

EMPLOYEE PERCEPTIONS OF THE DIMENSIONS OF A
FAIR PERFORMANCE APPRAISAL

by

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Employee Perceptions of the Dimensions of a

Fair Performance Appraisal

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ABSTRACT

Employees from two major companies in British Columbia responded to a questionnaire on the fairness of performance appraisals. On the basis of performance appraisal research and justice research, five dimensions were predicted to be important to the perception of a fair performance appraisal: 1) Employee Participation in the Appraisal Process; 2) Goal-setting for the Employee's Job; 3) Appraiser's Knowledge of Employee's Job and Performance Level; 4) Job Relevance of Appraisal Areas; and 5) Frequency and Follow-up of Appraisals. It was also predicted that employee appraisal outcomes would be positively related to employee perceptions of appraisal fairness.

Questionnaires were distributed to 300 management and professional employees from each of the two companies, resulting in 183 responses from Company One (a financial institution) and 214 from Company Two (a company in the public service industry). The questionnaire was composed of questions on demographic background, appraisal procedures in the Ideal Situation in a company, appraisal procedures in the Real Situation in the employee's company, and the results of the employee's most recent appraisal.

The Ideal and Real Situations were factor analysed for each company. The following three factors were confirmed for both the Ideal and Real Situations: 1) Employee Participation in the Appraisal Process; 2) Goal-setting for the Employee's Job; and 3) Appraiser's Knowledge of Employee's Job and Performance Level. It was concluded that these three dimensions may be basic to employee perceptions of fairness in the performance appraisal process and therefore, may be important in the design of performance appraisal systems to increase employee acceptance of the system and the appraisal results. The three basic factors were the only ones produced by the analysis of responses to the Real Situation. In contrast, analysis of the Ideal Situations resulted in additional factors to the three basic ones.

The differences between the Real and Ideal Situation results are accounted for in terms of the differences in the nature of the two types of ratings.

Highly significant positive correlations were found between the results of the employees' appraisal, the overall fairness of the appraisal system, and the Real variables for both companies, suggesting that favorable ratings are positively related to perceptions of fair appraisal procedures in an employee's company. Three demographic variables - age, number of years with the company, and number of years in position - were highly correlated with both the Real and Ideal variables for Company Two, but not for Company One. Several possible explanations for these relationships are discussed. Because both companies used a modified Management By Objectives appraisal system, the findings are limited to systems of this type.

DEDICATION

To my husband Allan for his constant
support, assistance and thoughtfulness

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I. INTRODUCTION

Most research in the area of performance appraisal systems has concentrated on the psychometric aspects (validity and reliability) of performance measures (Landy & Farr, 1980). Although it has been suggested that employee opinions of the appraisal system may be equally important to the system's long-term effectiveness, this is a much less researched area (Lawler, 1967). The present study examines one aspect of employee opinions of performance appraisal - perception of fairness. The major purpose of this study is to empirically examine the dimensions of perceived fairness in the appraisal process.

The term "performance appraisal" has not always been used in a consistent way. The basic goal of performance appraisals is to focus on job-related performance (Baron, 1983). Therefore, the clearest and simplest definition of performance appraisal is a rating of "how well an employee performs the job currently assigned" (Sibson, 1983, p. 23). Sibson states that the following activities may also be included in the performance appraisal process: performance evaluation (actions to improve performance of currently assigned duties), potential rating (the potential of each person to assume higher level responsibilities), and potential evaluation (activities to develop employees for future identifiable responsibilities). The above activities may all form part of the appraisal process but care must be taken to keep them separate since each has a different purpose. By Sibson's definition the performance appraisal system consists of all the interrelated methods by which a company reviews its employees' performance.

When an organization constructs a performance appraisal system, two main decisions must be made: what to measure and how to measure it. The purposes of the appraisal (administrative decision making and/or employee

feedback) and the organizational structure of a company will greatly influence the final criteria selected. In spite of differences between appraisal systems, some researchers have proposed general standards for selection of performance appraisal criteria. Baron (1983) proposes that all performance appraisal criteria should be: 1) reliable, 2) realistic, 3) representative of the job as a whole, 4) acceptable to employees, and 5) measurable. The present study is concerned with criterion number four - employee acceptance of performance appraisal criteria. In relation to it, Baron (1983) asserts "we expect evaluations to be fair - to be based on job-related performance, not upon the way we look or upon a manager's selective memory" (p. 239). Thus, perceived fairness of performance appraisal criteria was selected as an essential component of employee acceptance of performance appraisal, and singled out for investigation.

The following sections review the literature relevant to perceived fairness of performance appraisal systems. This review includes both justice research and organizational research.

Review of Justice Research

Support for perceived fairness as an important aspect of the the appraisal process can also be found in research on justice. Justice research has mainly focused on courtroom settings. The parallels between the outcome in a court of law and a performance appraisal decision are quite clear: both involve a review of evidence or information on a person; both involve a formalized decision making system; and both involve a decision or judgement by an authority figure involving an area deeply important to the person being judged or rated. There are of course differences between the two as well. For instance, a court case tends to be resolved in an all or nothing fashion (e.g. guilty or innocent of a specific criminal charge) whereas the

result of a performance appraisal involves much finer ratings. However, the similarities merit an examination of justice research.

Two general types of justice or fairness have been distinguished in the literature: distributive justice and procedural justice. Distributive justice refers to an individual's perception that the outcome of a judgement is fair (Walker, Lind and Thibaut, 1979). Some authors use the term distributive justice to refer only to outcomes involving the distribution of resources, usually money. In the present study distributive justice is used in the general sense to refer to the consideration of any judgement outcome. Procedural justice refers to an individual's perception that the procedures used to reach an outcome are fair (Thibaut & Walker, 1975). Outcome satisfaction refers to an individual's satisfaction with the outcome resulting from a judgement.

It has been proposed that perceptions of procedural justice have a direct influence on perceived fairness of outcome. Specifically, the research of Thibaut and Walker (1975) on simulated courtroom procedures found that court rulings following from the adversarial approach are perceived as fairer than the nonadversary procedures, even when the verdict is identical. Recent simulated court studies by Walker, Lind, and Thibaut (1979) and Lind, Walker, Kurtz, Musante, and Thibaut (1980) lend further support to the above finding. In contrast, Tyler (in press) in a field study on courtroom procedures found that only distributive justice ratings were significantly related to outcome fairness perceptions, and that procedural justice ratings were related only to approval of courts in general. It should be noted that the latter study involved fairness ratings of court rulings on traffic violations by the individuals who had actually made the violations. Therefore, the difference between the field study and

the simulated courtroom studies could be the result of whether the outcomes directly affect the individual making the fairness judgement -- that is, whether the individual is a participant in or merely an observer of the situation being judged.

Support for the above interpretation is found in attributional interpretations of perceived justice (Cohen, 1982). According to this perspective "potential injustices become "actual" injustices to the person only if and when the discrepancy between actual and deserved outcomes is attributed to something other than the actor's own behavior" (Cohen, 1982, p. 125). It has generally been found that actors (participants) tend to attribute the causes of their own outcomes to environmental influences, whereas observers attribute the causes of the same outcomes to the actor's own behavior (Arkin & Duval, 1975; Nisbett, Caputo, Legant, & Maracek, 1973). Therefore, the same outcome for an actor could be viewed as fair by an observer (attributed to the actor's own behavior) and viewed as unfair by the actor himself (attributed to external causes such as the judgement system). Thus, according to this perspective actors (participants) would be expected to focus on the outcome and its favorableness to themselves in making fairness judgements and observers would be expected to be more influenced by other factors such as the procedures used to reach the outcome.

There has been a considerable amount of justice research concerned with the relationship between personal outcomes (those directly affecting the individual) and perceived fairness. The results of these studies have been inconsistent. The majority of research in this area has concerned cases where individuals are the allocators of outcomes (generally involving money) between themselves and some other(s). Some findings from these allocation studies have supported the hypothesis that fairness judgements are

independent of personal outcomes (Kahn, Nelson, Gaeddert, and Hearn, 1982; Leventhal and Lane, 1970; Reis and Gruzen, 1976), and others have supported the hypothesis that fairness judgements are directly linked to how favorable the personal outcome resulting from it is to the individual making the judgement (Greenberg, 1978; Greenberg 1981). These studies involved requesting the allocators to make a decision on how to allocate the reward fairly between themselves and other(s) after the performance of some specified task.

The studies which found that decisions on fair allocations were uninfluenced by personal outcomes all involved publicly made decisions. Kahn et al. (1982) have argued that studies on such publicly made decisions must consider another type of personal outcome - that concerned with social rewards (increases in esteem, status and liking from others in the group). According to the above perspective the subjects were still making fairness decisions which maximized their own personal outcomes in terms of social rewards. Kahn et al. (1982) further assert that economic and social rewards are not independent but are often negatively related. Since in most laboratory situations the economic rewards are quite low, it would be expected that social rewards would predominate over economic ones. When fairness decisions were privately made, allocators made decisions which maximized their own economic rewards.

To summarize, based on a review of the justice literature two main points regarding fairness perceptions can be made. First, that perceived fairness of process (procedural justice) appears to be a major determinant of satisfaction with the fairness of the system (e.g. court system, appraisal system) and possibly with the judgement outcome. Secondly, the favorableness of personal outcomes (those directly affecting the individual)

may determine the individual's perception that the judgement outcome is fair, especially if they are made in private.

Dimensions of Fairness

Some indication of specific dimensions important to the perceptions of a fair performance appraisal can be drawn from both organizational research on appraisal systems and justice research. Two organizational studies on the appraisal process (Dipboye & de Pontbriand, 1981; Landy et al., 1978); are considered especially relevant to the present study and are detailed in the following paragraphs.

In a study involving 474 professional employees working in a research and development organization (50% of the sample surveyed), Dipboye and de Pontbriand (1981) found that perceived favorability of the appraisal was positively correlated with employees' opinions of their most recent appraisal and the appraisal system. The above finding matches the justice research findings that fairness opinions are directly linked to personal profit or loss outcomes. This study also found that three perceived process attributes (employee participation, discussion of job plans and objectives, and job relevance of appraisal areas) were positively correlated with employees' acceptance of their most recent appraisal and the appraisal system. The above finding parallels the justice research finding that perceived fairness of process is related to satisfaction with the judgement outcome and the system. The three aforementioned process attributes are included in the current study as possible dimensions of a fair performance appraisal. The authors concluded that actions on the part of the supervisor to enhance the perception of these three process attributes may increase employee acceptance of the appraisal result and the appraisal system. Unfortunately, the researchers do not mention what specific measure of

employee acceptance (e.g. fairness, satisfaction) was utilized in the study. The authors also report that the systems of appraisal varied between the different departments involved in the study, but do not report whether any differences in employee perceptions were found for the different appraisal systems.

The results of the Landy et al. (1978) study are of particular interest to the present study because the researchers utilized perceived fairness as the sole measure of employee opinion. The subjects were 711 managerial and professional employees in the production division of a large manufacturing organization (75% of the sample surveyed). The performance appraisal system utilized was a Management by Objectives type. The following four process variables were found to be significant positive correlates of perceptions of fairness and accuracy of appraisal: 1) performance is frequently appraised; 2) supervisor is familiar with the subordinate's level of performance and job duties; 3) supervisor identifies goals to eliminate performance weaknesses; and 4) subordinate receives the opportunity to express opinions during appraisal. The authors concluded that "the results indicate that perceptions of fairness and accuracy of performance evaluation are significantly related to process variables." They also observe that the causal implications of the above relationship cannot be inferred.

To summarize, the Landy et al. (1978) study and the Dipboye and de Pontbriand (1981) study suggest five process dimensions which may be important to the employee perceptions of fairness in performance appraisal. Two dimensions, Employee Participation in the Appraisal Process and Goal-setting for the Employee's Job, are supported by both the above studies. A number of organizational studies have indicated the importance of Employee Participation in determining perceived fairness or satisfaction with the

appraisal process (Greller, 1975; Hillery and Wexley, 1974; Wexley et al., 1973). Additional support for this dimension comes from procedural justice research which indicates the importance of participation on perceived fairness of procedures (Folger, 1977; Greenberg and Folger, 1983; Houlden, LaTour, Walker and Thibaut, 1978; Musante, Gilbert and Thibaut, 1983). Support for Goal-setting as a fairness dimension derives from numerous organizational studies which have found that goal-setting is associated with increased work satisfaction and/or productivity (Burke, Weitzel and Weir, 1978; Locke, Cartledge and Knerr, 1970; Ronan and Latham, 1973; Wexley and Nemeroff, 1975). The remaining three dimensions of fairness in the performance appraisal process are supported by either the Landy et al. (1978) or the Dipboye and de Pontbriand (1981) studies. The Appraiser's Knowledge of the Employee's Job and Performance Level, and the Frequency and Follow-up of Appraisals dimensions are supported by the former study; and the Job Relevance of Appraisal Areas dimension is supported by the latter study.

The Present Study

The present study sought to examine the impact of the five dimensions of fairness outlined above on the perceived fairness of performance appraisal by assessing the attitudes of employees from two different companies. A different approach from that of Dipboye and de Pontbriand (1981) and Landy et al. (1978) was employed. Whereas, the above studies arbitrarily assumed what the dimensions of fairness were, and then used single item measures of these dimensions to discover which ones correlated highly with perceived fairness in performance appraisal, the objective of the current study was to **empirically** examine what dimensions compose perceived fairness. This method involved the creation of a questionnaire,

and the use of factor analysis. The present study appears to be the first to examine employee fairness perceptions of the appraisal process in this manner.

In the present study, employees' perceptions of both "Ideal" and "Real" performance appraisals were examined. In addition, the study examined employees' opinions regarding their most recent appraisal outcome and the overall appraisal fairness of the appraisal system. The Ideal Situation was considered the most important one for discovering the perceived fairness dimensions of the appraisal process, because if there were common perceptions of fairness they would be expected to show up in the hypothetical situation. In contrast, it was expected that variation between companies in appraisal systems would cause employee perceptions of their own company (Real Situation) to differ more across companies. A positive relationship between personal outcomes and perceived fairness of process also was expected (see Greenberg, 1978; Greenberg, 1981; Cohen, 1982 and Dipboye and de Pontbriand (1981). This relationship was predicted to be strongest for the Real Situations, because of evidence of a direct link between personal outcomes and fairness perceptions of the system utilized in determining those outcomes.

The specific hypotheses concerning employee perceptions of fairness in the performance appraisal process were as follows. Five basic dimensions were predicted to be important to the perceptions of a fair performance appraisal:

1. Employee Participation in the Appraisal Process.
2. Goal-setting for the Employee's Job.
3. Appraiser's Knowledge of Employee's Job and Performance Level.
4. Job Relevance of Appraisal Areas.

5. Frequency and Follow-up of Appraisals.

A positive relationship between personal outcomes and perceived fairness of process was also predicted, and this relationship was expected to be stronger for fairness perceptions in the Real Situation than in the Ideal Situation.

II. METHODS

Subjects

The original subject sample consisted of 300 management and professional employees from each of two major companies in British Columbia, comprising a total of 600 subjects. The final subject sample consisted of 183 employees from Company One and 214 employees from Company Two who chose to participate in the study. The composition of the final sample by sex was 100 males and 76 females for Company One, and 128 males and 79 females for Company Two. Seven subjects from each of the two companies did not specify their sex. Other demographic characteristics of the final sample are summarized in Table 1.

