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Managing Indian IT professionals for global competitiveness: the role of human resource practices in developing knowledge and learning capabilities for innovation

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Abstract
Little is known about how human resource practices contribute towards the competitiveness of people based-knowledge intensive organisations in developing countries. This paper examines the role of human resource practices in developing knowledge and learning capabilities for innovation in the Indian information technology services sector. The study draws from the experience of a sample of 11 of the largest information technology service providers (ITSPs) in India and is based on in-depth interviews. The main finding suggests that the talent management architecture of ITSPs that comprises human resource practices and the development of knowledge and learning capabilities is the main drivers of innovation. A conceptual framework showing the link between human resource practices, knowledge and learning capabilities and innovation of ITSPs is developed followed by the limitations of the study and avenues for future research.
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> … this is a knowledge industry, [if] you take away people from here this won't work. You can't put in machinery instead of people. (ITSP-10)

Introduction

Despite the rapid emergence of a number of globally dominant information technology service providers (ITSPs) from India in the last decade, little is known about the sources of international competitiveness of these firms (Chadee *et al*, 2011). Over a relatively short period, India has become a preferred destination for off-shoring of IT services (Saini & Budhwar, 2004; Chadee & Raman, 2009). Today, India accounts for more than 50% of the global IT services market valued at more than US$180 billion annually and the IT off-shoring sector in India now employs more than 3 million people and contributes more than 6% to the national GDP (NASSCOM, 2011). Worldwide growth of the IT services sector since the early 1990s has also led to a global shortage of skilled IT specialists (Budhwar & Boyne, 2004). ITSPs in India are in particular vulnerable because graduates of India's elite educational institutes often seek employment overseas, such as in the United States, the United Kingdom

and Australia where salaries are much higher (Radha-krishnan, 2007). In the knowledge intensive sector, such as the IT services sector, the 'brain drain' of Indian scientific, technical and computer professionals to industrialised nations is problematic as this means knowledge and learning capabilities are channelled away from India (Khadria, 2001).

Knowledge and learning capabilities represent the abilities of an organisation to create knowledge and develop learning on an ongoing basis for organisational efficiency (Kong & Farrell, 2012). Organisations that have a high level of knowledge and learning capabilities are potentially more innovative and adaptive as they are able to build on and generate new knowledge, which is crucial for strategic renewal (Kong & Thomson, 2009). The loss of knowledge and learning capabilities through the loss of talented employees usually stifles the ability of firms to innovate for sustaining their international competitiveness. This is particularly relevant for Indian ITSPs, where employee turnover rates of as much as 40% are not uncommon (Thite & Russell, 2010).

Although there has been increased attention on the role of human resources in the competitiveness of firms (Guchait & Cho, 2010; Thite & Russell, 2010), the existing literature does not provide a comprehensive theoretical framework for knowledge intensive organisations, particularly in emerging markets, like India (Budhwar *et al*, 2006). The unique features of the Indian workforce in the IT services sector suggests that research specific to the Indian context should be of benefit to both practitioners and academics in the human resource management (HRM) field, particularly with the continuing shift of the global economy from manufacturing to knowledge-based service industries (Budhwar & Sparrow, 2002; Thite & Russell, 2010). One area where research is particularly lacking concerns the management of human resource practices and the development of knowledge and learning capabilities, which have largely remained disconnected fields of enquiry.

This study contributes to the literature in three ways. First, little systematic research has focused on exploring the role of human resource practices in developing knowledge and learning capabilities for organisational innovation in India and in emerging economies more generally. Second, research on the behaviour and performance of ITSPs remains underdeveloped despite their rapid growth in recent years (Chadee & Raman, 2009). This research draws from the experience of the 'stars' of the industry and suggests that senior executives in other ITSPs should strategically develop human resource practices with knowledge and learning capabilities as central piece for innovation and competitiveness. Third, and finally, the study helps to unveil the inner workings of the black box that guides HRM strategies on the development of knowledge and learning capabilities of IT professionals for innovation in Indian ITSPs. This is particularly important to Indian ITSPs but also to other knowledge intensive organisations in India and in other

developing countries in general because innovation and its strategy formulation are critical elements of global competitiveness in knowledge intensive organisations.

The rest of the paper is organised as follows. Next, a brief overview of the literature on human resource practices and their relationships to the development of knowledge and learning capabilities for innovation is provided. This is then followed by an outline of the research methodology used. The findings of the interview programme are presented in the fourth section followed with a discussion and development of a conceptual framework, which explains the link between human resource practices, knowledge and learning capabilities and innovation for competitiveness. The conclusion, limitations and avenues for future research are contained in the final section.

