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Role of Clusters and Certification in the Internationalization of Offshoring Service Providers from Emerging Markets: A Study of Indian IT firms

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Abstract

We adopt a resource-based view to investigate the drivers of internationalization of emerging market offshoring service providers (OSPs). Using data from Indian IT firms between 1992 and 2002, we investigate the effect of cluster presence and quality certification on OSP internationalization and in moderating the internationalization-performance relationship. Our findings contribute to the OSP literature by proposing a significant role for clustering and certification. We find a positive effect of certification on OSP internationalization. Although certification contributes negatively to OSP performance, it positively moderates the performance effect of OSP internationalization. Cluster presence was found to drive OSP's overall performance.

Keywords: Offshoring service providers (OSP); Internationalization; Performance; Clusters; Certification; Emerging markets

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Role of Clusters and Quality Certification in the Internationalization of Offshoring Service Providers from Emerging Markets: A Study of Indian IT firms

The restructuring of a firm along the geographical dimension is referred to as offshoring. It entails the relocation of the client's operations – often a multinational corporation (MNC) – to a foreign location where the same activities are either performed by the firm's own subsidiary or allocated to a foreign service provider on a contractual basis (e.g. Contractor, Kumar, Kundu, & Pedersen, 2010). These service providers are referred to as offshore service providers (OSPs). Extant literature has largely focused on how the large client firms select an offshoring location or on the effectiveness of client firms based on their offshoring decision (e.g. Chadee & Raman, 2009; Contractor et al., 2010; Manning, Massini, & Lewin, 2008). However, OSP's corporate strategy and the organization of its operations is clearly an under-investigated area (Li, Wei, & Liu, 2010). We attempt to contribute in this direction. In particular, the efforts and attempts of these OSPs to internationalize by opening branch offices and operational centers across the world have been largely under-investigated. In this paper, we investigate the internationalization facilitators of OSPs and their strategic relevance (for firm performance) from a resource acquisition and management perspective. More specifically, we focus on the choice of locations in the OSPs' home country and on quality certification as two facilitators of OSP internationalization.

Much of the offshoring is carried out by firms in emerging markets. While these firms have a cost advantage when compared to the Western clients, the OSPs are also required to maintain competitiveness when compared to other OSPs. Therefore, many of them expand to

locations within and outside their country, either to provide greater service by moving nearer to the client or to cut costs by moving some of their operations to even lower cost countries. Within the home country many of these OSPs locate in clusters (Manning, 2012). Clusters have been seen as providers of resources, information or knowledge spillovers to firms in emerging markets (Bresnahan, Gambardella, & Saxenian, 2001; Manning, Ricart, Rosatti Rique, & Lewin, 2010; Porter, 2000; Zaheer, Lamin, & Subramani, 2009). Resources have also been seen as a significant driver for emerging market firms to achieve a desired advantage in their respective markets, including international markets (Gubbi, Aulakh, Ray, Sarkar, & Chittoor, 2010; Y. Lu, Zhou, Bruton, & Li, 2010). Therefore, locating in clusters is likely to play a significant role in developing and emerging markets because firms in these markets often utilize externally and publicly available resources in order to build a competitive advantage, especially in international markets (Mesquita & Lazzarini, 2010). Similarly, emerging markets are marked by institutional voids and information asymmetry (Gopal & Gao, 2009; Khanna & Palepu, 1997; Nayyar, 1990). The high quality of processes helps OSPs not only to utilize their resources in an efficient manner, but also to be consistent in their service delivery. One of the ways through which OSPs achieve consistent service delivery is through certification by international agencies. Summing up these two elements of an OSP strategy, we take a resource-based view (RBV) to investigate the impact that cluster presence and quality certification have on the internationalization of emerging market OSPs.

We carry out an empirical study to investigate the internationalization drivers of firms in the Indian IT industry during the period 1993 to 2002. Our sample provides an interesting research context as Indian software firms have not only emerged as key OSPs from emerging markets in the recent years, but also internationalized to advanced economies by setting up

branch offices and development centers. While their competitive advantage in international markets was initially derived from the low-cost factor markets in their home countries, in the last two decades they have achieved global presence either in the form of sales offices or global development centers which help them produce software at an international level and sell it to clients at an international level. We attempt to investigate whether their home country location choices and quality certification of processes facilitated their internationalization efforts. Furthermore, we look at the interacting effects of these facilitators in enhancing the subsequent performance of the internationalized firms.

With our findings we aim to advance the understanding of the facilitators of the internationalization of OSPs from emerging markets and their performance. First, our findings are based on much broader (and we believe more robust) measures of internationalization. Second, we find that quality certification of emerging market OSPs has a positive impact on their internationalization. Third, we find that locating in clusters (in the home country) drives performance of OSPs, but has no effect on internationalization. Finally, we find that while quality certification negatively impacts the performance of OSP, it positively moderates the internationalization-performance relationship. In the following we discuss our theoretical framework and subsequently provide a description of the empirical investigation and discussion of its results.

THEORY AND HYPOTHESES

Internationalization of Emerging Market OSPs

Outsourcing of manufacturing to efficient locations has been one of the key strategies to achieve superior performance (Dunning & Lundan, 2008; Quinn & Hilmer, 1994). However, offshoring of services – defined as the outsourcing of services to a vendor in another country – has only attracted research attention in the past decade, following the growth in communication technology (Kenney, Massini, & Murtha, 2009). Offshoring has been seen “as a specific manifestation of firm internationalization that is primarily concerned with the internationalization of the firm's input-market side rather than with the internationalization of sales on the output-market side of the value chain” (Schmeisser, 2013 p. 390). Scholars in the area of offshoring have often focused on the reconfiguration of the client’s value chain to a globally dispersed network of activities that enables it to achieve competitive advantage in various markets (e.g. Contractor et al., 2010; Ernst & Kim, 2002; R. Mudambi & Venzin, 2010) or on how client firms achieve efficiency by selecting the best outsourcing location (e.g. Bunyaratavej, Hahn, & Doh, 2008). The focus so far has been on where and how the client chooses an OSP based on the aforesaid theoretical considerations.