Questionnaire

A self-report questionnaire was designed to elicit employee perceptions of fairness in performance appraisal. Some of the questionnaire items were adapted from similar studies (Burke et al, 1978; Landy et al, 1978; Dipboye & de Pontbriand, 1981), but most were composed by the researcher in consultation with an expert in the field of performance review. Twenty questions out of a total of 86 were negatively worded (e.g., "An employee's appraiser does not need to have a good knowledge of that employee's duties") to control for the possibility of an acquiescent response set bias. A discrete Likert scale of seven points with descriptive anchors was utilized for the question responses. The questionnaire is reproduced in Appendix A.

There were four sections to the questionnaire. The first section covered the following demographic characteristics: length of time in present position, length of time with company, age, and sex. The second and third sections each contained 39 questions on the procedures and format of

Table 1

Demographic Composition of the Sample in the Two Companies

<u>Characteristic</u>	<u>Company One</u>			<u>Company Two</u>		
	<u>X</u>	<u>S.D.</u>	<u>Low/High Value</u>	<u>X</u>	<u>S.D.</u>	<u>Low/High Value</u>
Age *	3.32	1.17	1.00/7.00	4.32	1.63	1.00/9.00
No. years with company	5.97	3.21	0.83/14.00	11.77	7.63	0.75/39.00
No. years in position	2.50	1.98	0.17/10.00	3.78	3.49	0.08/22.00

* Age was coded in nine groups ranging from under 25 yrs. (group 1) to over 60 yrs. (group 9) in intervals of 5 years. The mean age for Company One is closest to group 3 (30 - 34 yrs.), and for Company Two is closest to group 4 (35 - 39 yrs.)

performance appraisals. The questions in these sections are identical except that the second section was worded in the third person and applied to a hypothetical Ideal situation, while the third section was worded in the first person and applied to the Real situation in the employee's company. The order of the questions in these two sections was randomized. The Ideal section was placed before the Real section in the questionnaire since the Ideal situation was considered the main focus for eliciting fairness dimensions. The 39 questions sampled the five hypothesized fairness dimensions of: 1) Employee Participation in the Appraisal Process (nine items); 2) Goal-setting for the Employee's Job (eleven items); 3) Appraiser's Knowledge of Employee's Job and Performance Level (eight items); 4) Job Relevance of Appraisal (seven items); and 5) Frequency and Follow-up of Appraisals (three items). An additional question on whether salary increases should be dependent on appraisal results was also included in sections two and three since this was considered a basic issue in performance appraisals. The fourth section contained three questions on the employee's experiences with his/her most recent appraisal results, and a question on the overall fairness of the company's appraisal system.

Procedure

Two companies in British Columbia were approached and agreed to participate in the study. The two companies involved were a financial institution and a company in the public service industry. Both companies utilize a modified Management By Objectives system of performance appraisal. In this system standard job responsibilities as well as individual objectives for the position are appraised. Employee development plans (for performing job responsibilities or meeting objectives) are covered in a

separate section of the appraisal form. Both systems had been in place for approximately one year.

The participants were randomly selected from the management and professional sector of the two companies. Company One utilized a table of random numbers to select a sample of 300 employees from a total of approximately 850 management and professional employees. Company Two used a random selection of employee Social Insurance Numbers to obtain a sample of 300 employees from a total of approximately 2500 management and professional employees.

Questionnaires were distributed through the inter-office mail system of the companies. Each subject received a questionnaire with a covering letter giving directions and explaining the particulars of the study, along with a preaddressed envelope. Copies of the covering letters used are given in Appendix B. In addition, the participants received a company memo explaining that their organization had agreed to cooperate with the study. Employees completed the questionnaire anonymously and mailed their responses directly to the experimenter.

Scoring

The seven categories of responses on the Likert scale were converted to numerical ratings from one to seven. All questionnaire items were scored so that a high score (close to seven) reflected a positive response and a low score (close to one) reflected a negative response to an item considered important to a fair performance appraisal. In keeping with this scoring strategy, answers to negatively worded questions were transformed.

Missing Data

A total of 184 questionnaires were completed by Company One and 215 questionnaires were completed by Company Two. One questionnaire from each company was too incomplete to include in the sample, thereby leaving a final sample of 183 from Company One (61% of the total sampled) and 214 from Company Two (71% of the total sampled). No single questionnaire item in the final sample had more than 14 missing responses. This was not considered substantial for a sample of 397. The frequency of responses for each questionnaire item are given in Appendix C. Estimates of the missing data were calculated by a two step regression procedure in which the highest two predictors of each questionnaire item were utilized to estimate missing responses (Dixon, 1981).

III. RESULTS

Summary Statistics

Appendix C lists the means and other descriptive statistics for each questionnaire item. Appendix D lists the correlation matrices for the questionnaire items on the Real and Ideal Situations for each company.

Factor Analyses

A least squares factor analysis with orthogonal varimax rotation was performed separately on the Ideal and Real variables for the two companies. Nonorthogonal oblique rotations were also performed on the factor solutions. However, the patterns of factor loadings were not clarified by this procedure and therefore, oblique rotations were not utilized in the final analyses. Common factor analysis was utilized because the major focus of this study was to account for the correlations between the questionnaire items. Seven factor analyses (yielding factor solutions for one through seven factors) were performed on the Ideal and Real variables for the two companies. The final number of factors chosen was based on the interpretability of the factors and an examination of plots of the decrease in the root mean square residual correlation for the different factor solutions. This resulted in a selection of four factor analytic solutions - one for the Ideal and Real Situations for each of the two companies.

The factor loadings of these four factor analytic solutions are listed in Tables 2, 3, 4 and 5. The variables (questionnaire items) in these tables are grouped according to the five hypothesized dimensions or factors of fairness. Factor loadings over .30 were considered interpretable. The highest loading on a factor is highlighted with an asterisk (*) and secondary loadings are highlighted with an apostrophe ('). The decimals in

the loadings were removed for ease of interpretation. Figures 1, 2, 3 and 4 give the Inside-out plots (variable loadings on the rotated factors) for the four factor analytic solutions. The Inside-out plots should demonstrate simple structure because varimax rotation is designed to yield simple structure (i.e. maximize the high and low factor loadings) in the factors.

Real Situation: Company One

A three factor solution was chosen for the Real Situation in Company One. Table 2 lists the variable loadings on each of the three factors and Figure 1 gives the Inside-out plot for the factor solution. All three factors closely approximated the predicted factors. Based on the pattern of factor loadings, the factors were given the following labels and descriptions.

Factor I - Employee participation in the appraisal process

The variables loading highest on this factor concerned the presence of opportunities to discuss all aspects of the employee's job and the encouragement of the employee to express his/her opinions on the issues being discussed during the appraisal.

Factor II - Appraiser's knowledge of employee's job and performance level

The variables loading highest on this factor concerned the appraiser's knowledge of the employee's job and the skills required to perform the job, as well as the appraiser's knowledge of the employee's performance level.

Factor III - Goal setting for the employee's job

The variables loading highest on this factor concerned the review of

Table 2

Factor Loadings for Company One: Real Situation

Goal Setting for the Employee's Job		Factor I	Factor II	Factor III
2. Goals for my job are not discussed during my appraisal.	T	17	42*	41*
3. Progress on any previously set goals for my job are reviewed during my appraisal.....		32'	33'	59*
26. All plans for self-improvement established during my performance appraisal, are directed towards developing my skills and abilities to meet the requirements of my current position.....		40*	32'	29
15. The development of a personal plan to help me accomplish specified goals for my job is part of my performance appraisal.....		28	31'	50*
16. When personal plans (referred to in the above question) are made, they aren't necessarily related to my performance weaknesses.....	T	2	- 2	-11
28. My personal development needs are discussed during my performance appraisal.....		52*	23	51*
9. Possible means of self-improvement which I could take in my current position are not discussed during my performance appraisal.....	T	27	24	59*
33. Any plans or objectives for my job are established and mutually agreed upon by my appraiser and myself.....		41*	20	32'
36. My appraiser and I agree on my duties.....		49*	41'	24
17. Possible actions which I could take to improve performance in my present position are discussed during my performance appraisal.....		36'	35'	58*
11. Possible ways in which my opportunity for promotion could be improved are not discussed during my performance appraisal.....	T	33'	13	51*
Job Relevance of Appraisal Areas				
22. How well I get along with fellow workers and subordinates is not a part of my appraisal.....	T	18	3	-19
34. My performance appraisal is based on specified performance standards for my position.....		14	34*	20
38. My performance is appraised according to previously established responsibilities, standards and goals.....		23	38*	29
10. I am not asked about my homelife and other aspects of my life outside of the work setting during my performance appraisal.....		1	-12	- 4
21. I am not appraised on personal characteristics and behaviors which do not affect my level of performance.....		14	25	2
24. The skills and abilities on which I am appraised are relevant to my job.....		44*	29	28
8. My current job performance is appraised separately from my potential performance.....		19	3	-11

Table 2 continued

Frequency and Follow-up of Appraisals	Factor I	Factor II	Factor III
23. My formal appraisals are connected to informal meetings between my appraiser and I which take place through-out the entire year.....	40'	8	48*
13. Discussion and review of my performance is a continuous process, not one which occurs only during my formal performance appraisal.....	35'	17	56*
32. My performance is formally appraised at least once per year.....	20	4	- 3

Unclassified

31. My salary increases are tied to the results of my performance appraisals.....	25	9	1
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Employee Participation in the Appraisal Process

37. There is ample opportunity to discuss all aspects of my job during my appraisal.....	71 *	23	29
29. Overall company goals are not discussed during my performance appraisal.....	T 10	21	44*
12. The goals of my department are discussed during my performance appraisal.....	2	39'	45*
30. I am encouraged to express my opinions on how my duties could be more efficiently performed.....	68 *	8	28
19. I am given the opportunity to state my side of all the issues discussed during my performance appraisal.....	68 *	13	14
20. The results of my performance appraisal are not discussed with me afterwards.....	T 44 *	10	19
6. I am given the opportunity to express my feelings during my performance appraisal.....	54 *	24	11
4. My appraiser does not ask for my opinions about problems with my job.....	T 53 *	28	24
18. I have a clear understanding of the reasons behind the appraisals I receive.....	55 *	27	22

Table 2 continued

Appraiser's Knowledge of Employee's Job and Performance Level	Factor I	Factor II	Factor III
5. More than a single appraiser is involved in determining the outcome of my performance appraisal.....	9	- 7	16
7. My appraiser has excellent personal knowledge of my performance level in my current position.....	27	77 *	24
1. My appraiser is familiar with all phases of my work....	23	74 *	18
27. My performance appraisal takes into consideration contributions I've made beyond my formal job duties.....	50 *	33 '	27
25. My appraiser has a good understanding of the skills required to perform my job.....	18	86 *	13
35. My appraiser has observed my performance under both routine and pressure conditions.....	32 '	47 *	6
14. My appraiser is not my direct (next level) supervisor.. T	6	22	-1
39. My appraiser does not have a good knowledge of my position's duties..... T	35 '	57 *	16

T = questions that were transformed when scored

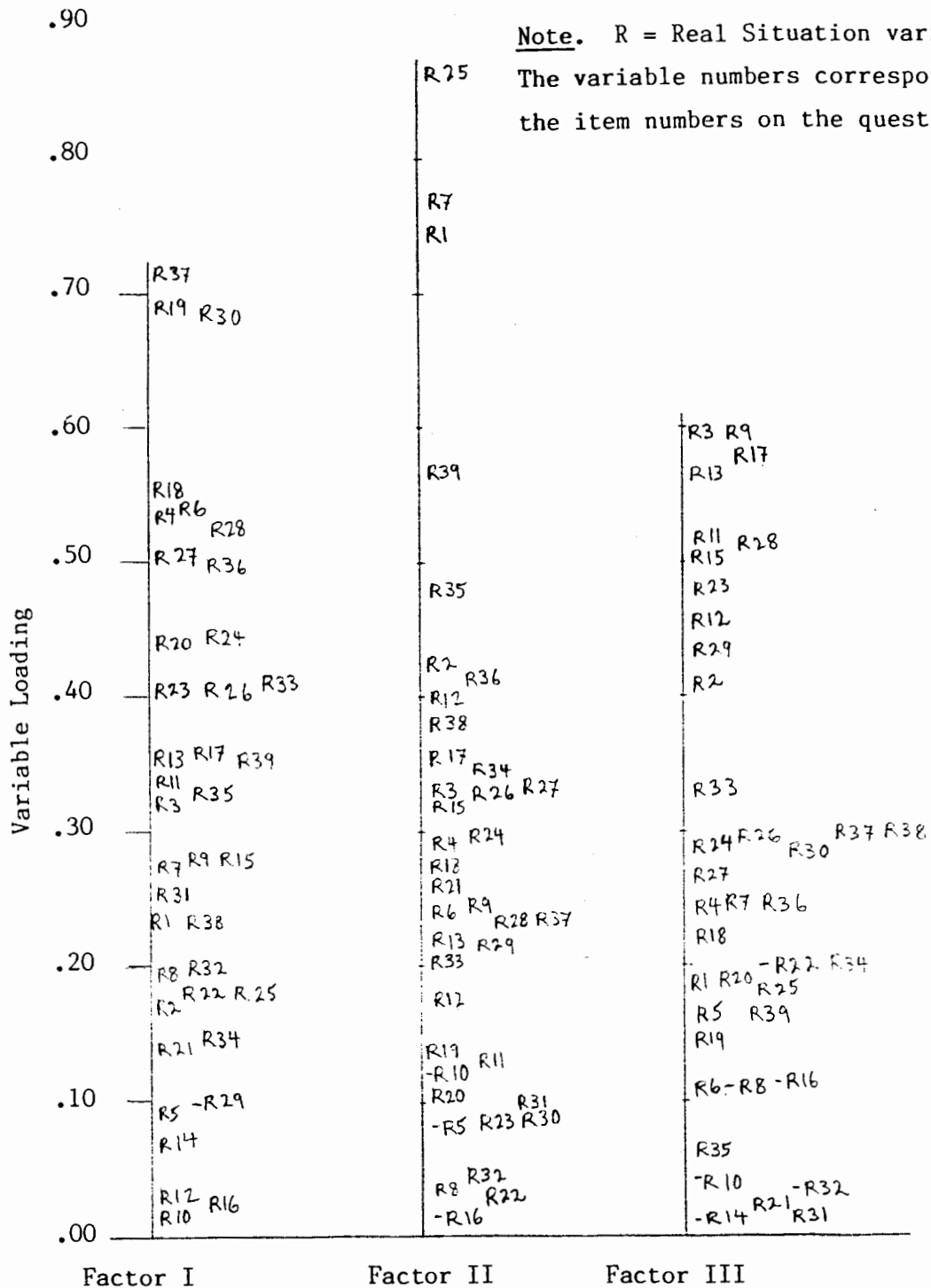


Figure 1
Inside-out Plot for Company One: Real Situation
Variable Loadings on the Rotated Factors

previously set job goals, the discussion of actions to improve performance, and the development of a personal plan for accomplishing specific job goals.

Real Situation: Company Two

A three factor solution was also selected for the Real Situation in Company Two. Table 3 lists the variable loadings on each of the three factors and Figure 2 gives the Inside-out plot for the factor solution. These three factors are very close to the aforementioned factors for Company One, with the highest factor loadings being identical except for two cases which are discussed below. Based on the pattern of factor loadings the factors were given the following labels and descriptions.

