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What Factors Influence Software Professionals Performance and Do Need for Achievement and Need for Social Power Moderate Performance?

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Chapter IV

What Factors Influence Software Professionals Performance and Do Need for Achievement and Need for Social Power Moderate Performance?

(Full Research paper begins on next page)

What Factors Influence Software Professionals' Performance and Do Need for Achievement and Need for Social Power Moderate Performance?

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Introduction

The success of software firms depends considerably on the performance of software professionals (SPs). SPs are engineers and senior engineer who write code, design programming architecture, look after system networks, manage web pages, and do software maintenance jobs. They not only possess specialized skills and knowledge but also work in lieu of financial rewards and are guided by the professional code of ethics (ACM, 2007; Buchholtz, 1989; Kakabadse & Kakabadse, 2000; Mosley & Hurley, 1999). Many Indians are employed in software firms that have contributed to the growth of national economy (ASSOCHAM, 2008) but little is known as to what contributes and facilitates their performance. This study intends to fill the gap.

Assessing the productivity (output/input) of SPs is an arduous task. The quantity of inputs or outputs of projects can take a month to a year or even more, and in certain instances, several years. For example, it took more than five years to launch 'Microsoft Vista'. Many indirect factors that influence productivity are hard to measure such as management culture, disturbances at work place, problems in information flow, competencies required for varied jobs, etc. (Uusi-Rauva & Hannula, 1996). SPs simultaneously work in many projects and produce different outputs—graphics, expert systems, web traffic control, and maintenance packages—that are difficult to specify in quantity of inputs and outputs (Kemppila & Lonnqvist, 2003). Software firms have synonymously used effectiveness, efficiency, quality, innovation, and profitability with productivity (Chilton & Hardgrave, 2004; Jackson & Petersson, 1999; Koss & Lewis, 1993; Tangen, 2004; Thomas & Baron, 1994) that link to performance. Performance refers to the degree to which an employee has executed his/her assigned job and it assesses productivity indirectly and subjectively.

The performance of SPs has on six dimensions (Prasad & Suar, 2010): (a) work-efficiency, (b) personal resourcefulness, (c) inter- and intra-personal sensitivity, (d) productivity orientation, (e) timeliness, and (f) business intelligence. Work-efficiency emphasises on independent thinking, ability to work on multiple projects, and meeting clients' requirements successfully. Personal resourcefulness incorporates the abilities of SPs to be innovative, efficient, and thereby add value to the customer through products and services. The inter- and intra-personal sensitivity shows not only the individual's responsibility at work but also interpersonal sensitivity in group to complete the job and deliver the goods on time. Productivity orientation entails the concern for quantity and quality of software along with overtime work. Timeliness dimension incorporates taking decisions and meeting deadlines in completing the projects. Business intelligence is a personal attribute for sustenance of enterprise in a competitive environment through advocating new ideas for improving products and services and showing concern for profitability.

Pareto's model (Pareto, 1897) of unequal distribution mentions that the top 20 per cent of any country's population accounts for about 80 per cent of its total income. With a similar analogy of 'the vital few and the trivial many', Goleman (1995) has proposed that emotional intelligence competencies (EICs) can alone contribute to 80 per cent of success in job performance against 20 per cent of cognitive/rational intelligence. Goleman (1998) has observed that SPs with high levels of EICs are three times more effective than those having low levels of EICs.

The organisational behaviour model (Robbins, Judge, & Sanghi, 2008), incorporates three levels—individual, group, and enterprise—of constructs that account for performance. Neglecting the variables at group and enterprise levels, (a) among the variables of perception, motivation, values, personality, and intelligence at the individual level, Goleman's (1995) model proposes that the EICs are the only important predictor of performance. (b) Leadership is frequently cited to influence performance (Bass, 1985) among the group level constructs of leadership, conflicts, negotiation, power, and politics. Also, the social attributes of trusting, sharing, and reciprocating among employees incorporated in social capital can smoothen the relations, help in negotiations, and resolve conflicts. (c) Also, human resource management (HRM) practices can contribute to employees' welfare, development, and commitment among

the enterprise level constructs of organisational structure, design, and culture. Incorporating Goleman's (1995) proposition of EICs at individual level, this study proposes the group and enterprise level constructs that can contribute to SPs' performance.

Antecedents of Performance

Individual level: Emotional intelligence competencies

Emotional intelligence (EI) is the ability of a person to accurately assess emotions within and observe them in others so as to modulate his/her behaviour (Salovey & Mayer, 1990). There are two major models of EI: (a) academician, and (b) practitioner models (Wong & Ang, 2007). The academician model is based on the mental ability model (Mayer, Salovey, & Caruso, 2000). It suggests that EI is based on cognitive abilities to understand emotional processes of empathy, sociability, warmth, and optimism (Mayer, 2001). The practitioner model includes: (a) Ruven's Bar-On model based on 'potential' (Bar-On, 1997) and (b) Goleman's (1995) model based on 'competency'. The practitioner model considers ability and personality traits to judge EICs. EICs entail inter- and intra-personal competencies. Being the heat traits, while the intra-personal competencies are self-awareness and self-management, inter-personal competencies are social awareness and relationship management (Boyatzis, Goleman, & Rhee, 2000).

Self-awareness is an individual's potential to be true to oneself. It is the ability to monitor one's own and others' feelings, moods, drives, and emotions. Self-awareness incorporates: (a) emotional self-awareness, (b) accurate self-assessment, and (c) self-confidence. (a) Persons with high degree of emotional self-awareness exhibit a sense of humour and perspectives about them. (b) Accurate self-assessment is the realistic self-evaluation and allows understanding one's strengths and limitations during indomitable circumstances (Wynekoop & Walz, 2000). (c) Persons with self-confidence express their feelings, opinions, and viewpoints openly and focus on customer requirements (Kaluzniacky, 2004; Phillips & Gully, 1997). SPs having high self-awareness are expected to perform better in their jobs.

Self-management focuses on reducing defects in software programme and improving quality in software products (Mathew, 2007). Self-management includes:

emotional self-control, drive for achievement, initiatives, transparency, and optimism (Goleman, Boyatzis, & McKee, 2002). SPs having emotional control can cope up with job stress, schedule pressure, and make rational decisions (Rozell, Pettijohn, & Parker, 2004). The achievement drive of SPs propels them to constantly do better than their past performance. Initiative is taking lead on different activities and improving product quality and, thereby, facilitating the success of software projects (Baddoo, Hall, & Jagielsk, 2006; Hatton 1995; Mathew, 2007). SPs having emotional feelings generate the same in peers and leaders. Optimism is positive thinking. Self-management moulds positive emotional attachment to clients and software projects and drives for more engagement in jobs.

Social-awareness is the empathetic ability to recognise what other people are feeling. It includes: empathy, service orientation, and organisational awareness. Empathy is the understanding of another person putting oneself in another person's situation. SPs' ability to empathize themselves with colleagues builds close relationship. Empathy is not only reading the subtleties, body language, but also reading the unheard voice beneath the spoken words (Goleman, 1998). Empathy is the capability to recognize and respond to social networks to facilitate goal attainment. Emphatic employees are trained to adopt themselves to a service orientation treating clients and co-workers as important customers (Bowen & Schneider, 1988; Bowen, Siehl, & Schneider, 1989; Witt, 1999). Organisational awareness includes the understanding of emotional feelings and power relationships, priorities and processes in a group. SPs interacting and communicating with offshore clients exhibit greater social-awareness, show sensitivity to cross-cultural etiquettes, ethnic and religious backgrounds, provide service, and meet customer requirements. SPs, having higher social awareness, are likely to perform better.

The relationship management competencies include: developing others, influencing, conflict management, inspirational leadership, teamwork and collaboration, and change catalyst. Developing others mean identifying people's developmental needs, taking steps to remove deficiencies, and improving competencies. Influencing others is an ability to persuade others. Effective professionals sense others' reactions and fine-tune their own responses to further their interactions. Conflict management is an ability of SPs to tactfully deal with the incompatible demands on or off the job. Inspirational

leadership is a process communicating and encouraging others and elevating them to a higher plane. Working with the team in a cooperative manner results in success of a project (Druskat & Wolff, 2001). The change catalysts adopt to the changing requirements of clients. Hence, higher the relationship management competency, higher will be the performance of SPs.

