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Guiding metaphors for knowledge-intensive firms

Strategic HRM practices and knowledge strategies

Guiding
metaphors

743

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Abstract

Purpose – The purpose of this paper is to conceptualize and empirically test the impact of strategic human resource management (HRM) practices on learning outcomes and also to examine whether this relationship is contingent on knowledge strategy in a sample of knowledge-intensive firms like software companies in India.

Design/methodology/approach – Data were collected through a questionnaire, and the software companies were chosen based on the listing in the NASSCOM annual report. A total of 32 companies participated in this research study, and the survey was conducted in two phases.

Findings – The universalistic approach revealed that organizational learning outcomes can be enhanced by focusing on specific individual HRM practices. Also, the fit between HRM practices and knowledge strategy revealed that the interaction effect between individual and knowledge strategy have had an increased impact on the learning outcomes.

Practical implications – HRM practices can be aligned to the targeted knowledge strategy of the organization and maximize specific organizational learning outcome to achieve sustained competitive advantage. Knowledge-intensive firms can measure their knowledge strategy and gauge whether it is complemented with HRM practices for better tangible and intangible outcomes.

Originality/value – The proposed model can benefit the firms to analyse the extent of contribution of HRM practices towards the organizational learning process. It also helps to understand how an organization can be productive by focusing on specific learning outcomes and establishing a tighter link between the select individual HRM practices and the defined knowledge strategy.

Keywords India, Human resource management, Organizational learning, Knowledge strategy, Learning outcomes, Sustained competitive advantage

Paper type Research paper

Introduction

The participation of emerging countries in the global market has been relentlessly competitive, especially, the number of companies from Brazil, Russia, India, China and South Africa have reportedly increased among the Fortune Global 500 (Warner, 2011). Despite the rapid growth, the major challenges of talent attraction and retention in the emerging markets can be attributed to the specific talent management practices focusing on employee development, total rewards, employee engagement, employee retention and the niche recruitment practices. During early 1990s, liberalization, privatization and globalization opened a new pathway for the Indian IT industry, and since then, human resources have been constantly regarded as a key resource to witness this exponential growth. These were highlighted with examples of Ready *et al.* (2008), with reference to HCL (a global IT company headquartered in India) and Tata



Consultancy Services (a division of Tata Group, India). Apart from the conventional attracting, training, retaining and motivating the employees, the human resource management (HRM) practices should enhance and provide a good learning culture where free transfer of knowledge takes place in the work environment. In one of the study conducted by Calvo and Garcia (2010), where in they attempted to study the specific HR policies to create a better conditions for “intensive knowledge” firms to maintain and sustain their senior talent with in organization. In the Indian IT sector, the focus is more on volume growth coupled with state-of-the-art systems and technology drives the need for increased organizational learning (OL) capability among the employees (Bhatnagar, 2006). In this context, the major challenge is to attract, motivate and retain like-minded individuals across the hierarchy to actively participate in the OL process. Most of the HRM and strategic HRM theories developed in the West cannot be generalized, the context-specific nature of HRM has been an increased debate in the literature, and hence it is extremely important to understand the complexity and uniqueness specifically in the Indian context (Bhattacharjee and Ackers, 2010; Krishnan, 2011). There are studies (Singh, 2003; Stumpf *et al.*, 2010; Nigam *et al.*, 2011) specifically on strategic HRM, which reported a positive impact on firm performance and employee perceptions in the Indian context. Further, some of the theoretical and empirical assertions linking strategic HR roles, OL and organizational performance in Indian IT firms (Bhatnagar and Sharma, 2005; Thite, 2004; Singh and Soltani, 2010) have been studied; however, an in-depth study is vital in aligning the strategic HRM practices with knowledge strategy (KS) and to analyse the impact on OL outcomes.

Therefore, the present study primarily focuses on a hypothesized model that presents antecedents and significances of strategic HRM practices, KS on learning outcomes. From the theories of strategic HRM, the direct (main) effects of individual strategic HRM practices on learning outcomes and the moderation effect of KS as moderator variable in the relationship between strategic HRM practices and learning outcomes are empirically tested. The remaining sections of this paper are arranged in the following structure. First, literature review of strategic HRM, KS and learning outcomes to discuss the model conceptualization. Second, the hypotheses of the research are presented. Third, the research design and methodology is discussed including detailed information on the research instruments, data and analysis performed in this study, followed by presentation of results. Fourth, detailed discussion on the empirical results and finally managerial implications, limitations and future directions are presented.

Theoretical background, conceptual model and hypotheses

Strategic human resource management and human capital

Evolution of the HR function across the globe has transformed completely from industrial relations to personal administration to strategic HRM (Thite *et al.*, 2012). Three different study perspectives can be construed in the HRM literature. First, the universal, individual HRM practices considered to be best practices and can be fitted in any kind of firms and not context specific. Second, a set of HRM practices or HRM configurations or patterns of HRM practices will have a significant impact to maximize the organizational performance. Third, contingency approach, the choice of HRM practices depends on the context in which organization strategy is aligned to macro-economic factors and specific business strategies towards competitive advantage. In contingency approach, choice of HRM practices may also be definite

based on the specific internal organizational strategy like organizational culture, learning or KS, cost optimization strategy, etc. Thus, strategic HRM have been interpreted in very many ways by researchers in the past, namely, developing organizational capability to adapt to changing environmental contingencies (Snell *et al.*, 1996), “fit” between strategies and HRM (Chadwick and Cappelli, 1999), relationship between human resource policies and practices and organizational outcomes (Richard and Johnson, 2001), “macro” HRM and “micro” HRM (Wright and Boswell, 2002), developing employee potential and strategic capability (Colbert, 2004), HR practices and organization culture (Bowen and Ostroff, 2004), specific HR practices and employee development (Becker and Huselid, 2011), external and internal fit (Boxall and Purcell, 2011) and variation in HR practices across employee groups (Clinton and Guest, 2013). In a nutshell, strategic HRM practices are deployed in firms to ensure a competitive advantage by focusing extensively towards the human resources and build the knowledge base for a sustained growth.

From the strategic HRM perspective, a set of integrative HR practices that support firm’s strategy produces a sustainable competitive advantage. Human capital (skills, knowledge and behaviour) and organization capital (routine, systems and tacit knowledge) are the most cited resources in the resource-based view literature, which are gained over time and makes it difficult for competitors to interpret and carry out (Barney, 1991). Shaw *et al.* (2013) argues that human capital can meet the criteria for sustained advantage, when HRM investments are aimed at increasing the knowledge and skills of the workforce and also to tightly integrate the human capital. Firm-specific HRM practices such as encouraging employee readiness and pursuing democratic managerial style effectively leverage knowledge assets (human capital) in to unique capabilities (Tzortzaki, 2014). Chiang *et al.* (2011) empirically tested and proved that high commitment HRM practices can foster knowledge sharing behaviour in employees through perceived organization support. To integrate the knowledge possessed by individuals with emerging market needs and trends, organizations encourage them to effectively use and enhance the knowledge through continuous learning and knowledge sharing process (ArunPrasad and Kamalanabhan, 2008).

Universalistic approach: strategic human resource management practices and organizational learning

The concept of fit among HR practices and with other organizational strategies may be important in defining and developing capabilities that facilitate OL (Prahalad, 1983). According to Panayotopoulou *et al.* (2003), one of the key declarations in defining and classifying the fit in strategic HRM is the approaches to fit – universalistic, contingency and configurational (Delery and Doty, 1996; Snell *et al.*, 1996; Boxall and Purcell, 2011; Clinton and Guest, 2013), some of the notable research studies (Budhwar and Varma, 2010; Nigam *et al.*, 2011) pertaining to these approaches in Indian context.

