**By Contribution**

# Task Characteristics & Group Effectiveness in Indian Organizations

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*This study explores the relationship between certain task characteristics and group effectiveness variables. The task characteristic variables were autonomy, skill variety, task structure, task identity, problem demands in terms of time, task difficulty, work schedule, quality assurance, performance rating and task significance. Group effectiveness was conceptualized in terms of group cohesiveness, group goal accomplishment, group growth level and special recognition. Factor analysis and canonical correlations were sought to answer the research questions. Factor-analysis results revealed the underlying dimensions of the variables under study. Canonical correlations revealed that a positive significant relationship existed between the two sets of variables.*

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## Concept of Group or Team Effectiveness

A lot of Indian firms find their ways through acquisition, strategic alliances and joint ventures, mergers and divestments. They have their concern towards managing change, turnaround and transformation, improving R&D, enhancing creativity, culture building, people issues etc. The present study raises a perspective from HR where ultimately it is the people whose consistent performance enables the company reach the goal. Team effectiveness is important right from the top to the bottom of the organization. We find that the use of team/group has expanded rapidly in response to competitive challenges. Numerous studies have shown how to design empowered or self-directed work teams, parallel learning teams, cross-functional project teams, executive teams, and team-based organizations.

The words "team" and "group" are used interchangeably in this paper. The popular management literature has tended to use the term "team," for example, empowered teams, quality improvement teams, and team effective-

ness. The academic literature has tended to use the word "group," for example, group cohesion, group dynamics, and group effectiveness. No differentiation is being made here in the concept of group and team.

**"The 'good' managerial team is one where the atmosphere is relaxed with people listening to each other without tension.**

Likert (1961) emphasized that management can derive maximum benefit out of it's human resources if the work groups are marked by a high degree of group loyalty, effective skills of interaction and high performance goals. He maintained that an organization may be called successful when, besides maximizing its profit, it makes the greatest use of human capacity consisting of highly effective work groups, linked together in an overlapping pattern by other similarly effective groups. McGregor (1960: 235-40) distinguishes between effective and less effective groups. "The 'good' managerial team is one where the atmosphere is relaxed with people listening to each other without tension. People participate and try to reach an agreement. When disagreements cannot be resolved, the group attempts to live with them, and criticism, while frequent, is constructive but not personal. Evaluation of group performance is constant. On the other hand, a less effective group has little idea of group task objectives. A few people dominate, and their contributions are often not to the point. Disagreements are either suppressed out of fear of conflict, or actual warfare emerges. Meetings produce tension but little of value in reaching any clear goal".

A group's ability to be effective depends particularly upon how well it transforms the resource inputs into group's outputs. The inputs would include the organizational settings, nature of the task, individual attributes and general member characteristics. The group process would include things like norms and cohesion, interaction patterns, decision making and task maintenance activities. These may be related both to required behaviours in the formal systems and the emergent behaviours in the informal systems. The outputs may include the task performance and human resource maintenance. Cartwright and Zander (1960) suggested that a group is more effective if it specializes the tasks of its member.

From the vast literature on group dynamics, few models of group effectiveness which attempt to develop new theoretical perspectives in this area are the work of Cummings (1981), Hackman (1976), and Gladstein (1984) who developed the model of group effectiveness out of the social-technical tradition that focuses on the interaction between leadership skills, technical skills, and group interaction. Guzzo (1986) focuses on three determinants of group effectiveness, namely, task interdependence, outcomes interdependence or the contingency between rewards and group performances, and potency of the collective belief that group can be effective. The work by Gladstein (1984) must be incorporated in this status report because it represents one

of the first attempts to pose and to test the comprehensive model of work group effectiveness. The general model is divided into inputs, process and outputs. Hackman's work (1987) has also been a major influence in shaping current thinking about work groups. A different type of model of work group effectiveness (Goodman 1986) has been proposed, which is derived from an economic – technological perspective rather than psychological perspective underlying the other models. It focuses on group performance as a function of the mix between labour and technological variables. Although there are other models of work group effectiveness, the above representations provide a broad picture of current thinking about work group effectiveness.

