Nature and Importance of Soft Skills in Software Project Leaders

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Abstract

Indian software industry has had a phenomenal growth since the last decade of the twentieth century. Indian software industry is expected to play a much bigger role in the new millenium in the growth of Indian economy. In the light of the research findings that lack of soft skills is one of the key reasons for the high rate of failure of information systems projects, this study assesses the difficulties experienced by Indian IT project leaders in executing projects and the need for learning soft skills. Through role diagnostic workshop of Indian software professionals and in-depth interviews of various stakeholders, the study identifies various soft skills required by software professionals in leadership position, such as self-related soft skills, leadership and managerial skills, followed by knowledge and skills related to business domain, customers, project and process management. The findings are discussed in a larger context of why technical professionals are reluctant to occupy managerial positions and the impact of lack of soft skills in leaders and team members on project success.

Keywords: Competency mapping; Indian software industry; Soft skills

1. Introduction

> *Those who can manage technology will move toward leadership roles; those who cannot, will move toward oblivion (Picmet, 1997)*

In most organisations today, information technology (IT) systems are a critical component in their strategic or operating plans. Along with the increased awareness of the potential for IT to facilitate re-engineering and restructuring of business processes in response to increased competition, there is a growing reliance on IT in all aspects of organisational work. However, there is a widespread dissatisfaction about the performance of information systems (IS) projects. DeMarco (1982) reported that some 15% of all software development never delivers anything, and overruns of 100-200% are common in software projects. Inordinate delays, excessive budget overruns, post-implementation testing, user dissatisfaction, late deliveries, poor reliability, maintenance problems... the list of woes continues (Abdel-Hamid and Madnick, 1990). The high rate of failure in IS projects compels us to examine the critical success factors for these projects. Even though the definition of success itself is contentious (Wateridge, 1995), in the context of this study, we adopt Pinto and Mantel's (Pinto and Mantel, 1990) definition of success that identifies three distinct aspects of project outcome: the implementation process for the project, the perceived value of the project, and client satisfaction with the

delivered project.

2. Critical Success Factors in Project Implementation

The literature on IS project implementation provides ample evidence on the importance of non-technical issues as critical success factors (Phan and Vogel, 1988; Laudon and Laudon, 1990). Although there is a paucity of empirical evidence on the causes for project failure, Sauer (1993) suggests that a consensus has been reached among researchers that failure is generally caused by the neglect of the behavioural and social factors. Lowry, Morgan and FitzGerald (1996) argue that managerial, organisational, and cultural factors, rather than technological ones, determine success in the IT industry. According to Bates (1994), "the key ingredient to effective project management is good people management and leadership skills. The more complex the people situation, the more critical a project manager's leadership capabilities become". Geaney (1995) agrees: "in today's corporations, tremendous responsibility lies with the IS project manager, who must take the corporation's vision and translate that vision in to systems that support the company's strategic direction".

The role of project manager in IS projects is more challenging and vital than in other types of projects where it may be less critical (Cleland, 1995). In IS departments, project managers are faced with increasingly complex tasks, which require more than a single set of management skills (Carter, 1998). That is why, the concept of 'hybrid'

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managers, particularly, in the context of IS environment is gaining prominence (Palmer and Ottley, 1990).

In the IS environment, several studies have highlighted the essential qualities and skills of IS project managers to ensure success in project implementation (Geaney, 1995; Bloom, 1996). They highlight the importance of IS manager's ability to manage people, stress, emotions, organisational bureaucracy, and communication. Jiang, Klein and Margulis (1998) found that experienced IS professionals ranked interviewing, directing and managing as the most important behavioural skills for IS project managers. In a study by Lowry et al. (1996), IT staff described their ideal manager in metaphorical terms: a coach, one who manages by walking around, diplomat, stands up for staff, open door policy, promoter of the best in people, juggler, directional, maintains momentum, a large ear and superman.

Based on an empirical study of successful IT project leadership styles, Thite (2000) recommends an "underlying yet flexible style characterised by organisational catalyst, intellectual stimulation, behavioural charisma, and contingent reward behaviours for enhanced leadership effectiveness".

