Influence of HRM Practices on Organizational Commitment: A Study Among Software Professionals in India

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Although organizational commitment has been discussed frequently in organizational psychology for almost four decades, few studies have involved software professionals. A study in India reveals that HRM practices such as employee-friendly work environment, career development, development-oriented appraisal, and comprehensive training show a significant positive relationship with organizational commitment. The study's results emphasize the role of such HRD variables as inculcating and enhancing organizational commitment, and suggest that HRD practitioners and researchers should further develop commitment-oriented organization policies.

Organizational commitment has been the subject of continued research interest for almost four decades because of its impact on individual performance and organizational effectiveness (Allen & Meyer, 1996; Beck & Wilson, 2000; Becker, 1960; Mowday, 1998). Researchers across the globe have always been keen to measure the organizational commitment of people in various professions and outline strategies to develop it. Lifelong commitment to the organization used to be the tradition for employees in India because in a land of millions of unemployed educated people, having a job meant a living for the individual, and all the more, for the family. Globalization, deregulation, and digitalization forced India to embrace the code of the New World economy. The short supply of quality software professionals gave the small band of "techies" a bargaining edge over their employers. Against such a background a study on organizational commitment of software professionals becomes more relevant now than at any time in the past.

Researchers in organizational behavior have defined organizational commitment in terms of nature of relationship (Grusky, 1996), loyalty to employer (Kanter, 1968; Kim, Price, Mueller, & Watson, 1996), integration of

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individual and organizational goals (Hall, Schneider, & Nygren, 1970), identification with or attachment to the organization (Porter, Steers, Mowday, & Boulian, 1974; Romzek, 1989; Sheldon, 1971), readiness to exert considerable effort on behalf of the organization, and strong desire to remain a member of the organization (Balaji, 1992; Mowday, Steers, & Porter, 1979). Meyer and Allen (1991) classified organizational commitment into three categories: affective commitment, continuance commitment, and normative commitment. Employees with strong affective commitment remain with the organization because they want to, those with a strong continuance commitment remain because they need to, and those with a strong normative commitment remain because they feel they ought to. Affective commitment seemed to be more positively related to job performance, and this was confirmed by different empirical studies (Jaros, 1997; Meyer, Allen, & Smith, 1993; Sommers, 1995; Whitener & Walz, 1993). Affective commitment can be understood as a strong belief in and acceptance of the goals and values of the organization and readiness to exert considerable effort on behalf of the organization, as well as a strong desire to remain a member of the organization (Mowday et al., 1979; Porter et al., 1974).

HRM Practices and Organizational Commitment

HRM practices have been considered to be effective tools for enhancing organizational commitment (Ulrich, 1997). Ogilvie (1986) perceives HRM practices as concrete, tangible programs designed to develop commitment. HRM practices promote, reinforce, and influence commitment through selection, placement, development, rewards, and retention (Wimalasiri, 1995). Among various HRM practices, it has been found that rewards have a greater influence on organizational commitment (Angle, 1983; Mottaz, 1988; Mowday, Porter, & Steers, 1982; Steers & Spencer, 1977). Jaiswal (1982) and Ogilvie (1986) found relationships between specific practices, such as performance evaluation, promotion policies, compensation, and benefits, and affective commitment.

It has been found that training activities not only develop employees and improve their skills and abilities but also enhance their satisfaction with the job and their commitment to the organization (Harel & Tzafrir, 1999; Kalleberg & Moody, 1994; McEvoy, 1997). Laabs (1997) found that a training program at Bell Helicopter reduced employee turnover. Singh (2000) found that performance appraisal in the organization is significantly correlated to employee turnover. Career development strengthens the psychological contract and motivates employees to have continued commitment to the firm (Harel & Tzafrir, 1999). Advanced compensation practices enable the organization to retain essential employees for longer periods of time (Lawler & Jenkins, 1992; Mobley, 1982). Profit sharing leads to better cooperation, better communication, and better participation (Weitzman & Kruse, 1990). Profit sharing and stock

ownership encourage team members to identify with the organization and work hard on its behalf (Pfeffer, 1998).

Pare, Tremblay, and Lalonde (2000) found that HRM practices such as recognition, empowerment, and competence development had a significant positive effect on organizational commitment among IT professionals. Igbaria and Greenhaus (1992) found that salary and promotional opportunities have a positive influence on the organizational commitment of professionals working in information systems. A study of software professionals in India revealed that key motivators for these individuals are money, work environment, career development, and training ("Software's best employees," 2001). For most IT professionals, a significant part of their motivation comes from the recognition they get from managers for doing an outstanding job (Agarwal & Ferratt, 1999; Gomolski, 2000).