Human resource practices, knowledge and learning capabilities, and innovation

The resource-based view (RBV) of the firm highlights the importance of rare, valuable, costly to imitate, and non-substitutable resources and capabilities to the competitive advantage and performance of firms (Barney, 1991; Wernerfelt, 1995). Tacit knowledge has been recognised as a critical firm resource that fits the RBV criteria and has the potential to contribute significantly to competitive advantage (Kogut & Zander, 1992; Nonaka, 1994; Spender, 1996).

Knowledge originates in human beings and can only be created by humans but not by organisations (Nonaka & Takeuchi, 1995; Watson *et al*, 2005). Quinn *et al* (1996) postulate that most organisational value, whether financial or non-financial, is created by the competent members of an organisation who 'know-what', 'know-how', 'know-why' and 'care-why' and the competent members can be anyone from the top to the bottom levels of the organisation. In slightly different words, an organisation's ability to innovate, create and use the entrepreneurial energies of its people becomes critical in the knowledge economy (Bhatnagar, 2006). Knowledge, notably tacit knowledge, has become the central theme in the strategic management literature because it is a critical source of sustained competitive advantage (Ambrosini & Bowman, 2001; Kong, 2008). Organisations that are able to effectively utilise tacit and firm-specific knowledge are more likely to coordinate and combine their traditional resources and capabilities in innovative and distinctive ways, providing more value for their customers than their competitors (Teece *et al*, 1997). However, knowledge, including tacit knowledge, can quickly become redundant and lose its relevance, particularly in industries that experience rapid technological change such as the IT services sector, which is often characterised as having declining product life cycles and constantly changing business environment. Thus, knowledge is valuable only when it is frequently updated and refreshed (i.e., learn, unlearn and re-learn) to remain

relevant for the organisation (Hedberg, 1981; Lei *et al*, 1999).

Learning acts as a dynamic element in the creation of new knowledge and helps augment the knowledge stock of the organisation while also keeping its knowledge stock up-to-date and relevant (Kong & Farrell, 2012). Learning occurs in different ways including studying, interacting and practicing (Boal & Hooijberg, 2000). These ways of learning result in changes in 'know-what', 'know-how', 'know-why' and 'care-why' (Garud, 1997). Learning firstly takes place at the individual level but can be extended to group and organisational levels (Mintzberg *et al*, 1998). For maximum results, learning processes need to be aligned with one another in a coherent way so that the culture, systems, structures and procedures support the strategic orientation of an organisation (Crossan *et al*, 1999; Vera & Crossan, 2004). Organisations that create knowledge on an ongoing basis are likely to develop dynamic and unique capabilities that potentially underpin continuous organisational learning (Tsoukas & Mylonopoulos, 2004). These capabilities can be defined as knowledge and learning capabilities, which are distributed throughout an organisation and thus can occur at individual, group and organisational levels. Knowledge and learning capabilities assist organisations to recognise new information, assimilate it and apply it towards new ends, and are a continuous genesis of creation and recreation where gestalts and logical structures are added or deleted from organisational memory (Boal & Hooijberg, 2000). The capabilities often involve processes used offensively and defensively to improve fit between an organisation and its changing environments (Boal & Hooijberg, 2000). Accordingly, organisations are more likely to build on previous knowledge and generate new knowledge constantly if they embrace a high level of knowledge and learning capabilities (Chaturvedi & Chataway, 2006; Crossan & Apaydin, 2010).

Innovation is usually the outcome of new knowledge arising out of research and development activities and is driven by people. Innovation is essential for firms to survive in today's hyper-competitive global environment (see, e.g., Pillania, 2007; Crossan & Apaydin, 2010). For the purposes of this research, innovation refers to the ability of firms to introduce new services and processes that increase the overall profitability and competitiveness of firms. Innovation has also been found to be strongly correlated with organisational culture where trust, empowerment and continuous learning are key characteristics of innovative firms (Kong *et al*, 2009). Since knowledge creation and learning processes occur through superior execution of human tasks of sensing, judging, creating and building relationships (Ireland & Hitt, 1999), organisations must manage their human resources effectively as they hold the key for innovation and strategic renewal (Pfeffer & Ulrich, 2001; Bontis & Serenko, 2007). For this reason, the global IT industry shifted its focus from simply managing human resources
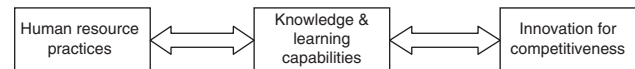

Figure 1   HR practices, knowledge and learning capabilities and innovation.

to managing talents strategically in the mid-1990s as a result of the severe shortage of skilled IT professionals globally (Schuler *et al*, 2011; Chadee & Raman, 2012). From a talent management perspective, organisations focus on the identification of pivotal positions that have the potential to differentially impact their organisations' global competitiveness (see, e.g., Boudreau & Ramstad, 2005; Collings & Mellahi, 2009). Thus, human resource practices with a strong focus on attracting, selecting, developing and retaining employees for pivotal positions can enhance innovation through superior knowledge and learning capabilities (Scullion *et al*, 2010). The relationship between human resource practices, knowledge and learning capabilities and innovation is shown in Figure 1. In sum, strategic human resource practices by firms likely lead to superior knowledge and learning capabilities that in turn make the firms more innovative and internationally competitive. In Figure 1, the two-way arrows also suggest that human resource practices themselves can be improved through superior knowledge and learning capabilities. Similarly, firms that are more innovative and competitive can also devote more resources to further support and develop knowledge and learning capabilities within the organisations.