Factor I - Appraiser's knowledge of employee's job and performance level

The highest variable loadings on this factor did not differ from Company One.

Factor II - Goal setting for the employee's job

This factor differed from Company One in that review of progress on previously set job goals was not one of the highest variable loadings on this factor.

Factor III - Employee participation in the appraisal process

This factor differed from Company One in that the variable concerned with soliciting the employee's opinion about problems with his/her job did not load highly on this factor.

Table 3

Factor Loadings for Company Two: Real Situation

Goal Setting for the Employee's Job		Factor I	Factor II	Factor III
2. Goals for my job are not discussed during my appraisal.	T	39'	48*	10
3. Progress on any previously set goals for my job are reviewed during my appraisal.....		38*	35'	21
26. All plans for self-improvement established during my performance appraisal, are directed towards developing my skills and abilities to meet the requirements of my current position.....		33'	25	10
15. The development of a personal plan to help me accomplish specified goals for my job is part of my performance appraisal.....		25	58*	8
16. When personal plans (referred to in the above question) are made, they aren't necessarily related to my performance weaknesses.....	T	1	-8	18
28. My personal development needs are discussed during my performance appraisal.....		33'	58*	18
9. Possible means of self-improvement which I could take in my current position are not discussed during my performance appraisal.....	T	23	44*	14
33. Any plans or objectives for my job are established and mutually agreed upon by my appraiser and myself.....		42*	36'	31'
36. My appraiser and I agree on my duties.....		66*	33'	25
17. Possible actions which I could take to improve performance in my present position are discussed during my performance appraisal.....		28	60*	13
11. Possible ways in which my opportunity for promotion could be improved are not discussed during my performance appraisal.....	T	23	57*	-4
Job Relevance of Appraisal Areas				
22. How well I get along with fellow workers and subordinates is not a part of my appraisal.....	T	0	10	40*
34. My performance appraisal is based on specified performance standards for my position.....		50*	40'	15
38. My performance is appraised according to previously established responsibilities, standards and goals.....		52*	40'	22
10. I am not asked about my homelife and other aspects of my life outside of the work setting during my performance appraisal.....		19	-29	30*
21. I am not appraised on personal characteristics and behaviors which do not affect my level of performance.....		39*	10	23
24. The skills and abilities on which I am appraised are relevant to my job.....		58*	24	41'
8. My current job performance is appraised separately from my potential performance.....		13	-8	15

Table 3 continued

Frequency and Follow-up of Appraisals	Factor I	Factor II	Factor III
23. My formal appraisals are connected to informal meetings between my appraiser and I which take place through-out the entire year.....	9	62*	16
13. Discussion and review of my performance is a continuous process, not one which occurs only during my formal performance appraisal.....	16	48*	14
32. My performance is formally appraised at least once per year.....	15	- 2	26

Unclassified

31. My salary increases are tied to the results of my performance appraisals.....	6	5	23
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Employee Participation in the Appraisal Process

37. There is ample opportunity to discuss all aspects of my job during my appraisal.....	50'	38'	57*
29. Overall company goals are not discussed during my performance appraisal.....	T 9	48*	1
12. The goals of my department are discussed during my performance appraisal.....	23	46*	17
30. I am encouraged to express my opinions on how my duties could be more efficiently performed.....	32'	42'	45*
19. I am given the opportunity to state my side of all the issues discussed during my performance appraisal.....	33'	26	66*
20. The results of my performance appraisal are not discussed with me afterwards.....	T 11	30*	23
6. I am given the opportunity to express my feelings during my performance appraisal.....	34'	24	55*
4. My appraiser does not ask for my opinions about problems with my job.....	T 28	51*	13
18. I have a clear understanding of the reasons behind the appraisals I receive.....	47*	32'	34'

Table 3 continued

Appraiser's Knowledge of Employee's Job and Performance Level	Factor I	Factor II	Factor III
5. More than a single appraiser is involved in determining the outcome of my performance appraisal.....	5	17	6
7. My appraiser has excellent personal knowledge of my performance level in my current position.....	75*	32'	23
1. My appraiser is familiar with all phases of my work....	77*	25	2
27. My performance appraisal takes into consideration contributions I've made beyond my formal job duties.....	39'	47*	25
25. My appraiser has a good understanding of the skills required to perform my job.....	88*	27	12
35. My appraiser has observed my performance under both routine and pressure conditions.....	47*	37'	24
14. My appraiser is not my direct (next level) supervisor..	T 1	5	24
39. My appraiser does not have a good knowledge of my position's duties.....	T 70*	27	1

T = questions that were transformed when scored

R = Real Situation Variables

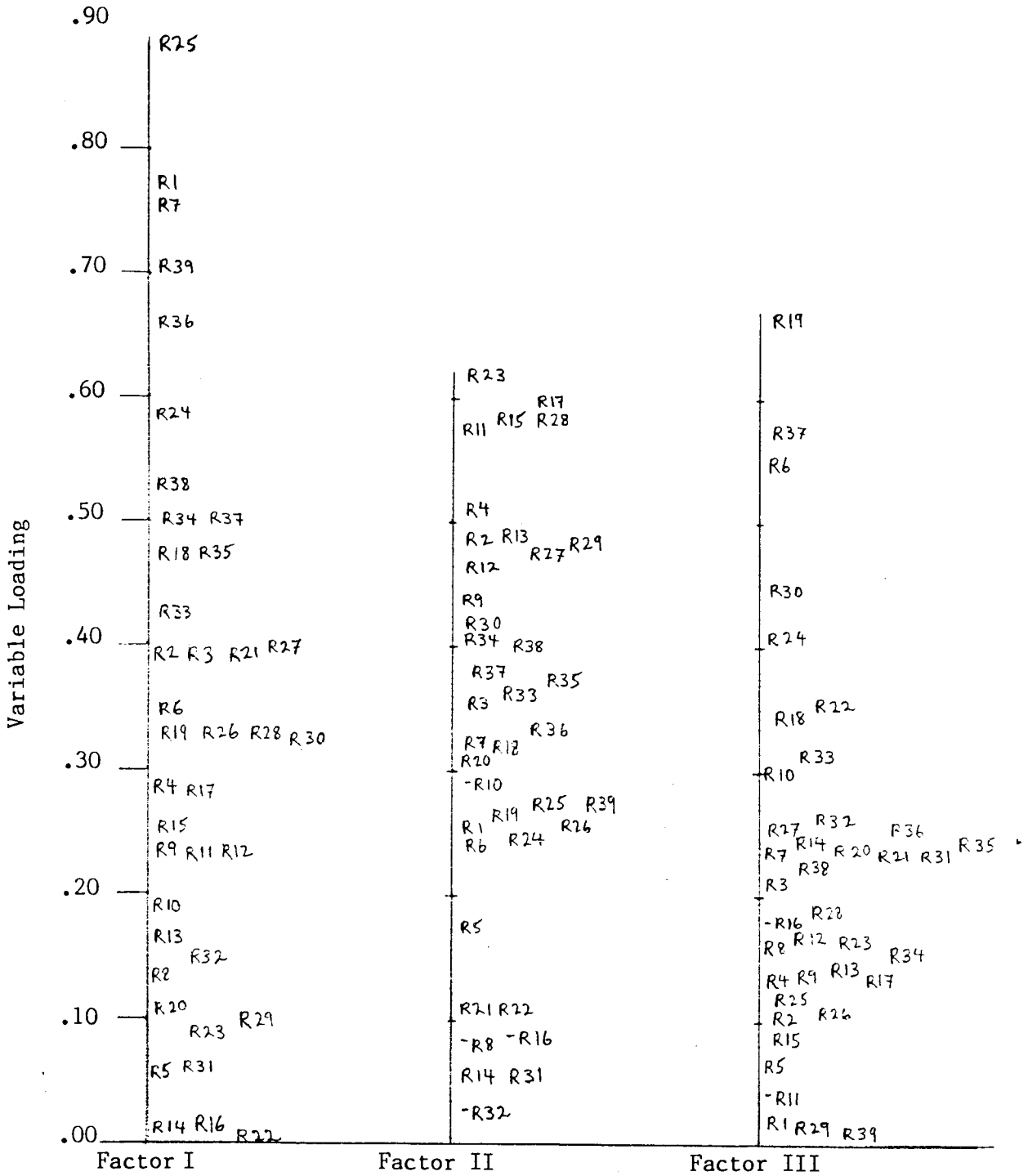


Figure 2

Inside-out Plot for Company Two: Real Situation

Variable Loadings on the Rotated Factors

Ideal Situation: Company One

A four factor solution was chosen for the Ideal Situation in Company One. Table 4 lists the variable loadings on each of the four factors and Figure 3 gives the Inside-out plot for the factor solution. The factors were not as close a match to the predicted factors as in the Real Situation. However, the highest factor loadings still basically followed the predicted factors. Exceptions to this finding are specifically mentioned in the following factor descriptions.

Factor I - Appraiser's knowledge of employee's job and performance level

The variables loading highest on this factor were the same as those found for the Company One Real Situation.

Factor II - Employee participation in the appraisal process

The highest variable loadings were similar to those found for the Company One Real Situation. The main difference is that two variables concerned with discussion of job duties did not load highly on this factor. Also, two variables from the predicted goal-setting factor (i.e. discussion of self-improvement methods and agreement on job plans) did load highly on this factor.

Factor III - The discussion of and setting of job goals

Again, the highest variable loadings were similar to those found for the Company One Real Situation. Also, two variables from the predicted employee participation factor (involving discussion of job duties) loaded highly on this factor.

Table 4

Factor Loadings for Company One: Ideal Situation

Goal Setting for the Employee's Job		Factor I	Factor II	Factor III	Factor IV
1. It is not important to discuss an employee's goals for his/her job during the performance appraisal.....	T	0	4	21	-10
2. Progress on any previously set goals for an employee's job should be reviewed during the performance appraisal....		1	11	46*	0
6. All self improvement plans established during performance appraisal should be directed towards developing an employee's skills and abilities to meet current job requirements.....		29	- 5	23	13
16. The development of a personal plan to help each employee accomplish specified goals for his/her job is an important aspect of performance appraisal.....		17	19	38*	6
17. The personal plan (referred to in the above question) doesn't need to be related to an employee's weaknesses in performance.....	T	7	1	21	-34
19. The personal development needs of employees should be discussed during performance appraisals.....		16	19	45*	-12
21. It is not necessary to discuss possible means of self-improvement which the employee could take in his/her current position during performance appraisal.....	T	7	43*	22	-14
23. Plans or objectives for an employee's job must be established and mutually agreed upon by an employee and his/her appraiser.....		11	51*	13	16
32. An employee and his/her appraiser should agree on the duties of the employee.....		4	18	33*	8
34. Possible actions which an employee could take to improve performance in his/her present position should be discussed during the performance appraisal.....		25	39'	50*	9
36. It is not important to discuss possible ways in which an employee's opportunity for promotion might be improved during the performance appraisal.....	T	2	29	29	1
Job Relevance of Appraisal Areas					
8. How well an employee gets along with fellow workers and subordinates should not be part of his/her appraisal...	T	1	17	5	-12
13. Employees' performance appraisals should be based on specified performance standards for their positions.....		43*	- 5	15	20
22. Employees' performances should be appraised according to previously established responsibilities, standards and goals.....		19	5	12	19
26. Employees should not be asked about their homelife and other aspects of their life outside of the work setting during performance appraisal.....		3	-12	- 4	32*
29. Employees should not be appraised on personal characteristics and behaviors which do not affect their level of performance.....		- 2	- 4	3	55*
30. The skills and abilities on which an employee is appraised should be relevant to the employee's job.....		22	33*	7	33*
33. An employee's current job performance should be appraised separately from his/her potential performance....		12	- 6	- 3	46*

Table 4 continued

Frequency and Follow-up of Appraisals	Factor I	Factor II	Factor III	Factor IV
9. Formal appraisals should be connected to informal meetings between the employee and his/her appraiser, which take place through-out the entire year.....	7	- 3	19	- 2
10. Discussion and review of an employee's performance should be a continuous process, not one which occurs only during formal performance appraisals.....	30*	0	23	-14
35. All employees' performance should be formally appraised at least once per year.....	8	18	30*	5
Unclassified				
12. Salary increases should be tied to the results of employee performance appraisals.....	21	4	26	3
Employee Participation in the Appraisal Process				
3. There should be ample opportunity to discuss all aspects of an employee's job during his/her appraisal.....	2	12	40 *	11
4. The discussion of overall company goals during an employee's performance evaluation is not necessary.....	T 3	- 3	38 *	-28
11. The goals of the employee's department should be discussed during an employee's performance appraisal.....	14	-14	49 *	- 8
15. Employees should be encouraged to express their opinions on how their duties could be more efficiently performed during performance appraisals.....	10	4	46 *	1
20. Employees should be given the opportunity to state their side of all the issues discussed during performance appraisal.....	16	75 *	2	- 3
24. It is not important that the results of an employee's appraisal be discussed with him/her afterwards.....	T - 4	33 *	2	-10
25. Employees should be given the opportunity to express their feelings during their performance appraisals.....	23	44 *	9	- 5
31. It is not necessary for an employee's appraiser to ask for the employee's opinions about problems with his/her job.....	T 11	56 *	12	- 5
39. Employees should have a clear understanding of the reasons behind the appraisals they receive.....	19	21	31 *	0

Table 4 continued

Appraiser's Knowledge of Employee's Job and Performance Level	Factor I	Factor II	Factor III	Factor IV
5. More than a single appraiser should be involved in determining the outcome of an employee's performance appraisal.....	4	0	5	26
7. An employee's appraiser should have excellent personal knowledge of the employee's level of performance in his/her current position.....	45 *	17	18	- 1
14. An employee's appraiser should be familiar with all phases of that employee's work.....	69 *	12	14	5
18. Performance appraisals should take into consideration contributions made by an employee beyond his/her formal duties.....	21	23	31 *	23
27. An employee's appraiser should have a good understanding of the skills required to perform that employee's job..	74 *	20	2	11
28. An employee's appraiser should observe his/her performance under both routine and pressure conditions.....	50 *	43	15	23
37. An employee's appraiser need not be his/her direct (next level) supervisor.....	T 28	23	- 3	-12
38. An employee's appraiser does not need to have a good knowledge of that employee's duties.....	T 84 *	16	13	0