The concern over here is with effectiveness, which include the multiplicity of outcomes that matter in organizational settings. These outcomes occur at several levels: at the individual, group, business unit, and organizational levels. Outcomes can be related to one another in complex and sometimes conflicting ways (Argote & McGrath 1993, Llgen et al 2005). Effectiveness at one level of analysis can interfere with effectiveness at another level. Thus, it is important to be clear about the dimensions of effectiveness that are being considered and the level at which they are being considered. Recent studies use several outcome measures and by and large they can be put into three categories:

(1) Outcome measures related to quantity and quality of outputs, including for example, efficiency, productivity, response times, quality, customer satisfaction, and innovation (Likert 1961, Weisman et al 1993, Seers, Petty & Cashman 1995, Wageman 1995, Eden 1990, Goodman & Leyden1991).

(2) Member attitudes, including for example. employee satisfaction, commitment, cohesiveness and trust in management (Cordery et.al.1991, Cohen et al 1996).

(3) Behavioural outcomes including absenteeism, turnover, intention to leave and safety (Coederry et. al 1991, Pearson 1992, Weisman et al 1993, Cohen & Ledford 1994, Cohen et al 1996). Guzzo & Dickson (1996), Sundstrom et al. (1990), and Hackman (1987) include multiple dimensions in their definitions of effectiveness, but do not draw attention to behavioural outcomes.

**Framework of Group Effectiveness**

On the basis of empirical studies on group/team effectiveness, it is seen that effectiveness is a function of environmental factors, design factors, group processes, and group psychosocial traits. Environmental factors are characteristics of the external environment in which the organization is embedded, such as industry characteristics or turbulence. Research studies signify the importance of environmental factor for group effectiveness (Karasek & Theorell 1990, Hambrick & D'Aveni 1992, Gupta et al. 1994 ). Design factors refer to those features of the task, group, and organization that can be directly manipulated by

managers to create the conditions for effective performance. Examples of task design variables include autonomy and interdependence (Levine & Tyson 1990, Wagner 1994, Robertson & Huang 2006). Examples of group composition design variables include size, tenure, demographics, and diversity. Examples of organizational context design variables are rewards, supervision, training, and resources. Processes are interactions such as communication and conflict that occur among group members and external others (Ancona & Caldwell 1992a). Group psychosocial traits are shared understandings, beliefs, or emotional tone. Examples include norms, cohesiveness, team mental models, and group affect (Klimoski & Mohanned 1994, Weick & Roberts 1993). In the present study certain task design variables were incorporated and their relationship with group effectiveness was examined. Group effectiveness was conceptualized in terms of group cohesiveness, group goal accomplishment, group growth level, group recognition, and group satisfaction.

**Group Cohesiveness**

It is often implied that effective work groups are cohesive. Group cohesiveness could be defined as the degree to which members are attracted to one another and are motivated to stay in the group (Keyton & Springston 1990, Dion 2000). Shanley & Langfred (1998) found a positive relationship between cohesiveness and effectiveness that depends upon the strength of group task norms. Research has generally shown that highly cohesive groups are more effective than those with less cohesiveness (Robbins 1993: 312, Yoo & Alavi 2001).

**Group Goal Accomplishment**

The group's goal, if clearly understood, can be a reason why an individual is attracted to a group. The goal setting theory asserts that specific and difficult goals lead to higher performance. Edwin Locke (1968) proposed that intention to work toward a goal is a major source of work motivation. Goals tell an employee what needs to be done and how much effort will need to be expended. Even one way of judging the success of an organization is to ask how effective it is in achieving specified goals. The effects of group goal upon the motivation and adjustment of group members were explored by Raven and Rietsema (1957). Antoni (2000, 2005) and Guzzo & Dickson (1996) found that group goal and goal commitment predict group productivity and job satisfaction.

