABLES

Figure 1a: Accenture's service delivery centers in 2005 (dots) and 2013 (dots and squares)*

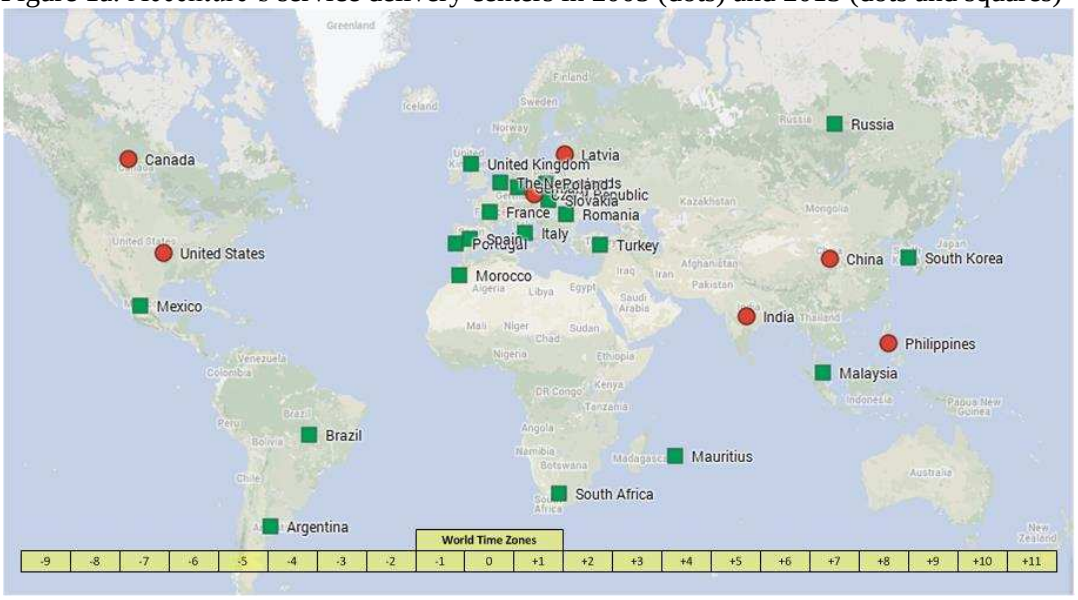

Figure 1b: Infosys' service delivery centers in 2005 (dots) and 2013 (dots and squares)*

*Software: Google Maps Engine; Sources: Compiled by authors based on data from firm websites, annual reports, SEC filings, and financial press reports.