Purpose of the Present Study

The literature review reveals that organizational commitment among software professionals has been a neglected area in HRD research. The reason for such a gap is yet to be explored. At the same time, organizational commitment has been identified as one of the key variables in enhancing the performance of individuals and organizations (Becker, 1960). This context provides a compelling reason to identify the HRM practices that lead to organizational commitment among software professionals, which in turn can decide the destiny of organizations.

What are the prominent HRM practices in the software industry? That is the key question in this process. There have been some attempts to identify the salient practices in software companies. The Software Engineering Institute (SEI) at Carnegie-Mellon University made a detailed study of HRM practices in the software industry and designed a quality certification program known as the People Capability Maturity Model (P-CMM) (Curtis, Hefley, & Miller, 1995). The important HRM practices for successful software development identified in the model were work environment, communication, staffing, managing performance, training, compensation, competency development, career development, team building, and culture development. Agrawal (1999) studied HRM practices in Indian software companies based on two large Indian companies—Infosys and Wipro—and identified the key HRM practices as attraction and selection, induction training, performance management, reward system, creating a learning organization, and nurturing teamwork. Agarwal and Ferratt (1999) found recognition, empowerment, distributive and procedural justice, competence development, work-life policies, and information sharing as the critical HR practices in the software industry. The diversity of results in the various studies invites researchers to probe for and identify the key HRM practices in this industry in order to find the key practices for enhancing organizational commitment.

Based on the literature review, we sought to answer the following research questions:

What are the prominent HRM practices in the software industry?
Is there a positive relationship between HRM practices and organizational commitment among software professionals?
What are the HRM practices that have a strong influence on the organizational commitment of software professionals?

Method

The method was as follows.

Research Design. The first objective of the study was to identify the important HRM practices in Indian software companies based on empirical analysis. Prominent HRM practices can be identified by measuring the organization's members' perceptions of HRM practices. The survey research method is very useful in collecting data from a large number of individuals in a relatively short period of time and at better cost. Hence, for the current study, the questionnaire survey was chosen for data collection.

The population for the study was software engineers working in software companies in India. With its large pool of qualified technical professionals, India has been recognized as an important base for software development (Gopalan, 2000; NASSCOM, 2001). With a compound annual growth rate of 50 percent between 1991 and 2000, the Indian IT software and service sector has expanded almost twice as fast as the U.S. software sector. No country in the world has consistently grown by more than 50 percent every year in the last ten years (NASSCOM, 2001). The world has recognized India's competitive advantage in software services as a result of the quality of its skilled software manpower, and today India is a magnet for software clients. Hence a sample of software engineers in India may be a better representative of software professionals (NASSCOM, 2000).

Using the NASSCOM membership as a measure, the number of Indian software firms was 405 in 1996 (Arora, Arunachalam, Asundi, & Fernandes, 1999). In India, software companies were generally classified as large-scale enterprises, small and medium-scale enterprises, and multinational companies (NASSCOM, 2000). Despite the presence of a number of software firms in India, 60 percent of their total revenue comes from just 26 large-scale companies. Taking into account the number of companies in 1996, per NASSCOM data, our sample was chosen as 10 percent of the population. Because organizations had several software development centers, only one major center was selected for study. To ensure that the respondents were able to provide the genuine information sought in the questionnaire based on their experience in the organization, it was decided to administer the questionnaire to employees with a minimum of one year of work experience at the company. A total of twelve

hundred employees from 45 different companies were approached. An internal coordinator was identified in each company to facilitate the data collection based on the number of employees in each unit. Out of 410 responses collected from 35 companies, 370 responses from 34 companies were usable for analysis. Among the participants, 277 (74.9 percent) were men and 93 (24.1 percent) women. The percentages of software professionals responding broke down as follows: from the large-scale group, 175 (47.3 percent), from the small and medium-size enterprises, 81 (21.9 percent), and from multinational companies, 114 (30.8 percent).

Measurement of Organizational Commitment. Organizational commitment was measured using the fifteen-item Organizational Commitment Questionnaire (OCQ) developed by Porter, Mowday, and co-researchers with a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5) (Mowday et al., 1979; Porter et al., 1974). Although there are other measures of affective commitment available in the literature, OCQ was preferred for its stronger consistency and coherence (Reichers, 1985). This scale has been widely used to measure organizational commitment (Angle & Perry, 1981; Beck & Wilson, 2000; Welsch & La Van, 1981). OCQ was designed to be unidimensional in nature, and therefore the sum of the scores for the fifteen items provided an index of organizational commitment, with higher scores indicating stronger commitment of employees to their organization. When compared with other, similar attitude measures this scale provided an acceptable level of convergent, discriminant, and predictive validity (Mowday et al., 1979). The factor analysis showed that one factor emerged with an eigenvalue at 4.367 for 65.05 percent variance. The reliability of the scale was tested by computing Cronbach alphas, and the alpha value was found to be 0.81.