Universalistic or best practice approaches assert that certain independent – dependent variable relationships hold across the whole population of organizations – that is, some human resource practices are always better than others and all organizations should adopt them (Pfeffer, 1994). Considering the empirical studies and theoretical assertions on HRM Practices, Harel and Tzafrir (1999) identified six practices: recruitment, selection, compensation, employee participation, internal labour market and training that are consistently considered to be strategic and universalistic

HR practices. The above-mentioned HRM/strategic HRM practices and strategic HR roles have been researched in the Indian context (Singh, 2003; Agarwal and Thite, 2003; Thite, 2004; Paul and Anantharaman, 2004; Bhatnagar and Sharma, 2005; Bhatnagar, 2007). Specifically, in the light of OL, ArunPrasad and Kamalanabhan (2011) identified seven strategic HR practices focused on enhancing OL process in knowledge-intensive organizations. Based on the literature review (Delery and Doty, 1996; Harel and Tzafirir, 1999; Cabrera and Cabrera, 2005; Arunprasad and Kamalanabhan, 2010, 2011; Gill and Meyer, 2011; Bhanugopan *et al.*, 2013), seven major constructs were adopted in this study to measure strategic HRM practices which are detailed in the Methodology section.

OL stems from aligning the routine and specific organizational practices with definite HRM techniques (Pucik, 1988). Human resources are considered the most important asset of an organization, but very few organizations are able to extensively capitalize and achieve a tighter link between HRM practices, KS and OL (Ahmad and Schroeder, 2003). OL researchers in the past observed that learning orientation, individual and OL positively impacted the organizational performance. OL is concerned with improving the behaviour and capability of individuals, so that the organization can more effectively respond to the internal and external environment (Murray and Donegan, 2003). Bhatnagar (2007) studied and reported the tighter link between the OL with strategic HR roles and the organization commitment. Successful learning organizations are able to attract and retain best talent by entering into a psychological contract with their employees (Thite, 2004), which will motivate them intensely to acquire, generate and disseminate the required knowledge. LÓpez-Cabrales *et al.* (2011) found that HRM practices like selection and competency-based appraisals are directly associated with OL capability. Jiménez-Jiménez and Sanz-Valle (2013) observed that knowledge-oriented HRM system enhances knowledge dissemination and knowledge interpretation. According to Tzortzaki (2014), unique capabilities targeting customer satisfaction can be derived by effectively managing the knowledge assets through HR initiatives focusing on employee readiness and engagement activities. Thus, the HR practices bridge the gap between organizational practices and the learning culture, so as to bring people together to share their tacit knowledge.

Studies which focused on measuring the outcomes of OL or characteristics of learning organizations includes Yang (2003), Ketokivi and Schroeder (2004) and Bhatnagar and Sharma (2005). Griego *et al.* (2000) used the learning organization profile developed by Marquardt (1996) to determine the predictors of the learning organization. The learning outcomes are adopted from the learning organization profile (Marquardt, 1996). The five dimensions of the learning organization profile are learning dynamics, organization transformation, people empowerment, knowledge management and technology application. From the above theoretical discussion and to empirically test the possible relationship between strategic HRM practices and learning outcomes, the following hypothesis is proposed:

- H1. There is a positive relationship between strategic HRM practices and learning outcomes (1a learning dynamics; 1b knowledge management; 1c organization transformation; 1d people empowerment; and 1e technology application).

Contingency approach: strategic human resource management practices, knowledge strategy and learning outcome

Strategic HRM initially followed a simple contingency approach that examined the match of HR practices and strategy (Schuler and Jackson, 1987). According to Boxall and Purcell (2011), firms select HR practices that support competitive firm strategy (Arthur, 1992; Schuler and Jackson, 1987) or opt for firm strategies that match the firm's HR practices (Bowen and Ostroff, 2004). A contingency perspective (Delery and Doty, 1996; Huselid, 1995) draws a causal line from the HR policies and practices to the organizational performance metrics and allows for the moderation effects of strategy (Colbert, 2004). In this study, the KS is examined as a moderator variable in the relationship between strategic HRM practices and learning outcomes. The knowledge strategies are based on the characteristics of OL (Argyris and Schon, 1978; Yuthas *et al.*, 2004), and they are single loop learning, double loop learning and triple loop learning. According to Snell and Man-Kuen Chak (1998), Arunprasad and Kamalanabhan (2008) and Arunprasad (2015b), knowledge strategies are termed as consolidators (single-loop learning), transformers (double-loop learning) and co-inventors (triple-loop learning).

Consolidators (single-loop learning) refers to simple error correction (Snell and Man-Kuen Chak, 1998) process and quickly adapting to the environment (Georges *et al.*, 1999), i.e. making simple adaptations and taking corrective actions in any organization. Consolidators focuses more on incremental learning, which is of broad and shallow knowledge base (Bierly and Chakrabarthi, 1996). Argyris and Schon (1978) define it as identifying and correcting the errors for improvement within the given set of governing variables. According to Dodgson (1993), single-loop learning can be equated to activities that add to the knowledge base or firm-specific competences or routines without altering the fundamental nature of the organization's activities. McGill *et al.* (1992) portrayed as adaptive learning, and Arunprasad (2015a) defines it as corrective actions for recurring problems at work with prevailing policies and procedures. Transformers (double-loop learning) refers to learning to see things in totally new ways (Georges *et al.*, 1999), to identify and fix the cause behind the error, which involves a creative and innovative approach. The learning outcome is intended to change the firm's competency and knowledge base for radical learning and for longer duration (Snell and Man-Kuen Chak, 1998). The learning involves reframing, that is learning to see things in totally new ways. It involves questioning the role of framing and learning systems, which underlie actual goals and strategies (Argyris and Schon, 1978). According to Senge (1990), companies place emphasis on generative learning (McGill *et al.*, 1992) which focuses on experimentation with new alternatives. Arunprasad (2015a) defines it as a radical change in existing practices and policies so as to curb any kind of recurring system failure. Co-inventors (triple-loop learning) refer to Deutero learning (Bjerlov, 2002), which is to anticipate the possible fall outs even before they occur and equip accordingly, i.e. continuous and constant learning to exploit and adapt towards the dynamic ask of organizations. Argyris and Schon (1978) defined it as an organization's ability to learn and the need for continuous learning as a way to exploit and adjust to changes in society. There is no scope for corrective measures, whereas proactive measures are taken in a systematic way even before the problem actually occurs, so as to curb the complex situation or any kind of system failure at initial stages (Arunprasad, 2015a). Thus, the knowledge strategies as explained above are considered as the contingent factor in the relationship between individual strategic HRM practices and

learning outcomes; thus, the following hypotheses are proposed to test the conceptualization empirically:

- H2.* Consolidator strategy positively moderates the relationship between strategic HRM practices and learning outcomes (2a learning dynamics; 2b knowledge management; 2c organization transformation; 2d people empowerment; and 2e technology application).
- H3.* Transformer strategy positively moderates the relationship between strategic HRM practices and learning outcomes (3a learning dynamics; 3b knowledge management; 3c organization transformation; 3d people empowerment; and 3e technology application).
- H4.* Co-inventor strategy positively moderates the relationship between strategic HRM practices and learning outcomes (4a learning dynamics; 4b knowledge management; 4c organization transformation; 4d people empowerment; and 4e technology application).

Proposed model for the study

From the theories of resource-based view (Barney, 1991; Wernerfelt, 1984), the internal resource of the firm considered as a strategic resource is the knowledge possessed by the individuals (human capital). The organization (knowledge) strategies are targeted to manage the human capital to achieve sustained competitive advantage. This paper underpins on how integration of organization's resource (knowledge), practices and capabilities (strategic HRM practices) and KS contribute to the improved learning outcomes.