There are not many studies that look at the vendor’s strategy and how OSPs achieve competitive advantage or take strategic decisions. For example, more recently Jensen (2012) undertook a dual perspective study to incorporate the perspective of the OSP from the process and resource perspective. Another trend we observe in the literature is that offshoring of services is no longer considered merely an operational or tactical tool towards achieving efficiency, but rather a strategic activity by the firm (Contractor et al., 2010). Scholars have also argued that

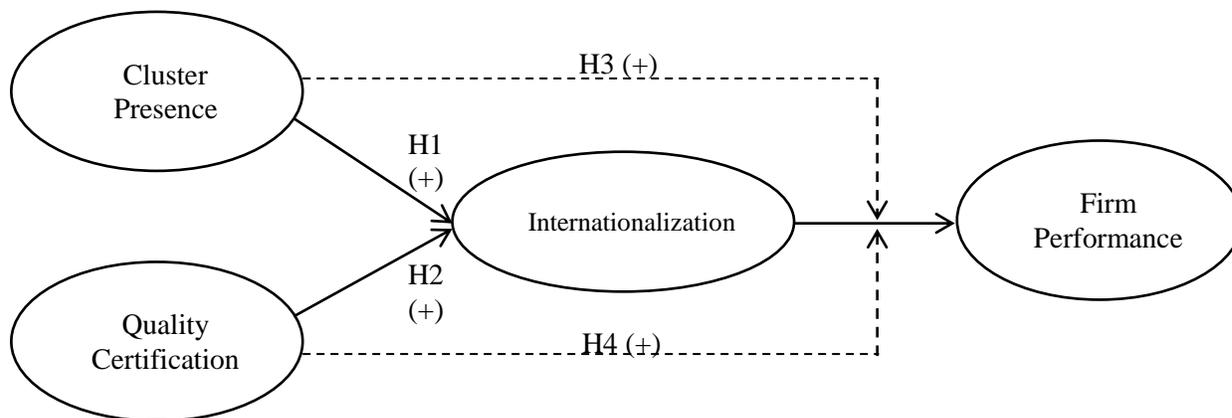
OSPs are an important ally in the value creation mechanism for the client (Kedia & Mukherjee, 2009; Zaheer et al., 2009) and that the success of value creation (and thereby of the client) is largely contingent on the performance of the OSP (Lahiri, Kedia, & Mukherjee, 2012). In the context of emerging market OSPs scholars have investigated the performance of OSPs from different perspectives, such as partnership quality, resource and talent management, top management social intelligence as well as the interplay between these factors (Chadee & Raman, 2012; Kong, Chadee, & Raman, 2012; Lahiri & Kedia, 2011; Lahiri et al., 2012; Raman, Chadee, Roxas, & Michailova, 2013).

Further, from the perspective of the service provider OSPs are seen to achieve a competitive advantage based on their ability to “manufacture” the service at a lower cost (Amiti & Wei, 2009; Dibbern, Winkler, & Heinzl, 2008; Farrell, 2005) and with comparable or better quality (Kenney et al., 2009; Lewin, Massini, & Peeters, 2009; Manning et al., 2008). The literature on OSPs has outlined several advantages to firms that are offshoring their services to emerging market locations. These (offshoring) advantages include strategic flexibility (Contractor et al., 2010; Kedia & Lahiri, 2007; Quinn & Hilmer, 1994), access to superior resources (Dossani & Kenney, 2007; Lewin et al., 2009; Zaheer et al., 2009), and resource complementarities (S. Mudambi & Tallman, 2010). OSPs or subsidiaries located in emerging markets are able to gain advantages not only as a result of the institutional differences (Manning, Sydow, & Windeler, 2012), but also based on their own specialized knowledge to offer the service (Baden-Fuller, Targett, & Hunt, 2000; Lewin, Couto, & Hamilton, 2007). At the same time, OSPs as well as their clients also incur costs such as coordination costs (Dibbern et al., 2008; Kumar, van Fenema, & Von Glinow, 2009) and experience relational difficulties (Ellram, Tate, & Billington, 2008). In order to be competitive, OSPs and their clients try to strike a balance between the

dispersion and disaggregation of the value chain (Contractor et al., 2010). Summing up, from the perspective of OSPs there is an expanding body of literature where scholars have attributed the success of the phenomenon to a range of theories with most of the literature using the transaction cost theory (e.g. Vivek, Banwet, & Shankar, 2008), with some exceptions using the RBV (e.g. Lahiri et al., 2012).

In the literature on globally organized firms it has been argued that disaggregation and dispersion also leads to an increase in task interdependence (Srikanth & Puranam, 2011). The client's decision to disaggregate and disperse a part of the value chain activity is also influenced by the ability of the OSP to reduce the configurational and task complexity (Larsen, Manning, & Pedersen, 2013) and coordination costs (Dibbern et al., 2008), as well as to increase the client's trust in the OSP (Levina & Vaast, 2008; Vlaar, van Fenema, & Tiwari, 2008). One of the ways in which all of the above can be achieved by OSPs is to internationalize operations in such a manner that they co-locate part of their operations at the client locations. Empirically, it has been observed that OSPs have been internationalizing rapidly since the late 1990s, when internet technology began supporting a globally distributed service operation (Manning, 2012). Many of these have internationalized to their client locations or to other low-cost countries. Whilst internationalization adds to their performance – by increased billing rates when expanding to client locations (Arora & Asundi, 1999) and by reduced resource cost when expanding to low-cost locations (Farrell, 2005) – it is worth looking at how this internationalization is facilitated. In the following, based on RBV, we hypothesize that cluster presence and quality certifications are two factors that facilitate this internationalization process. Figure 1 depicts our theoretical model.

Figure 1: Theoretical Model of the Role of Cluster Presence and Quality Certification in the Internationalization of OSPs



Cluster Presence

OSP are often based in emerging market locations to deliver services for clients in developed markets (Raman et al., 2013). Due to the competitive landscape, emerging market OSP are heavily dependent on international markets for their survival and performance. Since most of the offshoring advantage accrues out of the country-specific advantages of these firms, access to key resources such as human capital is a central success factor of these firms (Raman et al., 2013). Extant research in offshoring focuses on advantages of location, which provides access to rich infrastructure, or to factor market advantages – frequently in the form of concentrated resources within a geographical location (Graf & Mudambi, 2005). Furthermore, dense social networks are known to facilitate local transactions within specific geographies, since they offer broader sets of opportunities for knowledge spillover to occur and enable faster innovation development cycles (Dagnino & Mesquita, 2012). All of these point towards a specific role that home country advantages play in providing competitive advantage to OSPs, especially those originating in emerging markets. Extant literature (e.g. Cantwell & Mudambi, 2011; Manning et al., 2010;

Zaheer et al., 2009) highlights clustering as an important facilitator of firm-level competitive advantage or for entering new markets to source assets, ignoring the role clustering plays in enhancing home country advantage. We try to break away from this traditional view and hypothesize the role of cluster presence as a facilitator of the internationalization of OSPs from emerging markets.