T = questions that were transformed when scored

I = Ideal Situation Variables

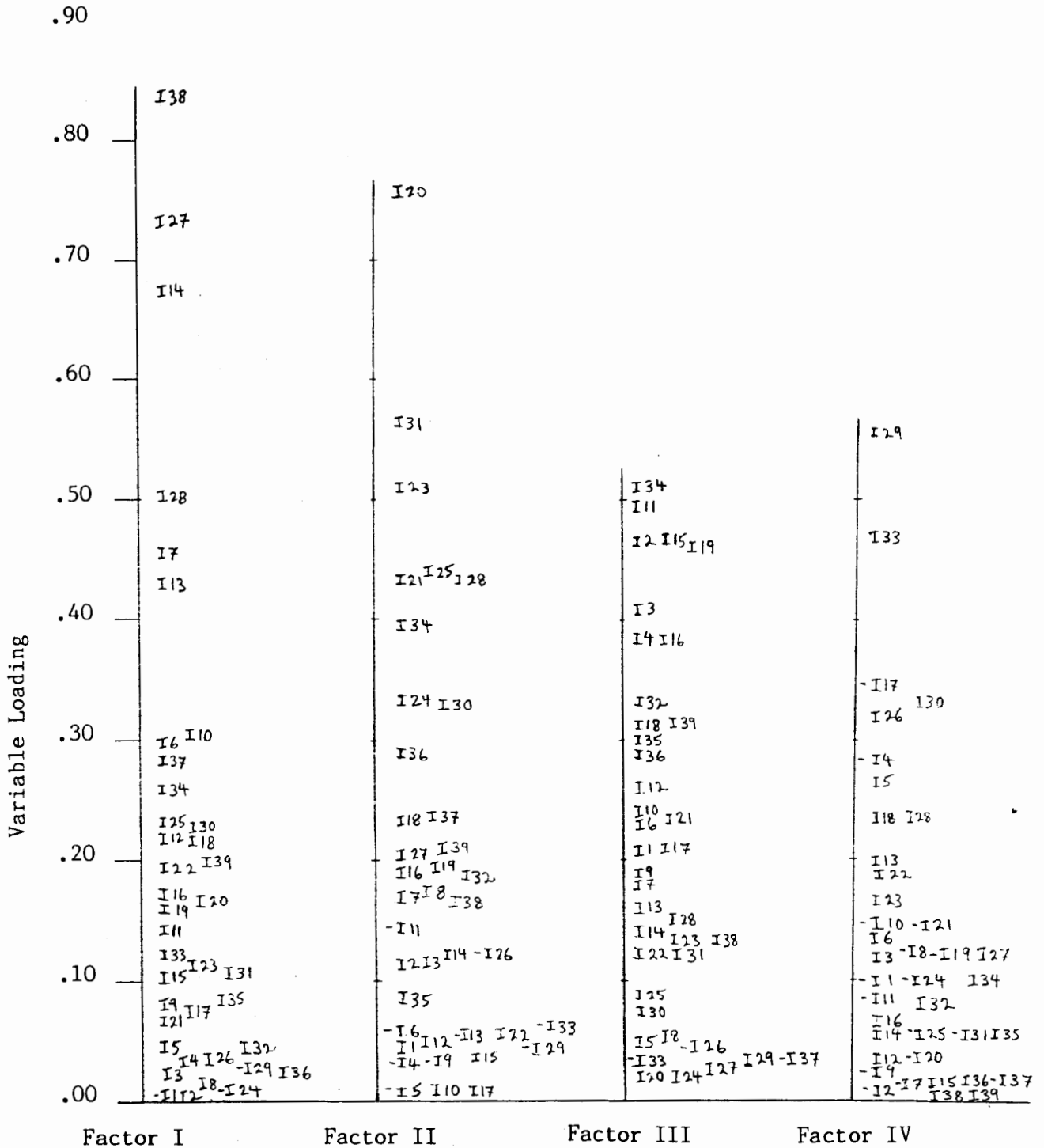


Figure 3

Inside-out Plot for Company One: Ideal Situation

Variable Loadings on the Rotated Factors

Factor IV - Job relevance of appraisal areas

The variables loading highest on this factor concerned whether the areas on which one is appraised are job relevant. The variables loading highest on this factor were primarily those predicted (that is four out of the seven predicted variables).

Ideal Situation: Company Two

A five factor solution was selected for the Ideal Situation in Company Two. Table 5 lists the variable loadings on each of the five factors and Figure 4 gives the Inside-out plot for the factor solution. As in the Company One Ideal Situation, the factors were not as close an approximation to the predicted factors as in the Real Situation. Also, a totally unpredicted fifth factor emerged. Based on the pattern of factor loadings the factors were given the following labels and descriptions.

Factor I - Appraiser's knowledge of and follow-up of employee's performance

The variables loading highly on this factor were from the three predicted factors: frequency and follow-up of appraisals, the appraiser's knowledge of employee's job and performance level, and goal-setting for the employee's job. The highest loading variables on this factor were two variables concerned with follow-up of appraisals, and one variable on personal knowledge of employee performance level. Moderately high loading variables concerned with the actual setting of job goals were also present.

Factor II - Appraiser's knowledge of the employee's job

The variables loading highest on this factor were those concerned with the appraiser's knowledge of the employee's job. These were variables expected to load on the predicted factor appraiser's knowledge of employee's job and performance level.

Table 5

Factor Loadings for Company Two: Ideal Situation

Goal Setting for the Employee's Job		Factor I	Factor II	Factor III	Factor IV	Factor V
1. It is not important to discuss an employee's goals for his/her job during the performance appraisal.....	T	2	11	36 *	11	0
2. Progress on any previously set goals for an employee's job should be reviewed during the performance appraisal....		5	16	40 *	- 6	10
6. All self improvement plans established during performance appraisal should be directed towards developing an employee's skills and abilities to meet current job requirements.....		4	23	-20	24	1
16. The development of a personal plan to help each employee accomplish specified goals for his/her job is an important aspect of performance appraisal.....		39*	6	26	35'	10
17. The personal plan (referred to in the above question) doesn't need to be related to an employee's weaknesses in performance.....	T	- 7	6	21	12	3
19. The personal development needs of employees should be discussed during performance appraisals.....		31'	3	35*	18	3
21. It is not necessary to discuss possible means of self-improvement which the employee could take in his/her current position during performance appraisal.....	T	27	1	42*	10	2
23. Plans or objectives for an employee's job must be established and mutually agreed upon by an employee and his/her appraiser.....		12	0	9	15	70*
32. An employee and his/her appraiser should agree on the duties of the employee.....		0	- 1	4	16	64*
34. Possible actions which an employee could take to improve performance in his/her present position should be discussed during the performance appraisal.....		43*	5	20	22	5
36. It is not important to discuss possible ways in which an employee's opportunity for promotion might be improved during the performance appraisal.....	T	4	- 9	42*	20	- 2
Job Relevance of Appraisal Areas						
8. How well an employee gets along with fellow workers and subordinates should not be part of his/her appraisal....	T	8	-11	34*	6	- 6
13. Employees' performance appraisals should be based on specified performance standards for their positions.....		9	6	-14	14	19
22. Employees' performances should be appraised according to previously established responsibilities, standards and goals.....		11	16	10	-15	52*
26. Employees should not be asked about their homelife and other aspects of their life outside of the work setting during performance appraisal.....		- 4	14	- 5	-12	16
29. Employees should not be appraised on personal characteristics and behaviors which do not affect their level of performance.....		- 1	28	-17	4	27
30. The skills and abilities on which an employee is appraised should be relevant to the employee's job.....		3	34*	- 3	13	20
33. An employee's current job performance should be appraised separately from his/her potential performance....		4	2	-33	- 4	15

Table 5 continued

Frequency and Follow-up of Appraisals	Factor I	Factor II	Factor III	Factor IV	Factor V
9. Formal appraisals should be connected to informal meetings between the employee and his/her appraiser, which take place through-out the entire year.....	65*	-11	4	-12	3
10. Discussion and review of an employee's performance should be a continuous process, not one which occurs only during formal performance appraisals.....	76*	- 6	2	- 9	16
35. All employees' performance should be formally appraised at least once per year.....	13	14	45*	1	2
Unclassified					
12. Salary increases should be tied to the results of employee performance appraisals.....	- 4	4	12	11	-10
Employee Participation in the Appraisal Process					
3. There should be ample opportunity to discuss all aspects of an employee's job during his/her appraisal.....	26	16	10	18	9
4. The discussion of overall company goals during an employee's performance evaluation is not necessary.....	T 7	-13	5	47*	- 3
11. The goals of the employee's department should be discussed during an employee's performance appraisal.....	16	- 2	9	41*	5
15. Employees should be encouraged to express their opinions on how their duties could be more efficiently performed during performance appraisals.....	39*	19	1	37'	9
20. Employees should be given the opportunity to state their side of all the issues discussed during performance appraisal.....	38*	32'	10	16	3
24. It is not important that the results of an employee's appraisal be discussed with him/her afterwards.....	T 10	-10	34*	- 2	13
25. Employees should be given the opportunity to express their feelings during their performance appraisals.....	25	21	13	36*	13
31. It is not necessary for an employee's appraiser to ask for the employee's opinions about problems with his/her job.....	T 7	11	9	44*	6
39. Employees should have a clear understanding of the reasons behind the appraisals they receive.....	32*	31*	5	27	2

Table 5 continued

Appraiser's Knowledge of Employee's Job and Performance Level	Factor I	Factor II	Factor III	Factor IV	Factor V
5. More than a single appraiser should be involved in determining the outcome of an employee's performance appraisal.....	- 1	7	3	15	- 1
7. An employee's appraiser should have excellent personal knowledge of the employee's level of performance in his/her current position.....	59*	25	- 2	6	3
14. An employee's appraiser should be familiar with all phases of that employee's work.....	2	61*	- 4	16	0
18. Performance appraisals should take into consideration contributions made by an employee beyond his/her formal duties.....	37*	23	5	- 3	- 2
27. An employee's appraiser should have a good understanding of the skills required to perform that employee's job..	24	67*	12	-13	3
28. An employee's appraiser should observe his/her performance under both routine and pressure conditions.....	30*	31*	5	11	- 2
37. An employee's appraiser need not be his/her direct (next level) supervisor.....	T 9	0	- 6	-18	- 2
38. An employee's appraiser does not need to have a good knowledge of that employee's duties.....	T 13	61*	16	- 3	9

T = questions that were transformed when scored



Figure 4 Inside-out Plot for Company Two: Ideal Situation - Variable Loadings on the Rotated Factors

Factor III - Discussion of job goals and personal development needs

The variables loading highest on this factor were those items from the predicted goal-setting factor concerned with the discussion and review of goals for the employee's job. Those variables concerned with the actual setting of goals were not found to load highly on this factor.

Factor IV - Employee participation in the appraisal process

The variables loading highest on this factor were all from the predicted employee participation factor.

Factor V - Mutual agreement on job standards, duties and goals

The variables loading highest on this factor were concerned with agreement between appraiser and employee on job standards, duties and goals. These were variables predicted to load on the goal-setting factor. Also included was a variable dealing with following the job standards established during the appraisal. The latter variable was expected to load on the predicted job relevance factor.

Multiple Regressions

Each of the four Outcome variables (section four of the questionnaire) was regressed on the 39 Ideal variables and the 39 Real variables. This resulted in four multiple regression analyses for the Outcome variables on the Real and Ideal variables for each company, for a total of sixteen analyses. The results of each of the regression analyses are summarized in Table 6. The correlation matrix for the four Outcome variables is given in Table 7. For both companies, highly significant multiple correlations between each of the Outcome variables and the Real variables were found. No significant relationships between any of the Outcome variables and the Ideal variables was found.

Table 7

Correlation Matrix for the Outcome Variables

<u>COMPANY ONE</u>				<u>COMPANY TWO</u>					
	01	02	03	04		01	02	03	04
01	1.000				01	1.000			
02	.422	1.000			02	.706	1.000		
03	.413	.376	1.000		03	.568	.363	1.000	
04	.675	.674	.421	1.000	04	.847	.702	.561	1.000

- Legend:
- 01 = fairness of most recent appraisal
 - 02 = favorableness of most recent appraisal
 - 03 = fairness of company's appraisal system
 - 04 = satisfaction with most recent appraisal

Three of the demographic variables (age, number of years with company, number of years in position) were each regressed on the 39 Ideal variables and the 39 Real variables. This resulted in three multiple regression analyses on the Ideal and Real variables for each company - for a total of twelve multiple regressions. The results of each of the regression analyses are summarized in Table 8. Significant multiple correlations between age and both the Ideal and Real variables, years in company and both the Ideal and Real variables, and years in position and the Ideal variables were found for Company Two. No significant multiple correlations between any of the three demographic variables and the Ideal or Real variables were found for Company One. This difference in regression results for the two companies is best understood by examining demographic differences between the two companies. Three t tests were performed to examine for differences between the two companies on age, years in company and years in position. A highly significant difference ($p < .0005$) on age, years in position and years in company was found for the two companies.

Finally, discriminant analysis was utilized to investigate possible sex differences in questionnaire responses (regression analysis is inappropriate for dichotomous variables). No sex differences were found in responses for either company.

Table 8

Multiple Correlations for the Demographic Variable

Regression	M.C.	S.M.C.	Adjusted S.M.C.	Sign. Level of Adjusted S.M.C.
Age on Company One: Ideal	.504	.254	.050	.1776
Yrs. in Co. on Company One: Ideal	.506	.256	.053	.1654
Yrs. in Position on Co. One: Ideal	.472	.223	.011	.4015

Age on Company One: Real	.450	.202	-.015	.5921
Yrs. in Co. on Company One: Real	.471	.222	.010	.4117
Years in Position on Co. One: Real	.439	.193	-.027	.6788

Age on Company Two: Ideal	.546	.299	.141	.005
Yrs. in Co. on Company Two: Ideal	.622	.387	.249	.00005
Yrs. in Position on Co. Two: Ideal	.554	.307	.151	.005

Age on Company Two: Real	.557	.310	.155	.005
Yrs. in Co. on Company Two: Real	.625	.391	.254	.00005
Yrs. in Position on Co. Two: Real	.442	.196	.015	.3519

M.C. = Multiple Correlation

S.M.C. = Squared Multiple Correlation

IV. DISCUSSION

Perception of Fairness in the Real Situation

In general, the predicted fairness dimensions or factors were more clearly confirmed for the employees' perceptions of the Real situation in their company than for the employees' perceptions of the Ideal Situation. The following three predicted factors were confirmed for the Real Situation in both companies: 1) Employee Participation in the Appraisal Process; 2) Goal-setting for the Employee's Job; and 3) Appraiser's Knowledge of Employee's Job and Performance Level. The majority of the variables that loaded highly on these three factors were as predicted.

There were only two major discrepancies between the variable loadings for the two companies. These were the review of previously set job goals for the Goal-setting factor, and requesting the employee's opinion about work problems for the Employee Participation factor. Both the above variables loaded higher on the factors for Company One than on the factors for Company Two. Considering the number of variables involved, these differences were considered to be minor.

The Goal-setting factor for the two companies had two high loading variables that were expected to load on the Employee Participation factor. These variables were discussion of overall company goals and discussion of department goals. It is apparent that these variables were incorrectly classified and actually formed part of the Goal-setting factor.

Several of the variables from unconfirmed factors loaded on the three confirmed factors. Two variables out of the three that were predicted for the unconfirmed Frequency and Follow-up of Appraisals factor actually loaded highly on the Goal-setting factor for both companies. These variables were presence of follow-up meetings and continuous review of performance. This

finding indicates that follow-up of appraisals was viewed as an aspect of successful goal-setting for the employee's job. Finally, several of the variables predicted for the unconfirmed Job Relevance factor loaded highly on the Appraiser's Knowledge and Employee Participation factors. Most notably, the two predicted Job Relevance variables concerned with basing appraisals on previously established performance standards loaded highly on the Appraiser's Knowledge factor for both companies. This finding indicates that employees viewed these two variables as aspects of the Appraiser's Knowledge of Employee's Job and Performance Level factor.

There were a few variables that did not load highly on any of the Real Situation factors found for the two companies. These were as follows:

- 1) The Frequency and Follow-up variable that formal appraisals should occur at least annually.
- 2) The unclassified variable that appraisal results should be related to salary increases.
- 3) The Goal-setting variable that personal job plans should be related to performance weaknesses.
- 4) The Job Relevance variable that current job performance be appraised separately from potential performance.
- 5) The two Appraiser's Knowledge variables: a) that more than a single appraiser be involved in the appraisal and b) that the appraiser be the employee's direct supervisor.