Group level: (a) Transformational leadership

Transformational leadership is introduced by the seminal work of Burns (1978). The transformational leader can motivate followers to achieve high performance standards beyond ordinary expectations (Bass, 1985). The transformational leader can change low job performers to high job performers inspiring and empowering subordinates so that they release more efforts and energy (Behling & McFillen, 1996). Such a leader communicates the organisation's vision to followers (Sashkin & Rosenbach, 1993), recognizes a need for change (Tichy & Devanna, 1986), and initiates collective behaviour to realise the organisation's vision. The transformational leaders are more effective than transactional leaders in bringing changes in subordinates' job performance when there is a close agreement with followers' goals (Barber & Warn, 2005; Bass, 1997; Leban & Zulauf, 2004; Maritz, 1995). Bass (1985) and later Bass and Avolio (1990) have identified four dimensions of transformational leadership. They are: (a) idealized influence (attribute and behaviour) (b) inspirational motivation, (c) intellectual stimulation, and (d) individualized consideration. Idealized influence refers to the leaders attributes that the followers emulate. The leader feels trusted, admired, and respected by followers (Bass & Avolio, 1994). Leaders, having idealized attributes and behaviour, are found to have extraordinary influence on followers (Bass, 1985). Idealized behaviours refer to the actions of the leader that transcend beyond self-interest to benefit the organisation. The leader develops a sense of collective mission and aligns the followers with that mission (Bryman, Gillingwater & McGuinness, 1996).

An intellectually stimulating leader encourages followers to view the world from new perspectives, that is, they question old assumptions, paradigms, and beliefs. Intellectual stimulation involves challenging followers' cognition, generalizations, and stimulating them to seek new ways to do the job. The leader appeals to the followers' intellect by instilling 'problem awareness and problem solving capabilities'. Because of

intellectual stimulation, followers conceptualize and comprehend the problems they face, solve them, and improve their performance.

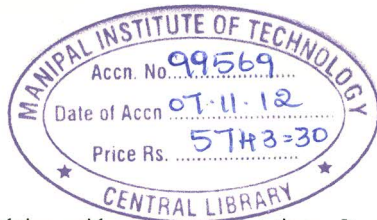
Inspirational motivation includes motivating followers to do their jobs, leading to higher performance, commitment, and satisfaction (Avolio, Gardner, Walumbwa, Luthans, & May, 2004). The leader through episodes, dialogues, and various activities takes the followers to a higher plane and they release their efforts accordingly. The leader raises followers' expectations and inspires them to achieve organizational goals.

A leader displaying individualized consideration identifies the deficiencies of followers and removes those through training, coaching, and counselling, and seeking employees' participation in goal-setting, decision-making, and problem-solving (Avolio, Bass, Walumbwa, & Zhu, 2004). As transformational leader mobilizes the minds of subordinates for higher performance, the more the extent of transformational leadership of superiors, the more will be the performance of subordinates.

(b) Social capital

Social capital entails interaction with people at different levels to access and take stock of accumulated resources (Coleman, 1988; Tymon & Stumpf, 2003). People participating in group activities build social ties in creating and sharing knowledge to focus on performance (Lin, 1999). They help to build trust in an environment of open communication that promotes exchange of even tacit knowledge (Davenport, 2005). Social capital has seven dimensions: (a) group characteristics, (b) generalised norms, (c) togetherness, (d) everyday socialising, (e) volunteerism, (f) trust, and (g) reciprocity (Narayan & Cassidy, 2001).

Group characteristics facilitate to carryout social affairs. Generalised norms are the compliance with group standards. Members of the network improve their performance to match with the standard (Galunic & Moran, 2000). Togetherness is getting along with others. During the crisis, togetherness builds strong social ties in the network and thus improves the confidence of employees to perform their jobs better. Everyday socialising is camaraderie among employees. Everyday socialising helps gathering current information about software projects that assist SPs to take and execute decisions.



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Volunteerism is helping without any expectations. It goes with altruism. Volunteers commence the work without seeking direction and help from others. Such activities keep the clients happy and build long-term relationships. Trust is an act of mutual belief to agree upon certain conditions (Coleman 1988; Collier 1998; Cox 1997; Kawachi, Kennedy, & Glass, 1999; Kilpatrick, Field, & Falk, 2003; Lemmel, 2001; Putnam, 1993; Welsh & Pringle, 2001). Reciprocity is an attitude of helping when employees are in distress (Putnam, 1993; Portes, 1998) and responding to their needs. SPs exchange ideas and opinions independently in return to queries of customers (Collier, 1998; Snijders, 1999). Because SPs are clustered into groups according to the projects, domain expertise, and customers' base, they reciprocate within their network. Hence, the more the social capital among team members, the better would be their performance.

Enterprise level: HRM practices

HRM practices attract, retain, and develop employees with appropriate competency to meet the current and future needs of the organisation. Such practices reinforce the learning of new skills and knowledge, encourage engagement in work activities and services to customers, and help adhering to values and norms of the firms. HRM practices include: (a) the rewards/incentives that drive performance, (b) the development of skills, knowledge, and attitude through continuous training to improve employees' present and future performance, (c) the manpower with requisite skills and competencies to execute jobs, and (d) the supportive work environment (Appelbaum et al., 2000; MacDuffie, 1995).

There are two theories to support the proposition of performance-linked rewards. Vroom's expectancy theory (Vroom, 1964) specifies that pay can improve performance when employees perceive that their performance would lead to valued rewards. SPs' performance would be better if they are given rewards in terms of pay and fringe benefits that they value. In Adams's (1965) theory, equity results whenever the person perceives that the ratio of his/her outcomes (pay, promotion, recognition, seniority benefits, etc.) to inputs (effort, education, experience, training, competency, etc.) and the ratio of other's outcomes to other's inputs are equal. The employee perceives equity only when his/her rewards are proportionate to efforts in same or similar jobs. The more

the bug free programme, agility, and lines of codes, the more will be the incentives for SPs. It can be expected that if the firm provides the rewards desired by employees and closely links rewards to performance, employees are more likely to show better performance.

In high performing firms, training is provided at regular intervals to improve skills, knowledge, and attitudes of employees to meet the current and future goals of the organisation. It teaches employees the right ways to do the jobs and reduces their dysfunctional behaviour. In project-based business of software, firms may not provide lifetime employment but structured training and development activities at regular intervals prepare the SPs for lifetime employability. Training prepares the SPs for multi-tasking/multi-skilling. It develops domain expertise, reduces dysfunctional behaviour, and can improve performance (Uden & Dix, 2004).

Staffing is crucial because of the demands of unpredictable knowledge in today's changing environment and innovation pressures (Scarbrough, 2003). Software firms focus on obtaining qualified people or rotating them across different job domains (Gardiner, Leat & Sadler-Smith, 2001) for making them multi-skilled. Staffing procedures aim to bring into vacant positions people with the identified skills and knowledge and placing the right person on the right job. It is a process to ensure that employees and their capabilities are aligned with business goals (Pfeffer, 1998). Arguably, deliberate recruitment and selection processes that match corporate strategy and firms' requirements provide strong underpinning to enhance ability to learn and leverage knowledge in the workplace.

Promoting employees from within the firm is likely to provide a strong motivation for employees to work harder. Internal promotion indicates that a firm considers employees as long-term assets for continuation of their service (Pfeffer, 1998; Lepak & Snell, 1999). Quinn (1992) suggests that software firms depend more on service capabilities instead of hard assets. Firms can provide staffing policies that can promote knowledge and foster service mentality for improving performance.

Quality of work life describes the workplace where employees feel comfortable to work. It includes the provisions of employees' stock-option plan, physical evidence, safety and security, and offshore assignments. Employees work hard to improve the

quality of software products so that stock price of the software firm does not decrease. As long as the stock prices increase, the employees continue their jobs.