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**Group Growth Level**

Motivation theorists refer to "growth need" as an intrinsic desire for personal development. That is, individuals need such things as personal accomplishment, learning, and personal growth and development. Individuals with strong needs for growth are likely to respond much more positively to jobs high in motivating po-

tential than are individuals with weak growth needs (Arnold & Feldman 1986: 377). The contemporary growth school emphasizes the attainment of satisfaction through growth in skill, efficacy, and responsibility made possible by a mentally challenging work (Locke 1976:1300). Growth is often used by managers to imply success. It has also been found that individuals in an organizational setup equate growth with effectiveness; hence managers are predisposed to the values of growth (Robbins 1993). Pfeffer and Salancik (1978) have proposed that growth is almost always consistent with the self interest of the top management in the organization. It increases prestige, power, and job security for this group and it is linked to executive compensation. Growth creates opportunities to work on new projects, more promotion possibilities, and higher salary increases (Robbins 1993). In the present framework , Alderfer's concept of "growth need" was operationalized in terms of group growth level of the role incumbents.

**Group Recognition**

Recognition could be defined as the demonstration of appreciation for a level of performance, an achievement or a contribution to an objective. It has been suggested that both reward and recognition are important for work groups. Recognition is a powerful and cost-effective way of enhancing the improvement process and is essential to culture change, where as reward (e.g. pay, bonus etc.) creates a value environment in which work is done (Vroom 1964, Robbins 1993, Cohen et al 1996). Recognition also provides a feedback concerning the competence of one's job performance. It can be used to correct past errors and to set future goals for performance (Locke, Cartledge & Koeppel 1968). Present study examines recognition in terms of the work group, considering it to be a part of group effectiveness.

**Task Characteristics**

Jobs are different and some are more interesting and challenging than the others. The most important theories here are: a) requisite task attributes theory, (b) the job characteristics model, and (c) the social information processing model. The task characteristics approach began with the pioneering work of Turner and Lawrence in the mid - 1960s. They predicted that employees would prefer complex and challenging jobs as such jobs would increase satisfaction and result in lower absence rates. They defined job complexity in terms of six task characteristics: (1) variety, (2) autonomy, (3) responsibility, (4) knowledge and skill, (5) required social interaction, and (6) optional social interaction. The higher a job scored on these characteristics, the more complex it was (1965). Turner and Lawerence's requisite task attributes theory laid the foundation for "job characteristics model" proposed by Hackman and Oldham (1976). According to this model job can be described in terms of five core job dimensions, (1) skill variety, (2) task identity, (3) task significance, (4) autonomy, and (5) feedback. These core dimensions can be combined into a single predictive index, called the motivating potential score (MPS). Jobs that

are high on motivation potential must be high on at least one of the three factors that lead to experienced meaningfulness, and they must be high on both autonomy and feedback (Hackman & Oldham 1976). Most of the evidence supports the general framework of the theory - that is, there is a multiple set of job characteristics which impact behavioural outcomes (Fried & Ferris 1987).The third task characteristics theory is about social information processing (SIP) model. The SIP model argues that employees adopt attitudes and behaviours in response to the social cues provided by others with whom they have contact. A number of studies confirm the validity of the SIP model. (Thomas & Griffin 1983, Fried & Frris 1987, Hackman & Lawler1971). The variables of task characteristics included in the study are, autonomy, skill variety, task structure, task identity, task difficulty, work schedule, quality assurance, performance rating and task significance.

**Table-1 Summary of the Organizational Characteristics & Number of Respondents**

| Organization No. | No. of employees | Industrial categorization | Ownership | No. of Respondents |
|---|---|---|---|---|
| 1. | 3198 | Mechanical | Public | 20 |
| 2. | 358 | Chemical | Public | 25 |
| 3. | 2500 | Mechanical | Public | 23 |
| 4. | 1160 | Chemical | Public | 20 |
| 5. | 8200 | Mechanical | Public | 20 |
| 6. | 3500 | Mechanical | Private | 20 |
| 7. | 2450 | Mechanical | Private | 20 |
| 8. | 1110 | Textile | Private | 19 |
| 9. | 13000 | Chemical | Private | 26 |
| 10. | 250 | Chemical | Private | 15 |
| 11. | 4148 | Mechanical | Public | 15 |
| 12. | 17000 | Mechanical | Private | 16 |
| 13. | 2230 | Textile | Private | 11 |
| | | | Total | 250 |

## Sample

The data was collected from two hundred and fifty male executives, mostly belonging to middle hierarchical level, from thirteen organizations from both public and private sectors. These organizations were located in three big cities of North India, one in Karnataka and the capital city of India. Further information about the sample is listed in Table1.