Figure 2: Global Delivery Model

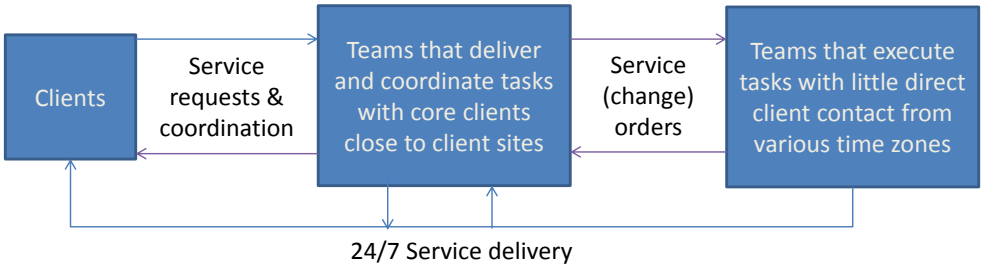

Table 1: Variables Construction

Core Variables	Description
Dependent	
GDM Location Configuration	Constructed dummy variable at the level of services: Takes value 1 if provider has set up multiple service delivery centers across multiple time zones, and if at least one center is within +3/-3 hours time zone range of most important client; otherwise 0
Independent	
Importance of Talent	Combined Likert-scale measure of two items (average): 1 to 5 (low to high) score attributed to (a) perceived importance of access to qualified personnel and (b) perceived shortage of talent at home in clients' decision to outsource a particular service (service level)
Importance of Speed	Combined Likert-scale measure of two items (average): 1 to 5 (low to high) score attributed to (a) perceived importance for clients to select the respective provider based on "Time to Complete Project" and (b) perceived importance of increasing operational efficiency in clients' decision to outsource a particular service (service level)
Conditional	
Degree of Service Commoditization	Combined Likert-scale measure at service level (sum): 1 to 5 (low to high) score attributed to perceived degree of commoditization of service today (1st measure) and in the near future/next 18-36 months (2nd measure)
Control Variables	
Importance of Costs	Combined Likert-scale measure of two items (average): 1 to 5 (low to high) score attributed to (a) perceived importance of low labor costs and (b) perceived importance of other costs in clients' decision to outsource a particular service (service level)
Provider Size	Log of number of employees
Importance of large clients	Percentage of revenue generated from serving large clients (> 2 billion sales)
Service experience	Number of years providing a particular service
Use of subcontractors	Dummy variable that takes value 1 (otherwise 0) if provider reports to use subcontractors for delivering a particular type of service
Provider HQ Time Zone East of HQ-Client	Dummy that takes value 1 (otherwise 0) if provider HQ is located east of top client HQ in terms of time zone
Geographic distance to clients	Air distance (in miles) between home country of provider and home country of most important client (based on Google distance database)
Language distance to clients	Dummy that takes value 1 (otherwise 0) if main language of home country of provider is different from main language of home country of top client
Provider HQ Dummies: USA, Western Europe, Eastern Europe, India, China, Latin America	Dummy variables that take value 1 (otherwise 0) if provider HQ is located in particular region (USA, Western Europe, Eastern Europe, India, China, Latin America)
Service Dummies: Administrative, Call Center, IT & Software, Product Development, Analytical Work	Dummy variables that take value 1 (otherwise 0) if service is of a particular type: Administrative (finance & accounting, HR, legal), Call Center, IT & Software (IT infrastructure, software development), Product Development (engineering, product design, R & D)
Average Number of Client Service Locations	Average no. of both captive and outsourced destinations clients source particular types of services from (Source: ORN Client Survey)
Average Size of Client Service Projects	Log of average no. of employees allocated by clients to captive & outsourced operations for particular types of services (Source: ORN Client Survey)

Data Source: ORN Service Provider Survey (unless noted otherwise)

Table 2: Geographical Configurations of Globally Distributed Operations*

Configuration of global operations	Services operated from a single time zone	Services operated from multiple time zones
Services operated more than 3 time zones away from major clients	**Case 1:** Provider leverages time zone difference to client, but lacks internal time zone distribution and client proximity benefits N = 0 (0% of cases)	**Case 3:** Provider leverages time zone difference to client and internal time zone distribution, but lacks client proximity benefits N = 15 (5% of cases)
Services at least partially operated within +3/-3 time zone range of major clients	**Case 2:** Provider leverages client proximity benefits, but lacks internal time zone distribution N = 19 (7% of cases)	**Case 4 = GDM Configuration** Provider leverages client proximity benefits *and* internal time zone distribution N = 258 (88% of cases)

* Based on sub-set of services operated from multiple countries (N = 292; 66% of services)