The aforementioned variables are good candidates for elimination in future studies on fairness in performance appraisals.

The finding that the three Real Situation factors were very similar for the two different companies makes a strong case for these factors comprising basic dimensions upon which employees' experiences with the performance process are organized. However, replication on companies utilizing different performance appraisal systems would be required before these conclusions could be extended beyond companies using Management By

Objectives type appraisal systems.

Perceptions of Fairness in the Ideal Situation

The factors found for the Ideal Situation differed more between the two companies than those factors found for the Real Situation. This is an especially interesting finding considering the similarities between the two companies on the Real Situation factors and the performance appraisal systems utilized. The Ideal Situation factors found for Company One more closely resembled the predicted factors than did those factors found for Company Two.

The Ideal Situation factors found for Company One were: 1) Appraiser's Knowledge of Employee's Job and Performance Level; 2) Employee Participation in the Appraisal Process; 3) Discussion of and Setting of Job Goals; and 4) Job Relevance of Appraisal Areas. These factors matched the predicted factors fairly closely. The exception was the Goal-setting factor, which included two variables from the predicted Employee Participation factor involving discussion of job duties. As in the Real Situation, discussion of company goals and discussion of department goals loaded highly on the Goal-setting factor.

The first three factors found for Company One were basically the same as those found for the Real Situation, with the Appraiser's Knowledge factor being the best match to a predicted factor. The fourth factor (Job Relevance of Appraisal Areas) was also a good match to the predicted factor with four out of seven variables loading highly on it. It should be noted that the predicted variable for Goal-setting, which states that the employee's personal job plan should be related to performance weaknesses, had a high negative loading on the Job Relevance factor. The predicted

factor of Frequency and Follow-up of Appraisals was not confirmed. Two of the three variables predicted for this factor -- performance review as a continuous process and that formal appraisal occur at least once a year-- loaded on the Goal-setting factor. As in the Real Situation, variables concerned with the timing aspect of appraisals (the Frequency and Follow-up factor) loaded on the Goal-setting factor.

The Ideal Situation factors found for Company Two were: 1) Appraiser's Knowledge of and Follow-up of the Employee's Performance 2) Appraiser's Knowledge of the Employee's Job; 3) Discussion of Job Goals and Personal Development Needs; 4) Employee Participation in the Appraisal Process; and 5) Mutual Agreement on Job Standards, Duties and Goals.

The three basic factors found for the Real Situation were present for the Company Two: Ideal Situation but sometimes separated into multiple factors. The predicted Goal-setting factor consisted of two components. The first component (discussion of goals) formed a separate factor and the second component (actual setting of goals) formed part of the Appraiser's Knowledge and Follow-up factor. The above finding is similar to a finding reported by Dipboye and de Pontbriand (1981), which suggested that discussion of plans and objectives and actual goal-setting measure separate dimensions of goal orientation. The predicted factor of Appraiser's Knowledge of Employee's Job and Performance Level also formed two factors: with the variables concerned with the appraiser's knowledge of the employee's job forming a separate factor, and the variables concerned with the appraiser's knowledge of employee performance level becoming an aspect of the first factor. The fourth factor was a fairly good approximation of the predicted factor of Employee Participation. The fifth factor was an unpredicted factor involving mutual agreement between employee and appraiser on job standards and the following of job standards established during

appraisal.

The Frequency and Follow-up of Appraisals and the Job Relevance of Appraisal Areas factors were not confirmed. All three of the variables predicted for the Frequency and Follow-up factor loaded on other factors. The two variables concerned with follow-up of appraisals formed a major part of the Appraiser's Knowledge and Follow-up factor. The variable stating that formal appraisal should occur at least once per year loaded highly on the Discussion of Goals factor. The latter finding was also found for the Ideal Situation in Company One. Except for the finding that the variable concerned with following previously established job standards loaded highly on the Mutual Agreement factor, the variables for the Job Relevance factor did not load highly on any of the factors. It is interesting to note that one Job Relevance variable (appraising an employee's current job performance separately from his/her potential performance) loaded negatively on the Discussion of Goals factor. This finding makes intuitive sense because discussing future job goals necessarily involves considering potential performance.

As found for the Real Situation, there were some variables that did not load highly on any of the Ideal Situation factors for either company. These were as follows:

- 1) The two Goal-setting variables: a) that all self-improvement plans should be directed towards meeting current job requirements and b) that personal job plans should be related to performance weaknesses.
- 2) The unclassified variable that appraisal results should be related to salary increases.
- 3) The two Appraiser's Knowledge variables: a) that more than a single appraiser be involved in the appraisal and b) that the appraiser be the employee's direct supervisor.

Four out of five of the above variables are identical to the low loading

variables found for the Real Situation (see page 43).

Summary of Fairness Perception Findings

In summary, the same three factors found for the Real Situations were again present for the Ideal Situations. These three factors were: 1) Employee Participation in the Appraisal Process; 2) Goal-setting for the Employee's Job; and 3) Appraiser's Knowledge of Employee's Job and Performance Level. The prevalence of these three factors indicates that they may be basic to employee perceptions of fairness in the performance appraisal process and therefore, may be important in the design of performance appraisal systems to increase employee acceptance of the system and the appraisal results (Baron, 1983; Lawler, 1967).

The Ideal Situation was not as clear as the Real Situation, with two of the three basic factors forming multiple factors for the Company Two: Ideal Situation. Two of the above basic factors found were the predicted factors with the most support in the organizational and justice literature reviewed (see Introduction, pages 7 and 8). These factors were the Employee Participation factor (Dipboye and de Pontbriand, 1981; Folger, 1977; Greenberg and Folger, 1983; Greller, 1975; Hillery and Wexley, 1974; Houlden et al., 1983; Landy et al., 1978; LaTour et al., 1978; Musante et al., 1983; Wexley et al., 1973) and the Goal-setting factor (Burke et al., 1978; Dipboye and de Pontbriand, 1981; Landy et al., 1978; Locke et al., 1970; Ronan and Latham, 1973; Wexley and Nemeroff, 1975). The finding that the Appraiser's Knowledge of the Employee's Job and Performance Level was a basic factor was less predictable since support for this factor came from a single study (Landy et al, 1978).

Four variables did not load highly on any of the factors found for the Ideal or Real Situations. These variables were: 1) the Goal-setting

variable that personal job plans should be related to performance weaknesses; 2) the unclassified variable that appraisal results should be related to salary increases; and the two Appraiser's Knowledge variables: 3) that more than a single appraiser should be involved in the appraisal and 4) that the appraiser be the employee's direct supervisor. These four variables are apparently not perceived as an aspect of a fair performance appraisal and should not be utilized in future studies in this area.

Some aspect of timing in all situations was found to form part of a Goal-setting factor. This makes intuitive sense because one would expect successful goal-setting to be connected to the frequency and follow-up of appraisals. The frequency variable, that appraisals occur at least once a year, did not load highly on any Real Situation factors because in the two companies surveyed the appraisals actually do occur once a year.

The fact that the predicted factors were not completely confirmed is not of undue concern because the factors which emerged were interpretable and added new information on employee perceptions of fairness dimensions in performance appraisal.

Perceived Appraisal Outcomes and Fairness Perceptions

Highly significant multiple correlations between all four Outcome variables (perceived favorableness of, fairness of, and satisfaction with appraisal results, and perceived fairness of overall appraisal system) and the Real Situation in both companies were found. No relationship between the Outcome variables and the Ideal Situations for either company was found. Although causation cannot be inferred, this finding is consistent with the possibility that the perceived favorability of the appraisal is one of the most important determinants of acceptance of the appraisal process

(Ilgen, Fisher, & Taylor, 1979; Dipboye & de Pontbriand, 1981). The finding that there was no relationship between these outcome variables and the Ideal Situation variables indicates that if employee opinions are influenced by personal outcomes on the appraisal, they do not influence what an employee perceives would ideally be important to a fair performance appraisal.

The above finding of a relationship between fairness ratings in the Real Situation and favorability of appraisal outcomes is consistent with attributional interpretations of perceived justice (Cohen, 1982). According to this perspective injustice is perceived when the discrepancy between "actual" and "deserved" outcomes to an actor is attributed to causes external to that actor's own behavior. Furthermore, actors (participants) tend to attribute the causes of their own outcomes to environmental influences, whereas observers tend to attribute the outcomes to the actor's own behavior (Arkin and Duval, 1975; Nisbett et al., 1973). Thus, in the present study the employees (actors) who did not receive their "deserved" appraisal outcomes attributed the cause to the lack of fairness in their company's appraisal system and not to their own actions. The above interpretation also explains why the relationship between outcomes and fairness ratings was found only for the Real Situation, since the employees were in the role of actors (participants) for that situation.

Another attributional interpretation of the relationship between favorability of outcomes and fairness ratings involves self-serving attributional biases (Fiske and Taylor, 1984). Self-serving biases are observed biases which allow people to take credit for success (self-enhancing bias) and deny responsibility for failure (self-protective bias). In the present study the self-protective bias would explain why an unfavorable appraisal outcome would correspond with the perception of unfairness in the company's appraisal system: Employees attribute

responsibility for the unfavorable outcome to the appraisal system. Conversely, the self-enhancing bias would explain why a favorable appraisal outcome would correspond with the perception of fairness in the company's appraisal system: Employees attribute responsibility for the favorable outcome to themselves. The expression of self-serving biases are also influenced by contextual variables such as public scrutiny of the outcome or the actor's behavior, ambiguity of the outcome or competing motives such as the desire to appear modest. The anonymous rating situation of the present study should result in a fairly full expression of self-serving biases. The study results were consistent with this expectation.

A major difference between the samples from the two companies was found for the number of years employees spent with the company. Highly significant multiple correlations between number of years with the company and both the Real and Ideal Situation variables were found for Company Two only. Significant correlations for Company Two were also found between number of years in position and the Ideal variables, and between age and both the Ideal and Real variables. The above relationships are best understood in terms of the demographic differences between the two companies. Number of years with the company, number of years in the position, and age were all significantly higher for Company Two. All three variables would obviously be highly overlapping. There are several possible explanations for these relationships. Perceptions of fairness may differ with age or amount of work experience. Alternately, a cohort effect due to the different social values and attitudes of the era(s) in which older workers were raised may be responsible for the differences. Perhaps the best explanation derives from research which indicates that older employees as well as those with higher seniority may have more positive attitudes

towards their company (Real Situation) because of increased company commitment (Salancik, 1977). The greater positive responses to the Ideal Situation questions may indicate that with experience employees tend to view most aspects of appraisal as very important to a fair performance appraisal.

Conclusions

Three dimensions predicted to be important to employee perceptions of fairness in the performance appraisal process were confirmed in the present study. These dimensions or factors were: 1) Employee Participation in the Appraisal Process; 2) Goal-setting for the Employee's Job; and 3) Appraiser's Knowledge of Employee's Job and Performance Level. These findings were interpreted as evidence that these three dimensions are basic to employee perceptions of fairness in performance appraisal. These basic factors were clearly found for the Real Situation in both companies. The Ideal Situation was more complex, with two of the three basic factors (Goal-setting and Appraiser's Knowledge) breaking down into multiple factors for Company Two.

Additional factors were found for the Ideal Situation in the two companies. For Company One (Ideal) a fourth factor approximated the predicted factor Job Relevance of Appraisal Areas. For Company Two (Ideal) four factors covered most aspects of the three basic factors and in addition, an unpredicted fifth factor was found: Mutual Agreement (between appraiser and employee) on Job Standards, Duties and Goals.

Some aspect of timing in all four situations was found to form part of a factor concerned with Goal-setting. The variables concerned with timing were part of the predicted Frequency and Follow-up of Appraisals factor. It makes sense that successful goal-setting would be connected to the frequency and follow-up of appraisals.

The expectation that the Ideal dimensions of fairness would be similar across companies and that the Real dimensions would be less similar was not confirmed. In fact the opposite was found. Perhaps the best explanation for the lack of confirmation of the above predictions is in terms of the different cognitive nature of the two types of ratings. In the Real Situation the employees were requested to engage in a task that was objective and observational. They were requested to report their perceptions of their company's performance appraisal system by responding to statements concerning their company's appraisal process. Their responses were based on their own experiences with their company's performance appraisal process. In contrast, in the Ideal Situation the employees were requested to engage in an abstract exercise involving a hypothetical situation. The employees were requested to respond to the statements on performance appraisal in terms of how they felt appraisals should ideally be conducted. Their responses were thus based largely on their own personal value systems. It is therefore possible that the personal value systems of the employees in the two companies differed more than their perceptions of the current appraisal systems used by the two companies.

Another related explanation for the lack of similarity in employee perceptions of the Ideal Situation between the two companies is in terms of demographic differences in the two samples. The employees from Company Two were significantly higher than Company One on age, number of years in company, and number of years in position. It is thus possible that older employees with higher seniority have different perceptions of what constitutes an ideal performance appraisal, and different personal values.

The prediction that the perceived appraisal outcomes (results) would be positively related to employee perceptions of fairness in the appraisal

process was confirmed. As expected, this relationship was stronger for fairness perceptions in the Real Situation than in the Ideal Situation. The causal implications of this relationship cannot be specified. However, this finding fits well with the possibility that perceived favorability of the appraisal may be one of the most important determinants of employee perceptions of fairness in the appraisal process. The finding that there was no relationship between perceived outcomes and employee perceptions of the Ideal Situation indicates that if employee opinions are influenced by personal outcomes on the appraisal, they do not influence the employee's perceptions of what would ideally be important to a fair performance appraisal. These findings are consistent with attributional interpretations of perceived justice and self-serving attributional biases.