Figure 1 provides a summary of the hypotheses proposed above. The direct (main) effects of individual strategic HRM practices on learning outcomes and the moderation effect of knowledge strategies as a moderator variable in the relationship between strategic HRM practices and learning outcomes are theorized as above. In the next section, an empirical study is reported to test the proposed model.

Research design and methodology

Sample design and data collection

In accordance with the NASSCOM annual report (2013-14), Indian software companies are classified based on the annual turnover (in INR) as small scale (<500 million), medium scale (500-2,000 million) and large scale (>2000 million), the same categorization (Appendix 1) has been used to select the firms from NASSCOM listing. Based on the above classification, using stratified random sampling, software firms were selected. The survey was conducted in two phases. In the first phase, the head of human resources or vice president of human resource department or senior human resource manager were requested to participate in this study and respond to the questionnaire measuring KS. The response rate for the first phase was 36 per cent (of 89 companies, 32 useful responses were received from 32 software companies). The second phase of the target sample was software employees of the companies which participated in the first phase of this research survey. The criterion for selecting the software employees was that, they should have at least a minimum of two years of work experience in the software industry and one year in the current company. Software employees across different designation/levels (software engineers, senior software

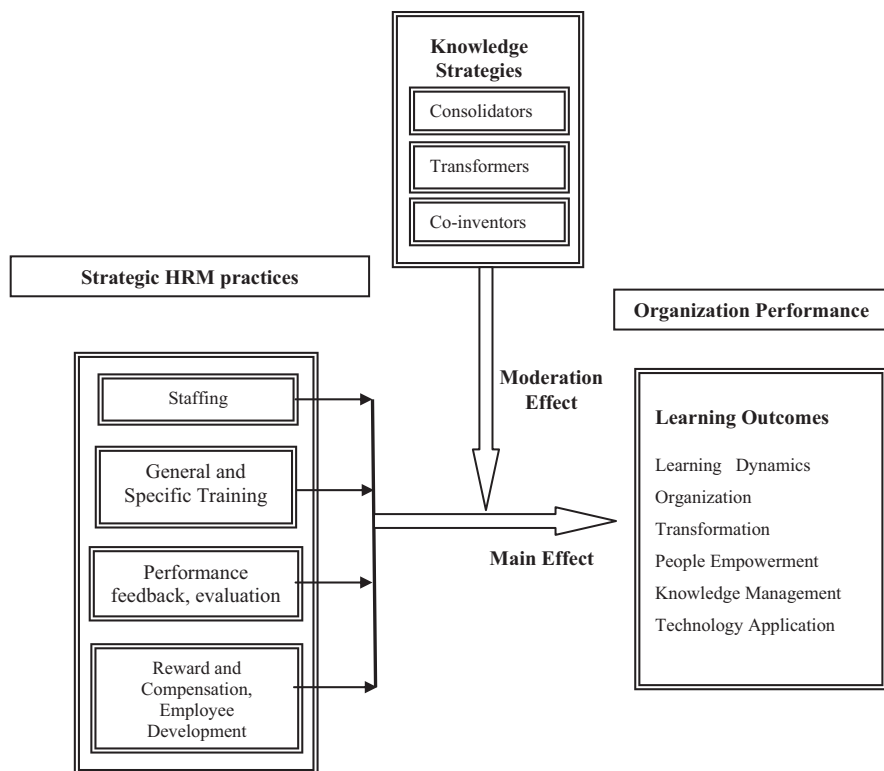


Figure 1.
Conceptual model
(strategic HRM
practices – KS-LO)

engineers, team leaders, project leaders and project managers) in each of the 32 software companies participated in this research study. Of 575 questionnaires that were circulated, 416 were received out of which 396 found to be useful. In all, 70 per cent of the respondents possess a total experience of 2-5 years, 20 per cent possess 6-10 years, 8 per cent possess 11-15 years, and 2 per cent possess 16-20 years in the software industry.

Instruments

Strategic human resource management practices. Measurement of strategic HRM practices considered in this study were personnel staffing, general training, specific training, performance evaluation, performance feedback, reward and compensation and employee development, all together consist of 47 items (Appendix 2) adopted from the study by Arunprasad and Kamalanabhan (2011) measured on a Likert's five-point scale. Sample items include "In addition to the technical skills, I was tested on my understanding and listening capabilities during the selection process" (staffing); "I am given training in job related (formal) communications to communicate with peers/supervisors" (general training); "I am given training to coach and support peers/subordinates in their personal development and career advancement" (specific training); "Contribution of novel and useful ideas is a key attribute measure in my performance appraisal" (performance evaluation) "The feedback of the performance appraisal

process does not help me in my career preferences" (performance feedback); "Incentives are provided based on my actual work outcome" (reward and compensation); "I am not given educational opportunities to improve in my career"(employee development).

Learning outcomes. Griego *et al.* (2000) used the learning organization profile developed by Marquardt (1996) to determine the predictors of learning organization, the same has been adopted in this study. Of 50 items in the learning organization's profile, 35 items (Appendix 2) were initially selected and modified slightly based on the appropriateness to the current study. Sample items include "Teams are encouraged to work and learn in groups" (learning dynamics); "I participate in learning events with suppliers, community, groups, professional associations and academic institutions" (people empowerment); "Learning is taking place without any fixed departmental boundaries" (organization transformation); "I seek information about products/processes for continuous improvement" (knowledge management); "I extensively use information technology (local area network, internet and intranet) to access information in my organization" (technology application). After testing for psychometric properties of the scale, all together 28 items were finally retained and measured on Likert's five-point scale.

Knowledge strategy. The measurement of KS was also taken from past empirical research (ArunPrasad and KamalanaSbhan, 2008) consisted of 21 items (Appendix 3) measured on Likert's five-point scale, defining three different levels of learning characteristics as KS, namely, consolidators, transformers and co-inventors. The organization learning characteristics defined by McGill *et al.* (1992) as adaptive learning for consolidators (routine behaviour, intra organization relationship and mechanistic action), generative learning for transformers (openness, systemic thinking, creativity, empathy, personal efficacy and systemic thinking) and deutero learning (ability to learn continuously to exploit and adjust to changes, sense making, reflection, insights and maturation) as defined by Bjerlov (2002) for co-inventors was used for describing the KS constructs. Sample items include "Employees in my organization are involved only in their day-to-day routine work" (consolidators); "my organization encourages employees to learn from success/failure and formulate further actions" (transformers); "my organization encourages joint responsibility among employees to discuss their job related issues" (co-inventors).

Control variables. Organization age, organization size and employee's level/hierarchy in the organization are measured and controlled. A number of strategic HRM researchers have found the size of the organization as one of the factors that show the differences in organization practices and performance (Snell and Youndt, 1995; Panayotopoulou *et al.*, 2003; Singh, 2003). Since 1970s, there has been a dramatic change in the growth of Indian software industry; hence, it is worthwhile and important to study the organizational practices and performance in the light of organization age; hence, organization age is measured and controlled that might have adequate impact on the organizational performance (learning outcomes). Likewise, the employee level/hierarchy is controlled to avoid the biasedness in the responses while measuring the perception of organization practices and performance.

Analysis and results

Psychometric properties of the scale: unidimensionality, reliability and validity

Confirmatory factor analysis was preferred to test the unidimensionality (Venkatraman and Grant, 1986) for each construct (Ahire *et al.*, 1996). A comparative fit index of 0.90 or

above for the model has been said to imply that there is a strong evidence of unidimensionality (Byrne, 1994), which complied with all the constructs used in this study. An alpha value of 0.70 or above is considered to be the criteria for demonstrating internal consistency of new scales and established scales, respectively (Nunnally, 1988), which fulfilled with all the constructs used in this study. The selection of the constructs is absolutely justified with reference to the existing literature in strategic HRM and organization learning, ensuring the content validity (Bohrnstedt, 1983).