Methodology and data
The main objective of the study is to investigate how human resource practices contribute towards the development of knowledge and learning capabilities of ITSPs in India. In order to meet the stated objective, semi-structured in-depth interviews with senior executives of a sample of 'star' ITSPs in India were used. The research was conducted using an emergent approach that enables an analysis and understanding of HRM issues from the perspective of the interviewees, rather than refocusing their perceptions through the lens of some existing theory or framework. Learning from the 'stars' also provides an industry wide perspective of best practice, which is valuable for wider generalisation of our findings to emerging ITSPs in other developing countries. For the purposes of this study, the 'stars' are defined as the 20 largest ITSPs (by revenue), as classified by the National Association of Software and Services Companies, India's main IT industry association (see the appendix). Together, the 20 largest ITSPs in India account for more than 85% of the industry's total revenue and have employees in more than 100 countries.

Potential participants from the top 20 ITSPs were contacted initially via email to invite them to participate in the study (Marshall & Rossman, 1999; Welch *et al*, 2002). During the initial contact, the purpose of the research

project, a background to the study and the data collection methods were clearly explained. Following initial contact and vetting of all participants, 11 ITSPs were selected to participate in the data collection exercise, the selection being based largely on the availability of participants and the logistics of organising the interviews on location. The 11 firms account for 64% of the sector's revenue. All the participants were in senior executive positions with key strategic management responsibilities within their organisations. Interviews were conducted at the respective ITSP headquarters in three main cities (Bangalore, Delhi and Mumbai) in India. All interviewees gave consent for taping the interviews, which lasted about 60 min each.

As recommended by Rubin & Rubin (2005), an interview guide was designed that contained a list of interview questions that reflected the nature of the information that the researcher wanted to uncover in an interview. Standard interview techniques and protocols were used such as employing questions to understand the complex behaviour of members in the ITSPs without limiting the field of enquiry. The approach followed a multiple-case research design (Yin, 2003). After collecting demographic information, the interview commenced with an unstructured 'grand tour' question: *Can you tell us about your company's history?* (Spradley, 1979, pp. 86–88). A further open-ended question was then asked: *Please tell us what you attribute the global success of India's ITSPs to?* Four structured questions were then asked to delve deeper into the role of human resource practices, knowledge and learning capabilities and innovation in the respective organisations: (1) *Please tell us more about the human resource practices in your organisation?* (2) *Please tell us more about how knowledge and learning take place in your organisation?* (3) *Please tell us what drives innovation in your organisation?* (4) *What are some lessons learnt in relation to human resource practices, knowledge, learning and innovation that you would like to share with other ITSPs which wish to become global leaders?* The last interview question was used to enrich the practical implications coming out of this research. Qualitative data were voice recorded and transcribed by one of the authors and content analysed. To maintain confidentiality, the names of all interviewees, their contact details and titles were omitted (Chell, 2004). Instead, each participant was assigned a code (e.g., ITSP-1, ITSP-2 … ITSP-11) and the numerical order was not indicative of interview chronology.

Issues in relation to research reliability and validity are vital to a successful qualitative research design (Maxwell, 2002). This is particularly important to a research project like this one given that sample selection, the conduct of interviews, and the analysis of interview transcripts and research notes are intrinsically subjective in nature. Accordingly, apart from interviews, sources such as mission statements, annual reports, newsletters, memoranda, proposals, progress reports and other internal documents as well as information available from organisational websites were used to collect relevant data. As a result of the document analysis, more detailed 'hard' facts were gathered to corroborate, enrich and challenge the interview data. This helps to further strengthen the reliability and validity of the research.

Main findings

An analysis of the available information from secondary sources and data from the interviews attributes the successful growth and dominance of Indian ITSPs in the global IT services sector to the availability of a large pool (over 2 million) of English-speaking graduates in science and technology every year who are ready to work at up to 80% less salary than their western counterparts (Bhatnagar, 2007; Guchait & Cho, 2010). As the IT services industry is a 'people-intensive' industry, the large pool of IT graduates has made India the 'electronic housekeeper' of the world (Budhwar *et al*, 2006) and a preferred destination for outsourcing IT services from firms in advanced industrialised countries (Chadee & Raman, 2009). As revealed from the interview data, the majority of the employees were highly committed to their jobs and highly committed employees are more likely to engage in 'extra-role' behaviours such as creativity or innovation (Mathieu & Zajac, 1990). Although it is apparent that the quantity and quality of employees constitute a critical element of success for Indian ITSPs, how this bundle of resources leads to competitiveness is investigated next.