Physical evidence improves the decor of the workplace. According to the stimulus-organism-response theory proposed by Mehrabian and Russell (1974), physical evidence (stimulus) of the organization can influence employees' (organism) behaviour (response). Environmental psychologists suggest that individuals react to places with two opposite forms of behaviour—approach and avoidance. Approach behaviour includes all positive behaviours—such as desire to stay, explore, work, and affiliate—towards the built and natural environment. The physical evidence differentiates a firm interior décor with comfortable seating arrangement, pleasant lighting, temperature, and cleanliness. Google (Inc.) provides opportunity to SPs in architectural design to modify their workplace interiors. The work-life can be safe and secured to encourage employees to put forth extra effort in their jobs. After global threats on health and life of SPs, many software firms have focused on improving employees' safety and security by providing safe drinking water and high value insurance policies. Offshore assignment exposes SPs to different culture, people, different ways of designing software, and brings creativity. Software firms with better HRM practices can promote employees' performance (Dechawatanapaisal, 2005). Hence, H_1 : Increased EICs of employees, transformational leadership of team leaders, social capital among SPs, and HRM practices' of software firms will enhance SPs' performance.

Such hypothesised relationships can change at the level of another variable. It is called the moderator. A moderating variable may be a qualitative (gender, race, countries) or a quantitative variable (reward) that affects the direction and/or strength of the relation between independent and dependent variables. In analysis of variance, it is observed as an interactive term. In correlation and regression analysis, the correlation coefficient and the beta coefficient respectively, change across different levels of the moderator. If the moderator variable interacts with the independent variable and relates to the dependent variable, then it is a quasi moderator. If the moderator variable interacts only with the focal independent variable, and does not relate to the dependent variable, then it is a pure moderator (Baron & Kenny, 1986; Sharma, Durand, & Gur-Arie, 1981). Here follows the discussion on moderators.

Moderators

Need for achievement

Employees having high need for achievement display a constant desire to do better compared to past. Their goal is to do the assigned job more efficiently and effectively compared to what they had done earlier. Persons having high need for achievement prefer to take calculated risks and aspire to accomplish moderately difficult but achievable goals for them. They take personal responsibility to accomplish the tasks and seek constant feedback on how well they are performing the job. They take control over situations/relationships, adopt to new circumstances, and make things happen (McClelland, 1994). They have a higher level of positive mood that influences programming performance (Judge & Ilies, 2004; Khan, Brinkman, & Hierons, 2007).

Achievement motivation is observed to be a moderator between academic ability and academic performance, leadership and subordinate satisfaction (Mathieu, 1990), anxiety and performance (Keeley, Zayac, & Correia, 2008), and work attitude and performance (Katzell, 1980). SPs having high need for achievement are better planners, initiators, and executors of objectives they set for themselves compared to the SPs having low need for achievement. The former are more competitive and pushed constantly by an inner drive to excel in performance. For high achievers, emotional competencies and transformational style of team leaders may not further elevate SPs' performance. For low achievers, the converse may occur. Again, trusting, sharing, and reciprocating in the group along with HRM practices increase SPs' social wellbeing. Social capital and HRM practices would be more influential in improving the performance of high achievers than of low achievers.

Need for social power

Power is the ability on the part of employees to exert influence on others. There are two faces of power: (a) social power—influencing others in the interest of the group/organization (McClelland 1970; 1975b) and (b) personal power—the ability to control/direct others for demonstrating dominance or superiority.

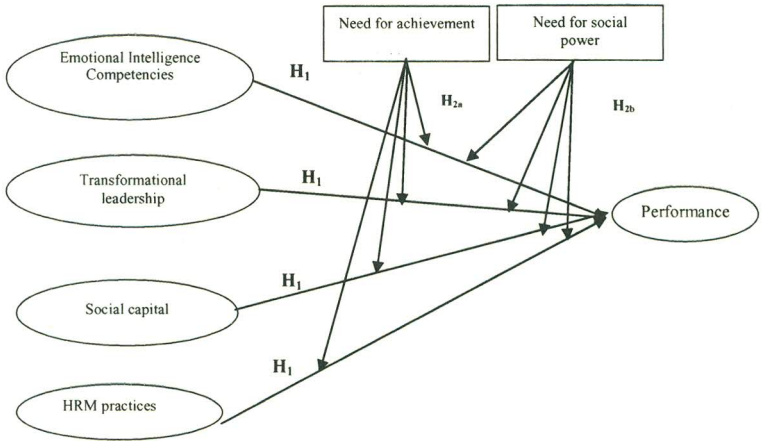
Lord Acton (1987) mentions that “power corrupts and absolute power corrupts absolutely”. People having personal power lack emotional maturity, self control, and

exercise power impulsively. They are often rude to others, drink too much, exploit others, and collect symbols of personal prestige such as fancy cars and big offices (McClelland 1975b). They do anything and everything for their personal importance. On the contrary, those having social power are higher in emotional maturity and self-control. Evidence suggests that executives having social power are effective (McClelland & Burnham, 1995; McClelland & Boyatzis, 1982) and absorb stress (McClelland 1979). They exercise power with a good degree of maturity and little egotism. They help others to feel strong and responsible, appreciate others for good performance, organise resources accurately for easy execution of others' job, and stimulate others to be more innovative and productive. They are fair and hard working, establish mutual trust and cooperation, mobilise employees to achieve organisational goals, sacrifice their own interests for the welfare of others, and take up responsibility to build the organisation. For SPs having high (low) need for social power, EICs of SPs and the transformational leadership of the team leader influencing performance may be attenuated (strengthened). But, social capital in group along with and HRM practices influencing performance would be strengthened under high need for social power than under low need for social power. Hence,

H₂: The high (low) need for achievement and the need for social power would attenuate (strengthen) the relationship of EICs and transformational style influencing performance and strengthen (attenuate) the relationship of social capital and HRM practices influencing performance.

The conceptual model depicting the hypothesized relations is illustrated in Figure 1.

Fig 1. Conceptual model for investigation



Method

Sample

Data were collected from eight software firms located in IT hubs at Bangalore, Hyderabad, and Kolkata (India), of which four were large size software firms having more than 15,000 employees and four medium size firms having less than 15,000 employees. The lists of engineers were procured from the HR managers. One thousand and four hundred software engineers and senior software engineers who had at least two years of experience in the software firm were selected for the questionnaire survey. The software engineers having two to three years of service were promoted to senior software engineers. SPs were contacted through telephone calls and e-mails. One thousand three hundred and thirteen persons were personally handed over questionnaires and questionnaires were sent to remaining 83 persons through emails. Three hundred and seventy one SPs returned the filled-up questionnaires when the researcher personally approached them and 70 returned the filled-up questionnaires through e-mails. The return rate was 31.5 per cent. The salient features of the demographic data obtained in the survey were analyzed and two groups were compared with F and χ^2 tests. Senior software engineers were older, $F(1, 439) = 146.53, p < .001$, had more years of formal education, $F(1, 439) = 31.031, p < .001$, had more years of

experience, $F(1, 439) = 124.11, p < .001$, and had more annual salary, $F(1, 439) = 52.52, p < .001$, than the software engineers. Senior software engineers and software engineers had nuclear families and did not differ on the family size, $F(1, 439) = .94, p > .05$. There were proportionally fewer female members compared to male members among the software and seniors software engineers, $\chi^2(1) = 113.70, p < .001$. While about equal proportion of the senior software engineers were married $\chi^2(1) = .03, p > .05$, about four fifths of software engineers were unmarried, $\chi^2(1) = 90.45, p < .001$.

Table 1. Sample profile

Variable	Descriptive statistics	Software engineers	Senior software engineers
Age	<i>M (SD)</i>	25.54 (1.67)	28.05 (2.63)
Experience	<i>M (SD)</i>	02.74 (1.62)	04.87 (2.32)
Annual total salary (in INR ^a)	<i>M (SD)</i>	339,000 (111,000)	425,000 (127,000)
Education (years studied)	<i>M (SD)</i>	16.29 (0.97)	17.12 (2.16)
Family Size	<i>M(SD)</i>	4.01 (1.12)	4.13 (1.35)
Gender			
Male	N (%)	243 (55.51)	125 (28.34)
Female	N (%)	58 (13.15)	15 (03.40)
Marital status			
Married	N (%)	68 (22.60)	69 (49.30)
Unmarried	N (%)	233 (77.40)	71 (50.70)
^a INR =Indian rupees			

Performance ratings of 441 SPs were obtained from 55 team leaders of projects. The software engineers and senior software engineers were directly reporting to the team leaders about their day-to-day activities. The team leader evaluated the performance of SPs.