Hypothesis testing

To analyse the impact of direct (strategic HRM practices) and interaction effect (strategic HRM practices \times KS) on the perceptions of learning outcome, moderate regression analysis in SPSS was used. First, we inserted the block of control variables, followed by the block of strategic HRM practices. The five sets of dependent variables were inserted one by one for the above-mentioned blocks, and the regression was run in two steps. This analysis enabled us to verify whether strategic HRM practices exert a direct effect on the perception of performance. As a third step to test the interaction effect for the analysis of contingency, in the third block, the interaction effect (strategic HRM practices \times KS) was introduced, and the regression was run for the dependent variables.

Table I presents the descriptive statistics of the principal variables and correlations among the variables of interest (Table II).

The results of regression analysis in Table III (Model 2) showed significant positive impact of strategic HRM practices on learning outcomes, namely, staffing ($\beta = 0.16, p < 0.01$), performance evaluation ($\beta = 0.28, p < 0.001$) on learning dynamics; staffing ($\beta = 0.12, p < 0.05$), general training ($\beta = 0.25, p < 0.001$) and performance feedback ($\beta = 0.19, p < 0.001$) on knowledge management; general training ($\beta = 0.36, p < 0.001$) and performance evaluation ($\beta = 0.14, p < 0.01$) on organization transformation; staffing ($\beta = 0.17, p < 0.001$), performance evaluation ($\beta = 0.21, p < 0.001$) and general training ($\beta = 0.18, p < 0.01$) on people empowerment; general training ($\beta = 0.18, p < 0.001$) and performance evaluation ($\beta = 0.22, p < 0.001$) on technology application. All of these results are consistent with our *H1a, H1b, H1c, H1d* and *H1e*.

As indicated in Table IV, regression coefficients for the interaction effect are obtained in Model 3(M3). *F*-values illustrate the significance of regression model that represents the moderation effects as explained by Baron and Kenny (1986). A significant increment of adjusted R^2 (Cohen and Cohen, 1983) in the M3 indicates the presence of moderation effects (Youndt *et al.*, 1996). As the moderated regression approach is a conservative procedure (Clegg and Wall, 1990), the significance level is fixed at 0.10 instead of 0.05 (Figure 2).

The interaction effect between KS and strategic HRM practices showed significant positive impact on learning outcome (Table III), namely, co-inventor strategy \times specific training on learning dynamics ($\beta = 0.10, p < 0.10$); consolidator strategy \times general training ($\beta = 0.12, p < 0.05$), consolidator strategy \times performance feedback ($\beta = 0.15, p < 0.05$), co-inventor strategy \times general training ($\beta = 0.15, p < 0.05$) on knowledge management; transformer strategy \times performance feedback ($\beta = 0.1, p < 0.10$), co-inventor strategy \times specific training ($\beta = 0.12, p < 0.05$) on people empowerment. All of these are consistent with our *H4a, H4b* and *H4d*; however, moderation effect had a negative impact on technology application, and no significant impact on organization transformation.

Table I.
Correlation

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Staffing	1														
General training	0.383**	1													
Specific training	0.322**	0.584**	1												
Performance evaluation	0.329**	0.218**	0.12*	1											
Performance feedback	0.322**	0.334**	0.208**	0.580**	1										
Reward & compensation	0.286**	0.294**	0.335**	0.362**	0.335**	1									
Employee development	0.198**	0.345**	0.358**	0.284**	0.385**	0.526**	1								
Consolidators	0.019	0.012	-0.02	0.036	-0.03	-0.02	-0.03	1							
Transformers	-0.30	0.014	0.04	-0.02	0.009	-0.02	0.044	-0.36**	1						
Co-inventors	-0.01	0.121**	0.141**	0.014	0.100*	0.094*	0.127**	-0.02	0.267**	1					
Learning dynamics	0.32**	0.272**	0.211**	0.411**	0.359**	0.226**	0.209**	0.032	-0.02	0.059	1				
Knowledge management	0.310**	0.408**	0.265**	0.285**	0.385**	0.206**	0.267**	0.047	-0.12*	-0.003	0.483**	1			
Organization transformation	0.244**	0.390**	0.163**	0.269**	0.287**	0.174**	0.151**	-0.02	-0.14*	0.062	0.493**	0.546**	1		
People empowerment	0.311**	0.311**	0.187**	0.289**	0.261**	0.174**	0.142**	0.03	-0.02	0.178**	0.433**	0.910**	0.546**	1	
Technology application	0.181**	0.246**	0.117**	0.298**	0.268**	0.091*	0.132**	0.456**	0.424**	0.320**	0.495**	0.485**	0.491**	0.544**	1

Notes: ** $p < 0.01$; * $p < 0.05$

Table II.
Variables and descriptive statistics

Variables	No. of items	Mean	SD	Cronbach's alpha (α)	Confirmatory fit index (CFI)
Staffing	7	3.26	0.54	0.78	0.93
General training	8	3.23	0.59	0.75	0.93
Specific skill training	6	3.02	0.65	0.72	0.90
Performance evaluation	8	3.4	0.51	0.73	0.94
Performance feedback	7	3.33	0.55	0.76	0.95
Reward and compensation	7	3.01	0.53	0.73	0.94
Employee development	4	3.04	0.65	0.74	0.99
Consolidators	5	2.58	0.79	0.78	0.97
Transformers	9	4.05	0.44	0.72	0.95
Co-inventors	7	3.02	0.46	0.77	0.90
Learning dynamics	4	3.74	0.54	0.72	0.97
Knowledge management	6	3.61	0.55	0.72	0.91
Organization transformation	7	3.61	0.45	0.71	0.90
People empowerment	6	3.57	0.5	0.72	0.91
Technology application	5	3.79	0.55	0.76	0.94

Discussion

Interpretation of research findings

This study empirically examines the issues that past research has seldom tested. It contributes to the literature by showing several new pieces of empirical evidence. In an extremely competitive international software market, Indian software firms emphasize the quality of procedures and human resources to gain a competitive advantage (Arora and Athreye, 2002). The outcome of this study indicate that strategic HRM practices are significantly and positively related to learning outcomes. Thus, the finding corroborates with observation of Thite *et al.* (2014) that Indian multinationals in the IT sector have leveraged on their HRM excellence from their inception in an industry where intellectual capital is the key ingredient of success. Learning culture has been emphasized and instilled in organization by leveraging on intellectual capital in and around the firms to feed forward human capital for a sustained competitive advantage. The observed results are also consistent with some theoretical assertions of previous studies (Bennett and O'Brien, 1994; Yong, 2000; Gardiner *et al.*, 2001; Fong *et al.*, 2011; Chiang *et al.*, 2011; Scully *et al.*, 2013; Swart and Kinnie, 2010, 2013; Hooi and Ngui, 2014; Thite, 2014).

Staffing and performance evaluation are the factors that significantly contributed to learning dynamics in software firms. It is observed that the selection criteria as part of the hiring process included test for learning ability of individuals, decision-making approach, a desire to share tacit knowledge and readiness to take additional responsibility. These results endorse the empirical and theoretical assertions of previous studies (Swart and Kinnie, 2013, 2010; Yong, 2000) wherein they emphasized multiskilling, versatility and creativity as a set criteria during the recruitment and selection process. The performance evaluation of outcome based, career growth, individual performance, contribution of novel and useful ideas in the workplace and ability to coach and support others had a greater impact on the learning dynamics. Performance evaluation contributes to individual and team level learning, which is in line with some of the previous research conclusion (Swart and Kinnie, 2013, 2010; Yahya and Goh, 2002).