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Appendix A

QUESTIONNAIRE ON PERFORMANCE APPRAISAL

PART ONE - Background Information

Please fill in the following information about yourself. This information is important to the analysis of the questionnaire:

- 1) Length of time you have worked at your present company _____ years.
- 2) Length of time you have worked in your current position _____ years.
- 3) Your present age (please mark applicable age group):
 - under 25 yrs. _____
 - 25 to 29 yrs. _____
 - 30 to 34 yrs. _____
 - 35 to 39 yrs. _____
 - 40 to 44 yrs. _____
 - 45 to 49 yrs. _____
 - 50 to 54 yrs. _____
 - 55 to 59 yrs. _____
 - 60 plus yrs. _____
- 4) Your sex: Female _____ Male _____

PART TWO - Fairness In Performance Appraisal: In General

Directions: In this section answer the statements according to how you feel performance appraisals should ideally be conducted to maximize their fairness. (Note - this does not refer to your personal experience with your present company). The statements pertain to various aspects of the performance appraisal process in general. Read each statement carefully and indicate the extent to which you agree or disagree with it by marking the appropriate box.

		strongly disagree	moderately disagree	slightly disagree	neutral	slightly agree	moderately agree	strongly agree
1. It is not important to discuss an employee's goals for his/her job during the performance appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Progress on any previously set goals for an employee's job should be reviewed during the performance appraisal....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. There should be ample opportunity to discuss all aspects of an employee's job during his/her appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. The discussion of overall company goals during an employee's performance evaluation is not necessary.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. More than a single appraiser should be involved in determining the outcome of an employee's performance appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. All self improvement plans established during performance appraisal should be directed towards developing an employee's skills and abilities to meet current job requirements.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. An employee's appraiser should have excellent personal knowledge of the employee's level of performance in his/her current position.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. How well an employee gets along with fellow workers and subordinates should not be part of his/her appraisal...	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Formal appraisals should be connected to informal meetings between the employee and his/her appraiser, which take place through-out the entire year.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. Discussion and review of an employee's performance should be a continuous process, not one which occurs only during formal performance appraisals.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. The goals of the employee's department should be discussed during an employee's performance appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. Salary increases should be tied to the results of employee performance appraisals.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Employees' performance appraisals should be based on specified performance standards for their positions.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Part Two cont...

	strongly disagree	moderately disagree	slightly disagree	neutral	slightly agree	moderately agree	strongly agree
14. An employee's appraiser should be familiar with all phases of that employee's work.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. Employees should be encouraged to express their opinions on how their duties could be more efficiently performed during performance appraisals.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. The development of a personal plan to help each employee accomplish specified goals for his/her job is an important aspect of performance appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. The personal plan (referred to in the above question) doesn't need to be related to an employee's weaknesses in performance.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. Performance appraisals should take into consideration contributions made by an employee beyond his/her formal duties.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. The personal development needs of employees should be discussed during performance appraisals.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. Employees should be given the opportunity to state their side of all the issues discussed during performance appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
21. It is not necessary to discuss possible means of self-improvement which the employee could take in his/her current position during performance appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. Employees' performances should be appraised according to previously established responsibilities, standards and goals.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. Plans or objectives for an employee's job must be established and mutually agreed upon by an employee and his/her appraiser.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. It is not important that the results of an employee's appraisal be discussed with him/her afterwards.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. Employees should be given the opportunity to express their feelings during their performance appraisals.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. Employees should not be asked about their homelife and other aspects of their life outside of the work setting during performance appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. An employee's appraiser should have a good understanding of the skills required to perform that employee's job..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. An employee's appraiser should observe his/her performance under both routine and pressure conditions.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Employees should not be appraised on personal characteristics and behaviors which do not affect their level of performance.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. The skills and abilities on which an employee is appraised should be relevant to the employee's job.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. It is not necessary for an employee's appraiser to ask for the employee's opinions about problems with his/her job.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. An employee and his/her appraiser should agree on the duties of the employee.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. An employee's current job performance should be appraised separately from his/her potential performance....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. Possible actions which an employee could take to improve performance in his/her present position should be discussed during the performance appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. All employees' performance should be formally appraised at least once per year.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. It is not important to discuss possible ways in which an employee's opportunity for promotion might be improved during the performance appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. An employee's appraiser need not be his/her direct (next level) supervisor.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	strongly disagree	moderately disagree	slightly disagree	neutral	slightly agree	moderately agree	strongly agree

Part Two cont...

	strongly disagree	moderately disagree	slightly disagree	neutral	slightly agree	moderately agree	strongly agree
38. An employee's appraiser does not need to have a good knowledge of that employee's duties.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. Employees should have a clear understanding of the reasons behind the appraisals they receive.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

PART THREE - Your Experiences With Your Company's Performance Appraisal System

Directions: In this section answer the statements according to how you feel performance appraisals are currently conducted in your own company. Read each statement carefully and indicate the extent to which you agree or disagree with it by marking the appropriate box.

	strongly disagree	moderately disagree	slightly disagree	neutral	slightly agree	moderately agree	strongly agree
1. My appraiser is familiar with all phases of my work....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2. Goals for my job are not discussed during my appraisal.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3. Progress on any previously set goals for my job are reviewed during my appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4. My appraiser does not ask for my opinions about problems with my job.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5. More than a single appraiser is involved in determining the outcome of my performance appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6. I am given the opportunity to express my feelings during my performance appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7. My appraiser has excellent personal knowledge of my performance level in my current position.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8. My current job performance is appraised separately from my potential performance.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9. Possible means of self-improvement which I could take in my current position are not discussed during my performance appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10. I am not asked about my homelife and other aspects of my life outside of the work setting during my performance appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11. Possible ways in which my opportunity for promotion could be improved are not discussed during my performance appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12. The goals of my department are discussed during my performance appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13. Discussion and review of my performance is a continuous process, not one which occurs only during my formal performance appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14. My appraiser is not my direct (next level) supervisor..	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15. The development of a personal plan to help me accomplish specified goals for my job is part of my performance appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16. When personal plans (referred to in the above question) are made, they aren't necessarily related to my performance weaknesses.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17. Possible actions which I could take to improve performance in my present position are discussed during my performance appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18. I have a clear understanding of the reasons behind the appraisals I receive.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
19. I am given the opportunity to state my side of all the issues discussed during my performance appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
20. The results of my performance appraisal are not discussed with me afterwards.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	strongly disagree	moderately disagree	slightly disagree	neutral	slightly agree	moderately agree	strongly agree

Part Three cont....

	strongly disagree	moderately disagree	slightly disagree	neutral	slightly agree	moderately agree	strongly agree
21. I am not appraised on personal characteristics and behaviors which do not affect my level of performance.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
22. How well I get along with fellow workers and subordinates is not a part of my appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
23. My formal appraisals are connected to informal meetings between my appraiser and I which take place through-out the entire year.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
24. The skills and abilities on which I am appraised are relevant to my job.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
25. My appraiser has a good understanding of the skills required to perform my job.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
26. All plans for self-improvement established during my performance appraisal, are directed towards developing my skills and abilities to meet the requirements of my current position.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
27. My performance appraisal takes into consideration contributions I've made beyond my formal job duties.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
28. My personal development needs are discussed during my performance appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
29. Overall company goals are not discussed during my performance appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
30. I am encouraged to express my opinions on how my duties could be more efficiently performed.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
31. My salary increases are tied to the results of my performance appraisals.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
32. My performance is formally appraised at least once per year.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
33. Any plans or objectives for my job are established and mutually agreed upon by my appraiser and myself.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
34. My performance appraisal is based on specified performance standards for my position.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
35. My appraiser has observed my performance under both routine and pressure conditions.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
36. My appraiser and I agree on my duties.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
37. There is ample opportunity to discuss all aspects of my job during my appraisal.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
38. My performance is appraised according to previously established responsibilities, standards and goals.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
39. My appraiser does not have a good knowledge of my position's duties.....	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	strongly disagree	moderately disagree	slightly disagree	neutral	slightly agree	moderately agree	strongly agree

PART FOUR - Your Most Recent Appraisal Results and General Questions Of Fairness

Directions: In this section answer each statement by marking the appropriate box. Again the statements refer to your own company.

1. Rate the fairness of your most recent performance appraisal:

very unfair unfair slightly unfair neutral slightly fair fair very fair

2. Rate the favourableness of the results of your most recent performance appraisal:

very unfavorable unfavorable slightly unfavorable neutral slightly favorable favorable very favorable

Part Four cont...

3. Rate the overall fairness of your company's performance appraisal system:

very unfair unfair slightly unfair neutral slightly fair fair very fair

4. Rate how satisfied you were with the results of your most recent performance appraisal:

very dissatisfied dissatisfied slightly dissatisfied neutral slightly satisfied satisfied very satisfied

Thank you for helping us with this research project. Please be sure you have answered all of the questions in this booklet before forwarding it to us.

Appendix B

Covering Letter: Company One



SIMON FRASER, UNIVERSITY, BURNABY, B.C., CANADA V5A 1S6
DEPARTMENT OF PSYCHOLOGY: 291-3354

May 25, 1984

Dear Sir or Madam,

Research Project on Performance Appraisal

I would like to invite you to participate in a research project investigating employee attitudes towards performance appraisals. This research project is part of my Master of Arts Thesis, and is being conducted under the supervision of Dr. Dennis Krebs of the Psychology Department and Dr. Steven McShane of the Business Administration Faculty at Simon Fraser University. Your company is among several major companies which have agreed to participate in this project.

The project has two central goals - firstly, to determine what employees think is generally important to a fair performance appraisal and secondly, to determine what you think of your own company's performance appraisal system.

To participate in this project, please complete the attached questionnaire and return it in the enclosed envelope. All responses will be anonymous and the individual questionnaires will be kept in strict confidence. Summary information on the findings will be made available to both you and your company. The obvious benefit to your company lies in the feedback it will receive about its system of performance appraisal.

It would be greatly appreciated if you could return the completed questionnaire within approximately one week's time. Please ensure that you do not mark the questionnaire with your name or any other means of identification.

Your participation will be extremely beneficial to the success of this project and the findings will hopefully provide valuable feedback to your employer.

Thank you for your assistance,

Elaine Evans



Appendix B

Covering Letter: Company Two



SIMON FRASER UNIVERSITY, BURNABY, B.C., CANADA V5A 1S6
DEPARTMENT OF PSYCHOLOGY: 291-3354

May 25, 1984

Dear Sir or Madam,

Research Project on Performance Appraisal

I would like to invite you to participate in a research project investigating employee opinions on performance appraisals. This research project is being conducted under the supervision of Dr. Dennis Krebs of the Psychology Department and Dr. Steven McShane of the Business Administration Faculty at Simon Fraser University. Your company is among several major companies which have agreed to participate in this project.

The project has two central goals - firstly, to determine what employees think is generally important to a fair performance appraisal and secondly, to determine what you think of your own company's performance appraisal system.

To participate in this project, please complete the attached questionnaire and return it in the enclosed envelope. All responses will be anonymous and the individual questionnaires will be kept in strict confidence. No one from your company will see any individual questionnaires; only summary information will be made available to them. The potential benefit to your company lies in the feedback it will receive about its system of performance appraisal.

It would be greatly appreciated if you could return the completed questionnaire within approximately one week's time. Please ensure that you do not mark the questionnaire with your name or any other means of identification.

Your participation will be extremely beneficial to the success of this project and the findings will hopefully provide valuable feedback to your employer. If you have any concerns I can be reached at 435-3167.

Thank you for your assistance,

Elaine Evans



Appendix C

Descriptive Statistics

Table C-1: Company One

Variable Name	Total Frequency	Mean	Standard Deviation	Low Value	High Value
YEARCO	182	5.966	3.208	0.830	14.000
YEARPOS	181	2.502	1.379	0.170	10.000
AGE	182	3.319	1.174	1.000	7.000
SEX	175	1.558	0.497	1.000	2.000
I1	183	6.208	1.754	1.000	7.000
I2	183	6.661	1.051	1.000	7.000
I3	183	6.645	1.094	1.000	7.000
I4	181	5.144	1.723	1.000	7.000
I5	183	5.229	1.301	1.000	7.000
I6	182	5.214	1.948	1.000	7.000
I7	183	5.523	0.899	2.000	7.000
I8	182	5.824	1.546	1.000	7.000
I9	183	5.306	1.328	1.000	7.000
I10	183	6.722	0.687	2.000	7.000
I11	183	5.180	1.243	1.000	7.000
I12	182	5.155	1.281	1.000	7.000
I13	183	6.037	1.306	1.000	7.000
I14	183	6.422	0.943	2.000	7.000
I15	183	5.426	1.021	1.000	7.000
I16	183	6.437	0.442	2.000	7.000
I17	183	4.404	2.253	1.000	7.000
I18	183	6.749	0.404	5.000	7.000
I19	182	5.372	0.357	1.000	7.000
I20	183	5.825	0.576	1.000	7.000
I21	183	6.333	1.142	1.000	7.000
I22	183	5.060	1.516	1.000	7.000
I23	183	5.393	1.171	1.000	7.000
I24	183	6.567	1.192	1.000	7.000
I25	182	6.727	0.520	2.000	7.000
I26	183	4.344	1.915	1.000	7.000
I27	183	5.524	0.751	2.000	7.000
I28	183	5.634	0.681	3.000	7.000
I29	183	5.005	1.226	1.000	7.000
I30	183	5.273	1.173	1.000	7.000
I31	183	6.475	1.113	1.000	7.000
I32	182	5.191	1.333	1.000	7.000
I33	183	4.344	2.093	1.000	7.000
I34	183	5.699	0.516	5.000	7.000
I35	183	5.578	1.011	1.000	7.000
I36	183	5.115	1.577	1.000	7.000
I37	183	5.393	1.851	1.000	7.000
I38	181	6.674	0.744	3.000	7.000
I39	181	6.813	0.610	1.000	7.000
R1	183	5.535	1.794	1.000	7.000
R2	183	4.984	2.001	1.000	7.000
R3	181	5.354	1.858	1.000	7.000
R4	183	4.940	2.041	1.000	7.000
R5	193	4.060	2.402	1.000	7.000
R6	193	6.066	1.345	1.000	7.000
R7	183	5.257	1.894	1.000	7.000
R8	183	4.306	2.111	1.000	7.000
R9	182	4.857	2.031	1.000	7.000

Table C-1 continued

Variable Name	Total Frequency	Mean	Standard Deviation	Low Value	High Value
R10	183	5.738	1.573	1.000	7.000
R11	183	4.055	2.223	1.000	7.000
R12	183	5.557	1.702	1.000	7.000
R13	183	3.891	2.219	1.000	7.000
R14	183	6.039	1.914	1.000	7.000
R15	183	3.914	2.166	1.000	7.000
R16	181	4.033	1.835	1.000	7.000
R17	183	5.191	1.937	1.000	7.000
R18	183	5.699	1.566	1.000	7.000
R19	183	5.803	1.532	2.000	7.000
R20	183	5.022	1.555	1.000	7.000
R21	183	4.410	2.118	1.000	7.000
R22	183	6.022	1.410	1.000	7.000
R23	183	3.781	2.125	1.000	7.000
R24	182	5.225	0.985	2.000	7.000
R25	183	5.907	1.456	1.000	7.000
R26	182	5.214	1.535	1.000	7.000
R27	183	5.322	1.735	1.000	7.000
R28	183	4.809	1.870	1.000	7.000
R29	183	4.491	2.150	1.000	7.000
R30	183	5.257	1.724	1.000	7.000
R31	182	5.341	1.315	1.000	7.000
R32	183	5.737	0.600	1.000	7.000
R33	183	5.164	1.909	1.000	7.000
R34	183	5.617	1.673	1.000	7.000
R35	183	5.945	1.478	1.000	7.000
R36	183	5.550	1.627	1.000	7.000
R37	183	5.486	1.754	1.000	7.000
R38	182	5.753	1.570	1.000	7.000
R39	183	5.705	1.742	1.000	7.000
O1	183	5.356	1.615	1.000	7.000
O2	183	5.546	1.273	1.000	7.000
O3	183	5.028	1.545	1.000	7.000
O4	183	5.060	1.638	1.000	7.000

Note. I = Ideal Situation variables;
R = Real Situation variables; O = Outcome
variables. The variable numbers correspond
to the item numbers on the questionnaire.