3. Research Background

Since the study pertains to Indian software project leaders, it is important to gain an understanding of the Indian software industry and the issues and challenges project leaders face within Indian IT project environment.

In spite of recessionary trends in the software industry worldwide, Indian software industry had a growth of about 26 percent during the year 2002-03 and had a total turnover of about US$ 12.45 billion. It has been the fastest growing sector in the Indian economy. The software exports are expected to touch US$50 billion by 2008. India reportedly has 2.5 million scientists and engineers with around 150,000 freshers being added every year (NASSCOM,2003). Considering that most of the Indian software services organisations are engaged in providing software solutions to clients abroad, project leadership assumes immense importance. Their key responsibilities include:

- Interfacing with potential customers, understanding their requirements, getting the contract and delivering in time, within budget and meeting quality requirements;

- Seeking management commitment and securing necessary resources, assigning roles and responsibilities, coordinating activities amongst different team members, and technical and managerial trouble-shooting;

- Coordinating with off-site and on-site development teams through personal visits, telephone

and video-conferencing and managing their often conflicting interests; and

- Keeping the customer and the local management informed about the project progress on regular basis.

Indian software organisations severely suffer from the lack of quantity and quality of project leaders, partly because many of the Indian software professionals used to till recently migrate abroad after acquiring about 3 years work experience. With the available pool fast depleting due to local and international demand, the future of the Indian IT industry hinges on how it deals with the shortage and how it trains the professionals in acquiring domain expertise (Fernandes et al.,2000). According to Tschang (2001), "while there is a strong labour pool, there is a shortage of middle-level systems analysis and project management skills". Many US clients, who account for 62% of Indian software exports market, consider the 'missing middle layer' as a barrier to growth (Arora et al., 2000).

Due to the shortage, Indian management tend to promote software professionals at a very early stage of their careers and ask them to take on the role of a project leader (Agrawal, 1999; Fernandes et al., 2000). It is in this context that this study looks at the nature and importance of soft skills for Indian software professionals operating in leadership positions at different levels.

4. Methodology

Respondents to the study included software professionals enrolled in the Year 2001 and Year 2002 batches of the Post-Graduate Diploma in Software Enterprise Management (PGSM) conducted by the Indian Institute of Management, Bangalore (IIMB). PGSM is a part-time, three-year course with flexible modules to suit working software professionals. All the 117 participants were working in software companies located in Bangalore. Forty-six participants belonged to 16 multinational corporations, 67 participants were from 15 Indian companies and four participants were self-employed. The average work experience of the participants was 60 months with a standard deviation of 36.7 months; the maximum work experience being 22 years and the minimum work experience being one year. Ninety-one participants were engineering graduates, 19 participants were post-graduates in engineering/computer applications, four participants were graduates in disciplines other than engineering, one participants had done Master in Business administration (MBA) and two participants had doctorate in engineering.

Based on the designation and the work experience, the participants in the study were placed into four categories, namely, module leaders (50 participants), project leaders (33 participants), project managers (23 participants) and business managers (11 participants). As a part of the in-

duction programme, all the participants attended a half-day role-diagnostic workshop. As a part of the work-shop, the participants filled a "Role diagnostic and Learning Need Identification Questionnaire". The participants needed to define the contribution expected from them in their existing roles, difficulties experienced by them to make those contributions and the learning required by them. Both the authors jointly analyzed responses from ten participants to identify the nature and cluster of difficulties experienced by the participants. The analysis led to identification of forty seven difficulties spread over seven clusters, namely, managerial issues, leadership issues, business domain related issues, self-related issues, customer related issues, project and process management related issues, and organization and role related issues. The remaining 107 questionnaires were independently analyzed and categorised by both the authors. Both the authors identified four hundred and eighty five difficulties as expressed by the participants in 117 questionnaires. The two authors did the classification of these 485 difficulties in the different clusters independently. In twenty-three cases, the two authors had chosen different clusters. The two authors jointly read those statements, discussed the context and the differences were sorted out.