Firstly, emerging market OSPs located in a cluster would have access to better quality resources and information in a cluster location as compared to other locations across emerging markets. While emerging markets are largely characterized by market imperfections and larger labor pools, it is difficult for OSPs from emerging markets to look for the right resources. Clusters provide service OSPs with better access to support services, high quality labor and other shared infrastructural facilities. Due to the better quality of resources within the clusters, firms located in clusters are able to achieve competitiveness in international markets. Secondly, clusters also act as a conduit of information (including market opportunities) for OSPs that are usually lacking an institutional environment with structured support for providing such information. Furthermore, some of the other key competitive advantages that clusters provide the firms with include information on opportunities abroad (Karagozoglu & Lindell, 1998), spillover effects from the presence of foreign firms in clusters (Birkinshaw & Hood, 2000; Shaver & Flyer, 2000), the presence of venture capitalists (Porter, 1998; Saxenian, 1990) and the presence of technological capabilities which enables firms to operate in international markets (Bartholomew, 1997). Finally, from a marketing perspective, clusters act as a signal to clients searching in international markets for firms offering offshoring services. This not only reduces the search cost for foreign clients, but also assures clients of easy access to resources by the offshore service provider firms (Manning et al., 2010). Based on the above reasons, we hypothesize that firms

locating to places with a larger number of similar firms as neighbors will have access to better resources in terms of information and knowledge spillovers, and therefore will be positively associated with internationalization as compared to those who are not in clusters. Therefore, we hypothesize,

H1: Cluster presence will be positively associated with the internationalization of emerging market offshoring service providers.

Certification

Quality certification provides two broad benefits to service providers. First, it helps in assessing the capabilities of a firm, especially those that reside within processes. Quality assessment, often performed by an external agency, provides an evaluation of the quality of the processes within the firm. Second, it is an important signal from service providers to their clients. It is difficult for clients to a priori evaluate the quality of services due to the nature of services. This is even more the case for offshoring services. Due to knowledge intensiveness and intangibility, information asymmetry exists between the service provider and the clients. In the absence of direct observability of service quality parameters, the service provider often resorts to the use of third-party quality certification (Gao, Gopal, & Agarwal, 2010). For these two reasons offshoring clients employ service providers either on the basis of their search, their past experience or the credibility these service providers possess. Furthermore, in the case of emerging market-based OSPs, there is often a lack of credibility enhancing mechanisms within the home country institutional environment (Khanna & Palepu, 2010) through which the emerging market OSPs can prove their capabilities for supplying the service to international clients. Therefore, clients of

emerging market-based OSPs are seldom able to differentiate between the various service providers when they search in emerging markets.

Extant empirical literature has argued that quality certification mechanisms are effective in reducing marketing costs for professional service firms (Podolny, 1993, 1994). Further, scholars also emphasize that the signaling mechanism would also help the professional service firms in hiring better resources as well as help service firms in charging a premium to their clients (Beatty, 1989; J. Krishnan & Schauer, 2000). We believe this to be true for emerging market OSPs too.

Quality certification is likely to have a positive impact on the internationalization of OSPs for the same reasons as outlined above. First, it is widely accepted that running an international firm is more complex due to the institutional differences surrounding the various locations where the firm is present (Dunning & Lundan, 2008). At the same time, quality certification, particularly as a measurement of organizational capabilities, requires the firm to possess necessary processes, including efficient deployment of resources, in order to run a globally dispersed firm. In other words, this means a quality certified firm is likely to be able to manage an internationally spread firm in a better manner than a non-quality certified firm. This positive impact could be due to reasons such as efficient processes, reduced losses occurring through miscommunication across the different locations, or the perceived nature of efficient processes by internationally dispersed clients (Larsen et al., 2013). Based on the reasons outlined above, the effects of quality certification on internationalization are only expected to be higher in OSPs because of the dispersed nature of its service operations.

Second, quality certification provides external legitimacy to the internationalizing firm. Institutional theory suggests that firms adopt certain practices – even if they are ‘institutional myths’ without any real economic benefits – to acquire legitimacy (Meyer & Rowan, 1977). Forces in the firm’s immediate environment prompt the adoption of these practices. DiMaggio and Powell (1983) suggest that firms adopt certain organizational practices under the net effect of institutional pressures and to increase the homogeneity of organizational structures within the institutional environment. Empirical evidence supports the existence of some of these institutional pressures on emerging market OSPs as well (Gopal & Gao, 2009; Kenni, 2000). Therefore, in order to establish international offices and target international markets, emerging market OSPs will benefit from international third party quality certification. Based on the above arguments, we hypothesize a positive effect of quality certification on the internationalization of emerging market OSPs. In other words, we hypothesize:

H2: Quality certification will be positively associated with the internationalization of emerging market offshoring service providers.

Enhancing OSP Performance

Extant literature has seen internationalization to be beneficial to firms (J. W. Lu & Beamish, 2001). The obvious gains from internationalization relate to scale and scope economies (Grant, Jammie, & Thomas, 1988; Kogut, 1985) which are achieved from larger volumes of sales and production made possible by revenue growth in the geographic extension of markets. Furthermore, although progressing on the internationalization curve (for e.g. FDI) involves further investments, there are more opportunities to be seized, thus leading to increased returns. Past literature, on SMEs in particular, have found a flattened U-shape relationship between

internationalization and firm performance (e.g. J. W. Lu & Beamish, 2001). This evidence in literature points towards initial investments followed by increasing returns to the firm during the early steps of internationalization (Hitt, Bierman, Uhlenbruck, & Shimizu, 2006). In the case of OSPs, it is widely expected that if the firms exhibit greater international presence – either at client locations or in other low-cost countries – they will be better placed to market their services in foreign markets (Weterings & Boschma, 2009). Scholars have further argued that client proximity will play a key role in the location choice decision of the firm (Ekeledo & Sivakumar, 1998). As clients of contemporary OSPs are increasingly offshoring critical functions from their value chain to offshore vendors, OSPs are often able to extract a price premium from clients by being present in the client’s country of choice. Therefore OSPs – such as IT firms that rely almost entirely on sales in foreign markets – are expected to yield a positive return on their internationalization. Theoretically, the two facilitators discussed above, cluster presence and quality certification, are likely to benefit the internationalized OSPs by further enhancing their performance. We hypothesize these relationships as follows.