Knowledge and learning capabilities

Having a large and highly committed workforce does not necessarily lead to success. A critical element of success is that this workforce should also be able to exploit knowledge and learning capabilities for innovation, which in turn can make the difference between success and failure. A unique feature of the success of the Indian IT services sector is that it was able to seize the opportunity from adverse events such as Y2K and 9/11. Y2K refers to the widespread speculation around 1998 that the world would experience a digital collapse due to system failures in the year 2000. India's IT specialists quickly seized the opportunity and established themselves as leading IT consultants providing solutions for the Y2K problem. 9/11 refers to the terrorist attack of 11 September 2001, which made information security a key issue for large companies. Indian IT service providers again seized the opportunity and built on their Y2K success to establish themselves as global information security service providers. Because of the industry's ability to extract knowledge and learn from adverse events, Indian ITSPs have been able to build resilience against adverse events. One of the interviewees described how his organisation utilised knowledge and learning capabilities to deal with one such adverse event:

> When the industry was going down because of 9/11, we didn't go down. We saw that everything [would] give knowledge and learning. In terms of processes and how we

handle customers give you knowledge and learning. And that's what helped us to grow for almost 40% for two quarters after that. (ITSP-7)

ITSP-7's comments can be interpreted in the following ways: 'seeing these [weak] processes' as 'know-what'; being able to understand why 'we were weak' as 'know-why'; 'thought of strengthening those processes' as 'care-why'. And finally, the ability to improve the processes involved a lot of 'know-how'. The above interviewee's comments were not an isolated one. The majority of the participants recognised the importance of knowledge and learning capabilities for organisational innovation in the sector. The following quotes illustrate the point further:

… we have a good set of [knowledge and learning] capabilities in migrating [business] processes. Our capabilities of managing these [processes], our capabilities of doing process improvements, improving the processes once they're migrated and making them more efficient, cutting down non-value added steps, making sure that our clients get more than just labour arbitrage. (ITSP-1)

In addition to this domain expertise … in extra reengineering process[es], the cost for me decreases and hence I can get back [to] you faster, so … we can do the same thing faster, better and cheaper. (ITSP-4)

In the above examples, 'improving business processes', 'adding values to clients' and 'extra re-engineering processes' were viewed as a form of seeking creative and innovative solutions to address problems. These knowledge and learning capabilities that embedded in the 'domain expertise' help the organisations to be innovative and sustainable.

This, however, does not mean that the Indian IT sector is growing without challenges. As put forth by the literature and confirmed by the interview data, the sector is constantly expected to reach for higher knowledge and learning capabilities in order to deliver better quality services (see, e.g., Bhatnagar & Sharma, 2005; Bhatnagar, 2006; Radhakrishnan, 2007). The following examples confirmed the findings from the literature:

[The] ability to move up the quality curve fast [is] very important …if the customer[s] start to [feel] hurt [due to] poor services then they're going to come down like a ton of bricks. (ITSP-6)

… the expectation to maintain the ability to constantly deliver that [quality services] is always high. (ITSP-9)

The *ability*, as described from the above quotes, can be understood as knowledge and learning capabilities that address customers' demand and expectations in terms of continuously delivering better quality services. This *ability*, as described by other interviewees, can lead to agility and novel ways of doing things:

… the challenge is to increase the speed to [the] market, to get more agility of the business [by serving] the customer[s] a lot better, and that [agility] provides the specific and

innovative solution … to [meet] those specific customer requirements. (ITSP-8)

I think the continuous challenge has been how to showcase that knowledge and learning [capabilities] as the industry grows and gets mature. (ITSP-9)

The HRM nexus

Rapid global growth in the IT services sector has meant that over the last few years the industry has experienced intensified competition for skilled IT specialists from both within and outside the country. While India has a large pool of human resources, not all of them are 'industry-ready' and 'rightly skilled' to Indian ITSPs (Bhatnagar, 2007) and competition exerts upward pressure on the labour market, which can erode firm competitiveness (Dayasindhu, 2002; Kuruvilla & Ranganathan, 2010). As unveiled from the interview data, this has become a challenge to Indian ITSPs as more than half of the participants expressed their concerns on the employability of graduates. The following quotes illustrate the point:

… these guys [graduates] are coming out of the Colleges and Universities, I believe [only] a fraction [could] fit into [the] IT [sector]. (ITSP-4)

… people coming out of Universities are not industry ready. You need to get people ready and trained so that they can be easily deployed on projects, rather than spending six months on training. (ITSP-10)

The challenges of managing human resources, particularly in relation to recruitment and compensation, in the IT sector were clearly stated in the following examples:

The graduates come out from the college and they search different companies for better compensation. Like [XXX IT firm] is offering double the salary. [So,] it is difficult to compete. (ITSP-8)