In addition, in-depth interviews of 10 software professionals, 10 project managers, five business leaders and four HR managers were conducted to gain a deeper understanding of the issues emerging from the 'role-diagnostics workshop'. A group of students of the first author conducted fourteen interviews as a part of the course taught by the first author at Indian Institute of Management Bangalore. The remaining 15 interviews were conducted by the authors. The average duration of an interview was about 45 minutes. All the interviews were transrcripted. Findings relevant to the paper are discussed and reported here.

5. Results

Content analysis of the data revealed that the difficulties experienced by the software professionals in leadership position and the consequent need for soft skills could be broadly classified in to seven clusters: self-related, leadership related, managerial related, business domain related, customer related, project and process management related, and organisational and role related. (Table1).

5.1 Self-related Difficulties and Learning Needs

As seen from Table 1, self-related difficulties are the largest cluster of difficulties. A much higher number of module leaders experience self-related difficulties as compared to other three levels of leaders. Management of time is a major self-related difficulty. Demanding work environment with tight schedules, fast changing customer needs and technological changes and the need to work within tight constraints leave software professionals with little time to plan and prioritise their activities. They feel that the work takes away so much of the time that they are not able to give enough time to their personal life.

Lack of assertiveness emerged as another major difficulty related to self. They find it difficult to disagree with their superiors as well as team members as they do not want to hurt them. They do not know how to deal with non-performers. They also have difficulties in projecting their contributions to their superiors and hence other takes away credit for their work. In addition, the respondents expressed inability to play multiple roles, lack of interest in non-technical subjects, inability to delegate tasks and hence feeling stressed, and inability to look beyond current roles and take more managerial responsibilities.

5.2 Leadership Related Difficulties and Learning Needs

As seen from Table 1, Motivating team members, managing team, change management, managing learning processes and knowledge management and creating shared vision are major leadership related concerns of software professionals. A much higher number of project leaders, project managers and business managers experienced leadership-related difficulties and challenges as compared to module leader.

Our study found that motivation is particularly low in certain repetitious tasks, such as testing, documenting, maintenance, and quality control. Lack of power to provide discretionary rewards to team members was another aspect highlighted by a few respondents. Managing teams consisting of people with different educational and cultural backgrounds with varying degrees of capabilities and commitments, is considered as a major challenge by respondents. The respondents also observed that while many of the team-members are individually excellent and highly capable, they are poor team members. The problem of building teams is exacerbated by short project life cycles, which are not conducive to bonding.

The respondents felt the need to learn knowledge management skills that promote effective, timely and on-going acquisition, sharing and utilisation of knowledge within and between projects. They expressed that their team members expect that as a leader they should provide opportunities for them to learn what is current in the field. Perceived inequity in learning opportunities between different projects lead to clamour for development projects and reluctance to undertake maintenance projects. In addition, lack of recognition and reward for knowledge generation, sharing and utilisation also add to the difficulties.

One of the key issues that emerged from the survey was that customers were prone to demanding frequent changes to their original specifications and the ability to

Table 1. Difficulties Experienced and Learning Needs Identified by Software Project Leaders
Number of Respondents: 117 Total No. of Difficulties: 485