Measures

SPs' performance was obtained from their team leader through a questionnaire. Besides the socio-demographic variables on age, years of experiences, and years of formal

education, data on EICs, leadership style of their team leader, social capital, and HRM practices were collected from SPs through another self-reported questionnaire.

Performance: Performance was assessed on sixteen items that had six dimensions (Prasad & Suar, 2010). Response categories were given on a ladder with 10 steps ranging from poor (=0) to excellent (=9). Each team leader was asked to rate his/her team members (name provided by the investigator) on the 16 items given in the questionnaire considering the past one-year performance. Ratings provided to software engineers and senior software engineers by team leaders were subjected to exploratory factor analysis. The scores on the items were factor-analyzed using principal component method and rotated through varimax procedure. Six factors were extracted that explained 60.42 per cent of total variance. The first factor loaded significantly on four items of “independent thinking”, “handling of multiple projects”, “mastery of skills and techniques”, and “focus on customers”. This factor was termed as ‘*work-efficiency*’. The second factor loaded significantly on three items of “efficient at work”, “creating value to customer”, and “creativity/innovation” that was named as ‘*personal resourcefulness*’. The third factor loaded on two items of “responsible at work” and “cooperativeness with team members” that was termed as ‘*inter- and intra-personal sensitivity*’. The fourth factor loaded on three items of “working overtime to complete projects”, “quantity concerned”, and “quality consciousness” that was termed as ‘*productivity orientation*’. The fifth factor loaded on two items of “taking decisions” and “meeting deadlines” that was termed as ‘*timeliness*’. The last factor loaded on two items of “advocating new ideas for improving product” and “showing concern for profitability” that was termed as ‘*business intelligence*’.

EIC: EICs were measured with a 110-items scale developed by Boyatzis, Goleman, & Rhee (2000). The scale had four dimensions: (a) self-awareness, (b) self-management, (c) social-awareness, and (d) relationship management. The questionnaire contained a set of statements about day-to-day emotional competencies that influenced SPs at the work place. Sample items on (a) self-awareness, include, “I have a sense of humour about myself” and “I can recognise the situation that arouses my emotion”, on (b) self-management, include, “I stay composed and positive, even in difficult moments” and “I am comfortable with ambiguity”, on (c) social-awareness, include, “I can accurately read key social networks in groups, firms, or larger world” and “I can

make myself available to customers/clients”, and on (d) relationship management, include, “I identify and use opportunities to meet new people and develop new contacts” and “I can recognise specific strength or development”. All items were rated on a five-point Likert-type scale ranging from ‘not at all true’ (= 0) to ‘always true’ (= 4). All items were positively keyed. High additive score on items of a dimension indicated more presence of that dimension.

Transformational leadership: Multifactor Leadership Questionnaire (Bass & Avolio, 1990a) was used to assess the extent of transformational leadership in the team leader. The scale had four dimensions: (a) idealized influence (attitude and behaviour), (b) inspirational motivation, (c) intellectual stimulation, and (d) individualized consideration. Sample items on (a) idealized influence, include, “My team leader talks about his/her most important values” and “My team leader goes beyond self interest for the good of the group”, on (b) inspirational motivation, include, “My team leader talks optimistically about the future” and “My team leader articulates a compelling vision of the future”, on (c) intellectual stimulation, include, “My team leader suggests new ways of looking at how to complete assignments”, and “My team leader gets others to look at problems from different angles”, and on (d) individualized consideration, include, “My team leader helps others to develop their strengths” and “My team leader spends time teaching and coaching me”. Response descriptions against each item were given on a five-point Likert-type scale ranging from ‘strongly disagree’ (= 0) to ‘strongly agree’ (= 4). All items were positively keyed. High additive score on items of a dimension indicated a more favourable evaluation of that dimension.

Social capital: Social capital was assessed using 32-items scale developed by Narayan & Cassidy (2001). The scale had seven dimensions: (a) group characteristics, (b) generalized norms, (c) togetherness, (d) everyday socialising, (e) volunteerism, (f) trust, and (g) reciprocity. Sample items on (a) group characteristics, include, “I spend more money every month as contribution to the group I belong”, and “I often participate in the activities of the group to which I belong”, on (b) generalised norms, include, “I always attend frequent meetings arranged of the group” and “I am willing to do a favour to a specific individual or group of individuals”, on (c) togetherness, include, “Member(s) of my community have togetherness feeling”, and “I feel I am getting closer to my network”, on (d) everyday socialiability, include, “I talk to my neighbours

over the cubicle” and “I am identified by my project name”, on (e) volunteerism, include, “I volunteer myself for cultural programmes” and “I volunteer myself to community’ activities”, on (f) trust, include, “I will be careful in trusting community people” and “I trust members of my sports community”, and on (g) reciprocity, include, “I reciprocate to the community needs” and “I have social relation contacts that my friends do not know”. Response descriptions against each item were on a five-point Likert-type scale—‘to a very small extent’ (= 0), and ‘to a very large extent’ (= 4). All items were positively keyed. High additive scores on items of a dimension indicated more favourable evaluation of that dimension.

HRM practices: HRM practices were assessed using the instrument developed by Dechawatanapaisal (2005). The dimensions of HRM practices were: (a) performance-linked incentive, (b) training and development, and (c) staffing. Another dimension on (d) quality of work life was added to the scale. Sample items to measure (a) performance-linked incentives, include, “Whenever I do a good job, my performance is noticed and rewarded” and “I receive adequate recognition for my contribution”, on (b) training and development, include, “I am provided with sufficient opportunities for attending programmes organised by training and development” and “Management in my software firm stresses the importance of training and development”, on (c) staffing, include, “Staffing process in my firm is rigid”, and “When filling vacant positions, people from my software firm are given preference”, and on (d) quality of work life, include, “My company has a transparent employee stock-option plan”, and “My company has the policy to send employees for offshore projects”. Response descriptions against each item were given on a five-point Likert-type scale from ‘strongly disagree’ (= 0) to ‘strongly agree’ (= 4). All items were positively keyed. High additive score of items on a dimension indicated more favourable evaluation of that dimension.

Need for achievement: Four items were developed to measure the ‘need for achievement’. Items to measure ‘need for achievement’ include, “I have constant desire to do better compared to past”, “I set moderate but achievable goals” , “I want a concrete short-term feedback on how well I am performing”, and “I do my job to get the inner kick”. The response descriptions against each item were given on a five-point Likert-type scale ranging from ‘strongly disagree’ (= 0) to ‘strongly agree’ (= 4). All

items were positively keyed. High additive score on four items indicated high need for achievement.

Need for social power. Four items were developed to assess the 'need for social power'. Items to measure 'need for social power' include, "I influence people to change their attitudes", "I try to facilitate people's activities", "I like to be in a position of authority over others", and "I try to persuade my colleagues on work execution". The response descriptions against each item were given on a five-point Likert-type scale ranging from 'strongly disagree' (= 0) to 'strongly agree' (= 4). All items were positively keyed. High additive score on four items indicated high need for social power.

The convergent and discriminant validity of constructs was tested by confirmatory factor analysis (CFA). The Amos 4.0 software package was used. We conservatively used the factor loading of an item to be ≥ 0.3 to eliminate the poorly performing items. Along with descriptive statistics, various fit measures of CFI, GFI, NFI, and RMSEA are given in Table 2.