Table III.
Hierarchical linear
regression analyses

Variables	Learning dynamics		Knowledge management		Organization transformation		People empowerment		Technology application	
	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
<i>Control</i>										
Size	0.02	0.12*	-0.11	-0.02	-0.03	0.06	-0.10	-0.01	-0.07	-0.01
Age	0.12*	0.02	0.22***	0.09	0.13*	0.03	0.25***	0.17**	0.26***	0.19**
Levels	-0.05	-0.03	0.00	0.02	0.08	0.08	0.07	0.08*	-0.05	-0.04
<i>Independent</i>										
SF		0.16**		0.12*		0.07		0.17***		0.04
GT		0.08		0.25***		0.36***		0.18**		0.18***
STR		0.05		0.02		-0.1*		0.02		-0.03
PE		0.28***		0.07		0.14**		0.21***		0.22***
PF		0.09		0.19***		0.09		0.01		0.06
RC		0.03		-0.03		0.03		-0.03		-0.06
ED		0.00		0.07		-0.04		-0.02		0.01
Adjusted R^2	0.01	0.24	0.02	0.24	0.02	0.22	0.04	0.19	0.05	0.15
ΔR^2		0.23		0.22		0.20		0.15		0.10
F	3.12*	16.12***	4.55*	16.77***	3.54*	13.39***	8.04***	12.74***	8.87***	9.40***

Notes: $n = 396$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; Values in tables are standardized beta coefficients. Model 1 includes only the control variables listed and Model 2 includes the control & independent variables; SF-Staffing, GT- General Training, STR - Specific training, PE-Performance evaluation, PF - Performance feedback, RC- Reward and compensation, ED - Employee development

Variables	Learning dynamics			Knowledge management			Organization transformation			People empowerment			Technology application		
	M1	M2	M3	M1	M2	M3	M1	M2	M3	M1	M2	M3	M1	M2	M3
<i>Control</i>															
Size	0.02	0.13*	0.12*	-0.10 ^a	-0.01	0.00	-0.03	0.06	0.05	-0.1	0.01	0.02	-0.07	-0.01	0.01
Age	0.1 ^a	0.03	0.05	0.22***	0.11*	0.1 ^a	0.13*	0.06	0.06	0.25***	0.21***	0.20**	0.26***	0.24***	0.22***
Levels	-0.05	-0.02	-0.05	0.00	0.03	0.03	0.1 ^a	0.09	0.09*	0.07	0.10**	0.11*	-0.05	-0.01	-0.02
<i>Independent</i>															
CO	0.01	0.01	0.02	0.05	0.05	0.05	0.01	0.00	0.01	0.03	0.01	0.03	0.11*	0.11*	0.11*
TF	-0.07	-0.10*	-0.10*	-0.06	-0.06	-0.1 ^a	-0.10*	-0.10 ^a	-0.10*	-0.2***	-0.2***	-0.2***	-0.08	-0.08	-0.10 ^a
CI	0.03	0.06	0.06	0.04	0.04	0.1 ^a	0.12*	0.11*	0.12*	0.10*	0.10*	0.13**	0.08	0.08	0.12*
SF	0.16***	0.21**	0.21**	0.12*	0.12*	0.12*	0.08	0.07	0.08	0.17***	0.17***	0.17***	0.04	0.04	0.03
GT	0.08	0.09	0.09	0.24***	0.24***	0.24***	0.35***	0.35***	0.35***	0.17***	0.17***	0.17**	0.16***	0.16***	0.16**
STR	0.05	0.07	0.07	0.02	0.02	0.04	-0.1 ^a	-0.06	-0.06	0.02	0.02	0.05	-0.02	-0.02	-0.01
PE	0.27***	0.29***	0.29***	0.06	0.06	0.10*	0.14*	0.14*	0.16**	0.20***	0.20***	0.25***	0.21***	0.21***	0.26***
PF	0.10	0.08	0.08	0.19***	0.19***	0.17**	0.08	0.08	0.09	0.02	0.02	0.03	0.06	0.06	0.05
RC	0.03	0.02	0.02	-0.03	-0.03	-0.06	-0.01	0.03	-0.01	-0.03	-0.03	-0.10	-0.06	-0.06	-0.08
ED	0.00	0.00	0.00	0.07	0.07	0.06	-0.04	-0.04	-0.04	-0.02	-0.02	0.00	0.01	0.01	0.02
<i>Interaction</i>															
CO × SF			-0.08			-0.09			-0.05			-0.04			-0.05
CO × GT			0.09			0.12*			0.09			0.07			0.09
CO × STR			-0.01			0.02			0.07			0.1			0.04
CO × PE			0.05			-0.10*			0.01			-0.1 ^a			-0.10
CO × PF			-0.03			0.15*			-0.03			0.02			0.03
CO × RC			-0.04			-0.04			-0.06			0.03			0.02
CO × ED			-0.01			-0.10			0.01			0.01			0.01
TF × SF			-0.08			0.05			0.06			0.04			0.03
TF × GT			0.02			-0.07			-0.01			0.01			-0.10 ^a

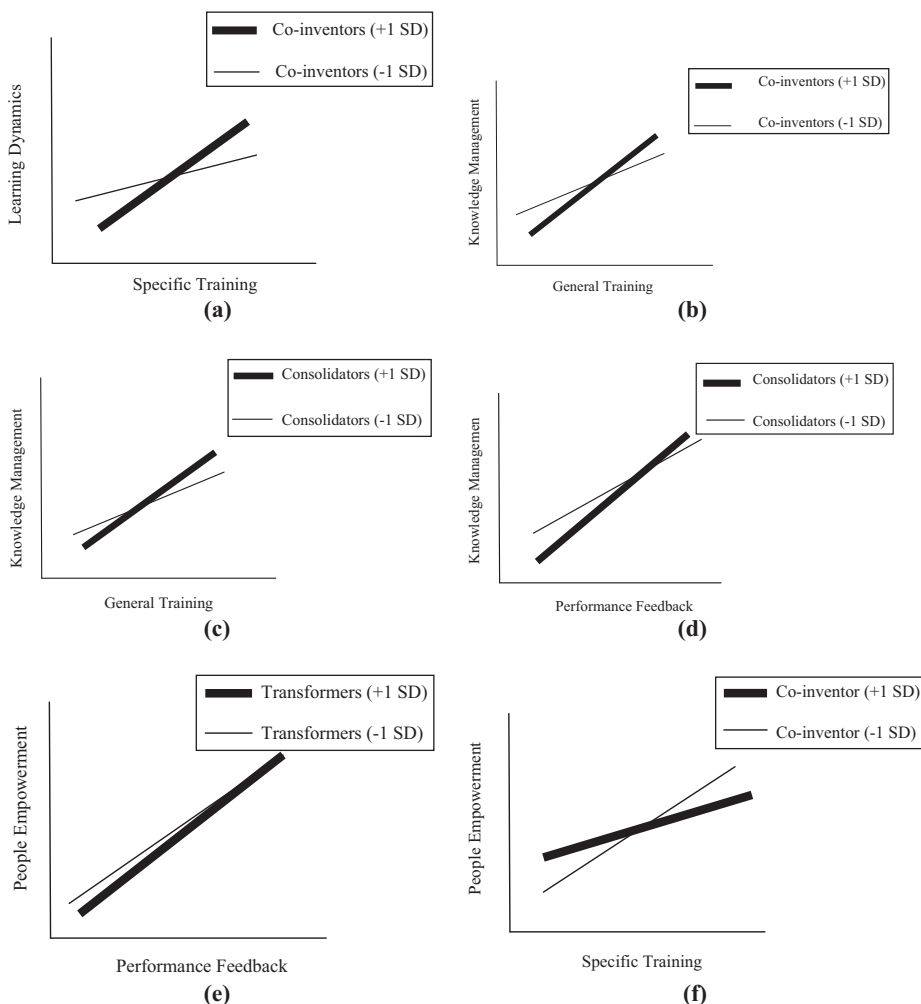
(continued)

Table IV.
Moderate
(hierarchical)
regression analyses

Table IV.

