

## Impact of Organizational Sociotechnical System on Managerial Retention: A Structural Equation Modeling Approach

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### Abstract

As an exploratory academic query to the industry wide problem of managerial turnover, organizational sociotechnical system has been applied as the basic theoretical framework to conceptualize and structure managerial retention factors in the organizations. In the first phase, a pilot survey was conducted on a sample of 93 managerial respondents at junior and middle levels in order to test the validity and reliability of the survey instrument. The second phase of the study was conducted on a sample of 444 junior and middle level managers from various organizations located in India to determine the causal impacts of the organizational social and technical subsystem factors on managerial retention through developing an integrated model by using the structural equation modeling technique. The factor analysis had grouped the items into seven constructs with a total of fifty-three items. The path analyses indicate that in industrial organizations the design of managerial jobs by balancing both the organizational social and technical subsystem elements does impact managerial retention. Through identifying and empirically establishing the impacts of organizational social and technical subsystem elements on managerial retention in Indian context, this study helps to understand the managerial expectations from their prospective employers. The top management of the business organizations may use the findings as guiding criteria, while constructing, managing, and evaluating their managerial retention strategies in Indian context.

**Keywords:** Sociotechnical system; Organization; Managerial retention; Structural model

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### 1. THEORETICAL FRAMEWORK

Sociotechnical system is an established methodology that provides a structured approach to redesign of job related processes [1], [2], [3], [4]. It holds that jobs in organization can be conceived in terms of social and technical subsystems. Broadly, the social subsystem includes the profile and expectations of organizational members, patterns of supervisory - subordinate relationships, interpersonal relationship of employees and the nature and interaction of subgroups within the population. The technical subsystem of an organization consists of the tools, work techniques and procedures, skills, knowledge and devices used by members of the social subsystem to accomplish the tasks of the organization [5], [6], [7],[8], [9]. The social subsystem of an organization is comprised of the people who work in the organization and the relationships among them [10],[11],[12]. Broadly, the social subsystem includes the profile and expectations of organizational members, patterns of supervisory - subordinate relationships, interpersonal relationship of employees and

the nature and interaction of subgroups within the population. The sociotechnical system theorists contend that the needs, which people bring with them to the workplace, have to be identified and ways have to be made to meet those needs through the design of the technology and the work. It directs and moves the efforts of organizational members toward organizational goals. The dimensions of the social subsystem include occupational roles, role relationships into teams around tasks, the nature of coordination and control, the degree of delegation, the degree of reliance on the expertise of workers in making complex judgments and decisions, and the social integration of workforce. The social subsystem at an organizational level comprises the individuals, who work in the organization and the total of their individual and social attributes. The social subsystem at individual job levels encompasses individuals' aptitudes, skills, their attitudes and beliefs, and their relationships within groups and between groups. These relationships include lateral relationships and vertical relationships between supervisors and subordinates; they include formal relationships and the informal relations determined by implicit psychological 'contracts' between the individual and the employer, political relationships based upon the distribution and exercise of power, and the influence of cultures and tradition.

The technical subsystem of an organization consists of the tools, work techniques and procedures, skills, knowledge and devices used by members of the social subsystem to accomplish the tasks of the organization [5],[6],[7],[8],[11]. The technological configuration chosen by organization designers effects the operation of the social subsystem by shaping the behaviors required to operate it. The level of variety, challenge, feedback, control, decision - making and integration provided for social subsystem members is largely a function of the way in which the technical subsystem is arranged [13],[14],[15]. Effective operation requires the joint action of technical and social subsystems. [5] have noted the unwillingness or inability of technical specialists to design integrated technical and social subsystems has a number of consequences. The most significant of them is a growing mismatch between the functions and processes of the technical subsystem on the one hand and the needs and requirements of the social subsystem on the other. Other consequences include underutilization of plant and people, pervasive apathy, inflexibility in adapting to change, turnover of key personnel and growing disruption of operations [14]. Fred Emery defines the dimensions of the technical subsystem as the nature of the work processes, the level of automation and computerization, the spatial layout and spread of the work processes over time, the physical work setting, and the nature of interdependence among tasks. All these dimensions impact the nature of roles and role relationships, the level of productivity, and the quality of work life. The technical subsystem of an organization consists of the tools, techniques, devices, artifacts, methods, configurations, procedures and knowledge used by organizational members to acquire inputs, and transform inputs into outputs.

At the micro level, the social subsystem embodies characteristics such as individual motivation, group performance, communication, flexibility, involvement, autonomy, commitment and satisfaction. At a macro level, the social subsystem represents organizational culture and social integration. The technical subsystem holds the tools, knowledge base, and technology required to acquire inputs, transform inputs into outputs, and provide outputs or services to customers in the organization. At the individual level, the technical subsystem affects work design, productivity, self-perceptions, and psychological contracts. At the functional unit or department level, the technical subsystem affects roles structures, physical layout, interaction patterns, and supervisory behavior. At the organization level, the technical subsystem affects relationships among departments, organizational structure, reward systems, organizational flexibility, and overall competitiveness [15],[16],[17],[18],[19].

STS theory [5],[20],[21],[12],[4] proposes that work design should jointly optimize the social and technical subsystems of an organization. Sociotechnical system theory takes the fundamental premise that organizational objectives are best met by joint optimization of the social and technical subsystems [23]. The principle of 'joint optimization' [8],[22],[23],[24] states that an organization will function optimally only if the social and technical subsystems of the organization are designed to fit the demands of each other and the environment.