Emerging market OSPs expand to international locations in order to create larger economic value for their clients. Whilst their global dispersion adds significantly to their operations, the firms also need to have a strategic location in their emerging market home base in order to maximize their basic cost advantage. Cantwell and Mudambi (2011) argue that clustered firms are considered ‘insiders’ with unique access to local resources as compared to non-clustered ‘outsiders’. This is likely to be the case especially in emerging markets, where firms located in clusters will have better access to shared resources as well as institutional support as an ‘insider’, and therefore possess a greater advantage compared to those located outside the clusters (Zaheer et al., 2009). In other words, their emerging market home country environment, although

marked with institutional voids, also provides heterogeneous institutional support at some locations. In order to maximize their basic cost advantage, internationalized OSPs with a higher degree of cluster benefit will have additional advantages for several reasons. Co-locating with similar firms will provide benefits such as access to resources and knowledge spillovers (Alcacer & Chung, 2007). Thus, whilst access to shared resources is likely to benefit internationalization, it is also expected to enhance the efficiency of internationalized OSPs. Based on the earlier definition of cluster presence (in our first hypothesis), we expect the impact of the performance of a firm with cluster presence to be stronger for an internationalized firm. We therefore expect a positive effect of cluster presence on the internationalization-performance relationship.

H3: Cluster presence will positively moderate the internationalization-performance relationship within emerging market offshore service providers.

One of the motivations for acquiring certification may also be increased process standardization and optimization. This would help firms in improving the operational efficiency of the OSPs. Firms would incur significant upfront costs of certification if the net benefit they are likely to achieve is positive. In other words, operationally inefficient firms are likely to attract more benefits from certification mechanisms than operationally efficient firms. Past studies on OSPs have demonstrated significant supply side benefits due to the implementation of CMM certification at the project level (Eickelman, 2003; Herbsleb, Zubrow, Goldenson, Hayes, & Paulk, 1997; Kenni, 2000; M. S. Krishnan, Kriebel, Kekre, & Mukhopadhyay, 2000). Few studies (e.g. Gopal & Gao, 2009) found no relationship between certification and performance (measured in terms of average costs).

Although the direct relationship between certification and performance may be ambiguous (King & Lenox, 2001; Terlaak & King, 2006), scholars have argued for certification to be a signal to clients (Gopal & Gao, 2009). We argue that the accreditation of process capability by international agencies will help internationalized firms – especially emerging market OSPs – to signal better quality and raise their billing rates. As a result, internationalized OSPs with quality certification will be able to attract more revenue than OSPs that have no quality certification. We therefore expect that internationalized firms with quality certification will demonstrate better performance. Thus, we hypothesize

H4: Quality certification will positively moderate the internationalization-performance relationship within emerging market offshore service providers

DATA AND METHODS

Research Setting

Academic scholars have documented the growth of the Indian IT offshore industry in great detail (e.g., Arora, Arunachalam, Asundi, & Fernandes, 2001; Athreye, 2005; Heeks, 1996; Kapur & Ramamurti, 2001). Although the industry has its origin in the late 1960s, the impetus for growth came after the economic reforms by the government of India in 1991. The initial growth of the Indian IT offshoring industry was primarily due to the availability of labor and the low capital requirement of IT firms. This was also aided by firms in the IT industry not requiring any production licensing from the regulators during the otherwise strict and closed regime in India (Athreye, 2005). The infrastructure required by software firms, such as communication links and power, was a constraint before 1991. Therefore, Indian IT firms initially adopted an on-site

approach to servicing their clients abroad, which entailed sending engineers to the client site. 90% of Indian IT industry exports were through an on-site delivery model before 1991, and internationalization was driven through the transfer of human capital to the client location.

After 1991, the growth of the Indian IT industry was also assisted by reforms including a reduction in import duties on hardware, the removal of export restrictions, and the availability of infrastructure (Athreya, 2005). Improvements in infrastructure such as technology parks and satellite links led to a greater increase in offshoring by clients. This led to an increase in offshore revenues from 5% in 1990 to around 40% in 1999 (Athreya, 2005). This was further aided by the expansion of engineering talent in India through self-financed colleges, particularly in western and southern India. This growth also led to the entry of a significant number of foreign players into India. Coupled with infrastructure improvements and a depreciated currency, Indian IT firms were able to move from the on-site delivery model to an offshore model during the 1990s. The availability of infrastructure as well as engineering talent in certain regions of India led to growth within the Indian IT offshore services industry.

The Indian IT industry provides an excellent setting for our study for two reasons. First, the firms from this industry are present in many cities/towns; studies in the Indian IT/ ITES industry have observed that there is a significant concentration of firms around Mumbai, Delhi (NCR), Bangalore, Chennai, Hyderabad, Pune and Kolkata (Arora, et al., 2001). The emergence of clusters across India has led to heterogeneity in the availability of resources to run operations. Second, to overcome the disadvantages as a result of the increased entry of players after 1991, and to signal superior ability to handle offshore projects, Indian IT firms started to gain international certification. Based on the two reasons highlighted above, it is evident that clustering and quality certification have played a significant role in the development of the Indian

IT industry. Therefore, we believe the industry provides an appropriate context for testing how such mechanisms enabled the internationalization process of Indian IT OSP firms that have established their presence in the global IT industry.