Variables	Learning dynamics			Knowledge management			Organization transformation			People empowerment			Technology application		
	M1	M2	M3	M1	M2	M3	M1	M2	M3	M1	M2	M3	M1	M2	M3
TF × STR			-0.07			0.07			0.07			0.09			-0.02
TF × PE			0.03			-0.03			-0.04			-0.1*			-0.05
TF × PF			0.10			0.05			0.05			0.10 [†]			0.07
TF × RC			-0.04			-0.02			-0.06			0.04			0.10
TF × ED			-0.04			-0.09			-0.02			-0.06			-0.07
CI × SF			-0.04			-0.06			-0.10			-0.07			-0.04
CI × GT			0.01			0.15*			0.01			-0.03			0.07
CI × STR			0.10 [†]			-0.07			0.03			0.12*			0.03
CI × PE			-0.04			-0.06			0.02			0.09			-0.02
CI × PF			-0.03			0.00			0.07			0.00			0.01
CI × RC			-0.02			-0.02			-0.06			-0.2 ^a			-0.02
CI × ED			0.08			0.03			0.04			-0.01			0.00
Adjusted R ²	0.013	0.236	0.254	0.021	0.246	0.271	0.015	0.208	0.211	0.041	0.212	0.248	0.046	0.164	0.185
Δ R ²		0.223	0.018		0.225	0.025		0.193	0.003		0.236	0.171		0.118	0.021
F	3.119*	12.568***	5.904 [†]	4.546**	13.287***	6.333*	3.539*	10.90***	4.852	8.035***	11.15***	5.753**	8.871***	8.384***	4.258 [†]

Notes: *n* = 396; [†]*p* < 0.10; **p* < 0.05; ***p* < 0.01; ****p* < 0.001; values in tables are standardized beta coefficients; model 1 includes only the control variables listed and Model 2 includes the control & independent variables in addition, Model 3 includes the interaction effect; SF = staffing; GT = general training; STR = specific training; PE = performance evaluation; PF = performance feedback; RC = reward and compensation; ED = employee development; CO = consolidators; TF = transformers; CI = co-inventors



Notes: (a) Specific training; (b) general training; (c) general training; (d) performance feedback; (e) performance feedback; (f) specific training

Figure 2.
Interaction plots

Staffing, general training and performance feedback are the significant, influential factors facilitating the knowledge management practice. The individuals are recruited with diverse skills and qualifications, thereby providing opportunity for the individuals to actively participate in knowledge sharing and strengthen the competitive learning platform. This is in accordance with the study conducted by *Gardiner et al. (2001)*, a selective recruitment process for learning-oriented organization that actively promotes diversity in skill, talent, experience and the background of an employee. *LÓpez et al. (2006)* observed that selective hiring, strategic training and employee participation in decision-making positively influence OL. The performance feedback based on learning

ability of the individuals and knowledge sharing in the workplace drives the Indian software companies towards a better knowledge management process. Performance appraisal system is aimed to direct employees' knowledge management activities by rewarding the positive behaviours, such as creativity in daily operational and information technology usage. Performance appraisal, career development and training facilitates motivation for learning in individuals and transfer knowledge within the firm (Jiménez-Jiménez and Sanz-Valle, 2013). It is clearly observed that to manage the knowledge effectively, individuals in the software companies are trained and motivated to make use of tacit and explicit knowledge. This empirical evidence reaffirms the study conducted by Dayasindhu (2002) that knowledge transfer happens in Indian software organizations when team members get training and teach others what they have learnt.

The general training factor had a significant positive impact on organization transformation, which underpins the fact that, training programs focused on inventive thinking, problem solving techniques, communication (both formal and informal) techniques, leadership skills, team-based and action reflection learning to meet the dynamic organization's expectation. Thite (2014) in his study observed and reported a similar finding that, one of the top-tier IT firm in India, which is more people centric invest heavily in the development of people in terms of training and mentoring. Through these focused training plans, individuals in the organization gain tremendous self-improvement and complete transparency in learning, without being affected by the fear of knowledge transfer across levels. Also, this evidence proves the verdict of Zellmer-Bruhn and Gibson (2006) that team-based learning positively influences task performance and quality of interpersonal relations. Long-term and group-oriented training allows the employee to complement their career, like job rotation and job enrichment. Individuals in software organizations are appraised based on their creativity and ability to deal with situations effectively with minimal information. This is in line with previous studies of Indian software organizations by Agarwal (1999) that software organizations identify and institutionalize new competencies required in the present knowledge workers, such as creativity, innovation, ability to deal with uncertainty and ambiguity.

Specific training programs like coaching for performance, business wise, delegation and building cohesive teams empower people and enhance learning opportunities for individuals. This is in consistent with the result of Fong *et al.* (2011) that through specific training a solid platform is provided for individuals to gather and share new knowledge. This also supports the theoretical affirmations of previous studies by Thite (2004), in which he has mentioned that the organization should encourage people to experiment and share their views without any fear or apprehension. During the hiring process, another important factor that was always assessed is the ability to work in teams and share problem solving skills. Some of the theoretical assertions of previous studies (Bennett and O'Brien, 1994; Carayannis, 2000) validates the above empirical confirmation. The competitive advantage of OL is reflected in learning at the individual and organizational levels (Sadler-Smiter and Badger, 1998). Employees who are engaged in the pursuit of OL process by actively interacting with clients and customers are recognized accordingly with good ratings in performance appraisal, which translates into a good sum of monetary benefit (Rowland, 2013). A similar study investigated by Agarwal and Thite (2003) in Indian software highlighted that remuneration is performance based on the individual, team and organizational level.

With reference to technology application, general training and performance evaluation contribute vitally to the effective OL process. The individuals are trained to use the technology and knowledge information system as a means for their active participation in the process of learning. Appropriate feedback helps the individuals in terms of career preferences, learning ability and knowledge sharing with peers. This result is in accordance with a previous study investigated by [Thomsen and Hoest \(2001\)](#) in which they have explained that organizations should use the possibilities in the information technology to make the information flow freely. The results of the impact of strategic HRM practices on learning outcomes (universalistic approach) in this study add to growing empirical evidence suggesting that such confirmation is plausible ([Mehra and Dhawan, 2003](#); [Bhatnagar and Sharma, 2005](#); [LÓpez -Cabrales *et al.*, 2011](#)).

Moderation effect of knowledge strategy

The moderation effect between KS and strategic HRM practices have had a positive and significant impact on learning outcomes. These results are in accordance with the interaction effect studied in strategic HRM literature with specific reference to strategy as a moderator variable ([Arthur, 1992](#); [Snell and Youndt, 1995](#); [Youndt *et al.*, 1996](#)).

Learning dynamics (self-learning, team/group learning and knowledge sharing) is enhanced when the specific training is aligned with the co-inventor strategy (triple loop learning). The individuals in the software companies are trained to analyse even the minute information holistically and also to identify the gaps between self-comprehension and others' understanding. They are also trained to develop new skills while solving the real business problems. The traits of transformer strategy (such as openness, systemic thinking, creativity, personal efficacy and empathy) is being emphasized in individuals through long term rewards for good creative thinking, individual and group incentives for knowledge exchange and information sharing, competency and performance-/result-based pay ([Bamel *et al.*, 2013](#)), profit sharing and educational opportunities to individuals aspiring for career growth.