The sociotechnical perspective explicitly narrates the idea that all aspects of a system are interconnected and they should be designed jointly [23]. Task structures are the connecting points between the technology and work processes at one end, and the personnel or work force at the other. Key choices include how the overall system will operate, how the work will be managed and organized, what form of technology will be

required to support this work, and what other organizational policies are required to manage and facilitate the implementation process. Decisions made in one organizational subsystem, should meet the requirements of the other subsystem. Designs particularly at the level of jobs incorporate various attempts to provide better security, equity, and rewards, teamwork, and to satisfy the growingly articulated psychological needs of all who work. Autonomy of individuals and groups, their work roles and the social structure (interactions, person - organization fit) of the organization are important components of job design and organizational restructuring [3],[14],[24],[26],[27],[28]. Although jobs in any organization are supposed to be designed by balancing the components of these two subsystems, in reality a gap exists between the theory and practice. How this gap between the principle and practice impacts the retention of managerial personnel in the organization is the subject matter of this study.

Author (s) / Researcher (s)	Empirical / Theoretical	Major Findings
[29],[30],[31],[32],[33],[34],[35],[36],[37],[38],[39]	Both	Causes and antecedents to employee turnover: demographic factors (e.g. age, education, job level, gender, and tenure with the organization), professional perceptions (e.g. organizational commitment, professional commitment, job satisfaction, motivation potential, value conflict, and burnout), and organizational conditions (e.g. stress, social support, fairness-management practices, physical comfort, and organizational culture); personal background, worker attitude, and job characteristics are also related to job satisfaction, commitment, and turnover
[40],[41],[42],[43],[44],[45]	Theoretical	Different work – outcome expectations in terms of job significance, emotionally satisfying work experiences, external rewards; meaningful work experiences are critical to employee engagement, performance, and turnover Hired competent people to be treated professionally, provided with the finest technology, and encouraged emotional bonding between the company and employee
[46],[47],[48],[49]	Both	Various factors related to turnover and absenteeism in work situations namely, 1. Organization wide factors, 2. Immediate work environment factors, 3. Job related factors, and 4. Personal factors Met expectations, job values, job attitudes, intention to leave the organization, and actual leaving were related to many of the above theorized antecedent variables Retention strategies include raising salaries; stay bonuses; career advancements, promotions; training; personal recognition; time off; working conditions; supportive managers and supervisors
[50],[51],[52],[53],[54],[55]	Both	Retention strategies include training and development program, redefining job classifications and minimizing restrictive work rules, designing jobs for groups; levels of organizational commitment; compensation and benefits, organizational affiliation, customized work environments, competent HR employees Employee satisfaction instrumental for decreasing employee turnover HRM strategies can affect organizational commitment and potentially influence turnover
[56],[57],[58],[59]	Both	Employees in service sectors most frequently switched over the organizations for factors like

		<p>quality of supervision, ineffective communication, working conditions, quality of co-workers, inappropriate fit with company culture, low pay and few benefits, lack of clearly defined responsibilities, and no direction on what to do</p> <p>Employee retention associated with a predictable and stable work environment</p> <p>High level of organizational inefficiency associated with a high level of staff turnover</p>
[60],[61],[62],[63],[64]	Empirical	<p>Increased training and career development promotes a high degree of job satisfaction, which in turn leads to retention</p> <p>Business with strong internal communication systems enjoyed lower turnover of staff</p> <p>Incentive pay and job satisfaction are the two major influencing factors to the problem of employee retention</p>
[65],[66],[67],[68],[69],[70]	Empirical	<p>Person - job and person - organization fit are related to employees' work experience as individuals perceive fit and experiential meaning through the performance of job tasks; and social information - processing network</p>
[71], [72]	Theoretical	<p>Socio - analytic theory has provided a framework for the management of fit perceptions of individuals in organizations</p> <p>General managers' turnover in the hospitality industry was primarily due to management conflicts and lack of career movements</p>
[73],[74],[75]	Both	<p>Factors as compensation and benefits, organizational affiliation, customized work environments, competent HR employees as some of the prime factors of talent retention</p> <p>Managers should have a clearly defined role in decision – making, receive constructive and high-quality feedback and be made to feel valued members of their organization; and learning experiences to strengthen their organizational commitment</p>
[76],[77],[78],[79],[80],[81],[82]	Empirical	<p>Meta-analyses and structural equation modeling techniques support a causal relationship of employee turnover and universally propose a negative relationship between satisfaction and turnover</p> <p>Improving employee satisfaction thus appears to be instrumental for decreasing employee turnover</p>
[38],[83],[84]	Empirical	<p>Intention to leave, in addition to, actual turnover was studied as the outcome variable</p> <p>Antecedents to retention and turnover among service sector employees suggest that the best predictors of intention to quit are job satisfaction, organizational commitment, professional commitment, and burnout. The findings have also indicated that the strongest single predictor of actual turnover is intention to leave</p>

**TABLE 1:** Overview of Studies Conducted in Managerial Retention

Further research needs to be done to map out all the variables included in the management of work and space so as to gain a better understanding of the relationships that exist between such things as quality of environment, job design, management styles, human resource practices and technology. When it is understood how these different elements interact and affect one another, one can move towards developing innovative and competitive intervention strategies that will help not only to build sustainable managerial retention in companies, but also to transform typical work environments into great places to work.

## 2. CONCEPTUALIZATION OF RESEARCH VARIABLES AND HYPOTHESES

In this paper, organizational social and technical subsystem elements are assessed to have an impact on retention of managerial personnel (see Figure 3) through developing a structural model that is proposed and tested subsequently. Hypotheses have been developed that essentially can serve to test the distinct impacts of social and technical subsystem elements on managerial retention. The structural model is intended to provide organizations with a logical path for addressing the issue of managerial turnover by examining the strength of each variable in relation to managerial retention for reducing turnover intention. The model also strengthens the conceptualization of organizational sociotechnical system to managerial retention, and would encourage researchers to consider the extension of theoretical framework in further management research.

### (i) Supervisory Relationship (SR)

[85], studied the relationship between the supervisory behaviour and subordinate absenteeism and found that supervisory behaviour is directly related to the subordinate absenteeism. They used the Leader – Member Exchange (LMX) scale developed by [86],[87],[88]. The dimensions of Development, Openness, and Reliability were adapted from the scale of [85] for the purpose of this study.