Competition [in recruitment] is very high, because everyone's offering good salaries and good career opportunities. (ITSP-10)

As evidenced from the interview data, recruiting and retaining experienced and talented employees was very challenging:

… ten years ago India's youth were struggling to get a job. Today, we are struggling to get good employees. I personally feel that we are facing a talent crunch today. (ITSP-4)

… the company invests about six months training in specific domain areas … and those people [IT professional and computer graduate] are getting picked up like hot potatoes in the market. (ITSP-8)

Although most of the interviewees recognised the significance of knowledge and learning capabilities, they also realised that there was an urgent need to continuously

develop these capabilities or they might lose their competitiveness in the global market:

> We have to provide value addition to the client[s] and it can only happen if our talent is at that level where we can provide value addition … I think our only weakness probably is our capabilities and I think we need to gear up for that. (ITSP-8)

As knowledge-intensive firms, Indian ITSPs look at new ways to improve capabilities to store, process, disseminate and apply knowledge relevant across different organisational functions (Chawla & Joshi, 2010). The interview data revealed that some of the Indian ITSPs developed HRM systems that helped capture knowledge and skills of employees in the organisations:

> We have 'Talent Management Systems' which captures all [employees' knowledge and skills]. We know exactly which employees have what skills, why are they employed, when do their employments come to an end and a forecasting system for the market. Based on that [knowledge], training department and human resource department can plan what they need to do. (ITSP-5)

> we have a portal called knowledge management portal … which is accessible to all employees and not to outsiders. So there is an instant sharing. They [employees] can see what's happening within the organisation and the expertise we have. (ITSP-7)

However, technologies, IT infrastructure, large-scale operations and capital are no longer competitive tools but rather 'entry criteria' (Bhatnagar, 2006). The following participants provided the following comments:

> Ultimately all graduates go to the same colleges. (ITSP-5)
> I think everybody has equal access to the technologies. So [competitiveness] depends on how you use the technologies to improve your day to day operational excellence and how you integrate the solutions in serving your customers. (ITSP-8)

The management of human resources, in particular IT professionals, was acknowledged to play an important role in the success and survival of ITSPs in an increasingly dynamic and competitive business environment as pointed out in the comments:

> I think the key facilitator that helps the industry to grow is … the mind power, skills and talent … the IT industry is all about people. (ITSP-9)

> … this is a knowledge industry, [if] you take away people from here this won't work. You can't put in machinery instead of people. (ITSP-10)

Knowledge and learning for innovation

For an emerging industry such as the Indian IT service sector, capturing knowledge is only the foundation and knowing how to utilise it is far more significant. As the following participants describe, the ability to learn and utilise knowledge for innovation contributes greatly to the success of their firms:

> … our [employees] came with extensive contacts [i.e. knowledge of clients] in the U.S. banking industry …. They [our employees] were able to use their contacts to get the initial business …. Next we learned to manage the service delivery very well and ensured that operations had gone as promised …. I think that [the ability to learn and utilise knowledge] is extremely important. (ITSP-6)

> We have a learning centre where everyone going to Japan has to have a six month intensive Japanese training. It's an immersion course where they speak in Japanese and live like Japanese, eat Japanese food, all sign boards in Japanese, so they're getting that culture. (ITSP-10)

ITSP-10's comments highlighted that the IT firm was very serious about learning new knowledge so that employees could become more innovative at work. However, learning must be related to the mission and objectives of an organisation and must be seen as the responsibility of all organisational members (Martin, 2000). More importantly, Indian IT firms must adopt strategic approaches for integrating new knowledge and learning capabilities in order to develop innovation competencies for tomorrow. The following interviewees argued strongly that innovation through knowledge and learning capabilities was the key for organisational survival and growth:

> I think they'll [customers will] expect a partner to know how to constantly engage, evolve and look for novel ways of improvement. (ITSP-6)

> Our mandate is not limited to what is there on the paper. If we have learned a new way to do something better we will be proactive and go and tell our clients. (ITSP-9)

From the above quotes, the ability to adopt *novel ways*, and be *proactive* was based on the knowledge and learning capabilities of its employees. Pillania (2007) argues that organisations must foster knowledge and learning capabilities for innovation for survival and growth as well as its development over time. As IT professionals are constantly required to work with people across sections within an organisation as well as those from outside, they need diverse knowledge and skills (Collins & Smith, 2006; Svetlik & Stavrou-Costea, 2007). Organisations that ensure firm-specific knowledge and learning capabilities to be developed for innovation are likely to gain sustained competitive advantage (Teece *et al*, 1997). The point was emphasised in the interview data:

> … if you're trying to sell technology to a bank you really must know the banking industry in that particular local market. I'm not talking about your theoretical macro knowledge but how a bank functions in Brazil, Canada, Korea or South East Asia. You need to know that to be able to design real solutions for these companies. (ITSP-9)