Table C-2: Company Two

Variable Name	Total Frequency	Mean	Standard Deviation	Low Value	High Value
YEARCO	213	11.771	7.532	0.750	39.000
YEARPOS	212	3.779	3.490	0.080	22.000
AGE	212	4.321	1.632	1.000	9.000
SEX	207	1.633	0.512	1.000	2.000
I1	214	6.093	1.715	1.000	7.000
I2	214	5.734	0.775	1.000	7.000
I3	214	5.645	0.778	1.000	7.000
I4	214	4.790	1.741	1.000	7.000
I5	214	4.231	1.911	1.000	7.000
I6	213	4.032	2.152	1.000	7.000
I7	213	5.639	0.344	1.000	7.000
I8	213	5.728	1.593	1.000	7.000
I9	214	6.131	1.326	1.000	7.000
I10	214	5.579	0.799	1.000	7.000
I11	214	5.084	1.172	1.000	7.000
I12	214	5.869	1.476	1.000	7.000
I13	214	5.065	1.153	1.000	7.000
I14	214	5.271	1.067	2.000	7.000
I15	214	5.495	0.761	3.000	7.000
I16	214	5.341	0.923	2.000	7.000
I17	212	3.807	2.132	1.000	7.000
I18	214	6.360	0.992	2.000	7.000
I19	214	5.210	1.047	1.000	7.000
I20	214	5.846	0.397	5.000	7.000
I21	213	5.183	1.145	1.000	7.000
I22	214	5.981	1.278	1.000	7.000
I23	214	5.425	1.075	1.000	7.000
I24	213	5.493	1.337	1.000	7.000
I25	214	5.819	0.454	3.000	7.000
I26	214	4.995	1.806	1.000	7.000
I27	214	6.503	0.761	2.000	7.000
I28	214	5.542	0.931	1.000	7.000
I29	214	5.551	1.707	1.000	7.000
I30	214	5.421	0.950	1.000	7.000
I31	214	5.332	1.022	1.000	7.000
I32	214	5.355	1.298	1.000	7.000
I33	213	4.915	1.896	1.000	7.000
I34	214	6.598	0.571	3.000	7.000
I35	214	6.289	1.355	1.000	7.000
I36	214	5.997	1.670	1.000	7.000
I37	214	5.117	2.076	1.000	7.000
I38	214	5.594	0.759	2.000	7.000
I39	213	5.837	0.331	5.000	7.000
R1	214	5.000	1.981	1.000	7.000
R2	212	5.283	1.937	1.000	7.000
R3	212	5.401	1.772	1.000	7.000
R4	212	4.761	2.197	1.000	7.000
R5	214	4.084	2.398	1.000	7.000
R6	212	5.962	1.557	1.000	7.000
R7	214	4.983	2.021	1.000	7.000
R8	213	4.145	2.001	1.000	7.000
R9	214	5.047	1.891	1.000	7.000

Table C-2 continued

Variable Name	Total Frequency	Mean	Standard Deviation	Low Value	High Value
R10	213	5.822	1.678	1.000	7.000
R11	214	4.003	2.195	1.000	7.000
R12	214	4.584	2.056	1.000	7.000
R13	214	3.589	2.145	1.000	7.000
R14	214	5.102	1.904	1.000	7.000
R15	214	4.206	2.005	1.000	7.000
R16	211	3.422	1.734	1.000	7.000
R17	214	4.841	1.339	1.000	7.000
R18	213	5.258	1.872	1.000	7.000
R19	214	5.804	1.612	1.000	7.000
R20	213	5.437	2.017	1.000	7.000
R21	214	4.435	2.061	1.000	7.000
R22	214	5.436	1.762	1.000	7.000
R23	214	3.578	2.130	1.000	7.000
R24	213	5.810	1.509	1.000	7.000
R25	214	5.220	1.902	1.000	7.000
R26	214	4.435	1.842	1.000	7.000
R27	214	4.606	2.001	1.000	7.000
R28	211	4.957	1.740	1.000	7.000
R29	214	3.682	2.099	1.000	7.000
R30	213	5.113	1.595	1.000	7.000
R31	214	5.986	1.561	1.000	7.000
R32	214	6.607	0.957	1.000	7.000
R33	214	5.542	1.657	1.000	7.000
R34	213	4.662	1.978	1.000	7.000
R35	214	5.439	1.875	1.000	7.000
R36	214	5.556	1.608	1.000	7.000
R37	214	5.481	1.751	1.000	7.000
R38	214	5.164	1.727	1.000	7.000
R39	214	5.131	1.934	1.000	7.000
O1	213	5.206	1.702	1.000	7.000
O2	213	5.380	1.339	1.000	7.000
O3	214	4.771	1.550	1.000	7.000
O4	214	4.878	1.777	1.000	7.000

Appendix D

Correlation Matrices

Table D-1. Company One: Ideal Situation

CORRELATION MATRIX

	I1	I2	I3	I4	I5	I6	I7	I8	I9	I10	I11	I12	I13
I1	1.000												
I2	0.112	1.000											
I3	0.145	0.350	1.000										
I4	0.097	0.226	0.195	1.000									
I5	-0.095	0.047	0.003	-0.129	1.000								
I6	0.011	0.154	0.230	0.117	0.052	1.000							
I7	0.012	0.055	0.059	0.007	0.023	0.000	1.000						
I8	0.045	0.004	0.084	0.110	-0.032	0.057	0.057	1.000					
I9	0.100	0.039	0.034	0.193	-0.059	0.050	0.127	0.050	1.000				
I10	0.110	0.116	0.070	0.098	0.077	0.046	0.111	0.004	0.289	1.000			
I11	0.015	0.347	0.120	0.339	0.044	0.115	0.125	-0.037	0.146	0.076	1.000		
I12	0.064	-0.019	0.035	0.135	-0.015	0.065	0.261	-0.053	0.091	0.210	0.166	1.000	
I13	-0.042	0.091	0.053	-0.022	0.097	0.302	0.220	-0.106	-0.025	0.154	0.166	0.279	1.000
I14	0.074	0.090	0.026	0.044	0.144	0.022	0.124	-0.011	0.052	0.188	0.144	0.189	0.271
I15	0.134	0.179	0.062	0.180	-0.040	0.236	0.135	-0.054	0.052	0.046	0.264	0.336	0.166
I16	0.042	0.117	0.319	0.083	0.129	0.179	0.183	0.035	0.007	0.118	0.035	0.047	0.085
I17	0.015	0.110	0.030	0.196	-0.026	0.091	0.069	0.100	-0.137	0.180	0.115	0.050	0.016
I18	0.003	0.235	0.139	-0.048	0.164	0.137	0.255	-0.007	0.218	0.157	0.074	0.093	0.085
I19	0.101	0.137	0.122	0.102	0.069	0.064	0.345	-0.001	0.137	0.100	0.223	0.209	0.162
I20	0.009	0.100	0.119	-0.036	-0.014	0.005	0.180	0.054	0.020	0.048	0.049	0.115	0.108
I21	0.080	0.272	0.041	0.042	-0.031	0.031	0.209	0.101	-0.021	0.042	0.042	-0.041	0.000
I22	-0.100	0.054	0.182	0.058	-0.110	0.119	0.001	0.119	-0.039	-0.021	0.111	0.161	0.272
I23	-0.048	0.227	0.217	0.013	0.108	0.044	0.142	0.196	-0.057	0.005	0.111	0.156	0.125
I24	0.023	0.058	-0.024	0.043	-0.067	-0.095	-0.026	0.066	0.009	0.172	-0.015	0.195	-0.036
I25	0.008	0.121	0.104	0.136	0.038	0.092	0.199	0.352	0.036	0.079	0.005	0.036	0.104
I26	-0.027	-0.093	0.017	-0.167	0.079	-0.030	-0.030	-0.045	0.037	0.066	0.006	0.014	0.100
I27	0.030	0.062	0.046	0.024	0.011	0.199	0.394	-0.018	-0.007	0.188	0.066	0.111	0.268
I28	-0.051	0.115	0.053	0.020	0.225	0.075	0.410	-0.094	0.064	0.093	0.093	0.209	0.197
I29	0.029	-0.031	0.066	-0.100	0.117	0.017	0.001	-0.042	0.008	-0.069	-0.005	0.060	0.102
I30	0.007	0.070	0.102	-0.010	0.077	0.202	0.124	-0.012	0.041	0.030	0.043	0.058	0.178
I31	0.118	0.027	0.094	0.152	0.066	-0.003	0.095	0.148	0.031	0.150	-0.013	0.058	0.013
I32	0.038	0.067	0.121	0.160	0.024	0.081	0.147	0.162	0.084	0.119	0.218	0.130	0.018
I33	0.004	0.035	0.027	0.150	0.099	0.099	0.069	-0.165	0.051	0.007	-0.077	-0.109	0.168
I34	0.194	0.194	0.243	0.030	-0.053	0.144	0.252	-0.062	0.079	0.162	0.102	0.143	0.069
I35	0.123	0.149	0.154	0.104	0.059	-0.017	0.089	0.002	0.053	0.097	0.004	0.084	0.017
I36	0.134	0.236	0.199	0.027	-0.052	0.131	0.033	-0.073	-0.004	0.048	-0.004	0.050	-0.117
I37	0.095	0.024	0.010	0.074	0.032	0.143	0.043	0.043	0.043	0.043	0.043	0.043	0.043
I38	0.078	0.059	0.074	0.053	0.073	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.043
I39	0.068	0.036	0.101	0.083	0.073	0.028	0.113	0.036	0.052	0.252	0.109	0.145	0.009

Table D-1 continued

	114	115	116	117	118	119	120	121	122	123	124	125	126
114	1.000												
115	0.194	1.000											
116	0.254	0.194	1.000										
117	0.082	-0.037	0.269	1.000									
118	0.279	0.157	0.239	-0.076	1.000								
119	0.155	0.259	0.258	0.257	0.211	1.000							
120	0.229	0.127	0.124	-0.026	0.211	0.203	1.000						
121	0.097	0.144	0.125	-0.115	0.203	0.313	0.343	1.000					
122	0.072	0.110	0.052	-0.044	0.019	0.012	0.012	0.104	1.000				
123	0.017	-0.009	0.015	-0.034	0.143	0.085	0.423	0.218	0.145	1.000			
124	0.015	0.008	0.004	-0.053	0.053	0.017	0.331	0.110	-0.077	0.110	1.000		
125	0.191	-0.072	0.097	-0.028	0.210	0.158	0.437	0.214	-0.030	0.217	0.079	1.000	
126	-0.012	0.072	-0.009	0.006	0.056	-0.033	-0.070	-0.144	0.193	-0.093	-0.029	-0.173	1.000
127	0.315	0.096	0.154	0.011	0.176	0.116	0.243	0.073	0.227	0.180	-0.041	0.275	0.116
128	0.342	0.092	0.252	0.019	0.345	0.118	0.340	0.226	0.204	0.354	-0.113	-0.293	0.004
129	-0.017	0.021	-0.005	-0.193	0.094	-0.103	0.059	-0.078	0.077	0.060	-0.037	-0.055	0.209
130	0.231	0.020	0.129	-0.011	0.133	0.044	0.323	0.126	0.117	0.237	-0.020	-0.183	0.009
131	0.193	0.090	0.199	0.022	0.073	0.211	0.473	0.148	0.084	0.370	0.219	0.229	-0.018
132	0.050	0.199	0.083	-0.053	0.191	0.141	0.115	0.011	0.180	0.225	-0.048	0.058	-0.042
133	0.114	-0.117	0.011	-0.211	0.190	-0.042	-0.091	-0.051	0.052	0.232	-0.094	0.041	0.046
134	0.317	0.331	0.456	0.152	0.349	0.335	0.303	0.292	0.157	0.224	0.149	0.273	-0.017
135	0.075	0.057	0.160	0.086	0.145	0.232	0.120	0.114	0.056	0.117	0.157	0.124	0.021
136	0.194	0.119	0.119	0.064	0.192	0.219	0.101	0.314	0.050	0.115	0.058	0.109	0.083
137	0.181	0.033	-0.058	0.024	0.145	0.100	0.219	0.283	0.213	0.103	0.057	0.151	-0.013
138	0.477	0.107	0.236	0.035	0.243	0.159	0.249	0.148	0.173	0.172	0.015	0.253	-0.007
139	0.155	0.125	0.199	0.102	0.250	0.270	0.175	0.213	0.032	0.108	0.045	0.195	-0.045
127	1.000												
128	0.213	1.000											
129	0.238	0.148	1.000										
130	0.234	0.401	0.247	1.000									
131	0.212	0.291	-0.047	0.232	1.000								
132	0.063	0.203	0.004	0.059	0.265	1.000							
133	0.127	0.095	0.229	0.212	-0.071	0.028	1.000						
134	0.262	0.390	-0.032	0.236	0.260	0.289	0.001	1.000					
135	0.124	0.235	0.083	0.140	0.034	0.111	-0.010	0.393	1.000				
136	0.157	0.152	-0.029	0.048	0.241	0.189	-0.018	0.313	0.023	1.000			
137	0.215	0.193	-0.076	0.079	0.191	-0.021	0.010	0.044	0.058	0.160	1.000		
138	0.632	0.494	-0.010	0.854	0.220	0.135	0.035	0.349	0.132	0.121	0.217	1.000	
139	0.225	0.237	0.076	0.030	0.160	0.217	0.023	0.281	0.316	0.119	0.105	0.248	1.000

Table D-2. Company One: Real Situation

CORRELATION MATRIX

	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13
R1	1.000												
R2	0.397	1.000											
R3	0.380	0.358	1.000										
R4	0.069	0.014	0.014	1.000									
R5	0.070	0.250	0.032	0.049	1.000								
R6	0.000	0.049	0.049	0.082	0.082	1.000							
R7	0.000	0.000	0.000	0.051	0.051	0.051	1.000						
R8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000					
R9	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000				
R10	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000			
R11	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000		
R12	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000	
R13	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	1.000