[89], studied the subordinate – supervisor relationship with organizational citizenship behaviour and supervisor effectiveness. It was found that a positive Leader – Member Exchange behaviour contributes to organizational citizenship behaviour and supervisor effectiveness. Higher quality subordinates obtain special benefits and opportunities, including the delegation of tasks without interference, favorable performance reviews, visible assignments, valued promotions, and career development support. In exchange, supervisors enjoy rewarding effectiveness ratings as well as committed, competent, and conscientious subordinates, whose actions are consistent with the supervisors' expectations. He used the scale developed by [90], and the dimensions namely Recognition for Performance, Reciprocity and Exchange of Opinions, Fair Performance Evaluation, and Consideration of Job Constraints were adapted from the scale of [89] for the purpose of this study. In the context of employee retention strategies, studies done by [47],[48] reconfirmed that supportive managers and supervisors influence the turnover of employees to a large extent. Taking the lead from these previous studies, the following hypothesis was developed in order to examine the causal impact of supervisory relations and practices on managerial retention in organizations.

**Hypothesis 1:** *Positive relationship of managers with immediate supervisor has a significant impact on managerial retention.*

### (ii) Peer Group Interaction (PGI)

[91], [92]; studied the motivating effects of task interdependence (social job dimension) in work teams, and found a strong relationship between the task interdependence measures and the personal work outcome of team members. It was shown that team member interdependence could positively affect the level of cooperation and collaboration within a team, conflict management, member satisfaction, and team performance. Dimensions namely Sharing Feedback by Self to Others and vice versa, and Cooperation Received from the Peers, and Informality were adapted from their scale for the purpose of this study.

Taking the lead from the study of [93],[94],[95] studied the reciprocal team interdependence. Three dimensions namely Collectivist Orientation, Group Proximity, Harmony, and Socialization have been taken

from their study and adapted to suit the purpose of this study. This psycho-social support received at the level of peer groups at workplace increases the job involvement of individual employees and reduces the intention to quit the organization [69],[70]. Taking the lead from these studies, the following hypothesis was developed in order to examine the causal impact of peer group interaction in the form of psycho-social support on managerial retention in organizations.

**Hypothesis 2:** *Congenial interpersonal relationship of managers with peer group has a significant impact on managerial retention.*

**(iii) Person – Organization Fit (POF)**

[96], in the context of people and organizational culture, made an extensive study on the construct of person – organization fit. They developed and validated an instrument for assessing person – organization fit called Organizational Culture Profile (OCP). Results suggested that a better fit predicted job satisfaction and organizational commitment, and hence reduced employee turnover. Dimensions namely Concern for Diversity, Working in Collaboration with Others, Sharing Information Freely, Achievement Orientation, Willingness to Experiment were taken and adapted from the scale developed by [96] for the purpose of this study. Also the studies done by [68],[69],[70] in the context of people and organizational culture, related the construct of person – organization fit with the intention to leave and employee turnover. Taking the lead from these studies, the following hypothesis was developed in order to examine the causal impact of person – organization fit as a component of organizational social subsystem on managerial retention in organizations.

**Hypothesis 3:** *A better fit of individual managers with the organizational norms and practices has a significant impact on managerial retention.*

**(iv) Managerial Job Characteristics (MJC)**

[97] have studied the job level characteristics from a number of previous studies [98],[99],[100]. They used the scale to reflect the relationship between job levels and job satisfaction. Dimensions namely job repetitiveness, scheduling and planning, authority, teamwork, and job flexibility.

[101], have developed a framework regarding the information system quality comprising the task characteristics, technology, people, and organization. From the task characteristics construct the three dimensions namely intra – unit task linkage, inter – unit task linkage, task specialization were taken, and the following three items were developed for this study. Following the increased trend of computerization of all functional level of managerial jobs, [82],[101] have developed a framework regarding the information system quality comprising the task characteristics, technology, people, and organization, and found the relation among nature of job, job satisfaction, and turnover intention. Taking the lead from these studies, the following hypothesis was developed in order to examine the causal impact of managerial job characteristics as a component of organizational technical subsystem on managerial retention in organizations.

**Hypothesis 4:** *Managerial job characteristics have a significant impact on managerial retention.*

**(v) Work Technology Support (WTS)**

[102], have defined technology as the combination of individual expertise (skills and knowledge), techniques, machines, and computers required for converting inputs into outputs in the form of products or services. This comprehensive definition of technology has been developed and extensively used for work technology analysis by researchers like Joan Woodward, Thompson, and William Pasmore. The same definition of technology has been adopted for the purpose of this study, and four dimensions (Team facilitation, Operational skill, Complexity, Usefulness) of work technology from [102], are taken for the purpose of this study.

[101], also studied work technology in the context of sociotechnical approach to determine the quality of a computer information system. They have also adopted the same definition of technology of Joan

Woodward, Thompson, and William Pasmore. Three dimensions namely Effectiveness, User acceptability, and Flexibility related to work technology have been taken from them for the purpose of this study.

**Hypothesis 5:** *Available technological support at workplace has a significant impact on managerial retention.*

**(vi) Perceived organizational support (POS)**

Perceived organizational support is defined as the employee's 'global beliefs concerning the extent to which the organization values their contributions and cares about their well - being [103]. [104], studied a few selective aspects of perceived organizational support as an antecedent to employee commitment taking leads from earlier studies by [103],[105]. The dimensions namely workplace infrastructure, compensation, workload, and career development have been adapted from the scale of [104], for the purpose of this study.

[106], in their study have reflected the relationship between the organizational support facilities, employee involvement and work outcomes. They modified the POS (perceived organizational support) scale used by [103]. Dimensions namely Inter – Unit Support, Support from Top Management and Seniors, Employee Well – being, and Work – Family Balance have been taken from the scale of [106] to suit the purpose of this study. The similar findings were further corroborated in the studies done by [38],[54],[68], and established that positive organizational support influences the intention to stay back with the organization. Taking the lead from these studies, the following hypothesis was developed in order to examine the causal impact of organizational support as a component of organizational technical subsystem on managerial retention in organizations.