General training, specific training and performance feedback are aligned towards consolidator strategy (single loop learning) which positively affects knowledge acquisition, knowledge creation, knowledge storage and knowledge transfer. Knowledge management practices are strengthened by traits such as routine behaviour, intra organization relationship and mechanistic action, which are imparted in individuals through general training (such as problem solving techniques, leadership skills, logical and creative thinking, communication and action reflection learning) and specific training (such as onsite/on the job training, team building, mentoring, core technical skills and peer teaching peers). A similar observation was emphasized by [Bhatnagar \(2008\)](#) that it is necessary for employees to upgrade the technical competency through constant exposure to cutting edge technological development. The study by [Singh and Soltani \(2010\)](#) who claimed that for Indian IT organizations to remain competitive, the best HR practices should be aligned to strengthen the knowledge management by removing the cultural barriers and create a supportive organizational climate. Some of the previous research studies ([Jiménez-Jiménez and Sanz-Valle, 2013](#); [Svetlik and Stavrou-Costea, 2007](#)) too demonstrated that effective knowledge transfer and knowledge management is dependent on a well-functioning HRM and the employees' perceived behaviour in knowledge creation, knowledge sharing and knowledge application ([Lord and Farrington, 2006](#)).

Performance feedback is aligned towards the transformer strategy (double loop learning) which positively affects the people empowerment. The traits of double loop learning such as openness, systemic thinking, creativity, personal efficacy and empathy, which is being emphasized in individuals through performance feedback have had a significant impact on people empowerment. Employees are empowered to contribute to the overall organization's innovation process by adequately contributing through their creative skills and holistic approach to real-time challenges, which are equally factored in as part of their performance feedback process. This clearly underpins the finding of Ulrich and Lake (1990) that effective HRM could enhance an organization's innovation ability through people empowerment. Also, these results evidently reinforces the observation by Cappelli *et al.*, (2010) that HR practices and orientation such as employee empowerment and development to actively contribute in the decision-making process (Khavul *et al.*, 2010) are indeed worth to be benchmarked by firms in Western countries. Also, studies by Shipton *et al.* (2005) and Jiménez-Jiménez and Sanz-Valle (2005) support this finding that HRM practices contribute to increased organization's innovation process.

Specific training such as coaching for performance, mentoring and peer teaching peers aligned towards the co-inventor strategy (triple loop learning) positively influences people empowerment in Indian software companies. Bhatnagar (2008) observed a similar empirical evidence in his study that job rotation and mentoring/coaching process in organizations strengthen the talent pipeline and endorse their potential development. The traits of transformer strategy (such as openness, systemic thinking, creativity, personal efficacy and empathy) is being emphasized in individuals through long-term rewards for creative thinking, individual and group incentives for knowledge exchange and information sharing, competency- and performance-based pay, profit sharing and educational opportunities to individuals aspiring for career growth. This reaffirms the study conducted by Jiménez-Jiménez and Sanz-Valle (2013) on factors targeted at learning in individuals and transfer of knowledge within the firm through performance appraisal, career development and training programs.

Implications and conclusion

This research study can be seen as the first of its kind in knowledge-intensive firms like software organizations in India, to empirically test the impact of strategic HRM practices and KS, on learning outcomes. Software firm is a youth's destination to most of the young graduates in India because of the rapid career growth and lucrative total rewards when compared to other industry sectors in the country. In this regard, learning and growth becomes essential and key for the software professionals to craft their career as developer, tester, systems networking and architects. This study attempted to prove that, strategic HRM practices which are aligned to specific KS will have a greater impact on software employee's learning orientation and learning competence for an improved tangible and intangible firm performance:

- Specific training programs which are closely aligned to employee's individual developmental plan (IDP) like training for certification programs in respective information technology domains such as programming language, testing tools, project management, etc., will lead to increased learning agility and creates a strong culture of knowledge sharing. Especially, the high potentials and quick learners (co-inventors) who are in the top quadrant of performance-potential

matrix, are capable to anticipate the possible occurrence of technical challenges while handling complex projects. These employees have to be amply empowered, as they always have strong inclination to travel the career path horizontally, vertically and diagonally in quick span of time. This has been empirically proved (co-inventor strategy \times specific training) in this study, and, hence, it is recommended that the training programs have to be closely aligned to both organizational priorities and employee's IDP, which will have a greater impact on learning dynamics and people empowerment.

- While handling the software projects in various phases (planning phase – development phase – testing phase – implementation – maintenance phase), it is extremely important to have employees involved to find the cause behind the problems (transformers) during the planning phase, and also a set of employees who are simultaneously involved to provide quick fix solutions (consolidators) during development and testing phase, and also some set of employees who continuously work on to anticipate the occurrence of possible flaws (co-inventors) that may arise during the implementation and maintenance phase. In such a dynamic and versatile mixed learning environment, as observed in this study (consolidator strategy \times general training and co-inventor strategy \times general training), to cater different learning styles and document the explicit and tacit knowledge in a structured way, software firms have to constantly train their employees on certain generic skill sets like problem solving techniques, leadership skills, logical and creative thinking, communication and action reflection learning.
- Employees in supervisory and managerial levels who are client facing like team leaders, project managers, delivery managers, etc., have to be very dynamic to cater the business requests from the clientele in terms of clientele business domain understanding (like manufacturing, pharma, tele communication, etc.) coupled with the comprehension ability of technical specification of the project itself like software architecture, IT infrastructure, etc. Especially, the employees who are interacting with clients on an everyday basis (consolidators) have to be extremely competent in capturing and documenting the client request and the solutions provided, which have to be recorded in the appropriate knowledge repository as engaged by the firm's knowledge management process and tool. Another finding of this study reinforces (consolidators \times performance feedback) that by factoring in the ability to document and share knowledge criteria in performance feedback process for the direct client facing employees becomes absolutely essential to create and sustain a robust knowledge management process. Also, the employees who are involved in the back-end process of software project life cycle, and intermittently interact with clients are expected to be innovative (transformers), ensure radical and incremental improvements in the overall project management and delivery. In this regard, employee empowerment becomes a guiding slogan for innovation and creative thinking to sustain the business in the long run, and hence these have to be factored in as a metric during the employee's performance feedback process. As reported through the concrete findings in this study (transformers \times performance feedback), through objective-based integrated performance feedback process, employees who have the capability of lateral and innovative thinking constantly instill the creative tension at work and have to be empowered, motivated and rewarded adequately.

This article examined the effect of individual strategic HRM practices on learning outcomes and the moderation effect of KS through the notions of universalistic and contingency theory as defined in strategic HRM literature. Though, numerous studies have investigated the role of strategic HRM and OL in different industry and national contexts, still the linkage is not studied profoundly. In this regard, the current study elucidated the association between specific individual HRM practices, KS and targeted learning outcomes by collecting responses from software professionals across levels, senior HR managers, AVP/VP/Head of HR function in software firms in India. This research has gone beyond the simple, linear, causal relationship explored in universalistic approach to test the interaction effect between individual strategic HRM practices and knowledge strategies to result in higher learning outcomes. From the data analysis standpoint, it has been observed that the strategic HRM practices and KS have had significantly predicted the learning outcomes such as learning dynamics, knowledge management, people empowerment, organization transformation and technology application. The proposed model can help the similar knowledge intensive firms to analyse the extent of contribution of strategic HRM practices and KS towards the OL process.

The following conclusions are derived based on the conceptualized and hypothesized relationships:

- In the sample of software firms studied, intended learning outcomes are significantly and positively predicted by individual strategic HRM practices such as staffing, general training, performance feedback and evaluation.
- The HR fraternity in knowledge-intensive firms should specifically look into the chosen strategic HRM practices and align it prudently with KS for the intended learning outcome. In this study, the interaction effect between specific KS and strategic HRM practices (consolidator strategy \times general training and performance feedback; co-inventor strategy \times specific and general training; transformer strategy \times performance feedback) significantly explained the variance in learning outcomes.