Table 2. Scale reliability and validity

Construct	No. of items	No. of items deleted	No. of items retained	<i>M</i>	<i>SD</i>	Cronbach α	<i>CFI</i>	<i>GFI</i>	<i>NFI</i>	<i>RMSEA</i>	Loading range
1. Performance											
(a) Work efficiency	4	-	4	7.42	0.87	0.64 ^a					
(b) Personal resourcefulness	3	-	3	7.35	0.87	0.59 ^a					
(c) Intra- and inter-personal sensitivity	2	-	2	7.10	1.10	0.54 ^a	0.80	0.92	0.72	0.08	0.39-0.76
(d) Productivity orientation	3	-	3	7.35	0.85	0.50 ^a					
(e) Timeliness	2	-	2	7.96	0.78	0.38 ^a					
(f) Business intelligence	2	-	2	7.43	0.97	0.36 ^a					
Antecedents											
2. Emotional intelligence competencies											
(a) Self awareness	16	04	12	2.84	0.57	0.97					
(b) Self management	30	02	28	2.69	0.41	0.85	0.65	0.56	0.55	0.07	0.32-0.97
(c) Social awareness	19	-	19	2.89	0.55	0.91					
(d) Relationship management	45	-	45	2.85	0.47	0.94					
3. Transformational leadership											
(a) Idealized influence	8	2	6	2.64	0.58	0.93					
(b) Inspirational motivation	4	2	2	2.83	0.61	0.77	0.93	0.88	0.92	0.11	0.30-0.98
(c) Intellectual stimulation	4	-	4	2.69	0.66	0.97					
(d) Individualized consideration	4	-	4	2.61	0.55	0.76					
4. Social capital											
(a) Groups characteristics	4	-	4	2.83	0.90	0.65					
(b) Group norms	5	1	4	3.69	0.86	0.64					
(c) Togetherness	6	-	6	2.41	0.62	0.67	0.78	0.83	0.71	0.07	0.37-0.85
(d) Everyday sociability	3	-	3	2.43	0.73	0.74					
(e) Volunteerism	3	-	3	2.46	0.74	0.64					
(e) Trust	4	-	4	2.42	0.70	0.64					
(f) Reciprocity	7	-	7	2.07	0.58	0.83					
5. HRM practices											
(a) Performance linked incentives	11	-	11	2.56	0.59	0.86					
(b) Training and development	6	-	6	2.68	0.64	0.81	0.80	0.84	0.74	0.08	0.35-0.77
(c) Staffing	5	-	5	2.48	0.62	0.70					
(d) Quality of work life	4	-	4	1.31	0.45	0.73					
Moderators											
6. Need for achievement	4	-	4	3.06	0.72	0.65	0.95	0.96	0.93	0.09	0.57-0.76
7. Need for social power	4	-	4	2.57	0.81	0.78	0.99	0.98	0.98	0.04	0.66-0.78

^a Composite reliability: Calculated by $(\sum \lambda)^2 / (\sum \lambda)^2 + (\sum 1 - \lambda^2)$ where λ , standardized regression weight (Chilton & Hardgrave, 2004)

Along with the validity of items, the inter-item consistency of each item was reported. Reliability is strong if the alpha coefficient exceeds 0.70 (Nunnally, 1967). In social research, an alpha value of 0.6 or higher is accepted as reasonable (Hair, et al., 1998; Nunnally & Bernstein, 1994). Only four out of six dimensions of performance had reliability less than 0.60. This happened because 'timeliness' and 'business intelligence' were causal indicators, productivity oriented and intra- and inter-personal

sensitivity had items containing mixture of casual and effect indicators. Had the items been purely '*effect*' indicators, then Cronbach alpha greater than 0.70 could have been expected (Bollen & Lennox, 1991).

The validity of all the scales was acceptable and the CFI, GFI were above 0.80 except the dimensions on emotional intelligence competencies. Though the construct had not appreciable fit (≤ 0.9), constructs could not be considered invalid because the minimum fit of the model was achieved and the path coefficients from the observed variables to the latent construct were significant. The mean of each variable was estimated considering the scores of the items in a variable and dividing that by the number of items in that variable to keep the score within the range of the scale.

Results

The performance of engineers and senior software engineers was obtained from the team leaders and SPs assessed their emotional intelligence competencies, team leaders' extent of transformational leadership, social capital among themselves, HRM practices of software firms, their need for achievement and need for social power. Pearson correlations among the studied variables are reported (see Table 3).

- Six dimensions of performance directly interrelated among themselves significantly suggesting that the increase in one dimension of performance was related to the increase other dimensions of performance.
- Barring a few relations, dimensions of EICs including self awareness, self management, social awareness, and relationship management positively varied with the six dimensions of performance.
- The transformational leadership dimensions of inspirational motivation and intellectual stimulation frequently and directly increased with the six dimensions of performance. But, idealised influence increased positively with personal resourcefulness and individualized consideration was related inversely to productivity orientation of performance.
- The social capital dimensions of group characteristics, group norms, togetherness, trust, and reciprocity consistently and directly related to the varied dimensions of performance. But, dimensions of everyday socializing and volunteering did not relate consistently to the dimensions of performance.

- HRM practices of performance-linked reward, training and development, staffing, and quality of work life frequently related to the varied dimensions of performance.
- The proposed moderators of need for achievement and need for social power positively related to all dimensions of performance as well as frequently related to the dimensions of EICs, transformational leadership, social capital, and HRM practices.
- The positive associations were in hypothesized direction but all constructs were not consistently related to all dimensions of performance except need for achievement and need for social power.

Table 3. Inter-correlation among studied variables

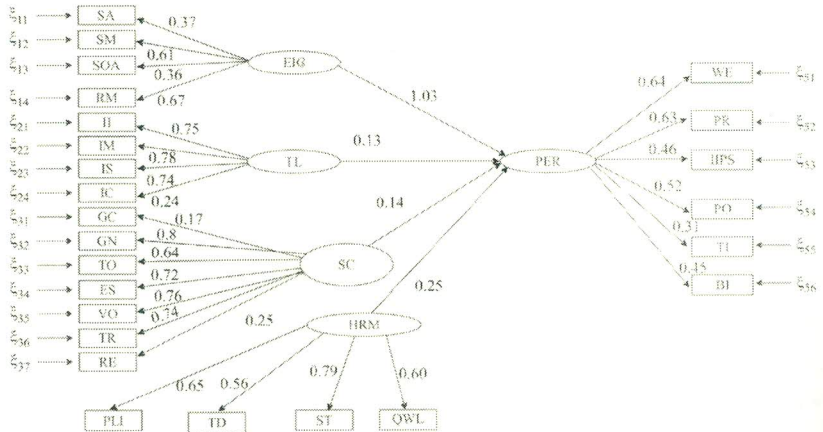
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
1.WE	1																									
2.PR	.37 ^a	1																								
3.IIPS	.31 ^a	.35 ^a	1																							
4.PO	.37 ^a	.34 ^a	.30 ^a	1																						
5.TI	.16 ^a	.29 ^a	.18 ^a	.23 ^a	1																					
6.BI	.32 ^a	.27 ^a	.28 ^a	.24 ^a	.19 ^a	1																				
7.SA	.36 ^a	.15 ^b	.17 ^a	.17 ^a	.06	.11 ^c	1																			
8.SM	.41 ^a	.42 ^a	.34 ^a	.38 ^a	.29 ^a	.35 ^a	.14 ^b	1																		
9.SOA	.36 ^a	.18 ^a	.15 ^b	.12 ^c	.04	.13 ^b	.33 ^a	.21 ^a	1																	
10.RM	.46 ^a	.45 ^a	.34 ^a	.40 ^a	.25 ^a	.38 ^a	.14 ^b	.43 ^a	.22 ^a	1																
11.II	.04	.09 ^a	.04	.07	.01	-.01	-.03	.06	-.04	.07	1															
12.IM	.04	.10 ^a	.08	.12 ^a	.11 ^a	.06	-.05	.08	-.06	.03	.59 ^a	1														
13.IS	.12 ^a	.19 ^a	.04	.09	.01	.11 ^c	-.06	.08	-.03	.15 ^b	.56 ^a	.57 ^a	1													
14.IC	-.08	-.01	-.06	-.13 ^a	-.05	-.05	-.07	-.03	.01	-.06	.27 ^a	.17 ^a	.21 ^a	1												
15.GC	.34 ^a	.34 ^a	.26 ^a	.78 ^a	.25 ^a	.32 ^a	.12 ^c	.38 ^a	.11 ^c	.35 ^a	.05	.11 ^c	.08	-.06	1											
16.GN	.12 ^a	.21 ^a	.12 ^a	.13 ^b	.14 ^b	.12 ^a	.01	.13 ^b	.07	.11 ^c	.08	.04	.09	-.01	.13 ^b	1										
17.ES	.07	.17 ^a	.09 ^a	.15 ^b	.06	.06	.01	.12 ^b	-.01	.04	.08	.03	.06	-.08	.13 ^b	.54 ^a	1									
18.TO	.08	.16 ^a	.10 ^a	.13 ^b	.09 ^a	.11 ^a	.03	.08	.07	.07	.07	.05	.07	-.01	.12 ^b	.55 ^a	.41 ^a	1								
19.VO	.06	.09 ^a	.05	.11 ^a	.03	.07	-.02	.07	-.01	-.01	.04	.06	.07	-.03	.10 ^a	.69 ^a	.53 ^a	.45 ^a	1							
20.TR	.13 ^b	.16 ^a	.06	.14 ^b	.09 ^a	.03	.01	.08	.01	.05	.09 ^a	.02	.05	-.05	.11 ^c	.53 ^a	.64 ^a	.53 ^a	.52 ^a	1						
21.RE	.36 ^a	.91 ^a	.36 ^a	.37 ^a	.27 ^a	.24 ^a	.13 ^b	.42 ^a	.18 ^a	.41 ^a	.12 ^b	.13 ^b	.21 ^a	.02	.38 ^a	.21 ^a	.19 ^a	.19 ^a	.13 ^a	.16 ^a	1					
22.PLI	.12 ^a	.28 ^a	.13 ^b	.16 ^a	.01	.12 ^a	.07	.11 ^c	.08	.13 ^b	-.10 ^a	-.03	-.03	-.01	.16 ^a	.13 ^b	.11 ^c	.12 ^a	.15 ^a	.13 ^b	.32 ^a	1				
23.T&D	.04	.16 ^a	.08	.19 ^a	.03	.09 ^a	.04	.04	.01	.10 ^a	-.01	-.02	.02	-.02	.16 ^a	.05	.12 ^a	.02	.16 ^a	.06	.17 ^a	.43 ^a	1			
24.ST	.17 ^a	.33 ^a	.19 ^a	.17 ^a	.08	.12 ^a	.04	.13 ^b	.03	.16 ^a	-.08	-.03	-.01	-.02	.17 ^a	.25 ^a	.20 ^a	.22 ^a	.22 ^a	.12 ^b	.35 ^a	.50 ^a	.45 ^a	1		
25.QWL	.17 ^a	.35 ^a	.22 ^a	.20 ^a	.08	.17 ^a	.02	.17 ^a	.05	.22 ^a	.03	.05	.08	-.01	.21 ^a	.30 ^a	.20 ^a	.28 ^a	.22 ^a	.24 ^a	.38 ^a	.35 ^a	.27 ^a	.50 ^a	1	
26.NFA	.19 ^a	.27 ^a	.16 ^a	.26 ^a	.29 ^a	.25 ^a	.07	.21 ^a	.11 ^c	.22 ^a	.16 ^a	.22 ^a	.08	-.02	.29 ^a	.02	-.04	.01	-.02	.02	.24 ^a	.01	.08	.04	.13 ^b	1
27.NFSP	.70 ^a	.62 ^a	.54 ^a	.62 ^a	.39 ^a	.51 ^a	.28 ^a	.49 ^a	.29 ^a	.56 ^a	.11 ^c	.12 ^a	.21 ^a	-.01	.54 ^a	.23 ^a	.18 ^a	.20 ^a	.13 ^b	.17 ^a	.58 ^a	.17 ^a	.15 ^b	.26 ^a	.27 ^a	.31 ^a