The following comments provide further insights that the development of knowledge and learning capabilities of IT professionals for innovation should be seen as a

more integral part of overall human resource strategies for Indian ITSPs:

> We still have advantage [of having IT professionals], but if we don't convert that advantage into some actionable [human resource] strategies then probably it will become a serious threat. (ITSP-8)

> so the key thing is how to retain your talent and what sort of opportunities you provide to your people to work on cutting edge technologies. (ITSP-5)

In addition, the interview data revealed critical information regarding the participants' perception of specific human resource practices on the development of knowledge and learning capabilities of IT professionals for innovation. Much research today in relation to employee development is focused on the effects of training functions on productivity and financial performance (Bassi *et al*, 2002; Evans & Clarke, 2010). As unveiled from the data, formal training was mainly utilised in the participating organisations but was largely for the purpose of transferring knowledge rather than promoting employees' innovative behaviours. When asked what could be done to enhance knowledge and learning capabilities for innovation in their organisations, many of the interviewees (70%) perceived that formal training was the tool to achieve the purpose. Formal training can be utilised as a significant human resource practice to facilitate knowledge and learning capabilities (Shadur *et al*, 1994) as it is 'instrumental in increasing the knowledge and competence of individuals' (Johannessen & Olsen, 2003). However, formal training is not the only method that can be utilised to leverage knowledge and learning capabilities. It is important to note that the key is to facilitate the development, application and dissemination of the crucial capabilities for innovation. The process of enhancing knowledge and learning capabilities does not always require a substantial amount of resources. Indeed, informal communications and knowledge sharing can also be effective techniques to facilitate the transfer of knowledge and learning in organisations. In the interview data, only 30% of the interviewees mention approaches other than formal training for facilitating knowledge and learning in their organisations. The following quotes highlight the point:

> We have something called Innovative Council to encourage employees to come up with innovative ideas. (ITSP-10)

> Every year we have these excellence awards to employees who gave innovative ideas. If a person gets an excellence award twice consecutively, one of the rooms is named after him [sic]. So every conference room has a name. (ITSP-7)

Venkata Ratnam (1995) suggests that rules regarding human resource practices such as recruitment, training, promotions and lay-offs in Indian firms are *ad hoc* in nature and are subject to easy manipulation by employers. The interview data revealed similar findings:

> The way we manage it [employee turnover] is to have a hiring engine which fires faster than the attrition engine as long as there are more people coming into the organisation than is leaving. (ITSP-6)

The above findings suggest that there is a general lack of HRM policies among Indian ITSPs on how human resource practices can be used to foster knowledge and learning capabilities of IT professionals for innovation. In this sense, ITSPs' full potential for creating new knowledge for global competitiveness is likely not being realised. This may be an area where the ITSPs need to focus.

Discussion

Drawing from the experience of 11 of the most successful and largest IT service providers in India, it becomes evident that in knowledge intensive and people-based industries, such as in IT services sector, human resource practices are critical elements for innovation. The IT services sector has experienced rapid growth and a global shortage of IT professionals has increased competition for talented IT employees thereby making HRM a strategic tool for sustaining competitiveness.

The findings from the interviews confirm that competitive advantage in knowledge intensive industries such as ITSPs can only be sustained by ensuring that knowledge and learning capabilities for innovation form an integral part of the human resource strategy of the organisation. The question then is 'how do ITSPs deal with HRM issues, in particular, in relation to capturing, utilising and storing the knowledge of IT professionals within their organisations?'

A main finding of this research is that all the ITSPs in the sample have well-developed talent management architectures supported by a strong organisational culture, which is conducive to knowledge creation, sharing and continuous learning. One of the major challenges for Indian ITSPs in terms of the management of IT professionals is the ease with which employees 'walk away' to rival companies in an increasingly competitive global market for skilled IT professionals. High employee turnover often represents a loss of tacit knowledge and learning capabilities (Loi *et al*, 2006). It has direct impacts on the financial costs associated with the loss of human knowledge investment, additional recruitment and training, and the negative effects on productivity (Guchait & Cho, 2010). Even if newcomers join an organisation, it usually takes a considerable time for them to pick up the knowledge that they need before they can proceed in any decision making, usually more than 6 months in the case of ITSPs in our sample. Shera & Page (1995) and Cohen (1999) argue that employees are likely to be more innovative and willing to share decision-making responsibilities in an empowered organisation because they feel less vulnerable, less helpless and more in-control of their own decision making as a result of a two-way
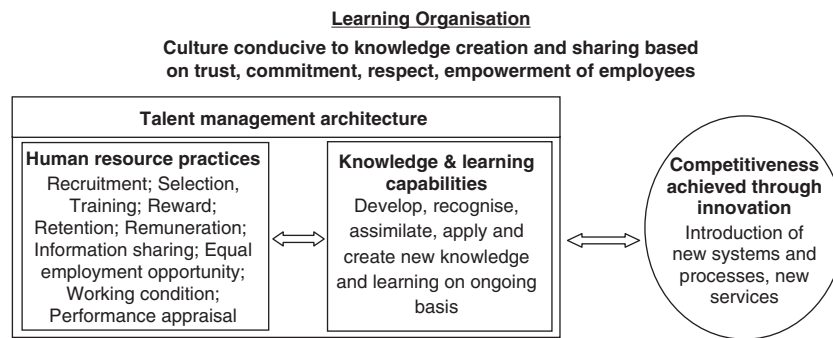
Figure 2 Human resource practices, knowledge and learning, and innovation: A conceptual framework.