Sample

The data for our study was collected from the published directories of NASSCOM. NASSCOM collated information and published directories every two years until the year 2000, since then once a year. We digitized the directories published in hard-cover format for the years 1992, 1994, 1996, 1998, 2000, 2001, 2002 and 2003. The information in these directories pertained to the financial years 1990-1991, 1992-1993, 1994-1995, 1996-1997, 1998-1999, 1999-2000, 2000-2001 and 2001-2002 respectively. These directories have also been used by a cross section of studies (Athreye, 2005; Lamin, 2013). These published directories provide information on international target markets, locations of international offices, vertical segments, services provided, number of employees, revenues, exports, certification, legal structure, year of establishment, etc. In order to investigate the internationalization of emerging market OSPs, we excluded foreign firms, government-owned enterprises and joint ventures from our sample. Observations with missing information were also omitted. In addition, we also took a lag structure to take causality into account (Hitt et al., 2006; Lamin, 2013). As much of the Indian OSP internationalization took place during this period (Athreye, 2005), the setting provided an appropriate context to examine the antecedents of internationalization as well as the moderators of the internationalization-performance relationship. We used the information given in NASSCOM directories to construct our dependent and independent variables for this study.

Dependent Variables

Performance

Similar to studies that used the same dataset, we also measured performance as total sales per total employees (Lamin, 2013). This measure has also been widely used in earlier studies to measure the performance of service firms (Greenwood, Li, Prakash, & Deephouse, 2005; Lorsch & Tierney, 2002). As a services firm, the revenues are a reflection of the number of employees and the price the firm charges its clients. Furthermore, this measure also reflects the relative profitability of the firms. Malos and Campion (2000) demonstrate that there is a high correlation between revenues per employee and profit per partner across US law firms. Thus, we believe that revenue per employee is a good reflection of the measure of the profitability of Indian IT firms.

Internationalization

Hitt, et al. (2006) consider exports to total sales as a uni-dimensional measure of internationalization since it fails to reflect the breadth of internationalization (e.g. number of foreign countries served) and its depth (degree of commitment in each of the countries). Similar to recent studies on internationalization (Hitt et al., 2006; J. W. Lu & Beamish, 2001; Singla & George, 2013), our study considers internationalization a multi-dimensional construct. In this study we consider three dimensions of internationalization viz. *International market scope (m)*, *International foreign office scope (f)* and *country penetration (c)*. While the first and second dimensions measure the breadth of internationalization, the third dimension measures the depth of internationalization. Each of these dimensions is described below.

International market scope: NASSCOM directories contain information on the foreign markets served by each firm. In the directories some firms provide the name of the individual countries /

markets they serve, whereas a few others provide information on the geographical regions only (for example the Middle East, Western Europe, etc). Using the classification of geographic regions provided by the United Nations Statistics Division, we classify the target markets served by the firms into various regions (Lamin, 2013; Lamin & Dunlap, 2011). Similar to the approach followed by Sanders and Carpenter (1998), *International market scope* was measured as the number of regions targeted by a firm for exports divided by the highest number of regions represented in our sample in a given year.

International foreign office scope: Besides target markets / countries served, NASSCOM directories also indicate the presence of firms in various countries. The firms with foreign branch offices have a higher commitment compared to firms who just export. In our study we used the presence of a foreign office as an indicator of commitment (Hitt et al., 2006). Following Sanders and Carpenter (1998), our measure of *international foreign office scope* is the number of countries (where the firm has a foreign office) as a proportion of the highest number of countries represented in our sample in a given year.

Country penetration: Previous studies (e.g. Hitt, et al., 2006) take into consideration not only the breadth of internationalization but also the depth of internationalization. Many firms when internationalizing do not give equal importance to each country. To take into account the difference in strategic importance of each country we adapt the Herfindahl index as follows. Country penetration = $\sum p_i \log(1/p_i)$ where p_i refers to the number of foreign offices in a country divided by the total number of foreign offices of a firm. This value increases as a firm either establishes offices in additional countries or tries to give equal importance to every country where the firm is present (by changing the number of foreign offices).

When we performed factor analysis on the three dimensions we found that all three dimensions loaded on to one factor with large eigenvalue (1.77) and an explained variance (59.27%). The inter-item reliability of the three dimensions was good with standardized Cronbach's alpha of 0.64. Following the approach given by Sullivan (1994), a firm's degree of internationalization was computed by adding *international market scope*, *international foreign office scope* and *country penetration*. The theoretical range for each of these dimensions was from zero to one.

Independent Variables

Cluster presence

In line with other studies (Bresnahan et al., 2001; Gao et al., 2010), we have considered Bangalore as a cluster in the Indian IT services industry. Accordingly, firms that do not have their principal operations in Bangalore (i.e., the top management located outside clusters) would not be able to derive benefits from the cluster. Accordingly, we coded *cluster presence* as taking a value '1' for those firms whose headquarters is in Bangalore and zero otherwise.

Certification

IT service firms use a number of certification mechanisms as a signal to their international clients. Some of the widely accepted certification standards for IT service firms include ISO and CMM. Following Lamin (2013), we consider a firm certified if it has CMM or ISO certification. *Certification* therefore takes a value of 1 if the firm has either CMM or ISO certification.

Controls

It is well known that emerging economy firms face significant disadvantages such as liability of foreignness and newness during their internationalization. Further, they also face issues of legitimacy compared to firms from developed economies. Business groups are one of the mechanisms through which emerging economy firms might be able to mitigate these disadvantages. Firms affiliated with business groups can learn from the internationalization experiences of their other affiliates. Moreover, these firms also gain easier access to information, knowledge resources, markets and technology, thus reducing their liability of foreignness. Based on the extant literature (Carney, Gedajlovic, Heugens, Van Essen, & Van Oosterhout, 2011; Khanna & Palepu, 2000; Khanna & Yafeh, 2007; Lamin, 2013; Singla & George, 2013; Yiu, Bruton, & Yuan, 2005), we control for business groups as part of this study.

In line with a number of studies that examine the internationalization of firms (Hitt, et al., 2006), we control for size of the firm. *Size* is operationalized as a log of the total number of employees (Lu & Beamish, 2001). Further, we control age for identifying differences between more established firms and relatively new firms. *Age* of the firm is operationalized as the time elapsed (in years) since the year of establishment. Further, similar to Hitt, et al. (2006) and Hitt, Boyd, and Li (2004), we also control for prior performance since performance can impact the internationalization strategy of firms.