^ap<.001. ^bp<.01. ^cp<.05

WE=Work efficiency, PR =Personal resourcefulness; IIPS = Intra- and inter-personal Sensitivity; PO = Productivity orientation; BI = Business intelligence; SA = Self awareness; SM = Self Management; SOA = Social Awareness; RM = Relationship management; II = Idealized influence; IM = Inspirational motivation; IS = Intellectually Stimulating; IC = Individualized consideration; GC = Group characteristics; GN = Group norms; ES = Everyday sociability; TO = Togetherness; VO = Volunteering; TR = Trust; RE = Reciprocity; PLI = Performance-linked incentives; TD = Training and Development; ST = Staffing; QWL = Quality of work life; NFA = Need for achievement; NFSP = Need for social power.

The latent variable structural equation modelling (LVSEM) was adopted to test the hypotheses. LVSEM unfolds antecedent-consequence relationships that are unreserved in bidirectional correlations. LVSEM tests the sequential relationships between a series of independent and dependent variables. It tests the complex models in a single analysis (Mackenzie, 2001). It incorporates measurement models as well as structural relations. It controls measurement errors—(a) random and (b) systematic. Random errors occur due to difficulties in measuring the constructs accurately. Random errors of each construct were isolated increasing the fit measures of constructs using confirmatory factor analysis. Systematic errors occur due to factors like social desirability, common method bias (e.g., scale type, rater, or context), and response biases (e.g., leniency, yea-saying, or nay-saying). Systematic errors like common method bias (Podsakoff, MacKenzie, & Podsakoff, 2003) were controlled procedurally and statistically. A procedural control was made collecting data on performance of SPs from their team leaders and on EICs, transformational leadership, social capital, HRM practices, need for achievement and need for social power from SPs. A statistical control was made using LVSEM, with all indicator variables loading on the latent factor. The method bias was controlled in the measurement model of LVSEM by incorporating highly reliable and valid measures.

Fig 2. The standardized path coefficients of antecedents on performance



Significance path, ξ = Error term SA=Self-awareness; SM=Self management; SOA=Social-awareness; RM=Relationship management; EICs=Emotional intelligence competencies; II=Idealized influence; IM=Inspirational motivation; IS=Intellectually stimulating; IC=Individualized consideration; TLS=Transformational leadership style; GC=Group characteristics; GN=Group norms; TO=Togetherness; ES= Everyday socialising VO=Volunteering; TR=Trust; RE=Reciprocity; SC=Social capital; PLI=Performance-linked incentives; TD=Training and development; ST=Staffing; QWL=Quality of work life; HRMP=Human resources management practices; WE=Work efficiency; PR=Personal resourcefulness; IIPS=Intra- and Inter-personal sensitivity; PO=Productivity orientation; TI=Timeliness; BI=Business intelligence; PER=Performance.

In LVSEM, the standardised paths from exogenous/observed variables to endogenous/latent constructs were significant suggesting that the observed dimensions of EICs, transformational leadership, social capital, and HRM practices were measuring their latent constructs (see Fig. 2). An increase in EICs at the individual level, transformational leadership and social capital at the group level, and HRM practices at the enterprise level increased the performance of SPs. Findings supported the first hypothesis. The unstandardized beta coefficients, standard errors, and critical ratios of hypothesized paths of first hypothesis are provided in Table 4.

Table 4. LVSEM results of antecedents determining performance

Hypothesis	USRW ^a	SE ^b	CR ^c	Hypothesis
H _{1a} Emotional intelligence competencies→ Performance	1.49	0.15	9.72***	Supported
H _{1b} Transformational leadership→Performance	0.02	0.01	3.02***	Supported
H _{1c} Social capital→ Performance	0.55	0.20	2.79***	Supported
H _{1d} HRM practices→ Performance	0.39	0.08	5.00***	Supported
Observed and latent variable				
Work efficiency→ Performance	1.00	-	-	
Personal resourcefulness→ Performance	0.98	0.10	9.80***	
Intra-and inter-personal sensitivity→ Performance	0.89	0.11	8.09***	
Productivity orientation→ Performance	0.80	0.09	8.89***	
Timeliness → Performance	0.45	0.08	5.63***	
Business intelligence→ Performance	0.79	0.10	7.90***	
Self awareness → Emotional intelligence competencies	0.50	0.08	6.25***	
Self management→ Emotional intelligence competencies	1.00	-	-	
Social awareness→ Emotional intelligence competencies	0.58	0.09	6.44***	
Relationship management→Emotional intelligence competencies	1.17	0.11	10.64***	
Idealized influence→ Transformational leadership	1.00	-	-	
Inspirational motivation →Transformational leadership	0.63	0.50	12.60***	
Intellectually stimulating →Transformational leadership	0.65	0.05	13.00***	
Individualized consideration →Transformational leadership	0.17	0.40	4.25***	
Group characteristics→ Social capital	2.45	0.74	3.32***	
Group norms → Social capital	3.38	0.69	4.90***	
Everyday sociability→Social capital	3.26	0.68	4.82***	
Togetherness → Social capital	3.64	0.77	4.75***	
Volunteering → Social capital	3.50	0.72	4.85***	
Trust → Social capital	3.18	0.66	4.83***	
Reciprocity → Social capital	1.00	-	-	
Performance-linked incentives → HRM practices	1.14	0.12	9.50***	
Training and development → HRM practices	0.91	0.11	8.27***	
Staffing → HRM practices	1.30	0.14	9.29***	
Quality of work life → HRM practices	1.00	-	-	

*** $p < .001$.^aUSRW = Unstandardized regression weight, ^bSE = Standard error, ^cCR =Critical ratio

To test the second hypothesis depicting moderator effects, two groups structural equation modelling were performed using median split samples for need for achievement and need for social power. The same structural equation modelling as shown in Figure 2 was estimated for high (above median) and low (below median) sample groups on two moderators of need for achievement and need for social power.