## Measures

The measures used in this study were either a modified version of the original source or were developed by the researchers. Modifications include changes in wordings, sentence constructions, scaling, response categories and selective use of items and ideas.

*Job autonomy* was measured through Autonomy scale adapted from Hackman and Lawler (1971), Hackman and Oldham (1975) and Sims, Szilagyi and Keller (1976). The measure comprises 5 items. *Performance Rating Scale* comprises 4 items. It was developed by researchers based on Robbins (1993). *Skill Variety* scale comprises 6 items. Skill variety was measured through the scale adapted from Hackman and Oldham (1975), Sims, Szilagyi and Keller (1976). *Task Significance* is a 3 item question-

naire, adapted from Hackman and Oldham (1975), from their job Diagnostic survey. *Task Identity* questionnaire comprised 3 items and is adapted from Hackman and Lawler (1971), Hackman and Oldham (1975).

*Task Difficulty* scale was adapted from Van De Van and Ferry (1979).The items in this scale are 5. *Quality Assurance* scale comprises 6 items. The scale was developed based on the writings of Sinha Madhav, Willbornh and Walter (1985). *Work Schedule* scale comprises 13 items and developed by researchers based on the writing of Robbins (1993). *Group Learning* scale was developed based on the writings of Argyris & Schon (1978). It measures the effectiveness of a work group. *Group Growth Level* scale measures the personal growth a group has achieved as a measure for group effectiveness. It was developed based on the Alderfer's (1969) concept of growth need. The scale has four items in number. *Group Goal Accomplishment*. A 4-item scale measuring work group effectiveness it was developed based on Locke's (1968) goal setting theory. *Group Cohesiveness* is a measure of work group effectiveness. The scale has 9 items. It was adapted from Scott and Rowland (1970).

*Special Reward* questionnaire measures the group effectiveness. It is a 3-item scale and was developed based on Robbins (1993).

**Procedure**

A list of the work organizations located in North India was compiled using the documented sources of information. To avoid inclusion of small organizations, those employing more than 500 persons were located. The geographical region of the sample was restricted to North India for the sake of convenience. Letters of request were sent for obtaining permission to collect data from particular organizations, to which most of the organizations responded favourably.

The sampling was purposive because of limitation of time and resource availability. It was decided to take 20 respondents from each organization belonging to middle hierarchical levels of management. The respondents were approached individually mostly in duty hours, with permission from their respective organizations as well as off duty hours. Data was collected through structured interview schedule. Respondents and organizations were assured of strict data confidentiality.

The variables in the study were planned and executed largely within the framework of multivariate conceptualization as opposed to the more popular uni-variate conceptualization of constructs. Owing to the complexity involved in conceptualization and treatment of variables in a real life setting, it was argued that there could always be the possibility of multidimensionality underlying the constructs that reflect social realities. To explore the underlying dimensionalities, all multi-item questionnaires were subjected to factor analysis (principal factoring with iterations and oblique rotation). In this research, the prime concern of factor analysis tech-

nique was items analysis and data reduction with a view to identify underlying dimensions of various constructs having items of clear and high loadings on representative factors. Hence, in further analysis, where canonical correlation was sought exploring the relations between certain "task characteristic variables and group effectiveness variables" the factors were treated as variables yielding composite scores on subscales of super ordinate constructs rather than as factors in strict statistical sense.