**Hypothesis 6:** *Organizational support facilities received by managers have a significant impact on managerial retention.*

**(vii) Managerial Retention (MR)**

Managerial Retention has been studied in this research as an outcome variable for the set of above mentioned sociotechnical constructs. To measure the individual impact of each construct on managerial retention (intention of an employee at managerial level to continue with the work) and the general level of managerial employee retention in an organization, a total of seven items were self – developed by the researcher. The measure was put to a five point Likert scale ranging from strongly disagree = 1 to strongly agree = 5.

No direct path was specified for the social and technical subsystem, with managerial retention respectively because the effects have already been accounted for via the interactions of social and technical subsystem elements with managerial retention. As evidenced by strong support of literature, no separate hypotheses were set to examine the relational significance between the social and technical subsystem on one hand; and between the social and technical subsystem and the respective elements under each of them.

### **3. APPLIED METHODOLOGY**

**(i) Sample**

The sample (N = 444) consisted of junior and middle level managers employed in both public and private sector organizations, which further bifurcated to manufacturing or service industries. The organizations within the manufacturing industry were covered from heavy engineering, automobile, power generation, and chemical processing sectors. The organizations within the service industry were covered from commodity trading, power distribution, IT solutions, engineering consultancy, and cargo and courier sectors. In all the organizations studied the total strength of employed manpower stood above 1000. The diverse background of the organizations enhanced the external validity and likely generalizability of the results.

**(ii) Measures**

A questionnaire was administered that assessed the organizational sociotechnical system variables and their impact on retention of managers at junior and middle levels in the organization. The measures for each variable were mostly adapted from the scales developed in previous research studies as have been cited in detail under the section of conceptualization of research variables. The measures were put to Likert type categorical rating scale ranging from 1 (strongly disagree) to 5 (strongly agree).

**(iii) Procedure and Analysis**

Sample respondents at junior and middle managerial levels filled up the questionnaire that measured the linkages of social and technical subsystem variables to the retention of managers in this study. On the dataset of item responses obtained from the sample, structural equation modeling was applied through using AMOS 7.0 version to test the model fit of the proposed relationships among the causal and outcome variables.

**4. ANALYSIS AND RESULTS**

The variables were examined for departures from normality, linearity, and homoscedasticity that might attenuate the correlation between the variables. Table 2 contains the descriptive statistics, and correlation coefficients for the variables.

The results of factorial validity and construct reliability (see Tables 3, 4, and 5) establishes the construct – item validation and the internal consistency of the measures used in this study respectively.

Variables	MJC	WTS	POS	SR	PGI	POF	MR
Managerial Job Characteristics (MJC)	1.00						
Work Technology Support (WTS)	.45**	1.00					
Perceived Organizational Support (POS)	.45**	.26*	1.00				
Supervisory Relationship (SR)	.39**	.14	.69**	1.00			
Peer Group Interaction (PGI)	.47**	.32**	.48**	.60**	1.00		
Person Organization Fit (POF)	.47**	.41**	.66**	.70**	.66**	1.00	
Managerial Retention (MR)	.33**	.17	.42**	.36*	.43**	.47**	1.00
Mean	3.64	3.34	3.43	3.47	3.47	3.36	4.00
Standard Deviations	.62	.71	.63	.87	.59	.63	.60

\*\* Correlation significant at .01 level (2 tailed), \* Correlation significant at .05 level (2 tailed)

**TABLE 2:** Correlation, Mean, and Standard Deviations of Measures Used in Path – Analysis



Variables	Measurement Items	Factor Loading ( $\lambda$ )	Composite Reliability (Cronbach $\alpha$ ) [107]
1. Supervisory Relationship (SR)	<i>Relationship with the immediate supervisor influences managerial retention as and when:</i>		.88
	Supervisor's feedback helps to improve performance	.89	
	Supervisor consults and openly shares information on important matters with people working under him or her	.88	
	Supervisor is reliable and trustworthy	.92	
	Supervisor gives credit for a job well done	.92	
	Supervisor tries to understand subordinate's point of view when discusses problems or projects	.89	
	Supervisor fairly evaluates job performance	.93	
	Supervisor understands the job related problems and needs well	.94	
2. Peer Group Interaction (PGI)	<i>Relationship with the work group members influences managerial retention as and when:</i>		.72
	One can share and discuss job related issues with peers in the department	.78	
	Peers in the department can share and discuss job related issues with someone	.75	
	Cooperation is received from people in the department to do the job well	.75	
	Members can collectively influence many important issues in the department	.68	
	Members of the work group work closely together and during the same time frame	.78	
	One is satisfied with the friendliness of the people in the department	.79	
	People interact informally with each other within the department	.77	
	People socialize with the co-workers even outside the job	.71	
	3. Person – Organization Fit (POF)	<i>The integration between the individual and organization influences managerial retention as and when:</i>	
Individual differences (e.g. gender, race, physical disabledness, social background etc.) are respected in the organization		.71	
Members in one department discuss with people in other departments how the quality of others' work affects them		.76	
People from one department discuss with people in other departments how the quality of their work affects others		.78	
Each department knows enough about other related departments within the company		.81	
Information about the organization's long-range plan and financial status are shared at managerial levels		.78	