communication process. All ITSPs display strong characteristics of learning organisations similar to those identified by Jamali & Sidani (2008) and Kong *et al* (2009) where strong elements of trust, commitment, respect and employee empowerment drive knowledge sharing and continuous learning that lead to innovation. These characteristics are very important to the ITSPs as they likely help to ease high employee turnover rates in the organisations by capturing and utilising existing tacit knowledge and creating new tacit knowledge for innovation.

The talent management architectures of ITSPs have two integral components; namely the management of human resources and the development of knowledge and learning capabilities. By identifying pivotal positions in the organisations (Collins & Clark, 2003; Chadee & Raman, 2012) and by strategically recruiting, developing and rewarding their employees, ITSPs are able to retain their best talents and thereby organisational tacit knowledge. Because the human resource practices and the development of knowledge and learning capabilities are related to each other, the role of human resource practices in an organisation cannot be treated independently (Guchait & Cho, 2010). Human resource practices and the development of knowledge and learning capabilities form an integral part of the talent management architecture, which together allow ITSPs to be innovative. From our sample of ITSPs, innovation is reflected through the capacity of ITSPs to introduce new systems and processes in order to be more efficient and cost effective in the delivery of new services and innovative solutions to their clients. Innovation also allows ITSPs to be profitable and plough some of their profits back into the organisation to strengthen their talent management architectures. The conceptual framework in Figure 2 shows the relationships between human resource practices, knowledge and learning capabilities and innovation of ITSPs in our sample.

Although research results to date generally agree that employee turnover has negative impacts on organisational performance (Benson, 2006; Wright & Kehoe, 2008; Guchait & Cho, 2010), some employee turnover can also be beneficial for organisations in terms of knowledge and

learning renewal by bringing in 'new blood'. Thus, management's overall focus should be to maintain a balance between employee turnover and the management and creation of knowledge and learning capabilities so that the overall knowledge stock is not depleted and learning occurs on an ongoing basis in the organisations.

While acquiring and developing new knowledge and learning capabilities can require significant efforts, more challenging is the decision to eliminate some knowledge stocks (Hitt & Ireland, 2002). If organisations do not invigorate their knowledge stocks through vigorous learning, they may lose their ability to explore new advantages (Hitt & Ireland, 2002). The elimination processes of knowledge stocks (often through layoffs or downsizing) must be carefully planned (whom to layoff) and executed (when to do). While human resource managers need to provide mechanisms that foster the development of knowledge and learning capabilities of IT professionals for innovation, they also need to ensure that mechanisms exist to ensure the capabilities are protected and transferred across different units within the organisation.

In short, it becomes meaningless for organisations to focus on the number of organisational members to be retained and trained, though the number may provide some insight. Ghoshal & Bartlett (1994) highlight that a key role of management is to create an organisational context within which knowledge and learning capabilities can be developed. Knowledge creation and learning transfer should be operationalised in terms of the generation of new ideas (Mitchell *et al*, 2009). Organisations are likely to be more innovative if they are able to facilitate and encourage their employees to continuously utilise their existing knowledge for new idea generation.

Conclusion, limitations and future research
This paper highlights the underdeveloped nature of research on human resource practices and knowledge and learning capabilities for innovation in the Indian IT context. The richness of the interview data provides valuable insights into knowledge management and learning as they relate to human resource practices for knowledge intensive firms in India. Against the established

norms of Indian IT firms and confirmed from qualitative interview data collected from 11 Indian IT senior executives, this study revealed that the development of knowledge and learning capabilities form an integral part of the talent management architecture because in knowledge intensive industries, employees are key to innovation. The results also suggested that Indian ITSPs needed to develop human resource strategies to manage their vast pool of specialised IT professionals and ensure that their talents remain industry-relevant and equipped with the necessary skill sets. ITSPs also need to ensure that knowledge and learning capabilities are developed as central piece for organisational innovation by integrating these in the talent management architecture of the organisation.

Although the research focuses on Indian ITSPs specifically, the findings in the paper open doors for future studies to conduct cross-national HRM research in relation to knowledge and learning capabilities for organisational innovation; and compare human resource practices in different organisations and different countries around the world at organisational and individual levels. An improved understanding of how human resource practices interact with knowledge and learning capabilities can lead to innovative strategies in business organisations. Thus, the findings provide significant insights to managers on how they may adapt human resource strategies in order to enhance innovation in their organisations.