To examine the presence of moderating effects, this study followed Joreskog & Sorbom (1993) directions. Two tests for each high and low group were conducted for each variable, based on four corresponding models A, B, C, and D differing according to the constraint levels that were grouped for each variable. In accordance with the recommendations of Dabholkar & Bagozzi (2002), four models associated with multi-analysis using SEM were constrained in terms of error variances explained by latent variables and path coefficients between latent constructs. Model A was constrained to be the same across the two models for both high and low groups in error variances and path coefficients. Model B only had path coefficients constrained and model D only error variances. With regard to model C, all path coefficients and error variances were constrained to be free across the two groups. Assuming that the pair of models for error variances such as A and B (C and D) is not significantly different, if the χ^2 differences between the other pairs of models such as A and B (C and D) are significant, then it can be considered that there are significant moderating effects across the low and high groups (Baron & Kenny, 1986).

According to the results, χ^2 difference between pairs of given models indicated that there were significant difference between model A and model B on need for achievement and need for social power for both the high and low groups (see Table 5). This suggested that significant moderating effects of need for achievement and need for social power.

Table 5. Structural equations results for moderating effects models							
		χ^2	df	RMSEA	GFI	CFI	$\Delta\chi^2/\Delta df$
Basic model	Model	1036.9	524	0.08	0.82	0.80	–
Moderating variables							
Need for achievement	B	1292.5	524	0.06	0.65	0.71	26.56***
	A	1319.1	523	0.06	0.66	0.70	
Need for social power	B	1022.3	524	0.05	0.68	0.75	129.61***
	A	1151.9	523	0.05	0.67	0.71	
*** $p < .001$.							

Careful testing was done to verify whether the change in coefficients were due to group differences and not due to measurement error. In each case, the chi-square (χ^2) difference between the high and low groups was estimated. If the χ^2 difference between these two groups divided by the change in degree of freedom (χ^2 difference for one

degree of freedom, $\Delta\chi^2/\Delta df$) was significant, then there were significant moderating effects across the low and high groups. The results are presented in Table 6. Only after obtaining such evidence, beta coefficients were compared across the high and low group levels. It is an adaptation of Joreskog & Sorbom's (1993) rigorous procedure for verifying whether factor loadings are essentially the same or significantly different across two groups. If the relevant effects of moderating are truly present (not spuriously caused) and that determine the direction and significance of beta coefficients.

Table 6. LVSEM results for moderating effects between groups															
Group	Variable	N	χ^2	df	χ^2/df	CFI	GFI	NFI	RMSEA	PCFI	PGFI	PNFI	$\Delta\chi^2$	Δdf	$\Delta\chi^2/\Delta df$
	Hypothesized Model	441	453.40	199	2.28	0.88	0.91	0.87	0.05	0.79	0.71	0.74			
High	Need for achievement	178	293.25	131	2.24	0.93	0.88	0.82	0.08	0.80	0.68	0.70	82.55	17	4.83**
Low	Need for achievement	263	375.80	148	2.53	0.92	0.88	0.82	0.08	0.77	0.69	0.70			
High	Need for social power	171	475.25	151	3.14	0.61	0.89	0.89	0.11	0.51	0.89	0.46	175.25	11	15.93***
Low	Need for social power	270	300.00	162	1.85	0.93	0.91	0.83	0.06	0.80	0.71	0.71			
* $p<.05$. ** $p<.01$. *** $p<.001$.															

The high and low groups on need for achievement and on need for social power differed significantly because the chi-square difference for one degree of freedom was significant. This suggested that moderators of need for achievement and need for social power at their high and low levels impacted differently the relationships of antecedents with performance. These results supported the moderating effects of need for achievement and need for social power between focal independent and dependent variables.

Table 7. Path analytic results of second hypothesis with moderating variables												
Need for achievement							Need for social power					
		Groups	SRW ^a	USRW ^b	SE ^c	CR ^d	Decision	SRW	USRW	SE	CR	Decision
H _{2a}	EICs → Performance	High	1.04	6.36	1.11	5.74***	attenuated (strengthened) for high (low) need for achievement	1.09	4.03	1.29	3.12***	attenuated (strengthened) for high (low) need for social power
		Low	1.05	5.24	0.66	8.00***		1.29	5.75	1.09	5.26***	
H _{2b}	TL → Performance	High	0.02	0.10	0.29	0.35	nullified (strengthened) for high (low) need for achievement	-0.1	-0.11	0.14	-0.79	nullified (strengthened) for high (low) need for social power
		Low	0.18	0.68	0.30	2.28*		0.24	0.66	0.31	2.10*	
H _{2c}	SC → Performance	High	0.18	0.67	0.24	2.81**	strengthened (nullified) for high (low) need for achievement	0.21	1.24	0.63	1.97*	strengthened (nullified) for high (low) need for social power
		Low	0.13	3.83	2.68	1.43		0.11	3.46	3.61	0.96	
H _{2d}	HRM practices → Performance	High	0.32	1.58	0.40	3.99***	strengthened (attenuated) for high (low) need for achievement	0.45	1.15	0.36	3.16***	strengthened (attenuated) for high (low) need for social power
		Low	0.18	1.41	0.51	2.77**		0.18	0.85	0.41	2.05*	

*p<.05. **p<.01.***p<.001.

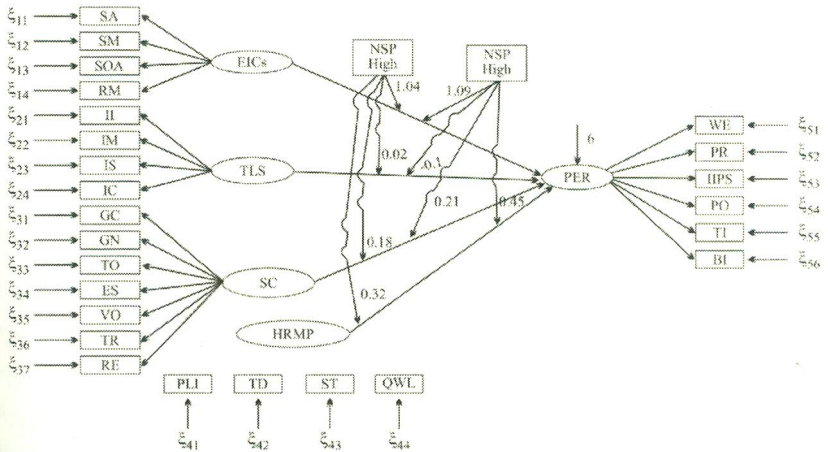
^aSRW= Standardised regression weight, ^bUSRW = Unstandardised regression weights, ^cSE = Standard error, ^dCR =Critical ratio.

EICs= Emotional intelligence competencies; TL= Transformational leadership; SC=Social capital; HRM practices= Human resources management practices.

The path coefficient estimates showing the relationship of predictors with the criterion at high and low levels of moderators are shown in Table 7. With low need for achievement and low need for social power of SPs, EICs of SPs and transformational leadership of superiors influencing performance were strengthened. Contrarily, with high need for achievement and high need for social power such relationships were attenuated/nullified.

Social capital among team members and HRM practices of software firms influencing performance of SPs were strengthened under high need for achievement and high need for social power (Fig. 3) and accentuated/nullified under low need for achievement and low need for social power of SPs. Because the need for achievement and need for social power (moderators) directly varied with the dimensions of performance (dependent variable), they were quasi/partial moderators (Sharma, Durand & Gur-arie, 1981).