Limitations and future directions

Despite the contributions, this study has certain limitations. First, this study is based on the integration of strategic HRM practices with the characteristics of OL and its effect on learning outcomes. Though the current study has explored the links and found some evidence in the Indian software industry, it should be considered largely as exploratory in nature. These findings may require confirmation in future studies. Second, this study was restricted to select knowledge intensive firms which was identified through stratified random sampling from NASSCOM listing (India); hence, the external validity remains to be examined, i.e. results of this study cannot be generalized to other knowledge-intensive firms/software companies in other countries. Third, there may be more control variables that influence the main effect and the moderation effect between strategic HRM practices, KS and learning outcomes. Fourth, this study was only a cross-sectional study, and a longitudinal study may give some more interesting results. In future studies, this conceptual model can be replicated and tested in other industries to find out how the strategic HRM practices are aligned towards KS and its impact on learning outcomes. The same study can be looked into by classifying the knowledge-intensive companies based on the nature of business like product-oriented/process-oriented companies.

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Appendix 1

Table A1.

Organization profile
(Annual turnover)

Companies/respondents	Size of the company (Annual turnover)		
	Small (<INR 500 million)	Medium (INR 500-2,000 million)	Large (>INR 2,000 million)
Number of companies	12	10	10
Number of respondents	120	131	145

Appendix 2

(1) Survey items used to measure strategic HRM practices scale:

- in addition to the technical skills, I was tested on my understanding and listening capabilities during the selection process;
- my ability to work in teams was not examined in the selection process;
- I had a structured interview (set of predetermined questions asked) during the recruitment process;
- my attitude towards knowledge sharing was not tested in the selection process;
- my attitude towards (responsibility) being answerable to others was not tested in the selection process;
- my ability to take rational decisions with small clues was one of the criteria used in the interview process;
- my curiosity in sharing problem solving skills was not examined in the interview process;
- I am not given training in problem solving skills;
- I am given training in job related (formal) communications to communicate with peers/supervisors;
- I am given training to practice informal communications with peers/supervisors/subordinates;
- I am not given training in leadership skills;
- I am not given training to come up with novel and useful ideas;
- I am not given training to get involved individually or as a team member in important decision-making processes;
- I am not given training to learn new skills while solving real business problems;
- I am not given training to institutionalize the idea of continuous innovation;
- I am encouraged to learn my job by actually performing it;
- I am given training to develop trust and openness with team members;
- I am given training to coach and support peers/subordinates in their personal development and career advancement;
- Special training is given to enhance my core technical skills;
- I am given training on “how to train others?”;
- I am given training to anticipate and respond quickly to new upcoming technologies;
- the performance appraisal is not purely targeted at my work outcomes;
- I am appraised and rewarded on the basis of the quantity of actual work done;
- I am appraised on the basis of my individual performance;
- I am appraised on the basis of my performance once in a year;
- contribution of novel and useful ideas is a key attribute measure in my performance appraisal;
- my ability to coach and support others is considered for performance appraisal;
- performance appraisal is mainly targeted towards my career growth;
- my ability to act effectively with minimal information is considered for performance appraisal;

- attendance is not considered as a measure in my performance appraisal;
 - my attitude towards work is one of the factors measured in performance appraisal;
 - my involvement in sharing knowledge with others is not rated in the appraisal process;
 - my experimentation skills are not considered as a measure for performance appraisal;
 - the feedback of the performance appraisal process does not help me in my career preferences;
 - my ability to compare and react to others actions is one of the performance appraisal measures;
 - my curiosity towards learning is not an important measure in the appraisal process;
 - incentives are provided based on my actual work outcome;
 - my ability to acquire specific job knowledge (e.g. quality strategy of a competing organization) determines my pay structure;
 - the compensation system is very transparent;
 - I am entitled to receive a share of my organization's stock (ESOP-Employee stock ownership plan);
 - I receive group incentives based on my team's performance as a whole;
 - I receive a share on the basis of my organization's profit;
 - I receive higher compensation in proportion to continuous upgradation of my knowledge;
 - my pay is not determined by the level of my performance at work;
 - my participation in knowledge sharing process is not considered for rewards through compensation;
 - helping others to improve their technical skills is not measured for my compensation; and
 - I am not given educational opportunities to improve in my career.
- (2) Survey items used to measure learning outcomes scale:
- I am encouraged to manage my own learning and development;
 - my team members learn from one another and share in a variety of ways (electronic bulletin boards, printed newsletter, inter-group meetings);
 - teams are encouraged to work and learn in groups;
 - I am engaged in action learning process (learning from careful reflection on problem or situations and applying the new knowledge to future actions);
 - managers/supervisors generate and enhance learning opportunities;
 - I do not share information with customers/clients to get feedback on services and products;
 - I participate in learning events with suppliers, community, groups, professional associations and academic institutions;
 - I actively seek learning partners among customers/clients;
 - I often create "demonstration projects" as a means of new ways of developing a product/delivering a service;
 - I (and my team) design ways to share knowledge and enhance learning;
 - I understood the importance of being part of a learning organization;
 - top management does not support the vision of a learning organization;

- the importance of learning is supported through a congenial organizational climate;
- I am committed to continuous learning in pursuit of self-improvement;
- learning is taking place without any fixed departmental boundaries;
- I am comfortable with computer assisted learning programs and electronic job aids (just in time and flow charting);
- cross-functional teams transfer important learning across groups, departments and divisions;
- I seek information about products/processes for continuous improvement;
- I don't monitor trends outside my organization by looking at what others do (attending conferences, examining published research, etc.);
- I use my creative thinking abilities to experiment with existing operations;
- I am not aware of the need to retain important knowledge;
- I don't develop new strategies to share my own knowledge with others;
- I am not encouraged to question new information;
- learning is not facilitated by computer based information systems;
- I can adapt software systems to collect, code, store, create and transfer information to meet the learning needs;
- I have full access to the required data/information to do my job effectively;
- I extensively use information technology (local area network, internet and intranet) to access information in my organization; and
- I utilize the developed system and structures to store important knowledge.

Appendix 3. Survey items used to measure KS

- employees in my organization are involved only in their day-to-day routine work;
- employees are appraised based on their regular work outcomes only;
- employees are encouraged to come up with valid disagreements rather than personality clashes or politics;
- the flow of communication is only from top to the successive lower levels (Downward Communication);
- in group decision-making, low level/less experienced employees are allowed to participate;
- my organization does not support the availability of all kinds of information to all employees;
- the teams/groups develop a way of learning from each other through oral communication;
- my organization does not recognize the importance of relationships based on information sharing, knowledge exchange and feelings;
- my organization encourages employees to learn from success/failure and formulate further actions;
- my organization does not believe in long-term reward policies for employees with good creative thinking;
- my organization allows employees to think beyond their regular work;
- my organization does not practice performance reviews that focuses on employees potential and capabilities;

- my organization encourages employees to take others perspective in accomplishing their task;
- my organization encourages employees to repair the stressed relationships;
- my organization prepares employees in fitting small information together to make rational decisions;
- my organization encourages employees to identify the gap between ones' own understanding and others' understanding;
- my organization encourages employees to reformulate their ideas in different perspectives;
- my organization encourages joint responsibility among employees to discuss their job-related issues;
- my organization engages in developing new strategies to relate employee's experiential knowledge;
- individual or group decision-making is based on the positive results rather than taking risks; and
- my organization is committed to diversity in selecting, developing and promoting employees.

About the author

Arunprasad P. is an Associate Professor of human resource management. He has a rich 12 years of corporate experience in human resource management and organizational development domain, before moving in to full time academics. He worked in Geographies like EMEA, APAC and Middle East. His research and consulting interests are in the area of general management, strategic human resource management (talent acquisition; talent management; total rewards; international HRM; performance management; HR scorecard), leadership, knowledge management, learning management and organization development and change. He has published widely on these subjects in peer-reviewed international journals. Arunprasad P. can be contacted at: arun@ud.ac.ae

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