	Achievement and competence are more important than hierarchical status	.74	
	Managers are encouraged to try new ways of doing things, even if they always might not work out	.74	
4. Managerial Job Characteristics (MJC)	<i>The elements of managerial jobs influence managerial retention as and when:</i>		.68
	The Job is not simple, repetitive and requires a great deal of thought	.74	
	Staying on schedule and planning for the future are important for jobs	.69	
	There is authority commensurate with the position to make the decisions necessary for accomplishing assigned task	.64	
	A number of people diagnose, solve problem, and collaborate together to deal with the work	.72	
	People are allowed to determine job sequence in the department	.74	
	To get the job done, one is required to coordinate the work with others in the department	.71	
	The job requires coordinating one's own work with people in other departments also	.68	
	The job requires expertise and specialized skills that may not be readily available with people	.79	
5. Work Technology Support (WTS)	<i>Technological support at workplace influences managerial retention as and when:</i>		.78
	The technology makes it easy for me to work with others as part of a team	.83	
	The technology that is used in the department requires high level of technological skill	.84	
	The technology helps to reduce the complexities of routine operating procedures	.81	
	The technology that is predominantly used is complex and advanced by nature	.81	
	The technology is effective and reliable to turn out work as fast as possible	.83	
	One feels comfortable to work with the technology used in the department	.82	
	The technology that is used for one's work is flexible to keep up with change arising out of job requirements	.82	
6. Perceived Organizational Support (POS)	<i>Organizational support facilities influence managerial retention as and when:</i>		.75
	Work stations in the department are comfortable	.79	
	One is fairly compensated in the organization	.80	
	The amount of work one is expected to do on the job is reasonable	.80	
	There are opportunities available for the manager to develop career and learn new skills within the company	.77	
	There is good alignment between one's own department and others with whom one needs to coordinate	.77	
	Top management has high integrity and commitment to the growth of the organization	.66	

	Senior executives / managers are willing to extend cooperation in order to help managers perform their jobs to the best of their ability	.83	
	The company really cares about employee well-being	.66	
	Time-off policies are flexible enough to let one take care of his / her personal and family needs	.77	

[Note: Acceptable factor loadings and reliabilities (guidelines used  $\lambda > 0.5$  and reliability  $> 0.5$  respectively.)]

**TABLE 3:** Results of Factorial Validity and Construct Reliability of Research Variables

Structural equation modeling was applied to find out the path analysis in order to test the proposed model. It is recommended that multiple fit indices can be used to reduce the likelihood of making either Type I or Type II error when determining model fit [108],[109],[110], [111]. The  $\chi^2$  goodness of fit, Comparative Fit Index (CFI), Non-Normed Fit Index (NNFI), and the Root Mean Square Error of Approximation (RMSEA) were used for fit indices in this study. The suggested cutoff values for the CFI and the NNFI are 0.95 and 0.90 respectively. The suggested cutoff value for RMSEA is 0.05 for a test of close fit. These cutoff values were used for the fit indices in this study (see Table 4). The model fit indices indicate a good fit of the model to the data.

Parameter Estimates	Social Subsystem – Managerial Retention Relationship Constructs	Technical Subsystem – Managerial Retention Relationship Constructs	Pooled Model
$\chi^2$	5.68	4.56	7.90
DOF	4	4	8
RMSEA	.022	.031	.00
CFI	.98	.96	1
NNFI	.95	.96	1

**TABLE 4:** Fit Statistics for Path Analysis (Structural Model)

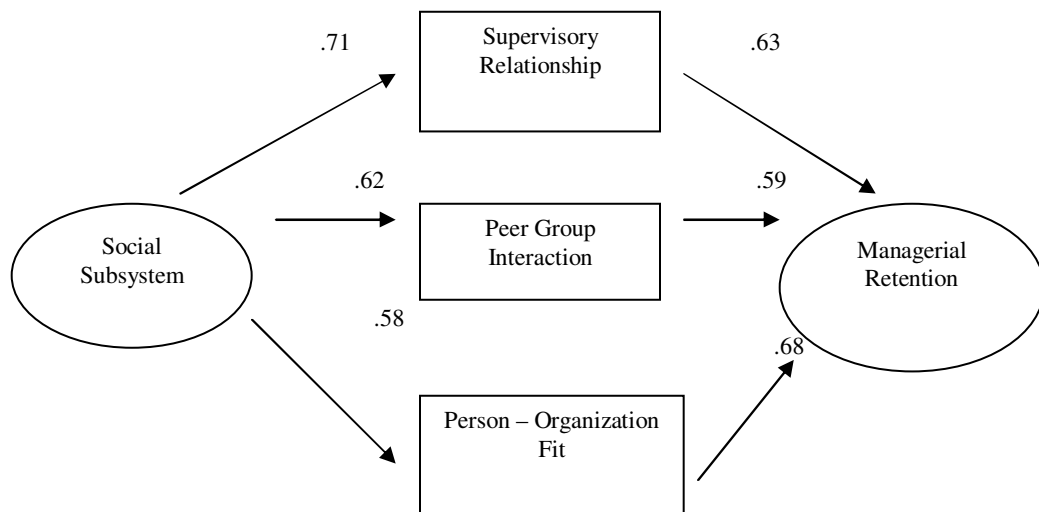
Path Specifications		Path Coefficients <sup>a</sup>	
		Direct Effect	Indirect Effect
Social Subsystem	→ Supervisory Relationship	.71 ** (.61)	
Social Subsystem	→ Peer Group Interaction	.62 * (.57)	
Social Subsystem	→ Person – Organization Fit	.58 ** (.49)	
Supervisory Relationship	→ Managerial Retention	.63 ** (.56)	
Peer Group Interaction	→ Managerial Retention	.59 ** (.49)	
Person – Organization Fit	→ Managerial Retention	.68 * (.63)	
Technical Subsystem	→ Managerial Job Characteristics	.61* (.49)	
Technical Subsystem	→ Work Technology Support	.42 * (.32)	
Technical Subsystem	→ Perceived Organizational Support	.48 ** (.37)	

Managerial Job Characteristics →	Managerial Retention	.58 * (.46)	
Work Technology Support →	Managerial Retention	.55 * (.43)	
Perceived organizational Support →	Managerial Retention	.61 ** (.49)	
Social Subsystem ↔	Technical Subsystem		.11 * (.20)
Social Subsystem →	Managerial Retention		.30 ** (.34)
Technical Subsystem →	Managerial Retention		.27 ** (.31)