## Results

The measures were subject to factor analysis. The factor loadings, the item contents and the constructs from which the respective factors had been extracted were kept in view while naming the factors. A brief description, of various forms of questionnaire measuring the constructs used in this study and factors obtained there of, follows. Factor analysis revealed the underlying dimensions of variables in the study. For task characteristic variables following dimensions appeared.

*Task Significance (TS)* is a 3- item questionnaire and the factor analysis resulted into a single factor named as Task Significance (TS). *Autonomy* questionnaire comprised 5 items. The factor analysis resulted into a single factor and it was retained and named as Autonomy. *Skill Variety* questionnaire comprised 6 items. The factor analysis results in two factors. Only one of these two factors was retained which was named as (a) Simple Job and Repetition of Tool (SJRT). This factor consisted of 3 items. *Quality Assurance* questionnaire consists of 6 items, culminating in a single factor which was named as Quality Assurance (QA). *Performance Rating* questionnaire has 4 items, culminating in a single factor, only those items were retained which were named as Groups Physical and Affective Caring (GPAC).

*Task Identity* is a 3-item questionnaire, culminating into two factors. One factor was retained which was named as Task Identity (TI). *Work Schedule* questionnaire has 13 items, culminating in three factors. Two factors were retained which were named as (a) Convenient Work Schedule (CWS), consisting of 3 items and ( b) Hours of Work (HW), consisting of 5 items. *Task Difficulty* questionnaire comprised 5 items and factor analysis resulted in a single factor which was named as Time Investment and Outcome Assurance in Tasks (TIOAT),only two items were retained.

### Factor Analysis for Group Effectiveness Variables

*Group Learning* is a 9- item scale, culminating in a single factor. The factor was named as Group Learning (GL)

*Group Growth Level* is a 3- item scale, culminating in a single factor that was named as Job Enriched at Group Level (JEGL)

*Special Reward* questionnaire comprised three items, culminating in a single factor that was named as Group's Recognition (GR)

*Group Goal Accomplishment* questionnaire comprised 3 items and the factor analysis resulted in a single factor. This was named as Group Goal Accomplishment (GGA)

*Group Cohesiveness* questionnaire comprised 9 items. The factor analysis resulted in three significant factors, but owing to our stand, only two factors were retained. They were named as (a) Cooperative, Vigorous and Efficient Fellow Workers (CVEFW), consisting of 3 items, (b) Quarrelsome, Selfish and Belligerent Fellow Workers (QSBFW), consisting of 3 items.

To study the relationship between the dimensions of task characteristics variables and group effectiveness variables canonical correlation (CC) was calculated. To interpret canonical correlation results, an arbitrary criterion of + 0.30 was used as an index of importance of a variable within a particular set of a variables or canonical variate. Such a stand has been taken by Lambert & Durand (1975). Only those canonical correlation results would be described in detail that consist simultaneously of both the left and right hand variates having loadings of + 0.30. CC results would not be described if on either variate, no loading turns out to be equal to or greater than 0.30. Canonical loadings rather than canonical weights were used in the analysis. Canonical loading statistic offers the advantage over the weight statistic by being largely free from the direct influence of multi co-linearity and suppresser effects (Lambart & Durand 1975).

Apart from the canonical roots, a redundancy index (Rdx) was also calculated. The canonical roots provide the estimates of the amount of shared variance extracted from the set' of variables. Often very little of the dependent variance is shared with independent variables although canonical root values are sometimes very high. The redundancy index overcomes this difficulty (Lambart & Durand 1975).

**Table 2 Canonical Correlation showing relationship between the dimensions of Group Task Characteristic variables and Group Effectiveness variables**

| Variables | Set 1 Loadings |
|---|---|
| Left Hand Set | |
| QA | 98 |
| GPAC | 81 |
| CWS | 21 |
| HW | 65 |
| TIOAT | 27 |
| Right Hand Set | |
| GL | 88 |
| JEGL | 1.00 |
| GR | 66 |
| GGA | 1.00 |
| CVEFW | 44 |
| QSBFW | -12 |
| RC | 0.60088 |
| $RC^2$ | 0.36106 |
| Chi Square | 142.93266 |
| Df | 60 |
| p> | .01 |
| Variance LHS | 0.43288 |
| Rdx LHS | 0.15629 |
| Variance RHS | 0.60797 |
| Rdx RHS | 0.21951 |