Fig 3. Moderators influencing antecedent-consequence relationships



ξ = Error, SA = Self-awareness; SM = Self management; SOA = Social-awareness; RM = Relationship management; EICs = Emotional intelligence competencies; II=Idealized Influence; IM=Inspirational motivation; IS = Intellectually stimulating; IC=Individualized consideration; TLS = Transformational leadership style; GC = Group characteristics; GN=Group norms; TO=Togetherness; ES= Everyday sociability; VO = Volunteering; TR=Trust; RE=Reciprocity; SC=Social capital; PLI = Performance-linked Incentives; TD = Training and development; ST=Staffing; QWL=Quality of work life; HRMP = Human resources management practices; WE = Work efficiency; PR = Personal resourcefulness; IIPS=Intra- and Inter-personal sensitivity; PO=Productivity orientation; TI= Timeliness; BI = Business intelligence; PER = Performance; NFA = Need for achievement ; NFS = Need for social power.

Discussion

This study examines the determinants of SPs' performance. A cross-section of 441 software engineers and senior software engineers responded to a questionnaire survey on socio-demographic variables, EICs, transformational leadership, social capital, HRM practices, need for achievement and need for social power, and the team leaders assessed the performance of SPs. Findings suggest that more the EICs of SPs, transformational leadership style of team leaders, social capital among SPs, and HRM practices provided by software firms, more is the job performance of software professionals. With high need for achievement and high need for social power of SPs, EICs and transformational leadership influencing performance are either attenuated or

nullified. Contrarily, under low need for achievement and low need for social power, EICs and transformational leadership have more potently furthered the SPs' performance. Also, under high need for achievement and high need for social power of SPs, social capital and HRM practices influencing performance of SPs are strengthened and under low need for achievement and low need for social power such relationships are weakened or nullified. Because the need for achievement and need for social power relate directly with the dimensions of performance, the proposed constructs are partial moderators.

Corroborating the earlier findings that job performance is more determined by emotional intelligence than cognitive intelligence (Boyatzis & Sala, 2004; Cherniss & Goleman, 2001; Feist & Barron, 1996; Goleman, 1995; McClelland, 1998), findings of this study suggest that SPs having high EICs are better performers. The findings agree with earlier evidence that SPs with high EICs show at least consistent behaviour when job demands and organisational environment call for high performance (Boyatzis, 1982, pp.239-240). Having high EICs, SPs perform better in accordance with organisational demands. Self-awareness and self-managerial skills have tuned the SPs emotional framework to be adept, resilient, and responsive to customers' demands. This intra-personal competency not only includes the personal attributes of confidence, optimism, proactiveness, self-control, emotional maturity, and tolerance for ambiguity but also contextual facilitative attributes of strategic goal settings, team building, and customer focus. All these in tandem have improved performance of SPs.

Findings are congruent with an earlier study (Goleman et al., 2002) that the interpersonal competencies of SPs have furthered performance synthesising their motivation with colleagues. SPs' emotional attachment with clients on successive interactions has inspired reworking and enhanced work-efficiency. An emotional affection in the workplace has resulted in exhibiting a greater social-awareness demonstrating business and cultural etiquettes when dealing with clients of different ethnic and religious backgrounds. SPs with more EICs have performed better synchronising their self-generated emotions with emotions of peers, clients, and team leaders. Empathizing with peers during pause-periods has helped SPs to overcome fatigue and focus more on software quality.

SPs writing open source code have improved job performance working under transformational team leaders (Li, Tan, Teo, & Mattar, 2006). Informal discussion with the SPs unfolds that their team leaders are senior to them, and they and their team leaders have worked as colleagues in the past. But the team leaders have been more influential on colleagues and juniors to achieve project objectives. Through their deeds, they have been able to mobilize the juniors, build trust, and bring the SPs' talent up to the surface for achieving projects vis-à-vis organisational goals.

The transformational team leaders have enhanced SPs' performance encouraging them to do their jobs in innovative ways, inspiring and elevating them to a higher plane, removing deficiency through teaching, training, counselling and seeking their participation in goal-setting, problem-solving, and decision-making. They withstand challenges posed by clients' requirements because the transformational team leaders have intellectually stimulated and encouraged SPs to think critically and do their jobs in novel ways. Such leaders have made SPs optimistic, enthusiastic, confident, and achievement-driven that increased performance.

This study compliments the evidence that people who perform better are better in networking with other constituents in the software firm (Burt, 2001; Taeube, 2005). SPs have overcome the pressure of performance through cooperation, reciprocation, and mutual support. They have practised togetherness with colleagues/peers interacting with them and collecting insightful information about the project that have helped to improve performance. Freedom of expression, open line of communication, and mutual pressure for performance have increased the efforts of SPs for success of software projects vis-à-vis their performance..

Findings concur with earlier evidence (Dechawatanapaisal, 2005) that improved HRM practices such as performance-linked incentive, training, and quality of work life have improved SPs' performance. SPs have attended training and development programmes offered by the firm to meet job demands in developing their domain expertise and being multi-skilled. Performance-linked incentives have reinforced engagement in work activities, offering excellent services to the customers, adhering to values and norms of firms, and being disciplined at the work place. The staffing function has engineered to hire right people for the right job. Through staffing, SPs have

designed more bugs free, more agile programme with more lines of code and have accordingly received more incentives. Perhaps, the top management of software firms has been quick enough to respond to needs of employees about quality of the workplace. A case in point is the Microsoft Company (Redmond, USA). SPs are given freehand to purchase and place order for any item without hierarchal hassles that they consider essential to improve the quality at workplace (Microsoft, 2006). It is possible that HRM practices have motivated SPs to work hard in meeting deadlines and fulfilling the needs of clients. Reasonable performance-linked incentive, training, staffing, and having stocks in firms, overseas assignments, and physical evidences in the work place have promoted the SPs' performance.

It was assumed earlier that 80 per cent of successes in job are determined by EICs and 20 per cent by cognitive/rational intelligence (Goleman, 1995). Supporting the claim of Goleman (1995), EICs are found to be most important predictor of job performance. The other constructs at group and enterprise levels, not proposed by Goleman (1995), are also found to influence performance.

High need achievers are self-motivated and are high performers. Their performance can hardly change with their high EICs and transformational style of team leaders. Contrarily, for low achievers, their EICs and the transformational style of team leaders propelled them to improve their performance. Similarly, SPs having high need for social power have high emotional maturity, high self control, and an ability to influence others. Contrarily, SPs having low social power, their EICs and transformational team leaders mobilized them for superior performance. Software jobs are unroutinised, unstandardised, and non-deterministic (Ilavarasan & Sharma, 2003) and are carried under high schedule pressure. After the 9/11 incident, many contractual software projects were delayed/diverted, and in the present situation also because of global recession software firms have terminated services of SPs. This has created a fear psychosis among SPs. The low achievers have displayed intrapreneurial behaviour by focusing their emotional energies to learn news skills, knowledge, and develop domain expertise working in different projects. Team leaders also improved the performance of SPs by inspiring, removing deficiency, and intellectually stimulating them. They mobilized the heart and minds of SPs for higher performance. As the team leaders expected from the low achievers, the low achievers performed accordingly. This is the 'Pygmalion effect'.

Under high need for achievement and high need for social power, social capital and HRM practices boost up performance. For those, having high need for achievement and high need for social power, the trust, reciprocation, and cooperation among team members and the adequate HRM practices have provided an enabling environment to higher performance. SPs, having low need for achievement and low need for social power, are not self-driven and are not good in inter- and intra-personal emotional sensitivity. For them, the social capital and HRM practices have hardly influenced performance. Under favourable conditions, EICs, transformational leadership style, social capital, and HRM practices have improved performance of SPs. Contrarily, when such favourable conditions are lower, antecedents have accentuated performance.

There are certain limitations of the study that must be acknowledged. The perceptual data from SPs and team leaders might have been contaminated by social desirability. Notwithstanding the limitations, this study provided the evidence that beyond the emotional competencies; transformational team leaders, and social capital among SPs' and HRM practices of software firms can contribute to performance. Software firms can hire SPs with high EICs and mould the way of functioning of the team leaders, and establish a favourable social capital among team members via social blogs (e.g., twitters, ibibo), and provide HRM practices to promote performance. Also, SPs having need for high achievement and high need for social power can boost up their performance regardless of EICs and the leadership style of team leaders.

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