Measurement of HRM Practices. Because there was no prior instrument available to measure the perception of HRM practices among software professionals, especially in India, a new instrument was developed based on a review of the literature on HRM practices in software companies (Curtis et al., 1995; Agrawal, 1999). The face validity of the instrument was established after a review by experts (academicians, practitioners, and consultants). The HRM practices were measured using a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). Unidimensionality was assessed by using exploratory factor analysis. The seventy statements forming the HRM practices' scale were analyzed for principal factors, and the extracted factor matrix was analyzed with varimax rotation (Huselid, 1995). Statistical Package for Social Sciences (SPSS) version 9.00 was used for statistical analysis. Nine factors with eigenvalues higher than 1.51 accounting for 51.44 percent of the variance emerged. Reliability of the scale was tested by computing Cronbach's alpha value, and it was found to be higher than 0.6 in all factors. Table 1 provides the details of the factor analysis and reliability results. The complete instrument consists of sixty-three items spread over the nine factors: rigorous selection process, value-based induction, comprehensive training, team-based job design, total approach to compensation,

Table 1. Factor Analysis and Reliability Results of HRM Practices

No.	*HRM Practice*	*Eigenvalue*	*Variance (%)*	*Cronbach's Alpha*
1.	Value-based induction	16.481	25.751	0.89
2.	Total approach to compensation	3.191	4.986	0.83
3.	Career development	2.616	4.087	0.84
4.	Employee-friendly work environment	2.072	3.238	0.82
5.	Development-oriented appraisal	1.888	2.949	0.83
6.	Comprehensive training	1.812	2.832	0.81
7.	Value-added incentives	1.724	2.693	0.76
8.	Team-based job design	1.627	2.543	0.65
9.	Rigorous selection process	1.510	2.359	0.68

employee-friendly work environment, development-oriented appraisal, career development, and value-added incentives.

Results

Table 2 provides mean, standard deviation, and correlation of HRM practices and organizational commitment measures. The overall mean score for organizational commitment was 51.74 (SD = 7.29) for the fifteen-item instrument, indicating a moderate level of commitment. HRM practices such as employee-friendly work environment, career development, total approach to compensation, development-oriented appraisal, and comprehensive training showed very high positive relationships with organizational commitment. Although value-added incentives, value-based induction, and team-based job design showed a moderate relationship with organizational commitment, selection process showed a comparatively lower association.

The stepwise regression model was used to characterize the relationship between organizational commitment and HRM practices. The results of regression analysis are summarized in Table 3. Of the total variation in organizational commitment, 41.3 percent is explained with four HRM practices: employee-friendly work environment, career development, development-oriented appraisal, and comprehensive training. The overall effect of HRM practices on organizational commitment was highly significant. An analysis of the effect of individual HRM practices on organizational commitment shows that one standard deviation increase in work environment leads to a 0.282 increase in organizational commitment. One standard deviation change in career development results in 0.21 change in organizational development. Development-oriented appraisal also has a significant impact on organizational commitment; for one standard deviation increase in development-oriented appraisal there is a 0.177 increase in organizational commitment. Finally, one standard deviation change in comprehensive training makes a 0.112 change in organizational commitment. Selection process, induction, team-based job design, compensation, and incentives did not show a significant relationship with organizational commitment.

Table 2. Means, Standard Deviations, and Correlation with Organizational Commitment

HRM Practice	*No. of Items*	*Mean*	*SD*	*Correlation*
1. Rigorous selection process	5	20.39	2.91	0.26*
2. Value-based induction	8	30.49	5.71	0.37*
3. Comprehensive training	6	21.36	4.16	0.49*
4. Team-based job design	5	17.79	2.71	0.30*
5. Employee-friendly work environment	9	33.30	5.46	0.57*
6. Development-oriented appraisal	9	32.32	5.02	0.50*
7. Total approach to compensation	10	34.39	6.01	0.54*
8. Career development	7	22.14	5.32	0.54*
9. Value-added incentives	4	12.86	3.47	0.43*
10. Organizational commitment	15	51.74	7.29	1.00

*Correlation is statistically significant at $p < 0.01$.

Table 3. Regression Analysis: Main Effects of HRM Practices on Organizational Commitment

HRM Practice	*Standardized Coefficients Beta*	*t value*	*Significance*
Employee-friendly work environment	0.282	4.938	0.000
Career development	0.210	3.778	0.000
Development-oriented appraisal	0.177	3.437	0.001
Comprehensive training	0.112	2.031	0.043
R^2	Adjusted R^2	*F*	ANOVA significance
0.413	0.406	61.675	0.000

Discussion

The findings of the study offer interesting insights into the relationship between the organizational commitment of software professionals and the organization's HRM practices. Work environment, which is the combination of both the physical and the social environment, plays a significant role in enhancing organizational commitment. This result is in agreement with that of an earlier study conducted among software professionals in India ("Software's best employees," 2001). Intellectual work needs an environment conducive to creative thinking. The physical infrastructure and support services, along with an informal culture and communication, bind the members into an organizational family. Such a strong bond might help the members attach to the organization and work for its success.