Model (or Analytical Approach)

Similar studies argue that the decision to internationalize is affected by unobserved factors, thereby introducing a potential bias due to sample selection and endogeneity (Hitt, et al., 2006). To avoid specification bias we used two stage Heckman procedure. In stage 1 we coded

internationalization as a dummy variable and used the same as a dependent variable in a probit model to compute the inverse mills ratio. Apart from the main variables (*certification* and *clustering*), we controlled for size, business group, age and trend in the stage 1 model. Internationalization for the stage 1 takes a value of ‘1’ if the firm has a foreign branch office and ‘0’ otherwise. For stage 1 model, our sample consisted of 794 firm year observations across 488 firms. The incidence of internationalization was 61%. We used the inverse mills ratio (computed from stage 1) as a control in the stage 2 model when estimating the relationship between internationalization and performance. This approach helped us remove any bias due to endogeneity and sample selection (Shaver, 1998). Following Heckman (1979), we used export intensity and performance in stage 1 and not at the stage 2 (Table 2 model 1). Our stage 2 sample consisted of 221 firm year observations across 98 firms. This reduction in the sample size occurred because of two reasons. Firstly, consistent with Heckman (1979) procedure, only those firms that internationalized were included in the stage 2. Secondly, since we require data of firms with two consecutive year observations (for causality), there was a further reduction in our sample. Apart from the direct and interaction terms, we also controlled for size, business group affiliation and age.

To estimate our model, we considered standard panel estimation procedures such as fixed and random effects specifications. However, the time period of consideration in our data set reduces to an average of 2.25 years per firm. Consequently, the power of panel data specifications would be significantly reduced (Wooldridge, 2002).. As an alternative, we estimated pooled ordinary least squares regression. To take into account the correlation between the error terms belonging to the same firm, we used robust clustered standard errors. This approach also helped us correct for

any potential heteroscedasticity (Wooldridge, 2002). To account for any unobserved time effects, we included a trend variable in our model.

Further, in order to correct for the potential problem of multicollinearity, we mean centered all the continuous variables following Aiken and West (1991). To overcome and minimize multicollinearity arising out of multiple two-way interactions, we applied residual centering procedure (de Jong, de Ruyter, & Wetzels, 2005; Lance, 1988; Zhang, Li, Hitt, & Cui, 2007). The residual centering procedure entails regressing each interaction term ($X1*X2$) on its constituent parts ($X1$ and $X2$) and using the residuals in final estimation (de Jong et al., 2005; Zhang & Rajagopalan, 2010).

RESULTS

The basic statistics for our stage 2 sample and correlation matrix are presented in Table 1. The average number of employees of the firms in our sample is 753 and the average age of the firms in our sample is 11 years. About 27% of the firms have presence in a cluster and 61% of the firms in our sample have either ISO or CMM certification, and the average revenue per employee of the firms in our sample is Rs. 3.16 million.

We estimated the antecedents to internationalization through a probit model since this takes into consideration the decision to internationalize by the firms. Table 2 presents the results of our probit estimation. Our hypotheses 1 and 2 suggested a positive relationship between *cluster presence* and *certification* on one hand and *internationalization* on the other. As shown in Table 2, we find support only for *certification* ($\beta=0.367$, $p<0.01$) affecting *internationalization* in a significant manner. In other words, while we find *certification* to positively influence *internationalization* of firms, we do not find support for *cluster presence* on internationalization.

Table 1: Basic statistics and correlations

		Mean	Std. Dev.	Min	Max	<i>Performance</i>	<i>Size</i>	<i>Age</i>	<i>Degree of Internationalization</i>	<i>Cluster presence</i>	<i>Certification</i>	<i>Business group Affiliation</i>
1	<i>Performance (in million Rupees)</i>	3.16	24.77	0.01	368.94	1						
2	<i>Size</i>	753.45	1882.08	7.00	16880.00	0.3961*	1					
3	<i>Age</i>	10.90	8.56	1.00	88.00	0.1502*	0.3368*	1				
4	<i>Degree of Internationalization</i>	0.66	0.38	0.05	1.46	0.3544*	0.5760*	0.1527*	1			
5	<i>Cluster presence</i>	0.27	0.45	0.00	1.00	0.0655	-0.0417	-0.0826	-0.1330*	1		
6	<i>Certification</i>	0.61	0.49	0.00	1.00	0.2361*	0.4044*	0.1900*	0.2883*	0.0073	1	
7	<i>Business group Affiliation</i>	0.16	0.37	0.00	1.00	0.1068	0.1453*	0.3024*	0.0736	-0.0697	0.1174	1

N = 221

* p < 0.05 (two-tailed test)

Table 2: Estimation Results for Internationalization

	(1) Internationalization	(2) Internationalization
<i>Size</i>	0.201*** (0.0368)	0.159*** (0.0394)
<i>Age</i>	-0.00561 (0.00729)	-0.00788 (0.00749)
<i>Business group affiliation</i>	0.232 (0.153)	0.213 (0.153)
<i>Past performance</i>	0.0738* (0.0412)	0.0725* (0.0414)
<i>Export intensity</i>	-0.228 (0.154)	-0.247 (0.155)
<i>Trend</i>	-0.0000163 (0.0527)	-0.0329 (0.0535)
<i>Certification (H2)</i>		0.367*** (0.112)
<i>Cluster presence (H1)</i>		-0.0834 (0.115)
<i>Constant</i>	0.265 (0.166)	0.264 (0.169)
Chi square	47.80 (6) ***	59.01(8)***
Log likelihood	-504.9	-499.5
<i>N</i>	794	794

Robust Standard errors in parentheses

* p < 0.05 (two-tailed test)

** p < 0.05 (two-tailed test)

*** p < 0.01 (two-tailed test)

*** p < 0.01 (two-tailed test)

Table 3 presents the results of our stage 2 estimation for moderating effects on the internationalization-performance relationship. There was a mild multi-collinearity between size and inverse mills ratio in stage 2 model estimation. Removal of size from the model to correct for

multicollinearity did not affect our results. Although, the inverse mills ratio appears to create a mild multicollinearity problem with our size variable, we retained the same in order to control for size effects. The statistical significance of Mills ratio ($p < 0.01$) indicates that sample selection bias could have been significant if we had not used Heckman two stage procedure. The results of the stage 2 model are hence free from any sample selection bias.