Cluster	Difficulties	Learning Needs
Self related (101)	• Time management. Lack of balance between professional and personal life (35) • Lack of assertiveness in saying no, getting work done from team members & dealing with non-performers (20) • Find it difficult to have skills in project management, people, management, process execution, technical management and client interaction (8) • Lack of interest in non-technical subjects (6) • Find it difficult to cope up with stressful situations (7)	• Time Management • Assertiveness • Ability and mindset to play multiple roles • Delegation skills, • Stress Management
Leadership related (93)	• Motivating team members to work towards a common goal by contributing their best and aligning personal goals with those of the organisation (34) • Building effective, cohesive, diversity sensitive teams (21) • Need to keep up with latest technology, share knowledge and continuous learning (18) • Managing change (12) • Common vision for the individual, team & organisation (8)	• Motivational skills • Team Building skills • Knowledge Management skills • Change Management skills • Creating Shared Vision
Managerial Role related (92)	• Communication with customers, team members & management (37) • Inter-personal problems (27) • Human resource management related responsibilities (19) • Lack of Planning skills (9)	• Oral and Written Communication • Inter-personal skills • HRM skills • Planning skills
Business domain related (69)	• Lack of business and market knowledge related to project domain (34) • Lack of knowledge about finance and marketing (27) • How to get more projects and business for the company (5)	• Domain related Business Knowledge • Finance and Marketing skills.
Customer related (48)	• Lack of understanding of customers, their problems, business plans and customers' markets (21) • Balancing customers' demands and organisational priorities (10) • Cultural differences between customers and project team (7) • Changing needs of customers (6)	• Customer management • Project negotiations • Cross-cultural sensitivity
Project & process management related (47)	• Lack of project planning skills (10) • Estimating project time (8) • Resistance to and lack of appreciation of process & quality improvement (9)	• Project Management • Process management
Organization and role related (35)	• Don't understand how my role fits into the big picture (16) • How to meet high level of technical expectations set by team members (2)	• Role clarity Knowledge about organizational systems and processes

Note: 1. Since the difficulties with low frequency are not listed in the column 2, the sum of column 2 is not equal to the aggregate difficulties for a cluster as listed in the column 1.

cope with this could be an important determinant for project success. System diagnostics, ability to manage growth and create infrastructure amidst frequent organisational change, and ability to identify essential technology and convert them into opportunities are other aspects of change management skills that are required by leaders in software industry. Software leaders also have trouble planning and creating shared ownership for a vision.

5.3 Managerial Role Related Difficulties and Learning Needs

Communication skills, inter-personal skills, human resource management (HRM) related skills and planning skills are the managerial role-related cluster of skills required by software professionals. As seen from the Table 2, a higher number of module leaders and project leaders experienced managerial role-related difficulties as compared to project managers and business managers.

Software professionals have trouble in oral as well as in written communication. Being technically perceptive, though they were able to understand complex technological scenarios, often from the customer's side, they faced difficulties in communicating this to team members thus hampering efficient working. They find it difficult to give feedback about poor performance to their team members and peers, and experience problems in sharing unpleasant news such as schedule slippage with senior management and customers. They also lack skills in conducting meeting. Communication has been made more complex by the imperative of working together with teams spread out across the globe. New tools of communication such as email, teleconferencing and video conferencing have their own particular etiquette, which need to be learned by software professionals. Different nationalities, languages, and time zones further make the task of communication more complex for leaders in the software projects.