Table 2 presents the results of CC in which Left Hand variate composed of variables of task characteristic related to Right Hand variate composed of group effectiveness variables. One CC turned

out to be significant ($p < 0.01$). The CC result (RC = .60, RC2 = .36, *2 (60) = 142.93266, $p < 0.01$) showed that Left Hand variate was significantly related to Right Hand variate. Both the variates mutually shared 36 per cent variance (the derived values such as squares or square roots of a number may not exactly tally because of rounding off up to two places after decimal). The redundancy index (0.21951) for Right Hand variate composed of Group Effectiveness related variables showed that the total variance (0.60797) in the Right Hand canonical variate was shared with variance in or explained by the Left Hand canonical variate. The redundancy explained 21.95 per cent of the variance in the right hand variate by the left hand variate. The Left Hand Variate could be thought to be loaded positively with quality assurance, group's physical and affective caring, hours of work. This Left Hand Variate was related significantly to Right Hand Variate that was loaded positively with group learning, job enriched at group level group's recognition, group goal accomplishment, cooperative, vigorous and efficient fellow workers.

## Discussion

Factor analysis results for task characteristics variables revealed a total of 9 dimensions from 9 major concepts scales, which could be understood as, autonomy, skill variety, task significance, quality assurance, group's physical and affective caring, task identity, convenient work schedule, hours of work, time investment and outcome assurance in task.

Analysis of group effectiveness scales resulted into 6 factors from 5 major concepts: group learning, job enriched at group level, group recognition, group goal accomplishment, cooperative, vigorous and efficient fellow workers, Quarrelsome, selfish & belligerent fellow workers.

Table 2 depicts that only one canonical correlation was derived. Here quality assurance, group's physical and affective care, hours of work are related to group effectiveness factors namely, group learning, job enriched at group level, recognition, group goal accomplishment, cooperative, vigorous and efficient fellow workers. Organizations may have a look at the above stated task characteristics which were found to have a positive contribution in enhancing group effectiveness. Studies by various researchers on nature of group's task (Hackman & Morris 1975, McGrath 1984, Steiner 1972), task design (Hackman 1987) support our findings. Studies by Anat & Anit (2006), Pyoria Pasi (2005), Koster et al (2007), Brief & Weiss (2002) were found to support the dimension of group's physical and affective care. Flexitime (flexible work hours) have been found to reduce absenteeism, overtime expenses, hostility towards management, eliminate tardiness, and increase autonomy and responsibility at work, workers' productivity and satisfaction (Kossek et al.1999, Ralston & Flangan 1985, Ralston 1989). Arnold and Feldman (1986) have indicated that in order to enhance group effectiveness, group leaders need to assign specific duties to individual group members, and reward them for their efforts.

He has also given importance to group cohesiveness, functional and productive group norms, interpersonal relations, tolerance of deviance without ignoring the offenders completely to increase group effectiveness. By and large it has been found that autonomy, interdependence, and team development, along with process and contextual support variables, are related to the effectiveness of teams of "knowledge workers. Doolen, Hacker and Aken (2006) found direct relationship between organizational context variables and team effectiveness.

**In order to enhance group effectiveness, group leaders need to assign specific duties to individual group members, and reward them for their efforts.**

## Limitations of the Study

Some of the obvious limitations of the present study include the following:

1. No "Objective Criterion" was included in the study for evaluation of performance and effectiveness related issues.
2. The organizations and respondents constituting the sample of the study were marked by heterogeneity rather than homogeneity. Sometimes heterogeneity of the sample is treated as a weakness of the research design. Nevertheless there have been instances where such heterogeneity has been treated to be the strength rather than the weakness (Kaur 1992). And it is argued that heterogeneity as a sample contributes towards wider generalizability of the findings. Besides the non-random sampling imposes further constraints on the generalizability issue.

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