Table D-2 continued

	R14	R15	R16	R17	R18	R19	R20	R21	H22	R23	R24	R25	R26
R15	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
R16	0.050	-0.059	-0.084	0.090	0.463	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R17	0.087	0.553	-0.087	0.392	0.463	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R18	0.064	0.338	-0.032	0.393	0.463	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R19	0.160	0.220	-0.030	0.295	0.393	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R20	0.130	0.166	-0.010	0.159	0.065	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R21	0.210	0.123	-0.033	0.177	0.080	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R22	0.010	0.350	-0.061	0.275	0.320	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R23	0.197	0.340	-0.115	0.280	0.426	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R24	0.109	0.416	-0.042	0.465	0.330	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R25	0.137	0.294	-0.041	0.382	0.440	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R26	0.150	0.322	-0.041	0.591	0.417	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R27	0.137	0.190	-0.020	0.258	0.125	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R28	0.235	0.384	-0.090	0.438	0.470	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R29	0.241	0.111	-0.091	0.091	0.072	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R30	0.019	0.021	-0.019	0.076	0.073	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R31	0.110	0.411	-0.122	0.165	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R32	0.294	0.294	-0.008	0.160	0.319	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R33	0.123	0.491	-0.002	0.332	0.226	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R34	0.124	0.491	-0.002	0.432	0.459	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R35	0.206	0.345	-0.013	0.230	0.338	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R36	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
R37	0.201	0.220	0.041	0.207	0.158	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R38	0.124	0.148	0.032	0.116	0.255	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R39	0.079	0.099	0.020	0.101	0.134	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R40	0.322	0.191	0.024	0.351	0.144	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R41	0.350	0.324	0.024	0.222	0.333	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R42	0.454	0.551	0.102	0.609	0.132	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R43	0.343	0.333	0.151	0.199	0.177	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
R44	0.399	0.433	0.092	0.146	0.077	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

ble D-3. Company Two: Ideal Situation

CORRELATION MATRIX

	11	12	13	14	15	16	18	19	110	111	112	113
11	1.000											
12	0.259	1.000										
13	0.018	0.372	1.000									
14	0.145	-0.024	-0.024	1.000								
15	-0.020	0.033	0.033	0.050	1.000							
16	-0.058	0.058	0.058	0.058	0.100	1.000						
17	0.073	0.096	0.187	0.038	0.037	0.042	1.000					
18	0.158	0.067	0.066	0.089	0.166	0.032	0.092	1.000				
19	-0.009	-0.002	0.035	0.020	-0.005	0.010	0.055	0.055	1.000			
110	0.162	-0.011	0.167	0.044	-0.007	0.055	0.022	0.102	0.562	1.000		
111	0.044	0.056	-0.041	0.073	-0.006	0.017	0.098	0.044	0.044	0.103	1.000	
112	-0.022	-0.022	0.063	0.065	-0.012	0.043	0.069	-0.013	-0.013	0.079	0.080	1.000
113	0.091	0.037	0.043	0.033	0.092	0.241	0.091	-0.004	-0.004	0.111	0.136	0.193
114	0.126	0.042	0.314	0.132	-0.039	0.225	0.264	-0.123	-0.042	0.282	0.282	0.050
115	0.177	0.094	0.227	0.201	-0.005	-0.021	0.200	0.129	0.080	0.111	0.111	0.050
116	0.110	0.025	-0.027	0.009	-0.042	0.114	0.093	0.195	0.191	0.262	0.155	0.115
117	0.078	0.091	0.129	0.004	-0.004	-0.052	0.335	0.004	0.037	0.178	0.037	0.095
118	0.159	0.068	0.167	0.089	-0.029	0.063	0.116	0.072	0.178	0.162	0.036	0.014
119	-0.028	0.050	0.223	0.014	0.123	0.045	0.170	0.099	0.224	0.198	0.198	0.008
120	0.262	0.188	0.110	0.131	-0.096	-0.023	0.206	0.161	0.195	0.122	0.038	0.002
121	0.031	0.155	0.040	-0.126	-0.065	-0.012	0.117	0.101	0.167	0.275	-0.014	0.016
122	0.006	0.092	0.114	0.045	-0.056	-0.012	0.117	0.101	0.167	0.275	-0.014	0.016
123	0.070	0.096	0.025	0.017	0.026	0.049	0.140	0.056	0.050	0.198	0.022	0.121
124	0.169	0.096	0.197	0.156	0.060	-0.154	-0.051	0.044	0.156	0.092	0.074	-0.094
125	-0.043	-0.098	-0.021	-0.112	-0.007	-0.072	-0.050	-0.110	-0.172	-0.115	0.123	0.049
126	0.075	0.170	0.125	-0.081	-0.002	0.111	0.250	0.028	-0.029	-0.124	0.047	0.020
127	0.066	0.043	0.154	-0.011	0.011	0.113	0.050	0.094	0.144	0.10	0.030	-0.008
128	0.064	0.044	0.024	-0.097	-0.032	0.067	0.079	0.112	0.069	0.069	-0.008	-0.008
129	-0.016	-0.000	0.159	-0.065	0.103	0.091	0.041	-0.022	-0.069	-0.021	0.105	0.041
130	0.041	-0.018	0.124	0.160	0.170	0.091	0.091	0.022	0.010	0.093	0.060	0.103
131	0.008	0.085	0.055	0.104	-0.024	0.110	0.031	-0.004	0.005	0.179	0.024	0.104
132	0.005	-0.133	0.003	0.009	0.097	0.058	0.003	0.021	0.090	0.091	-0.091	0.066
133	0.051	0.150	0.132	0.127	0.114	0.015	0.025	-0.157	0.236	0.054	0.132	0.075
134	0.272	0.250	0.055	-0.007	-0.045	-0.045	0.271	0.115	0.235	0.191	0.079	0.047
135	0.136	0.040	0.045	-0.085	-0.009	-0.059	-0.091	0.132	0.092	0.121	0.024	-0.024
136	0.146	0.011	-0.028	-0.085	-0.025	-0.023	-0.002	0.141	-0.011	0.195	-0.023	-0.106
137	0.116	0.046	0.121	-0.062	-0.031	0.140	0.007	-0.098	0.047	-0.129	-0.072	-0.124
138	0.090	0.064	0.170	0.032	-0.003	0.111	0.031	0.002	0.135	0.119	0.063	0.077
139												

Table D-3 continued

	114	115	116	117	118	119	120	121	122	123	124	125	126
114	1.000												
115	0.140	1.000											
116	0.065	0.352	1.000										
117	0.026	0.042	0.066	1.000									
118	0.121	0.245	0.189	0.081	1.000								
119	0.050	0.197	0.151	-0.084	0.159	1.000							
120	0.050	0.244	0.137	0.134	0.213	0.211	1.000						
121	0.104	0.090	0.243	0.012	0.105	0.059	0.149	1.000					
122	0.042	0.043	0.055	0.012	0.112	0.021	0.021	0.036	1.000				
123	-0.115	0.172	0.123	0.038	0.016	0.137	0.079	0.051	0.085	1.000			
124	-0.129	0.034	0.123	0.075	0.069	0.076	0.076	0.211	0.085	0.032	1.000		
125	-0.035	0.243	0.311	0.150	0.079	0.147	0.287	0.098	0.222	0.230	0.010	1.000	
126	0.457	0.073	0.001	0.071	0.111	-0.079	0.019	0.014	0.193	-0.030	0.092	0.077	1.000
127	0.247	0.219	0.120	0.051	0.209	0.187	0.117	0.073	0.104	0.104	0.136	0.140	0.023
128	0.165	0.218	0.257	0.022	0.075	0.067	0.067	-0.034	0.032	0.082	-0.006	0.104	0.036
129	0.221	0.130	0.145	-0.051	0.053	0.019	0.064	-0.037	0.046	0.138	0.034	0.104	0.028
130	0.170	0.195	0.193	-0.145	0.093	0.012	0.164	0.076	0.215	0.054	0.124	0.100	0.201
131	0.016	0.130	0.094	0.066	-0.054	0.105	0.129	0.204	0.040	0.068	0.068	0.255	0.051
132	0.079	0.007	-0.094	-0.186	0.046	-0.101	0.129	0.129	0.262	0.122	0.077	0.155	0.015
133	0.051	0.275	0.343	-0.002	0.136	-0.115	0.271	-0.179	0.201	0.039	-0.077	-0.236	0.160
134	-0.008	0.092	0.135	0.093	0.094	0.253	0.190	0.191	0.105	0.114	0.139	0.149	-0.066
135	-0.012	0.092	0.135	0.122	-0.018	0.268	0.164	0.160	-0.019	0.090	0.318	0.115	-0.109
136	0.413	0.195	-0.048	-0.105	-0.008	-0.030	-0.030	0.026	-0.019	-0.043	-0.031	0.003	-0.067
137	0.176	0.237	0.024	-0.025	0.169	0.062	0.461	0.124	0.145	0.073	0.073	0.181	-0.045
138													
139													
127	1.000												
128	0.226	1.000											
129	-0.013	0.102	1.000										
130	-0.021	0.030	0.142	1.000									
131	0.117	0.036	0.221	0.015	1.000								
132	0.131	0.035	0.061	0.054	0.013	1.000							
133	0.008	0.040	-0.120	-0.029	-0.146	0.015	1.000						
134	0.038	-0.031	-0.079	-0.025	-0.058	-0.015	0.080	1.000					
135	0.503	0.171	0.122	0.023	0.033	0.114	0.086	0.086	1.000				
136	0.211	0.253	0.033	0.073	0.235	0.134	0.134	0.213	0.092	1.000			
137													
138													
139													

Table D-4. Company Two: Real Situation

CORRELATION MATRIX

	R1	R2	R3	P4	R5	R7	R8	R9	R10	R11	R12	R13
R1	1.000											
R2	0.415	1.000										
R3	0.365	0.469	1.000									
R4	0.353	0.151	0.054	1.000								
R5	0.418	0.303	0.324	0.114	1.000							
R7	0.701	0.435	0.414	-0.043	0.000	1.000						
R8	0.055	-0.007	0.093	0.379	0.007	0.000	1.000					
R9	0.248	0.460	0.261	-0.079	0.224	0.007	0.000	1.000				
R10	0.038	0.001	0.116	0.401	0.190	0.000	0.000	0.011	1.000			
R11	0.295	0.385	0.314	0.282	0.196	0.337	0.095	0.337	0.173	1.000		
R12	0.319	0.244	0.337	0.273	0.239	0.097	0.017	0.210	0.231	0.273	1.000	
R13	0.299	0.244	0.241	-0.014	0.129	0.074	0.097	0.246	0.074	0.074	0.074	1.000
R14	0.023	0.031	0.124	0.047	0.129	0.102	0.036	0.074	-0.007	0.074	0.074	0.074
R15	0.363	0.394	0.280	-0.035	-0.144	0.291	-0.036	-0.036	-0.011	0.349	0.302	0.295
R16	-0.038	0.095	-0.009	0.280	0.100	-0.144	0.089	-0.073	-0.114	0.075	-0.032	-0.016
R17	0.387	0.362	0.391	0.325	0.191	0.306	0.414	0.073	0.010	0.414	0.407	0.315
R18	0.434	0.372	0.331	0.374	0.001	0.473	0.535	0.058	0.093	0.400	0.323	0.302
R19	0.364	0.272	0.309	0.300	0.036	0.693	0.447	0.083	0.122	0.210	0.268	0.233
R20	0.118	0.290	0.200	0.229	0.125	0.300	0.270	0.333	-0.047	0.286	0.101	0.179
R21	0.331	0.177	0.249	0.189	0.047	0.333	0.363	0.110	0.192	0.182	0.205	0.099
R22	0.020	0.100	0.117	0.020	0.041	0.182	0.110	0.018	0.085	0.023	0.126	0.126
R23	0.219	0.304	0.300	0.321	0.152	0.191	0.340	0.023	-0.131	0.289	0.386	0.600
R24	0.311	0.473	0.453	0.391	0.054	0.457	0.520	0.346	0.110	0.329	0.393	0.361
R25	0.294	0.472	0.423	0.195	0.094	0.433	0.391	0.095	0.109	0.321	0.391	0.333
R26	0.372	0.270	0.232	0.182	0.064	0.272	0.314	0.147	0.004	0.162	0.254	0.212
R27	0.492	0.300	0.349	0.367	0.181	0.373	0.595	0.029	0.019	0.374	0.379	0.293
R28	0.492	0.262	0.315	0.319	0.025	0.325	0.495	0.113	-0.037	0.408	0.273	0.298
R29	0.393	0.343	0.293	0.403	0.023	0.173	0.447	-0.079	-0.210	0.358	0.438	0.199
R30	0.028	0.142	0.102	-0.023	0.023	0.026	0.111	0.038	0.023	0.330	0.107	0.168
R31	0.078	0.085	0.120	0.023	0.046	0.053	0.115	0.018	0.053	0.020	0.165	0.109
R32	0.119	0.045	0.120	-0.024	0.077	0.144	0.115	0.018	0.053	-0.003	0.165	0.109
R33	0.370	0.442	0.445	0.353	0.117	0.144	0.192	0.084	0.180	0.240	0.305	0.326
R34	0.519	0.490	0.362	0.304	0.160	0.393	0.501	0.164	-0.085	0.228	0.372	0.286
R35	0.499	0.322	0.316	0.331	0.101	0.342	0.595	0.153	-0.017	0.325	0.322	0.306
R36	0.501	0.453	0.420	0.361	0.034	0.411	0.621	0.102	0.104	0.314	0.332	0.293
R37	0.433	0.433	0.416	0.425	0.094	0.547	0.622	0.161	0.142	0.309	0.369	0.328
R38	0.467	0.367	0.443	0.377	0.147	0.331	0.621	0.263	0.166	0.309	0.320	0.293
R39	0.626	0.334	0.493	0.342	0.125	0.231	0.651	-0.312	0.108	0.360	0.320	0.243

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	R14	R15	R16	R17	R18	R19	R20	R21	R22	R23	R24	R25	R26
R14	1.000												
R15	-0.070	1.000											
R16	0.144	-0.226	1.000										
R17	0.057	0.559	-0.161	1.000									
R18	0.092	0.327	-0.004	0.405	1.000								
R19	0.163	0.333	-0.170	0.319	0.273	1.000							
R20	0.111	0.140	-0.024	0.224	0.260	0.296	1.000						
R21	0.084	0.202	-0.162	0.151	0.140	0.366	0.073	1.000					
R22	0.030	0.053	-0.090	0.398	0.311	0.278	0.049	-0.043	1.000				
R23	0.100	0.273	-0.090	0.317	0.541	0.574	0.304	0.112	0.071	1.000			
R24	0.079	0.373	-0.057	0.445	0.567	0.443	0.245	0.351	0.248	0.254	1.000		
R25	0.071	0.224	-0.049	0.255	0.213	0.245	0.128	0.282	0.108	0.359	0.275	1.000	
R26	0.144	0.400	-0.129	0.580	0.303	0.414	0.295	0.251	0.154	0.366	0.405	0.518	1.000
R27	0.051	0.525	-0.151	0.540	0.303	0.371	0.174	0.076	0.145	0.259	0.325	0.432	0.285
R28	0.099	0.314	-0.041	0.258	0.171	0.395	0.174	0.074	0.090	0.207	0.207	0.261	0.250
R29	0.170	0.232	-0.094	0.401	0.424	0.516	0.270	0.344	0.240	0.334	0.420	0.461	0.264
R30	0.049	0.085	-0.014	0.049	0.045	0.138	0.020	0.270	0.140	0.170	0.130	0.067	0.015
R31	-0.002	0.101	-0.052	0.052	0.162	0.135	0.090	0.175	0.043	0.101	0.178	0.148	0.049
R32	0.117	0.311	-0.044	0.367	0.392	0.372	0.159	0.232	0.034	0.328	0.384	0.426	0.304
R33	0.010	0.404	-0.076	0.383	0.326	0.374	0.159	0.225	0.032	0.298	0.365	0.421	0.292
R34	0.093	0.316	-0.140	0.355	0.536	0.413	0.328	0.179	0.181	0.353	0.486	0.570	0.276
R35	-0.055	0.393	-0.054	0.368	0.536	0.413	0.328	0.322	0.146	0.308	0.477	0.658	0.350
R36	0.167	0.322	-0.105	0.347	0.588	0.432	0.373	0.307	0.272	0.398	0.609	0.692	0.350
R37	-0.021	0.336	-0.068	0.307	0.394	0.377	0.121	0.260	0.116	0.260	0.528	0.558	0.292
R38	0.047	0.329	-0.011	0.366	0.354	0.377	0.143	0.278	0.017	0.215	0.511	0.733	0.292
R27	1.000												
R28	0.519	1.000											
R29	0.212	0.207	1.000										
R30	0.445	0.473	0.270	1.000									
R31	0.086	0.158	-0.024	0.093	1.000								
R32	0.053	0.050	-0.016	0.216	0.251	1.000							
R33	0.412	0.526	0.110	0.434	0.184	0.184	1.000						
R34	0.400	0.328	0.249	0.404	0.146	0.055	0.337	1.000					
R35	0.500	0.350	0.224	0.376	0.001	0.055	0.577	0.410	1.000				
R36	0.503	0.437	0.129	0.416	0.074	0.182	0.577	0.324	0.324	1.000			
R37	0.424	0.485	0.272	0.582	0.174	0.173	0.485	0.316	0.455	0.616	1.000		
R38	0.434	0.375	0.270	0.386	0.161	0.173	0.485	0.347	0.455	0.567	0.555	1.000	
R39	0.383	0.393	0.173	0.350	0.067	0.079	0.401	0.347	0.423	0.480	0.383	0.480	1.000