<sup>a</sup> Unstandardized (Standardized), \*\* p < .01, \* p < .05

**TABLE 5:** Results of Path Analysis of Identified Structural Model

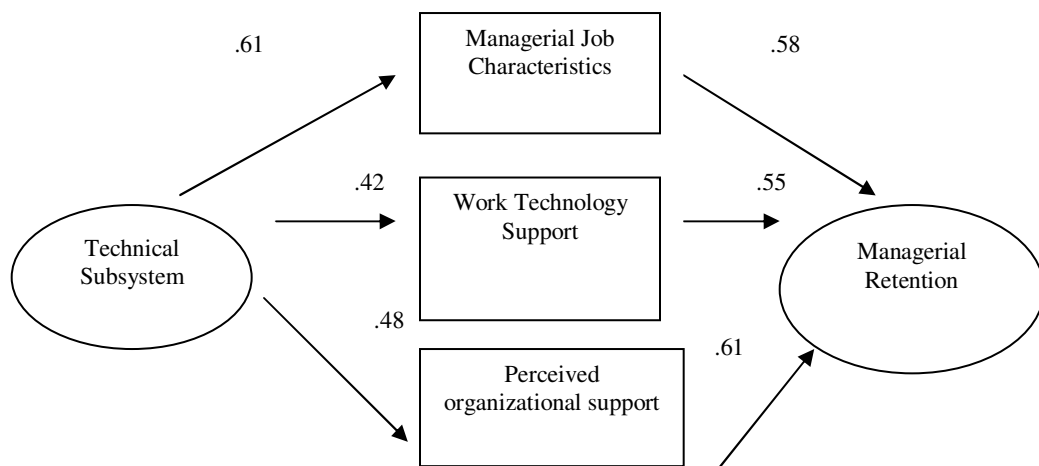
Table 5 shows both unstandardized and standardized path coefficients estimated for the proposed relationships of social subsystem variables in the model. The impact of positive supervisory relationship on retention of managerial personnel was found significant and in the expected direction. It accounted for a significant amount of variance in managerial retention ( $R^2 = 0.49$ ), providing evidence for the importance of healthy relationship with the immediate supervisor for retention of managerial personnel. This provides support for hypothesis 1. The impact of congenial peer group relations on retention of managerial personnel was found significant and in the expected direction. It accounted for a significant amount of variance in managerial retention ( $R^2 = 0.52$ ), providing evidence for the importance of peer group relationship for retention of managerial personnel. This provides support for hypothesis 2. The impact of person – organization fit on retention of managerial personnel was found significant and in the expected direction. It accounted for a significant amount of variance in managerial retention ( $R^2 = 0.46$ ), providing evidence for the importance of matching individual expectations and values with organizational norms and practices for retention of managerial personnel. This provides support for hypothesis 3. Thus, all the social subsystem variables had significant path coefficients indicating that these variables can be effective for reducing managerial turnover, and should be considered in managerial retention initiatives (see Figure 1).



**FIGURE 1:** Path Model for Impact of Social Subsystem Constructs on Managerial Retention

Table 5 shows both unstandardized and standardized path coefficients estimated for the proposed relationships of technical subsystem variables in the model [112],[113]. The impact of managerial job characteristics on retention of managerial personnel was found significant and in the expected direction (see Figure 2). It accounted for a significant amount of variance in managerial retention ( $R^2 = 0.39$ ), providing evidence for the importance of designing managerial job assignments for retention of managerial personnel. Hypothesis 4 was supported by the analysis. The impact of work technology support on retention of managerial personnel was found significant and in the expected direction. It accounted for a significant amount of variance in managerial retention ( $R^2 = 0.51$ ), providing evidence for the importance of available support technology at workplace for retention of managerial personnel. Hypothesis 5 was supported by the analysis. The impact of perceived organizational support on retention of managerial personnel was found significant and in the expected direction. It accounted for a significant amount of variance in managerial retention ( $R^2 = 0.53$ ), providing evidence for the importance of organizational support facilities received by managers for retention of managerial personnel. Hypothesis 6 was supported by the analysis.

Although not stated as formal hypotheses, the analysis of path coefficients (direct and indirect effects) indicated that organizational social and technical subsystems do have a significant relation, and also each element under social and technical subsystems respectively have significant relations with the social or technical subsystem as the case may be (see Table 5).