As with any study, this research has several limitations. First, due to the small size sample, care should be taken in interpreting the findings. Second, the purposeful sample used means that the study draws from the experience of large firms only. Third, although the findings serve as guidance to ITSPs in other jurisdictions, differences in demographic, cultural settings, technologies, work processes, interdependence among employees, and the role of customers and rivals should be taken into consideration (Laursen & Mahnke, 2001; Batt, 2002).

The current study has raised a number of questions for further investigation. For instance, what are the relationship(s) between the bundle of human resource practices and knowledge and learning capabilities of IT professionals that lead to organisational innovation in ITSPs? Research to date has mostly described the link between selected human resource practices (such as recruitment, training and development, pay incentives) and knowledge and learning capabilities (Collins & Smith, 2006). However, what remains unclear is how a bundle of human resource practices influences the strategic HRM decision making of managing knowledge creation and learning ability in the organisations. Will knowledge and learning capabilities increase proportionally if resources are injected into one type of human resource practice? Does any type of human resource practice mediate or moderate the overall knowledge creation and learning ability? What is the direction flow of the relationship(s)? Can knowledge and learning capabilities have any influence to human resource practices and how?

In addition, another research avenue is to investigate the transformation of routine human resource activities towards a strategic approach to knowledge and learning capabilities. High attrition rates in ITSPs also present exciting research opportunities. Understanding the predictors of employee turnover in ITSPs, particularly from developing countries and from knowledge and learning perspective, has attracted renewed interest from both academics and senior executives (Loi *et al*, 2006). This research also uncovers a paradox in that there is general agreement among ITSPs that their employees are highly committed to the organisations while at the same time ITSPs experience high attrition rates. It will be informative for future research to investigate this paradox further. Finally, the role of Indian IT expatriates who 'went back home' to contribute to the industry's development remains under-researched. In particular, the role of Indian IT diaspora who have contributed significant high levels of knowledge and learning capabilities towards innovation in the industry could be the subject of further investigation.

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Appendix

Table A1 Profile of top 20 IT offshore service providers in India

Company	2009 Revenue (US$ million)	Nature of business: main services provided
● Tata Consultancy Services	6300	IT Services, IT Infrastructure Services, Enterprise Solutions, Consulting, Business Process Outsourcing, Engendering and Industrial Services, IT Software
● Wipro Technologies	5880	Consulting, Business Process and Technology Services, Enterprise Application Services, Infrastructure Management, Product Engineering Design and Product Support
● Infosys Technologies	4804	Consulting, Application Services, IT Infrastructure Services, Business Process Outsourcing, Software Development, Product Engineering
● HCL Technologies	2324	IT Applications, IT Infrastructure Management, Business Process Outsourcing, Product Engineering
● Genpact	1120	Broad Portfolio with Solutions in Finance and Accounting, Procurement and Supply Chain, Collections and Customer Service, Human Resource Services, Content Solutions, Risk Management, IT Infrastructure Services, Enterprise Application Services
● Mphasis (BPO)	945	Business Process Outsourcing: Customer Sales and Support, Finance and Accounting, and Human Resources Outsourcing services
● Patni Computers	656	IT services, Product Engineering Services, Infrastructure Management Services, Business Process Outsourcing
● I-flex Solutions	618	Software and Services Solutions Footprint for the Financial Services Industry
● L&T Infotech	424	Applications Development, Maintenance and Outsourcing, Business Process Services, Consulting, Infrastructure Management Services, Oracle and SAP Services
● Hexaware Technologies	230	IT Services – Application Development and Reengineering, Enterprise Applications, Infrastructure Development, Business Process Outsourcing, Consulting
● i-Gate Global Solutions	226	Complete to end services that integrate Consulting, Technology, Business Process Outsourcing and Provisioning
● Mastek	209	IP Led Services and Business Technology Services including IT Consulting, Application Development, Management and Security, Systems Integration
● NIIT Technologies	202	IT Services in Application Development and Management, Enterprise Solutions and Managed Services, Business Process Outsourcing
● EXL service Holdings	191	Transformation and Outsourcing Services in Multiple Industries including Insurance, Banking, Financial Services, Utilities, Transportation and Travel
● Polaris Software	N/A	Polaris offers software solutions for core banking, corporate banking, wealth and asset management and insurance
● Siemens Information Systems	N/A	Consulting, Software Deployment, System Integration, IT Infrastructure Management
● Perot Systems	N/A	These four companies have since been subject to takeovers and thus current data are not available
● Satyam Computers	N/A	
● Covansys	N/A	
● Flextronics	N/A	

Sources: Interview notes, annual reports, company publications and company websites.

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