Table 2. Nature and Number of Difficulties by Level of Leaders

SL. No.	Level of Leaders→▶ Nature of Difficulties▼	Module Leaders	Project Leaders	Project Managers	Business Managers	Total Leaders
	No. of Respondents	**50**	**33**	**23**	**11**	**117**
1.	Self Related Difficulties	53 (106)	22 (67)	19 (83)	7 (64)	101 (86)
1a.	Time Management Difficulties	18 (36)	9 (27)	6 (26)	2 (18)	35 (30)
1b.	Lack of Assertiveness	12 (24)	5 (15)	2 (9)	1 (9)	20 (17)
2.	Leadership Related Difficulties	27 (54)	34 (102)	22 (96)	10 (91)	93 (79)
2a.	Motivating Team Members	12 (24)	9 (27)	7 (30)	6 (55)	34 (29)
2b.	Team Building	4 (8)	11 (33)	5 (22)	1 (9)	21 (18)
2c.	Learning and Knowledge Mgt.	6 (12)	7 (21)	4 (17)	1 (9)	18 (15)
3.	Managerial Difficulties	60 (120)	41 (124)	19 (83)	7 (64)	127 (108)
3a.	Communication Difficulties	20 (40)	12 (36)	4 (17)	1 (9)	37 (31)
3b.	Interpersonal Difficulties	15 (30)	8 (24)	2 (9)	2 (18)	27 (23)
3c.	HRM Related Difficulties	4 (8)	7 (21)	6 (26)	2 (18)	19 (16)
4.	Business Domain Related Difficulties	29 (58)	23 (70)	12 (52)	5 (45)	69 (59)
4a.	Business Knowledge related to Projects	19 (38)	10 (30)	4 (17)	1 (9)	34 (29)
4b.	Knowledge about Finance & Marketing	5 (10)	12 (36)	6 (26)	4 (36)	27 (23)
5.	Customer Related Difficulties	19 (38)	15 (45)	12 (52)	2 (18)	48 (41)
5a.	Lack of understanding about customers	9 (18)	2 (6)	4 (17)	0 (0)	15 (13)
5b.	Balancing Customer & Organisational needs	0 (0)	5 (15)	4 (17)	1 (9)	10 (9)
6.	Project and Process Related Difficulties	21 (42)	12 (36)	10 (43).	4 (36)	47 (40)
6a.	Project Management Related Difficulties	11 (22)	8 (24)	7 (30)	3 (27)	29 (25)
6b.	Process/Quality Related Difficulties	10 (20)	4 (12)	3 (13)	1 (9)	18 (15)
7.	Organisational & Role Related Difficulties	16 (32)	11 (33)	7 (30)	1 (9)	35 (30)
7a.	Role Related Difficulties	11 (22)	6 (18)	6 (26)	1 (9)	24 (20)
7b.	Organisational Related Difficulties	5 (10)	5 (15)	1 (4)	0 (0)	11 (9)
8.	Total Difficulties	207 (414)	149 (451)	95 (413)	34 (309)	485 (414)

Note: 1. Figures in the bracket indicate percentage of respondents who expressed that difficulty

2. Since, a cluster consists of multiple difficulties, the percentages at cluster level is more than 100 percent in some cases.

3. Under each cluster, only major difficulties are listed.

Software projects require interactions with team members, with other teams and with customers on a continuous basis. In turn, it requires that software professionals need to have good interpersonal skills. But software professionals experience difficulties in understanding others and relating with them. They grow to leadership positions based on their technical competencies and in the process, many times they supersede some of their colleagues who are much older than them. They have trouble in managing people who are senior to them in terms of age and experience or people who were their colleagues until recently. Software professionals also reported difficulties in influencing people who do not report to them or relating to other module leaders. They also have difficulties in building good rapport with their superiors. Lack of planning skills and difficulties in balancing short term and long term objectives further add to the problems as experienced by them.

Software professionals in leadership responsibilities have to perform a number of HRM activities such as recruitment, placing right person in the right job, career management, training the new entrants, counselling on performance and resolving team issues. HRM Skills for software leaders become much more relevant and significant in the Indian context where young and capable software professionals continue to have alternative job choices. However, software leaders find it difficult to discharge these responsibilities without requisite skills.

5.4 Business Domain Related Difficulties and Learning Needs

Indian IT companies are mostly engaged in software consultancy services for international clients. Hence as seen from Table 2, all the four level of leaders experienced difficulties with business domain related knowledge. Specifically, the respondents felt the need for knowledge about finance and marketing. In addition, they also wanted to learn about how to get more projects and business for the company. A few of them also wanted to learn about product management and product design and knowledge about alliances and partnerships.

5.5 Customer-related Difficulties and Learning Needs

A much higher number of project leaders, project managers and module leaders experienced customer-related difficulties as compared to business managers. Lack of knowledge about customers, their products and problems, their business plans and markets make the task of understanding and relating to customers complex and difficult. Cultural differences between customers and the software professionals add to the difficulties in relating to customers. In addition, many customers from Europe and East Asia are not fluent in English language adding to the problems of communicating and relating to them.

Balancing customers' demands and organisational priorities is a major challenge for software professionals in leadership positions. Customers based on their market requirements and business plans keep redefining their requirements. Project leaders and project managers firstly need to negotiate with the customer to restrict the extent of change or at least make it chargeable. Then they also need to justify the changes to senior management, and convince team members about the need for those changes and the need for putting extra efforts. Many software professionals like to use new software tools and technology that may be interesting as well as beneficial to customers. However, due to risk aversion or laid back attitude of customers, they do not agree for the same.