**FIGURE 2:** Path Model for Impact of Technical Subsystem Constructs on Managerial Retention

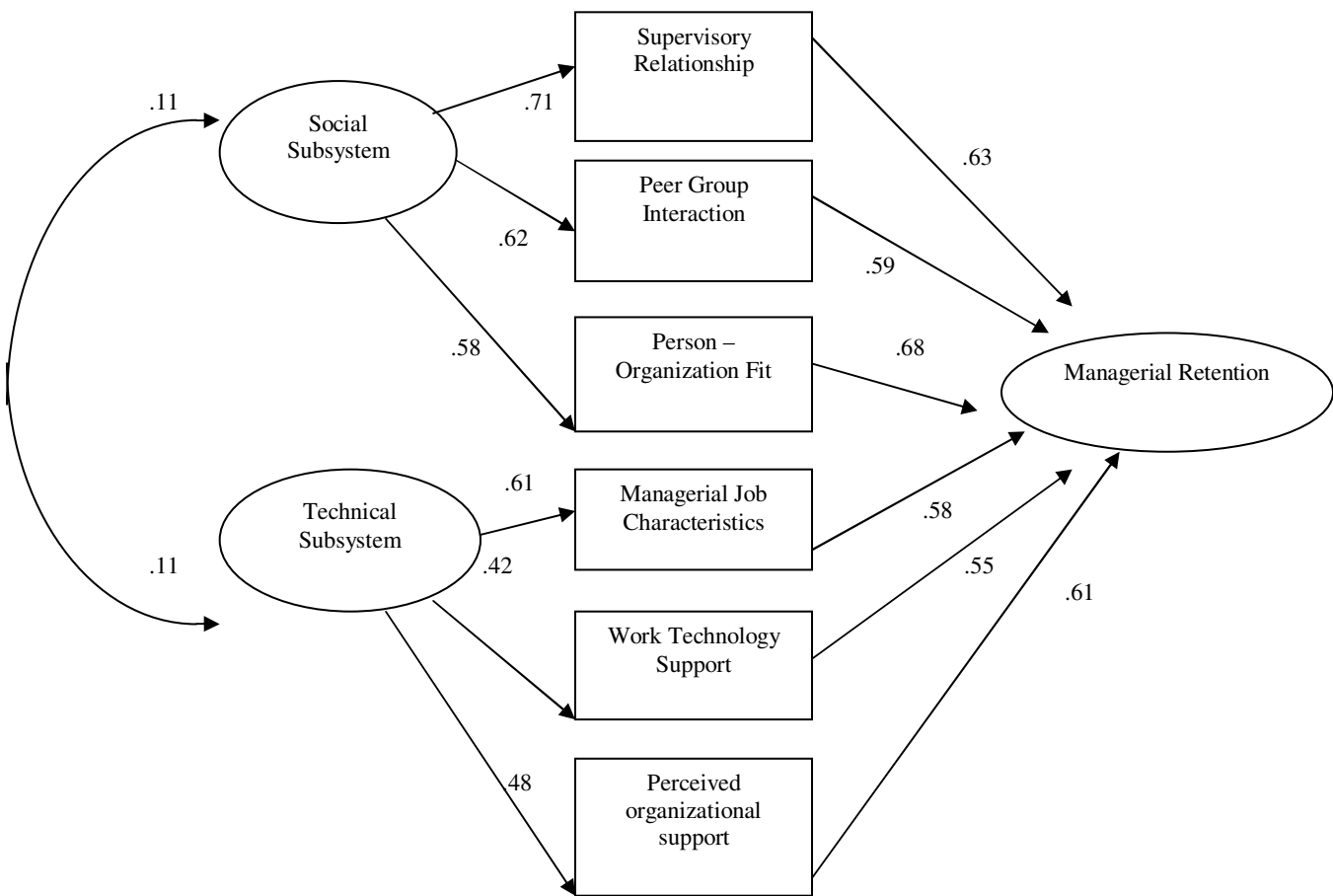
## 5. RESEARCH OUTCOME

This study investigated the impact of organizational social and technical subsystem elements on managerial retention. The social subsystem was studied with the help of variables namely supervisory relationship, peer group interaction, and person – organization fit; and the technical subsystem was studied with the help of variables namely managerial job characteristics, work technology support, and perceived organizational support. Path analysis supported the hypotheses that all three social subsystem elements (supervisory relationship, peer group interaction, and person – organization fit) had significant impacts on retention of managerial personnel at junior and middle levels in the organization. Given the results, the senior and top management should be careful about creating positive impacts of these factors in the context of designing the social structure of managerial jobs in the organizations.

The analysis also examined the relationships between the technical subsystem elements (managerial job characteristics, work technology support, and perceived organizational support) and the outcome variable of managerial retention. Path analysis supported the hypotheses that all three technical subsystem elements (managerial job characteristics, work technology support, and perceived organizational support) had

significant impacts on retention of managerial personnel at junior and middle levels in the organization. As the technical subsystem elements were significantly related to the intentions of managerial personnel to stay back and continue to work with the organization, the senior and top management should be careful about creating positive meaningful work experiences supported by technological and operational facilities in the context of designing the technical structure of managerial jobs in the organizations.

The simultaneous impacts of the organizational social and technical subsystem factors on managerial retention have been illustrated in the figure 3. The empirically supported integrated model in figure 3 exhibits the joint significance of the organizational social as well as the technical subsystem factors as part of the overall organizational sociotechnical system on the retention of managerial personnel in industrial organizations in addition to the impacts of the individual subsystem factors in figures 1 and 2 respectively. The combined effect of social and technical design of managerial jobs would function as a source of competitive advantage in the attraction and retention of quality managerial resources at junior and middle levels. The senior management along with the HR professionals has to develop suitable retention initiatives that become more effective in retaining managerial talents and reducing attrition rates. The results of the present study support the role of social and technical subsystems elements for reducing intentions to leave the organization, and increasing the retention of managerial personnel at junior and middle levels. The balanced sociotechnical design of managerial jobs gives more job satisfaction to the managerial personnel, which brings more commitment to work and organization and reduces attrition rates. These findings are in communion with the employee retention studies conducted in the relatively recent context by [38],[70],[74],[81],[82],[84].



**FIGURE 3:** Pooled Structural Model for Impact of Sociotechnical System on Managerial Retention

## 6. MANAGERIAL IMPLICATIONS

The results of the present study indicate that the organizational social and technical subsystem elements have significant impacts on managerial retention, and the careful design of managerial jobs through balancing the elements of these two subsystems decreases the likelihood that a junior and middle level manager would voluntarily leave the organization. The positive superior – subordinate relationship in terms of factors like Sharing Feedback, Sharing Information, Trustworthiness, Recognition, Reciprocity, Performance Appraisal, and Cooperation can significantly reduce the turnover intention of managerial personnel, and this finding from the study is consistent with the findings from the studies of [85],[89] based on the notion of Leader – Member Exchange (LMX) processes. The top management of the organizations has to emphasize on building a healthy superior – subordinate relationship by following the above supervisory practices at all levels in the organization as a continual process.