Table 3: Correlations and Descriptive Statistics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)	(21)	(22)	(23)	(24)	(25)
(1) GDM Location Configuration	1.00																								
(2) Importance of Talent	**0.15**	1.00																							
(3) Importance of Speed	0.09	**0.23**	1.00																						
(4) Service Commoditization	-0.05	0.09	0.09	1.00																					
(5) Importance of Costs	0.04	**0.23**	**0.10**	**0.21**	1.00																				
(6) Provider Size	**0.26**	0.03	0.05	-0.06	0.01	1.00																			
(7) Importance of Large Clients	**0.18**	0.02	**-0.13**	**-0.11**	0.03	0.38	1.00																		
(8) Service Experience	0.09	-0.04	0.04	0.07	0.00	**0.22**	**0.23**	1.00																	
(9) Use of Subcontractors	0.10	-0.07	-0.01	0.08	**-0.10**	**-0.15**	-0.04	0.00	1.00																
(10) HQ Time Zone East of HQ-Client	-0.03	0.04	-0.03	0.04	0.04	0.04	0.07	**-0.11**	**0.15**	1.00															
(11) Geographic Distance to Clients	**-0.15**	0.08	0.07	-0.04	-0.07	0.07	0.01	**-0.10**	0.03	**0.22**	1.00														
(12) Language Distance to Clients	-0.06	0.07	**0.13**	0.09	0.02	**-0.15**	-0.06	0.05	0.08	**0.24**	**0.32**	1.00													
(13) HQ USA	**0.41**	-0.04	-0.03	-0.07	0.02	**0.19**	0.07	0.00	0.01	0.09	**-0.40**	**-0.23**	1.00												
(14) HQ Western Europe	-0.06	-0.05	-0.04	0.08	-0.06	**-0.15**	-0.01	0.05	**0.14**	**-0.12**	**-0.24**	-0.08	**-0.37**	1.00											
(15) HQ Eastern Europe	**-0.15**	0.07	-0.06	0.06	0.09	**-0.23**	-0.05	0.08	**-0.12**	0.02	0.01	**0.47**	**-0.25**	**-0.13**	1.00										
(16) HQ India	**-0.13**	**0.16**	0.02	0.03	-0.04	**0.15**	-0.06	-0.09	0.01	**-0.10**	**0.52**	-0.05	**-0.31**	**-0.16**	**-0.11**	1.00									
(17) HQ China	-0.05	-0.02	-0.03	-0.04	0.03	**0.11**	**0.13**	-0.07	0.00	**0.12**	**0.36**	-0.04	**-0.27**	**-0.14**	**-0.10**	**-0.12**	1.00								
(18) HQ Latin America	**-0.16**	-0.07	**0.14**	0.02	**-0.10**	-0.08	**-0.11**	0.03	-0.06	0.03	-0.06	0.05	**-0.23**	**-0.12**	-0.08	**-0.10**	-0.09	1.00							
(19) Service Administrative	**0.10**	-0.05	0.02	**-0.11**	0.06	**0.10**	0.04	**-0.09**	-0.02	0.01	0.04	0.05	**0.12**	-0.08	**-0.10**	-0.02	0.00	-0.06	1.00						
(20) Service Call Center	0.01	**-0.12**	0.01	**0.24**	0.08	**0.22**	0.01	0.03	-0.08	-0.01	-0.04	-0.07	0.01	-0.04	**-0.10**	0.01	0.02	0.06	**-0.14**	1.00					
(21) Service IT & Software	-0.05	0.06	-0.01	**0.17**	0.03	**-0.16**	**-0.09**	0.04	0.03	0.02	0.03	0.06	**-0.12**	0.03	**0.17**	0.01	0.02	0.05	**-0.33**	**-0.26**	1.00				
(22) Service Product Development	-0.09	**0.23**	0.02	-0.05	0.00	-0.07	0.02	**0.10**	-0.03	0.00	0.02	-0.04	-0.08	-0.05	0.08	0.07	0.05	-0.02	**-0.18**	**-0.14**	**-0.34**	1.00			
(23) Service Analytical Work	0.06	0.04	-0.03	**-0.17**	-0.09	0.08	0.07	-0.01	0.00	0.01	0.01	-0.04	**0.09**	0.01	-0.07	-0.03	0.03	-0.06	**-0.10**	-0.08	**-0.18**	**-0.10**	1.00		
(24) Avg Client Service Locations	0.03	**-0.16**	0.04	-0.09	-0.08	**0.17**	0.08	-0.06	0.00	-0.02	-0.08	**-0.11**	**0.12**	0.03	**-0.15**	-0.02	-0.04	0.00	**-0.21**	**0.30**	**-0.45**	**-0.14**	**0.49**	1.00	
(25) Avg Client Project Size	0.06	-0.01	0.03	0.01	0.06	0.08	0.00	0.02	0.04	0.02	0.01	0.03	0.07	-0.04	-0.06	-0.03	0.01	-0.02	**0.33**	0.07	0.07	**-0.29**	**0.39**	**-0.11**	1.00
Mean	0.62	3.71	3.30	6.65	4.17	6.11	0.57	9.07	0.26	0.07	2097.47	0.20	0.41	0.16	0.08	0.12	0.10	0.07	0.15	0.10	0.38	0.16	0.05	1.29	5.91
Standard Deviation	0.49	1.01	1.02	2.01	0.79	2.57	0.36	7.74	0.44	0.26	3139.00	0.40	0.49	0.37	0.27	0.33	0.29	0.25	0.35	0.30	0.49	0.36	0.22	0.09	0.84
Minimum	0.00	1.00	1.50	2.00	1.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.20	3.46
Maximum	1.00	5.00	5.00	10.00	5.00	11.61	0.99	60.00	1.00	1.00	8446.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.50	8.01
Number of Observations	442	442	442	442	442	442	442	442	442	442	442	442	442	442	442	442	442	442	442	442	442	442	442	442	442