Previous studies identified career development as one of the primary factors to strengthen the psychological contract with employees, creating a strong commitment to the organization (Harel & Tzafrir, 1999; Igbaria & Greenhaus,

1992; Jaiswal, 1982; Ogilvie, 1986). This was also the finding in the present study. Because most professionals in the industry are comparatively young, it is natural for them to aspire to fast career growth. More than pay, they give prime value to the growth opportunities in the company. This concern is widely reflected in their decision to join and remain in an organization. Career development may also encompass opportunities to go abroad and to work in high-level technology-based projects.

The study found that a development-oriented appraisal system also contributes to the organizational commitment of software professionals, as did prior research studies (Jaiswal, 1982; Ogilvie, 1986; Singh, 2000). When the appraisal system is focused on employee development, it nurtures a sense of attachment and belonging. The appraisal system that incorporates an informal approach and a genuine interest in the development of the employee would give the employee a chance to grow and might prompt him or her to contribute more to the company's goals.

The current study also found a significant impact for comprehensive training, as did a number of previous studies (Harel & Tzafrir, 1999; Kalleberg & Moody, 1994; Laabs, 1997; McEvoy, 1997). Those working in the field of software development need continuous learning because of the rapid changes in technology. A comprehensive and customized training program gives a sense of confidence to the professionals to venture into new projects and prove their mettle. When learning opportunities are available, it creates a sense of attachment to the company and enhances organizational commitment.

Previous research studies found a significant relationship between compensation and organizational commitment (Angle, 1983; Igbaria & Greenhaus, 1992; Mottaz, 1988; Mowday et al., 1982; Jaiswal, 1982; Ogilvie, 1986; Steers and Spencer, 1977). Mottaz (1988) found compensation and rewards to be the main factor in the organizational commitment of employees. In the present study, although compensation practices showed a comparatively high correlation with organizational commitment, they did not show significant predictive relationship in the regression analysis. Salary might be a major criterion in choice of organization, but once they are members of an organization software professionals look for vertical and horizontal growth. It has also been observed that there has not been significant difference in salaries across companies. Although profit sharing and other incentive schemes showed a strong relationship with organizational commitment in other studies (Pfeffer, 1998; Weitzman & Kruse, 1990), the current study did not find any significant connection. This might be a result of the similarity of practices across companies. Similarly, HRM practices such as selection, induction, and job design did not show a significant relationship with organizational commitment in the present study. Wimalasiri (1995) found some connection between selection and placement and organizational commitment. The present result might be due to the nature of the selection process and the time gap between campus

recruitment and actual placement in the organization, which makes the employees forget the entire selection process.

Implications for Practice

The finding that HRM practices positively influence the organizational commitment of software professionals is a great practical insight for the HR community. Though the analysis was on important HRM practices, the main factors that showed stronger connection with organizational commitment were HRD variables such as career development, performance appraisal, and training. This finding gives HRD professionals the additional responsibilities of systematically designing and implementing HRD practices that influence organizational commitment and equipping line managers to implement them in their own units. An HRM system that puts due attention on work environment, career development, training, and development-oriented appraisal is likely to have the advantages of higher organizational commitment. It must be the prerogative of the organizations to work out strategies to improve the organizational commitment of their employees if they want to survive and succeed in the long run, because the level of commitment among software professionals was not found to be high.

Limitations of the Study and Implications for Future Research

Because of time and cost factors, the current study was cross-sectional. A longitudinal study would bring about more reliable results with regard to the impact of HRM practices on organizational commitment. In addition, there is high correlation among HRM practices, and multicollinearity is a methodological problem. At the same time, we must remember that HRM practices are integrated and interdependent. Any integrated system is likely to have some amount of high correlation (Huselid, 1995).

Because technology plays a key role in the software industry, future research might touch on the impact of technology life-cycle stages in the organizational commitment of software professionals. Software professionals soon become outdated unless they keep up with the latest in the technology market. There is also a need for further research to identify differences in organizational commitment based on such organizational variables as size of company and type of company. Further study should touch on relevant demographic variables and their influence on organizational commitment. Another important research avenue is to use organizational commitment as an intervening variable to fill the gap between HRM system and organizational performance. This will move organizational commitment research from a purely

psychological dimension to a higher platform where there is synergy of both soft and hard aspects of organizational life.

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