Table 3: Regression Estimates for Performance

	(1) Performance	(2) Performance	(3) Performance	(4) Performance
<i>Mills ratio</i>	-4.091*** (1.299)	-4.071*** (1.294)	-4.658*** (1.246)	-4.640*** (1.237)
<i>Size</i>	-0.161 (0.109)	-0.160 (0.109)	-0.206** (0.103)	-0.206** (0.103)
<i>Age</i>	0.0161* (0.00921)	0.0163* (0.00919)	0.0179* (0.00905)	0.0181** (0.00902)
<i>Business group affiliation</i>	-0.283 (0.211)	-0.282 (0.211)	-0.292 (0.211)	-0.291 (0.211)
<i>Degree of internationalization</i>	0.442** (0.208)	0.442** (0.207)	0.431** (0.194)	0.431** (0.192)
<i>Degree of internationalization squared</i>	0.408 (0.756)	0.375 (0.747)	0.309 (0.712)	0.271 (0.707)
<i>Trend</i>	0.0877 (0.0684)	0.0939 (0.0703)	0.0859 (0.0674)	0.0929 (0.0688)
<i>Cluster presence</i>	0.437*** (0.152)	0.436*** (0.151)	0.453*** (0.144)	0.451*** (0.143)
<i>Certification</i>	-0.680** (0.296)	-0.672** (0.294)	-0.798*** (0.287)	-0.790*** (0.284)
<i>Cluster presence x Internationalization</i>		-0.220 (0.355)		-0.249 (0.337)

(H3)

<i>Certification x Internationalization</i>			0.822**	0.829**
			(0.325)	(0.324)

(H4)

<i>Constant</i>	2.229**	2.194**	2.595***	2.559***
	(0.906)	(0.899)	(0.869)	(0.861)
Observations	221	221	221	221
Adjusted R ²	0.210	0.207	0.228	0.226

Robust clustered standard errors in parentheses.

* p < 0.10 (two-tailed test)

** p < 0.05 (two-tailed test)

Consistent with previous studies (e.g. Grant, et al., 1988; Hitt, et al., 2006; Kogut, 1985), we find a positive association between internationalization and performance. As shown in table 3, the coefficient for internationalization is positive ($\beta=0.431$) and significant ($p<0.05$). Further, we also hypothesized a positive moderating effect of *cluster presence* and *certification* on the *internationalization-performance* relationship. As shown in table 3, we find mixed support for hypotheses 3 and 4. The direct effect of *certification* on *performance* is negative ($\beta=-0.790$) and statistically significant ($p<0.01$), whereas the interaction of *certification* and *internationalization* on *performance* was found to be positive ($\beta=0.829$) and statistically significant ($p<0.01$). Thus, we find that certification positively moderates the performance of internationalized firms. However, we do not find evidence for a moderating effect of *cluster presence* on the internationalization-performance relationship, although, the direct effect of *cluster presence* on *performance* is positive ($\beta=0.451$) and statistically significant ($p<0.01$). Similar to previous studies, we find that age is positively related with performance. We also find relationship between size and performance of firms. While some may find this result surprising, our finding is consistent with Lu and Beamish (2001) who had also used number of employees as a measure of size. Additionally, we found that there is no evidence of non-linear relationship between

internationalization and performance (Hitt, Hoskisson, & Kim, 1997; Lu & Beamish, 2001) . We also found that affiliation with a business group does not impact performance for internationalized firms.

DISCUSSION

One of the primary motives of offshoring is reduced costs as well as availability of the resources for the firms from advanced economies. Much of the literature on the topic therefore focuses on benefits that firms from advanced economies realize by way of efficient offshoring (e.g. Bunyaratavej et al., 2008). Such investigations are often focused on the client-vendor relationship and even more so from the client perspective (Manning et al., 2008). While most studies highlight the importance of factors affecting the offshoring decision of clients, there is a need to look at the strategies of OSPs (Chadee & Raman, 2009). In this study we address this need by examining the internationalization strategy of OSPs. Our results demonstrate some interesting findings, mostly supporting our expectations. First, our findings are based on much broader (and we believe more robust) measures of internationalization. Second, we find that quality certification of emerging market OSPs has a positive effect on their internationalization. Third, we find that although cluster presence does not drive internationalization, it positively affects firm performance. Finally, although the direct effect of certification on performance is negative and significant, it positively reinforces the effect of internationalization on firm performance. Furthermore, clustering has a significant and negative effect on firm performance; however the effect turns insignificant when interacted with internationalization. We discuss each of our findings in the following.

First, our measure for internationalization as well as combinations thereof provides robust results for a positive internationalization-performance relationship of emerging market OSPs. We take into account not only the depth of internationalization (country penetration), but also the breadth (branch office and target market scope), thus providing a further contribution to the export-oriented literature on firm internationalization. The positive relationship between internationalization and performance hints at the benefits of international dispersion of offshoring activities, even at OSP level. The economic logic of OSPs – in general – is based on the cost arbitrage between the location where the service is ‘produced’ and where it is ‘consumed’. With the possibilities of further international dispersion of such activities, internationalization is likely to enhance OSP performance by further breaking up the value chain and by distributing activities to areas where they are most optimally performed. Our findings therefore support a need for globally dispersed OSPs as the next form of offshoring. Further, this may also enrich the literature that argues for internationalization as one of the ways in which OSPs benefit from the reconfiguration of complex activities to the most optimal locations.

Second, as expected, quality certification was found to positively affect internationalization. This finding is significant as legitimacy within the client base is a necessary condition for emerging market OSPs to gain a foothold in developed markets. We validate the perspective that having certification from international agencies enables OSPs to exhibit their ability to manage resources, and helps them internationalize by overcoming the lack of resources such as brand or other reputational aspects. This finding also extends the previous literature (Beatty, 1989; J. Krishnan & Schauer, 2000; Podolny, 1993, 1994), which has proposed a positive effect of certification on internationalization, to OSP internationalization. We believe that this finding is of particular significance as it is from the unique setting of OSPs

internationalization to developed markets, thus providing a way to overcome institutional voids in their home country environment (Khanna & Palepu, 2010) and to provide the much-needed legitimacy to developed market clients. We believe this to be an important step towards cementing the role of resource deployment and its legitimacy in the process of the internationalization of emerging market OSPs.