Bold: Significant at $p < 0.05$ level

Table 4: Effect of Importance of Talent and Speed on Likelihood of GDM Location Configuration (Logit Regression)

	Whole Sample			Subsample: Commoditization LOW			Subsample: Commoditization HIGH		
Dependent Variable: GDM Location Configuration	**Model 1a: Controls**	**Model 1b: All Variables**	**Odds Ratios All Variables**	**Model 2a: Controls**	**Model 2b: All Variables**	**Odds Ratios All Variables**	**Model 3a: Controls**	**Model 3b: All Variables**	**Odds Ratios All Variables**
Independent Variables									
Importance of Talent		0.580***	1.786***		0.514**	1.672**		0.822***	2.274***
Importance of Speed		0.283**	1.323**		-0.087	0.916		0.417**	1.518**
Control Variables									
Importance of Costs	0.157	-0.061	0.941	0.181	0.043	1.044	0.503**	0.220	1.246
Provider Size	0.203***	0.195***	1.216***	0.373***	0.375***	1.454***	0.139	0.132	1.142
Importance of Large Clients	0.676*	0.826**	2.286**	0.379	0.348	1.417	1.042**	1.347**	3.846**
Service Experience	0.004	0.012	1.012	0.026	0.024	1.025	-0.020	0.001	1.001
Use of Subcontractors	0.742**	0.843***	2.325***	0.972*	1.142**	3.133**	0.896**	1.237***	3.447***
Provider HQ TZ East of Clients	-1.262**	-1.400**	0.247**	-1.598	-1.799*	0.165*	-2.229***	-2.159**	0.115**
Geographic Distance to Clients	0.000	-0.000	1.000	0.000	0.000	1.000	-0.000	-0.000	1.000
Language Distance to Clients	0.762**	0.505	1.658	0.983	0.685	1.983	0.994*	0.604	1.829
Provider HQ USA	2.753***	2.895***	18.084***	2.743***	2.688***	14.423**	3.682***	3.768***	43.292***
Provider HQ Western Europe	1.161**	1.101*	3.008*	1.328	1.144	3.139	1.955**	1.843*	6.317*
Provider HQ Eastern Europe	0.207	0.336	1.400	1.677	1.745*	5.728*	-0.582	-0.560	0.571
Provider HQ India	0.353	0.076	1.079	-0.454	-1.040	0.354	0.871	0.646	1.907
Provider HQ China	0.892	1.041	2.831	-0.879	-0.794	0.452	2.650**	2.384*	10.845*
Provider HQ Latin America	0.388	0.115	1.122	-1.423	-1.686	0.185	2.745**	2.375*	10.752*
Service Administrative	0.278	0.263	1.301	0.494	0.710	2.034	-0.423	-0.552	0.576
Service Call Center	0.151	0.090	1.094	-0.218	-0.174	0.840	0.229	-0.007	0.993
Service IT & Software	0.060	-0.113	0.893	-0.024	0.229	1.257	-0.082	-0.803	0.448
Service Product Development	-0.245	-0.733	0.481	-0.238	-0.351	0.704	-0.557	-1.566*	0.209*
Service Analytical Work	0.734	0.297	1.346	-0.061	-0.776	0.460	0.800	0.879	2.409
Avg Client Service Locations	-2.626	-1.778	0.169	-2.207	0.699	2.012	-3.431	-4.546	0.011
Avg Client Project Size	-0.159	-0.131	0.877	-0.112	-0.000	1.000	-0.216	-0.397	0.672
N	442	442	442	200	200	200	242	242	242
Chi^2 / $Prob>chi^2$	131.69 (0)	157.99 (0)	157.99 (0)	81.47 (0)	86.58 (0)	86.58 (0)	90.80 (0)	113.28 (0)	113.28 (0)
Pseudo R^2	0.2234	0.2691	0.2691	0.3067	0.3260	0.3260	0.2825	0.3524	0.3524

**p<0.1; **p<0.05; ***p<0.01.*