Congenial interpersonal relationships and interactions at peer level as an enabling social subsystem element to managerial retention are having significant impacts in terms of factors like Sharing feedback by Self – to – Others and Others – to – Self, Cooperation, Collectivist Orientation, Group Proximity, Harmony, Informality, and Socialization. This finding from the study is consistent with the findings from the studies of [91],[92],[95] in the context of team based interdependence and work outcomes. The departmental / unit heads have to be sensitive to developing and maintaining a supportive and reciprocative relationship among the colleagues within the department / unit. At times, this work place interaction and interdependence get extended to their social lives beyond the organizational boundary. Over the course of time this familial feeling brings in organizational citizenship behaviour among the organizational managers [52],[73],[74].

Person – Organization Fit in terms of factors adapted from the study of [96], (Respect for Diversity, Sharing feedback by own unit – to – others and vice versa, Inter - Unit Information Sharing, Organizational Information Sharing and fair management practices, Performance Based Recognition, Encouraging Willingness to Experiment) and was found to have a significant impact on retention of junior and middle level managerial personnel in organizations. The finding from the study supports and coincides with the result from a number of previous studies [65],[66],[67] conducted in social integration between the person and organization as incidental to managerial retention. The top management and the HR team have to build a transparent organization culture sensitive to the needs and expectations of professionally qualified managerial workforce.

The characteristics of managerial job assignments in terms of factors like Non – Complexity and Repetitiveness, Planning and Timeliness, Authority for Decision – Making, Extent of Teamwork, Flexibility, Intra – Unit Task Linkage, Inter – Unit Task Linkage, Task Specialization were found to have a significant impact on retention of managerial personnel in this study. The presence of these factors in managerial job assignments produces high level of job satisfaction that in turn is associated with reduced managerial turnover in organizations [83],[37],[84].

Work Technology has a wide connotation in the present study and has been defined as have defined technology as the combination of individual expertise (skills and knowledge), techniques, machines, and computers required for converting inputs into outputs in the form of products or services [102]. In the managerial job context of present scenario, workplace technology has taken the form of computerized support system. Work technology support in terms of factors like Team Facilitation, Operational Skill, Complexity, Usefulness, Effectiveness, User Acceptability, and Flexibility were found to have a significant impact on retention of managerial personnel.

Perceived organizational support in terms of factors like Infrastructure, Compensation, Workload, Career development, Inter – unit support, Support from top management, Support from seniors, Employee well being, Work – family balance had a significant impact on retention of managerial personnel in organizations. The presence of these support facilities in organizations is associated with the increase in involvement, commitment, and positive work outcomes of managerial personnel [103],[104],[105],[106]; and that in turn enhances the likelihood of managerial retention level as supported by this present study.

In order to design the organizational system and redesign the managerial jobs the top management along with the human resource management professionals has to develop managerial retention initiative strategies. While the issues like open information sharing at all levels, building professional work culture, managerial leadership, compensation, infrastructural support, inter-departmental relations involve the actions of top management at the organizational level; the issues of superior-subordinate relationship, peer level relations, team work, career planning, job characteristics, and work technology call for actions on the part of concerned line managers and human resource professionals at various functional levels. Hence, the design and implementation of organizational social and technical subsystems elements as antecedents to managerial retention require interface among various groups of organizational members at different levels of interactions.

This present study also supports and thus strengthens the theoretical underpinning of the fact that for effective functioning of the organizational sociotechnical system, both the subsystems (social and technical) factors have to be considered simultaneously for retaining managerial personnel in the organizations. The point that the over emphasis on one at the cost of another would disturb the balance among them, and hence would lead to the malfunctioning of the overall organizational sociotechnical system. This is well corroborated in the theory of sociotechnical system [8],[24],[25],[26]. The empirically supported integrated model in figure 3 implies the causal significance of all the organizational social and technical subsystem factors being incidental to the retention of managerial personnel in the organizations. The top management, unit heads, and the human resource managers must take the imperative cues from these findings of the study, and accordingly can focus on designing the managerial retention strategies for their own organizations.

## **7. IMPLICATION FOR FUTURE RESEARCH**

This study has implications for the conceptualization of the organizational sociotechnical constructs and linking them to managerial retention in organizations. The study has implications for models of managerial retention. The study suggests that sociotechnical antecedents of turnover have to be included in retention models. Results indicate that managerial personnel at junior and middle levels are more likely to stay with an organization due to combined positive impacts of organizational sociotechnical system constructs. Organizations often attempt to moderate turnover by offering extrinsic factors that individuals value and might increase individuals' sense of continuance organizational commitment [45],[46],[47],[48]. The sociotechnical perspective of this study focuses on both intrinsic (social) and extrinsic (technical) factors incidental to managerial retention. The inclusion of both social and technical subsystem constructs in models of retention may increase the validity of theoretical framework and provide a holistic assessment of the managerial turnover phenomenon.

So far as the future research scope of this study is concerned, the longitudinal studies in specific organizations can be conducted to determine how the improvements made in the organizational social and technical subsystem variables impact the retention of managerial personnel in the organization. Also the studies can be conducted in a number of representative organizations in a specific sector to assess the impact of organizational sociotechnical system on managerial retention. When the study gets repeated in different sectors, a sectoral perspective can emerge out of this research issue. At the third level of research, the study can be taken up both at national and international levels to compare the findings in these two different contexts, and empirical model(s) can be developed based upon the convergent / divergent research outcomes.

## **8. LIMITATIONS OF THE STUDY**

One major limitation of this study is being a survey research by nature; the generic structural model has been developed based on the empirical findings of the junior and middle level managerial responses from the selective organizations in this study. Covering a large number of organizations from other industrial sectors could make the model more generalized. Instead of following specific sectoral studies, this study focuses on a generic research approach in various types of industrial organizations. With the present study



it is hoped that the ideas presented here help the management and human resource professionals in creating balanced social and technical subsystems; and stimulate the management researchers to expand the scope and application base of organizational sociotechnical system in resolving various problems that the organizations face in their organizational life cycle.

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