5.6 Project & Process Management Related Difficulties and Learning Needs

Software projects are complex tasks involving interdependencies at multiple levels. In addition, Indian companies tend to accept tight project schedules, which add to the complexity of project management. The respondents felt the need for project planning and estimation skills for effective project management. Software leaders also expressed that they experienced resistance to process and quality improvement initiatives from their team members.

5.7 Organisational and Role Related Difficulties and Learning Needs

Software leaders expressed that the organisations did not take enough initiative to make them aware about organisational plans and priorities. Hence, they did not understand how their roles fit into the big picture. They also felt that they did not have enough knowledge about organisational processes that affect them and their team members. Finally, the software leaders expressed that they sometimes found it difficult to meet the expectation of their team members to provide them technical leadership related to their projects.

6. Discussion

The findings of this study essentially reinforce the importance of soft skills for software professionals in leadership positions. There is growing evidence that technical skills are ranked far behind managerial and leadership skills as critical factors in technical project success. For example, an empirical study by El-Sabaa (2001)] found that IS project managers rated human skills such as, mobilising, communication, coping as the most important (85.9%) followed by conceptual and organisational skills (78.9%) while technical skills were ranked the last (52.5%). Asked about the difficulties faced by them in carrying out work, most respondents in our study have pointed to managerial, and behavioural issues, and have not referred to technical difficulties except in the context of keeping pace with technological innovation, and knowledge management. While Indian software professionals are regarded highly for their technical skills, they are coming to realize that this does not compensate for the lack of soft skills. Shih and Chiang (2003) argue the need for congruence in core competence, corporate strategy and HRM practices. The Indian software industry has been as a strategy growing very fast and hence promoting software professionals much earlier in leadership roles. Hence it is important that the India IT industry and the organizations operating in the field acquire necessary core competence in terms of various soft skills emerging from the study.

It is not surprising that self-related difficulties and learning needs have emerged as the biggest cluster in our study. In India, software organisations have been growing very fast and to manage the growth, organisations have been often promoting software professionals prematurely to leadership responsibilities. In fact, due to attrition of experienced software professionals, average age and experience profile in India has been reducing over time rather than increasing. The young software professionals need to grow up in terms of their maturity as well as in

terms of their ability to handle leadership responsibilities. As described by one respondent in our study, "in transactional analysis terminology, project leaders are expected to move from child and adult ego to more of adult and parent ego".

The problem of time management is substantially a creation of software professionals. They tend to have interests in everything that is current and want to learn. They are reluctant to learn from their colleagues and land up spending enormous time learning tools and techniques, which is possibly known to somebody in their group. Like many knowledge workers, they tend to overestimate their capabilities. Some of them observed in our study that "I tend to overestimate my capabilities and land up with a very tight schedule". Indian software organisations tend to agree to delivery schedules as demanded by customers that may be very tight. The findings clearly suggest the need for higher level of discipline in terms of using planning tools and techniques on the part of software professionals as well as software organisations. In addition, software professionals need to learn and take responsibility to balance their professional and personal life.

Jiang, Klein and Chen (2001) observe that in the studies that are devoted to understand what project managers should do to enhance project success, leadership, communication and networking skills top the list. Gemmill and Wilemon (1994) found that team apathy and lack of commitment by team members are the most serious sources of frustration for project managers and underscored the importance of the awareness about hidden interpersonal team dynamics. Leadership challenges in software organisations are exuberated by inherent contradictions in the goals of software professionals as individuals and those of the organisation as a whole. While the organizations want to maximize revenue, earnings and customer satisfaction, team members like to work on the assignments that maximize their learning, technical capabilities and the market value. The team leader is required to reconcile between these goals, pull the team in one direction, and encourage the team members to exert necessary energy and enthusiasm to contribute their best to the success of the team.

While Indian software professionals in leadership position like to have managerial titles and status, they are often reluctant to invest time and effort to perform these responsibilities. Agrawal and Thite (2003) argue that partly these difficulties emerge from the self-concept which software professional tends to hold about them. They tend to describe themselves in terms of the software-related knowledge they have, and the opportunity to use that knowledge. This concept-of-self limits the interest and willingness to acquire other capabilities and effectively play other roles.