Third, we find mixed results with respect to the role of cluster presence in internationalization of OSPs. Our results raise questions on the resource-based argument for internationalization of OSPs, or the role that knowledge service clusters play in providing competitiveness to OSPs. Based on the setting of our study, we can infer that some of the key resources that would help emerging market OSPs perform better are obtained from neighboring firms in their home country. Whilst the traditional IB literature focuses on host country location advantages in order to internationalize, OSPs from emerging markets rely on comparative institutional advantages (Martin, 2014), rather than possessing a unique competitive advantage over other OSPs from the same home-country. Our finding brings into focus the role of home country location advantages as a generic resource that does not drive the internationalization of a particular firm. However, our results of cluster presence positively associated with firm performance support the widely-accepted argument that clusters provide access to a variety of resources which firms cannot access when they are located outside the clusters (Cantwell & Mudambi, 2011; Lorenzen & Mudambi, 2013). In other words, our results underline the importance of clustering as a mechanism through which OSPs access resources and capabilities which affect their performance (Lahiri & Kedia, 2009). This supports the role of clusters in providing “comparative institutional advantage” (Hall & Soskice, 2001: p. 37) to the firms. However, the lack of support for moderator effect could indicate the limits to the “institutional

competitive advantage” (Martin, 2014: p. 59) cluster presence can provide to internationalized firms.

Finally, and one of the most interesting finding of our study, is that quality certification positively moderates the internationalization–performance relationship in spite of a negative direct effect. In sum, our results point towards a counter-productive role of quality certification as far as the overall performance of the firm goes, but it increases the performance of internationalized firms. Our results for the direct effect of quality certification support other results that had found a negative effect of reputation on professional service firms and firm performance (e.g. Dick, 2000; King & Lenox, 2000). However, looking at these results in the context of OSP internationalization, we find that quality certification positively enhances the benefits of internationalization. Based on the results, we infer that although quality certification might be an investment in itself and also reduces profitability – probably due to too many processes and the routines it introduces in a knowledge intensive business – it does have a positive impact on the performance effects of OSP internationalization itself. This finding supports the view that while providing international or offshore services, having a certified process helps in managing the process more effectively. This efficiency-enhancing perspective, coupled with the aforementioned resource management perspective, boosts the role that quality certification can play in the internationalization process of OSPs.

CONCLUSION

Our study has several implications for research on OSPs. We believe that our results advance the offshoring debate from the OSP perspective. In particular, we address a recent call from offshoring scholars (Chadee & Raman, 2009) to investigate the strategy of OSPs and the

global dispersion of value chain activities. The OSPs that offer services on the basis of cost advantage internationalize to optimize their offering to the client. They do so in various forms, which we capture in our dependent variable of internationalization. Our findings further the literature by providing support for the facilitators of the internationalization of OSPs from emerging markets. We advance the literature on OSP internationalization by highlighting certification as an important facilitator of such internationalization. The expansion of emerging market OSPs to different countries, advanced economies in particular, is supported by quality certification as credible evidence that they can manage their processes well. Such a strategy of internationalization is somewhat different to that of traditional MNCs that exploit their ownership advantages in different countries. Secondly, our study uses an extensive set of measures, such as international market scope, international foreign office scope and country penetration, to measure the degree of internationalization of OSPs. Such comprehensive measurement directly addresses the call for using a multi-dimensional construct rather than a uni-dimensional construct such as exports (Hitt et al., 2006).

Our results also have implications for practitioners. Our findings imply that in order to perform OSP managers need to focus on the processes, on how they can have their processes assessed and achieve certification to establish their credibility. Further, in order to perform well, they should also choose a location where there are more neighbors, i.e. in clusters. Although the costs of locating in clusters are high, our results highlight that it is prudent for OSP managers to choose clusters to boost their performance. Offshore locations – especially clusters – provide better access to resources which drive the performance of OSPs. Secondly, even for a commoditized service such as software we find a positive effect of internationalization (foreign offices) on performance. Emerging market OSPs aspiring to be a globally dispersed organization

should not underestimate internationalization. Our study is unable to highlight a particular motive for internationalization, but we continue to believe that this could lie in proximity to client location or expanding to lower-cost countries. Both strategies can play an important strategic role in firm performance.

Our study is limited on several fronts. First, it is limited by the data available on Indian IT firms. Although we use a richer measure of internationalization, it could have been further improved with information about the number of employees or sales from each of the foreign offices. Further, with the limited time period we were not able to gauge the long-term effects of internationalization and performance. Finally, as the data is from a single industry, it is difficult to generalize results to firms that are concerned with the manufacturing of goods. Future research in the area would benefit by testing the framework across different sectors of trade, especially manufacturing firms.

To conclude, our study sheds new light on the facilitators of the internationalization of emerging market OSPs and how these perform. Coming from emerging markets, OSPs often experience resource scarcity and institutional voids, conditions that can be overcome by co-locating with similar firms. On the one hand, a positive effect of certification on internationalization and certification as a moderator of the internationalization-performance relationship support the use of resource acquisition and quality processes by OSPs when expanding internationally. On the other hand, a positive effect of clustering on firm performance underlines the cost implications of cluster location in emerging markets. These two findings together provide a step forward towards a theory of the internationalization of emerging market OSPs.

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Appendix 1

Basic statistics and correlations for Stage 1 model

Variable	Mean	Std. Dev.	Min	Max	<i>Internationalization</i>	<i>Size</i>	<i>Age</i>	<i>Cluster Presence</i>	<i>Certification</i>	<i>Past Performance (in million Rupees)</i>	<i>Export intensity</i>	<i>Business group affiliation</i>
<i>Internationalization</i>	0.61	0.49	0.00	1.00	1							
<i>Size</i>	374.57	1142.19	1.00	16880.00	0.2343*	1						
<i>Age</i>	8.61	6.85	1.00	88.00	0.0827*	0.3634*	1					
<i>Cluster presence</i>	0.22	0.41	0.00	1.00	0.0086	0.0932*	-0.0017	1				
<i>Certification</i>	0.35	0.48	0.00	1.00	0.2026*	0.4489*	0.2113*	0.0942*	1			
<i>Past performance (in million Rupees)</i>	1.11	2.09	0.00	28.59	0.1285*	0.3071*	0.2357*	0.1282*	0.2179*	1		
<i>Export intensity</i>	0.76	0.32	0.00	1.00	-0.0434	0.0577	-0.1748*	0.0614	0.0718*	0.0168	1	
<i>Business group affiliation</i>	0.11	0.32	0.00	1.00	0.0862*	0.1534*	0.1805*	-0.0164	0.0964*	0	-0.1551*	1

N = 794

* p < 0.05 (two-tailed test)