Apart from possessing necessary soft and hard skills, software professionals in leadership position should also focus on developing "team character", i.e., the collective set of virtues and pattern of intentions that dispose members to be ready to act ethically (Petrick and Quinn, 1997). Kloppenborg and Petrick (1999) link virtues to project life-cycle stages and highlight the importance of intellectual virtues (imagination, knowledge and foresight) in the project planning stage; social and emotional virtues (cooperation, trust, emulation and commitment) in the organising stage; moral virtues (honesty and courage) in the implementation stage; and political virtues (justice, inclusiveness and citizenship) in the evaluation stage.

Indian software companies have been aspiring to manage their growth by growing up on the value chain. Increasingly, they operate in different business domains and strive to offer total business solutions. For countering the uncertainty associated with the US software service market, Indian software companies have been nurturing other markets. During the year 2002-03, about thirty percent of the Indian software exports were to Western Europe, Japan, Latin America and Asian Pacific region (NASSCOM,2003). These business exigencies require that software leaders should have business domain-related and customer-related knowledge, skills and competencies as it has emerged from the study. Apart from language and cultural sensitivity, the nature of customers also defines the kind of customer-related competencies leaders would require. Indian customers, for example, are generally considered more demanding of value for money than their western counterparts. They are prone to frequent change requests and deviations from the original sign-off. Being able to negotiate frequent change requests and handling politics in the client organization becomes an important requirement for leaders managing software projects for Indian customers.

Traditionally, sales and marketing competencies are not considered a pre-requisite for project leaders. However, with increasing competition, many software organizations, now expect software professionals to garner repeat business from customers. This is because leaders in software organisations are in a privileged position of being in close contact with customers over a sustained period, and they have access to information about the customers' forthcoming requirements before others. Therefore, building and maintaining client relationships have now become an important part of leadership responsibilities, as opposed to interaction on the pure technical aspects of a project.

Indian software companies have been pioneers in adopting quality systems and practices. They have also adopted superior human resource management practices. India has highest level of CMM and PCMM Level certified software companies (NASSCOM,2003). Inspite of these initiatives, it is observed that leaders experienced project management, process and quality related, and organisation and role-related difficulties. Software organisations need to ensure that in addition to getting quality cer-

tification, extensive effort is put in educating software professionals at all the levels in project management and estimation skills. Organisations should also facilitate software professionals to appreciate the importance of quality systems and processes in building quality. Project works require team members to work with evolving roles. However, senior managers in collaboration with HR people should help project team members to have clear and specific role-scripts to avoid any role-ambiguity and related problems.

The findings of this study need to be discussed in the overall context of well-documented reluctance of technical professionals in making a transition from technical to leadership roles and the issues and challenges they face as leaders. While analysing the role of scientific and professional employees in management, Davis.(1981) suggests that they are a major source of talent for promotion to management, but sometimes their transition to management is difficult, particularly if they lack management and behavioural education and training. Their orientation towards logic, the physical world and/or the framework of their specialty may result in narrow viewpoints and blind spots. Rosenbaum (1991) observes that

"the challenge is even greater for most technical leaders, who often come to management positions because of their technical competence, not their interpersonal abilities. Many such leaders assume their responsibilities without adequate role models. They can manage the technical aspects of the job, but are not adept at managing the people involved in it. But the fast paced, competitive world of technology requires balanced leaders who are responsive to the needs of technical professionals and to the organisation's strategic objectives".

A number of organisations have attempted to create alternate career paths for technical people who do not wish to become managers but the results are mixed (Power, 1995). Today one needs to be a "hybrid" manager with both technical and managerial credentials and skills. While technical professional may be reluctant to move into pure leadership roles, organizational support in this regard needs to be examined. Though senior managers and HR people are aware of the importance of multiple soft skills required by leaders, hiring decisions for leadership positions are often based on proven technical competencies. Agrawal and Thite (2003) argue that technical competencies are easy to assess as compared to soft skills. In addition, senior managers who themselves had grown in their career because of technical competencies tend to give much greater importance to technical competencies during hiring and career growth decisions. In addition, it is much simpler for superiors to set technical objectives and assess an appraisee those objectives as compared to assessing their contributions in soft area. Software professionals experience a dissonance and they resolve the dissonance by following the proven path focussing on developing and nurturing technical skills.

Thus, research studies clearly highlight the importance of soft skills in project management. But software professionals in leadership position are seen to be reluctant or unable to look beyond their technical horizon and understand the dynamics of organisational and social issues. It is important that organisations initiate measures as a strategic priority to correct this imbalance. Such measures could include:

- Incorporating soft skills as an important measure of selection and performance assessment of project managers;

- Providing necessary training and learning environment to help project managers acquire the soft skills;

- Recognising and rewarding project managers with exceptional soft skills and projecting them as appropriate role models and mentors; and

- Designing and implementing appropriate career management strategies that ensure smooth transition of technical professionals in to leadership roles.

As soft skills are more tacit than explicit and can only be learnt in an experiential environment, communities of practices and hubs of voluntary cooperation need to be established to encourage knowledge sharing on soft skills. As Polyani, an early proponent of tacit knowledge said, human beings "know more than they can tell". Tacit knowledge is personal, practical, context-specific and difficult to formalize. Inter-firm tacit knowledge is difficult and so is intra-firm transfer. Tacit knowledge of soft skills into explicit knowledge can happen successfully only when individuals and groups "volunteer" to take it and exert the necessary energy and enthusiasm to internalize it (Thite, 2004). Here, mentoring (Ibarra, 2000), informal learning (Horibe, 1999), experiential learning through job rotation (Garvin, 1993) and social networks (Wenger and Snyder, 2000) can play a crucial role. These initiatives are primarily driven by individual motivation and team cohesiveness and are further facilitated by organizational learning climate and conducive HRM philosophy and practices.

In a multi-cultural global environment, soft skills assume immense importance in understanding and gaining the trust and confidence of customers. India was able to ride the crest of the software wave in the late nineties with its base of technically qualified, English speaking professionals. While Indian software professionals are acknowledged for their technical expertise the world over, it is also recognised that they lack the soft skills, which become much more important as Indian companies move up the value chain in business. Management researchers tell us that successful technical leaders are "people-focused, open to risk, a leader and visionary, a trust builder, and able to hold people accountable for performance while at the

same time fostering their personal growth".(Shih and Chiang, 2003) Similarly, today's successful companies are the ones that "provide the leadership to develop and deploy this strategic weapon better than competitors" (Anonymous, 1997). The crucial determinant here is the "difference between being a technical leader and a true technical leader" (Strohmeier, 1998).

An alternate way in which to develop a middle management base in software organizations is to invest in developing technical skills in managerial talent (e.g. young MBAs), as opposed to trying only to inculcate managerial skills in technical professionals. This, however, will require considerable investment from the organization's side, and a gradual building of client confidence in such managers as opposed to managers who have grown up the technical ladder.

This measure may also create jealousy and unhealthy competition between general management and technical professionals as "each group of employees thinks about themselves as more important than other groups of employees" (Kundu, 2004).

The findings of this study suggest that Indian software professionals holding leadership responsibilities recognise this reality. However, whether this realisation will encourage them to shed their inhibitions about leadership roles and responsibilities, and motivate them to acquire necessary soft skills and competencies depend on individual initiative and organisational encouragement. Encouraging initiatives are being taken by the software industry, educational institutions, training institutions, government and industry associations to sustain high level of technical excellence in context of software industry (Agrawal and Rao, 2002). Similar initiatives and collective effort are required of these agencies to help Indian software professionals acquire superior soft skills and in the process, enable the Indian software industry to retain its competitive advantage and grow up on the value chain. Those organzations which "help employees to help themselves" in developing an all round personality that makes them   technically adept and managerially suave, can clearly see their profits soaring and employee commitment (Lin and Chen, 2004) deepening.

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